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Medical Director Approval: _____ **Date:** _____

Certificate of Acknowledgment of Notary Public

State of _____; County of _____

This document was acknowledged before me, a Notary Public, this _____ day of _____, 20 _____

_____ who personally appeared and is known to me to be a credible person of lawful age.

Notary Public, State of _____

My commission expires: _____

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Introduction

The Academy of Medicine of Cincinnati Clinical Practice Guidelines have been designed not only to be practically applied but also to be used as a teaching tool. The full protocol will provide detailed explanations on patient management, while the quick reference sheets give a simplified version of the treatment options.

Where possible, evidence-based medicine (EBM) has been used to create the clinical care protocols you see in this document. When no formal EBM was applicable, a process of consensus building within the protocol committee was used to arrive at the final product.

There are several caveats in the protocol:

A. The Symptom Based protocol section does not cover all possible patient complaints. Make sure to do a thorough patient assessment and proceed to the appropriate protocol. Remember that whenever there is any question regarding medical treatment, medical control is available.
B. Those sections marked **ALL** are the responsibility of all levels of providers. **EMT** sections are for EMT-Basic providers specifically. **MEDIC** sections are for the paramedic providers specifically. If a paramedic does not have the proper medic equipment available, then they should function under the EMT section.
C. There are state specific sections where applicable. Unless listed in a state specific area, all other sections of the protocol apply as per above. Anything OHIO is listed in YELLOW. Anything KENTUCKY is listed in PURPLE. Anything INDIANA is listed in ORANGE.
D. IV access means either a saline lock or a bag of saline at keep open rate. If after 3 unsuccessful attempts at an IV, then an IO or other access should be obtained if access is needed.
E. Where oxygen is called for, apply an appropriate oxygen delivery device and volume to maintain SpO2 at 95% unless the specific protocol indicates a different target oxygen saturation. Consider patient's previous medical conditions.
F. Any place that cardiac monitor is mentioned for an **EMT** or **ALL** it is only applicable if the equipment is available.
G. "If Available" is stated often. This means that for some departments the option being recommended may not be available. If it is not available, then disregard this part of the protocol.
H. Generic and Brand names of medications may be used interchangeably.
I. When "Inclusion Criteria" or "Physical Exam Criteria" are listed for a protocol, a patient may have some of the findings. A patient does not need to have all the findings unless the protocol specifically indicates that all must be present.
J. When a patient has nasal congestion, intranasal (IN) medications are ineffective and should not be used.
K. Review patient allergies, if possible, prior to medication administration and do not administer any medications to which the patient has a true allergy.

Nationally there are shortages of medications. The States will not allow the use of expired medications at the current time. Alternate medications that can be used can be found on the website. However, eventually there may be a situation where there is no substitute for a medication that is not available. In the current legal environment if you do not have a medication, then you cannot use it and must proceed with the protocol as best as possible. For drugs that are in short supply we recommend using them only when truly necessary. There is no intent that all listed medications must be carried.

These protocols are not SOP's. There are position statements from many other official agencies that can be used to augment these protocols. Examples include Active Shooter from Ohio EMFTS Board, Fire Scene Rehab from the NFPA and PPE recommendations from the CDC.

Lastly, the purpose of these protocols is to establish guidelines between EMS administration, the EMS provider and medical direction for the management, treatment, and transport of specific medical emergencies. The protocols are not designed nor intended to limit the EMS provider in the exercise of good judgment or initiative in taking reasonable action in extraordinary circumstances. These protocols are intended to assist in achieving excellent, consistent prehospital care for patients. The following protocols are not intended to provide a solution to every problem which may arise. Our objective is not only to serve the people of our area, but also to give them our best possible service. Part of that service is treating patients even when there is a short transport time. We will achieve the high standard required of emergency medical services only by coordinating our operations, working together, and maintaining a high degree of professionalism.

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Kevin Richards, NRP, Co-Chair Protocol Subcommittee krichards@springfieldtwp.org
These protocols can be found at the Academy of Medicine website.

ALL

I. Introduction

A. In consideration of the agreement by the undersigned emergency medical services to abide by the provisions of these administrative protocols and procedures, the Academy of Medicine (AOM) authorizes and permits the undersigned emergency medical services to operate under the auspices of the AOM and to utilize the AOM's Protocols and Standing Orders for Paramedic Services.

B. These administrative protocols and procedures are the result of a cooperative effort among the members of the Academy of Medicine, Hamilton County Fire Chiefs' Association, and others. It is intended those cooperative efforts between the Academy and the Hamilton County Fire Chiefs' Association shall continue and that such cooperative efforts shall underscore any interpretations of these administrative protocols and procedures. The most recent protocols as found on the AOM website will be readily available to the paramedics at their base station(s) and in their life squads.

C. It is recognized by the parties here to that several committees and organizations are involved in the provision of emergency medical services provided under the auspices of the AOM. These include:

1. The Academy of Medicine of Cincinnati:
    a. The Academy of Medicine of Cincinnati will serve as the official body for establishing medical policy for emergency medical services operating in and around Hamilton County, OH, pursuant to Ohio Revised Code. The Protocols and Standing Orders for Paramedic Services issued by the Academy of Medicine constitutes the community standard for the provision of pre-hospital medical care. The Academy of Medicine will communicate all medical policy to the Hamilton County Fire Chiefs' Association, to Departments or agencies providing emergency medical services under the auspices of the Academy of Medicine, and to individual paramedics through the various committees and subcommittees organized under the auspices of the Academy of Medicine. The Academy of Medicine will also mediate conflicts arising within the emergency medical service through the grievance procedures set forth in the administrative protocols.
2. Emergency and Disaster Services Committee (EDS):
    a. The EDS Committee will be comprised of physicians and other persons with interest and/or expertise in emergency services and/or disaster services appointed by the president of the Academy. The EDS Committee will consist of the following members:
        i. Chair of the EDS Committee
        ii. Chair of the Compliance Committee
        iii. Chair of the Protocol Committee
        iv. Disaster Services Expert
        v. A representative appointed by the Hamilton County Fire Chiefs Association
        vi. At large members
    b. There will always be an odd number of appointed members since this is a voting committee that reports to the Academy of Medicine Executive Board.
    c. Other members will be considered on a case-by-case basis. The chair of the EDS Committee will be a member of the Academy of Medicine appointed by the president of the Academy. This committee will advise the Council of the Academy about issues pertaining to emergency medical services. The Disaster Services member of this committee should be well versed in the regional disaster preparedness for the region and will be designated to coordinate regional disaster planning.
    d. The EDS Committee meeting will be considered an Open meeting but reserves the right to close the meeting to all non-members if a sensitive topic must be discussed.
    e. All protocol changes will be approved by the EDS Committee.
    f. The EDS committee will vote on all recommendations of the Compliance Committee regarding accreditation of member departments.
3. Pre-Hospital Care Operations Committee (PHCOC):

a. The PHCOC will be an Open ad hoc committee of the Academy of Medicine. The membership will include emergency physicians, emergency nurses, paramedics and EMT's, each hospital and squad represented equally. Members of the committee shall be appointed by the president of the Academy. The SWOPHCOC will report to and receive guidance from the EDS Committee.

4. The Compliance and Inspection Subcommittee of the Pre-Hospital Care Operations Committee (C/I):
    a. The Compliance and Inspection Subcommittee of the PHCOC will be composed of members appointed by the president of the Academy and will may include at least one member from each of the following categories:
        i. Emergency Physician
        ii. Emergency Nurse
        iii. EMT-P
        iv. EMT-B
        v. Representative from Hamilton County EMS Committee of the Hamilton County Fire Chief's Association
    b. The Compliance Subcommittee will be chaired by a member appointed by the EDS Committee chair. The function of the subcommittee will be to perform original site visits and repeat site visits as determined by the administrative protocols and to investigate complaints about pre-hospital care in accordance with these administrative protocols. The Compliance Committee shall report on all matters to the EDS Committee.
5. Protocol Committee:
    a. The Protocol committee shall meet throughout the year to plan any changes to the upcoming years protocol.
    b. The Protocol should set a meeting schedule at the beginning of each year with consistent dates so the meeting can be attended by any person interested in contributing to protocol development.
    c. This is considered an open meeting.
6. Hamilton County Fire Chiefs' Association: The Hamilton County Fire Chiefs' Association, consisting of major providers for the delivery of emergency medical care by the fire service within Hamilton County, will operate their services under the community standards set forth in the administrative and medical protocols and standing orders issued by the Academy of Medicine.
7. Other County Fire Chiefs Associations: Other County Fire Chiefs Associations may adopt the Academy of Medicine Protocols and Procedures Pre-Hospital Care upon the review and approval of the EDS Committee.

D. Each Emergency Medical Service, which is a signatory, to this agreement, agrees to comply with the following administrative protocols, compliance procedures, and grievance procedures.

E. Medical Director
1. Each emergency medical service shall have a Medical Director who shall be a licensed physician in the state of the agency.
2. The Academy recommends that the Medical Director have a written agreement with the governing body of the EMS to define the role of the Medical Director and the Medical Director's relationship to that department.
3. If a Medical Director leaves a department for any reason, it is expected that a replacement will be found within 90 days. The Ohio State Board of Pharmacy requires an updated "responsible person" on the drug license within 30 days or less.
4. Duties of Medical Director:
    a. Assures the adequate training and continuing education of paramedics.
    b. Assures the Academy of Medicine Protocols are followed in the management of all patients cared for by the EMS Personnel.
    c. Assists in the development of medically related dispatch procedures and transportation policies.
    d. Assists EMS administration in development of patient care Standard Operating Procedures (SOP).

e. Assists the administrative head in establishing criteria for patient disposition.
f. Assists the administrative head in developing and implementing a quality assurance program, including systematic audits, to include how problems are identified and corrected. The quality assurance program should include a review of run reports. Such a report could include:
   i. runs involving deaths.
   ii. cardiac arrests.
   iii. intubations and rescue airway device use.
   iv. questioned runs or misadventures.
   v. return runs within 24 hours same patient.
   vi. reasonable sampling of non-transport runs
   vii. runs involving complaints.
   viii. runs involving DNRs.
   ix. a random sampling of 10% of the runs each month.
   x. runs involving exposures of EMS personnel.
g. The Medical Director shall possess a thorough knowledge of pre-hospital emergency care, emergency medical systems, and emergency medicine. It is recommended that the Medical Director be certified in ACLS and ATLS or Board Certified in Emergency Medicine.

II. Voice Communication Ability
A. Each unit used to transport patients shall be equipped with communication equipment capable of voice transmission and compatible with Academy of Medicine approved medical control base stations.

III. Treatment Protocols
A. The Department shall utilize these Treatment Protocols of the Academy of Medicine of Cincinnati.
B. Minor alterations to the protocols may be made by the Medical Director. These changes or additions become the sole responsibility of the Medical Director. The Academy of Medicine EDS Committee shall review all such changes.
C. Any additions or modification should be made in the same format as these protocols for consistency.
D. Any additions should be copied to the EDS Committee of the Academy of Medicine.

IV. Run Report and Record Keeping System
A. The Department shall utilize a run report that collects the following information about patient encounters:
   1. Patient demographic data.
   2. EMS vehicle information.
   3. Incident location.
   4. Patient chief complaint.
   5. Patient condition and mechanism of injury.
   6. Patient treatment.
   7. Record of base station contact, when used.
   8. Patient condition on arrival at the receiving facility.
   9. Receiving facility.
B. A copy of the run report shall be left at the hospital at the time of patient delivery to facilitate transfer of care.
C. An appropriate filing system, with a manual or computerized method to track patient, capable of access for review by the Department Medical Director, shall be in place.
D. The Department shall have a process that tracks critical patient care procedures performed by each employee.

V. System Audits
A. Training and Continuing Education Monitoring/Record-Keeping
   1. A system of verification of employee's certification and monitoring of his/her training and continuing education efforts shall be established and maintained either manually or by computer.
   2. EMS personnel employed by an emergency medical service to provide EMS services under the auspices of the Academy of Medicine shall be certified by their relevant state and shall meet all continuing education requirements.
   3. The Academy of Medicine may request additional training that it may deem necessary.

4. A report of continuing education shall be made to the Medical Director at the time of re-certification.

VI. Department SOP/Policies

A. Written department SOP and policies for the delivery of EMS must exist and be distributed to all members who provide EMS service for the department.

B. Department SOP and policies shall be consistent with the Academy of Medicine protocols and procedures.

C. EMS personnel shall be trained in these standard operation procedures.

D. Have a protocol review procedure with EMS personnel.

VII. Variances

A. Application

1. Any emergency medical service may apply to the EDS Committee for a variance from any of the provisions of the administrative protocols.
2. The application for a variance shall set forth the exceptional circumstances requiring relief from an administrative protocol giving, in detail, the reasons for the need for a variance, the duration of the variance sought, and the terms of the variance.

B. Decision by EDS

1. The EDS Committee shall, within 45 days of receipt of a request for a variance, conduct a hearing on the request.
2. Prior notice shall be given to the EMS requesting a variance with an opportunity to be heard.
3. The decision whether to grant or deny a request for a variance or to grant the variance with conditions or limitations shall be within the sole discretion of the EDS Committee.
4. The EDS Committee may grant a variance with conditions including limits on the duration or terms and may impose alternative requirements.
5. Communication Variance Forms shall be submitted to the Medical Director and the EDS Committee for review.

VIII. Protocol Copies

A. All EMS units shall

1. Have a copy of these protocols on the unit for reference.
2. Utilize the communication variance form whenever a procedure which normally requires the approval of a medical command physician has been performed without such approval.

EMT

IX. EMT

A. Protocol

1. The EMT protocol is intended to be used in its entirety but may be used in part according to the EMS Medical Director.

B. Continuing Education

1. All EMT's are required to maintain current BLS cards. A 90-day grace period is allowed when a card expires, to be enrolled in a new course.

C. Personnel

1. Of the medical team members, both must be EMT certified.

D. Equipment

1. A BLS unit is required to carry and maintain equipment needed to comply with the EMT section of these Protocols by the Academy of Medicine of Cincinnati.

MEDIC

X. Paramedic

A. EMS Responses

1. It is the recommendation of the Academy of Medicine of Cincinnati Emergency and Disaster Services (EDS) committee and the Protocol committee that the number of paramedics utilized per EMS detail shall be determined by parameters set by individual EMS agencies and their respective Medical Directors.
2. It shall be the responsibility of the EMS Agency and their Medical Director to determine the operational staffing and paramedic response guidelines for their department relative to the number of paramedics responding to an EMS detail.

B. 24 Hour Paramedic Service

1. Each emergency medical service that chooses to provide paramedic services operating under the auspices of the Academy of Medicine shall provide paramedic services on a 24-hour basis.
2. Each emergency medical service shall be required to show that it has sufficient certified paramedics to provide 24-hour paramedic service.

C. Continuing Education
1. All paramedics are required to maintain current ACLS cards. A 90-day grace period is allowed when a card expires, to be enrolled in a new course.

D. Required Drugs, IV Solutions, and Equipment for All Paramedic Services
1. Drugs, IV Solutions, and Equipment needed to comply with these Protocols by the Academy of Medicine of Cincinnati.
2. Rapid Glucose monitoring capability with appropriate CLIA License.
3. Documentation Regarding Compliance with Board of Pharmacy, State of Ohio, and other Licensing bodies
4. If other supplies are added by an emergency medical service, they must be approved by and used under the authority of the emergency medical service's Medical Director.
5. Any devices needing manufacturers recommended calibration and service shall have records of such available for review.

ALL

XI. Compliance Procedures

A. Site Visits
1. A site visit is an inspection of an emergency medical service conducted by a Site Visit Team, which consists of at least one physician and two paramedics (nurses well versed in emergency medical services can fulfill one of the paramedic positions). This process ensures compliance with the requirements of the Administrative Protocols, Medical Protocols and Standing Orders for Paramedic Services. The Site Visit Team will review adherence to recommended practices deemed important by the EDS Committee as essential to the functioning of a superior EMS system. The Site Visit Team will verify compliance with standards clearly stipulated and/or required by a rule governing body, such as the Ohio Revised Code, Ohio Administrative Code and/or the National Fire Protection Association. Refer to Hamilton County Fire Chiefs Website for detailed list.
2. The on-site physician member of the inspection team will lead the site visit process and is responsible for completing and submitting the site visit report. No member of the inspection team shall have any potential conflict of interest with the Emergency Medical Service being inspected.
3. Site visits shall be conducted at the time an emergency medical service requests the right to operate under the auspices of the Academy of Medicine and everyone to five year(s) thereafter.
4. Site visit process is as follows:
   a. The emergency medical service will be notified, by the Academy of Medicine, that a site visit is needed.
   b. The emergency medical service will have three months, after notification, to complete and submit (to the Academy) the Academy of Medicine EMS Site Visit Form. (Hamilton County Fire Chiefs Website)
   c. The Chair of the Compliance Committee, or his/her designee, will conduct a preliminary review ensuring the emergency medical service meets the items listed on the submitted site visit form.
   d. After review, the site visit form is forwarded to the Academy of Medicine for site visit scheduling; at this time, a Site Visit Team is established.
   e. The Site Visit Team will verify the information, practices and equipment as identified on the submitted site visit form.
   f. The site visit results will be sent to the Academy of Medicine, with a copy forwarded to the Compliance Committee Chair.

B. Compliance Committee Report
1. Within 90 days of a site visit, the Compliance Committee Chair shall present its report to the EDS Committee, specifying any deficiencies discovered or setting forth its finding that the emergency medical service has successfully satisfied all the requirements of the site visit.
2. The EDS Committee decision shall be delivered to the Fire Chief and the administrative head of the emergency medical service, unless otherwise designated, in writing, within 30 days of

receipt: to the Medical Director of the emergency medical service and to the chair of the EDS Committee.

3. The emergency medical service may respond in writing to the EDS Committee decision within 30 days of receipt of that report. The EMS response shall be delivered to the chair of the EDS Committee.

C. EDS Hearing
1. The EDS Committee shall conduct a hearing concerning the Compliance Committee site visit report and the EMS response (if any) within 45 days.
2. The EDS Committee shall give prior notice of its hearing to the EMS and the Compliance Committee.
3. The Compliance Committee and the EMS shall have a right to be heard at the EDS hearing.
4. The EDS may request additional information from the Compliance Committee and/or EMS.

D. EDS Decision
1. EDS Committee shall render a decision that may provide any one or more of the following:
   a. 5-year approval
   b. 3-year approval
   c. 1-year approval
   d. Follow-up site visit
   e. Corrective action
   f. Probation
   g. Suspension
   h. Termination

E. Promulgation of EDS Decision
1. The decision of the EDS Committee shall be provided, in writing, to the Fire Chief and the administrative head of the EMS, (unless otherwise designated in writing); and to the Medical Director of the EMS Department.
2. The decision of the EDS Committee is neither confidential nor privileged.
   a. However, to the extent that the Compliance Committee report, the EMS response, or any other documentation refers or relates to individual patient care, all matters relating to any particular patient's care shall be kept confidential.

F. Right of Appeal
1. Any emergency medical service disciplined by the EDS Committee as set forth above shall have a right of appeal to the Council of the Academy of Medicine.
2. There shall be no automatic stay of the decision of the EDS Committee pending appeal to the Council of the Academy of Medicine.
3. Upon request, the Chair of the EDS Committee or the President of the Academy of Medicine may grant a stay pending appeal.

XII. Grievance Procedures

A. Complaint
1. Any Individual or Group may file a complaint to be considered under these grievance procedures.
2. Any such complaint may be made concerning deviations from the Protocols and Standing Orders for Paramedic Services, the Administrative Protocols, or any questioned conduct.
3. The complaint should be filed with the EDS Committee Chair
4. Once a complaint is received by the chair of the EDS Committee, notice shall be given to the Fire Chief and administrative head of the EMS, the Medical Director, and to the members of the EDS Committee.
5. No complaint shall be investigated, without the written consent of all parties involved where: litigation is threatened or pending, until such litigation, including all appeals, is completed; or
6. A collective bargaining or other agreement imposes inconsistent procedures or confers rights that cannot be protected under these grievance procedures.

B. Investigation of Complaints
1. The chair of the EDS Committee shall appoint a team to investigate the complaint. The investigators may be from the EDS Committee, the Compliance Committee, the Pre-Hospital

Care Operations Committee, or any other individuals determined by the chair of the EDS Committee to be appropriate for the investigation.

2. Within 45 days of its receipt of the complaint, the investigation team shall submit its report and recommendation to the chair of the EDS Committee, the administrative head of the EMS, and to the Medical Director.

C. Right of Response
1. The EMS shall have a right to respond to the report and recommendation of the investigation team within 30 days of receipt of its report.
2. This response should be filed with the EDS Chair.

D. EDS Hearing
1. The EDS Committee shall conduct a hearing on the complaint, report, and recommendation of the investigation team, and EMS response.
2. Prior notice shall be given to all concerned parties.
3. All concerned parties shall be given an opportunity to be heard.
4. The EDS Committee may request additional information.
5. The EDS Committee, at the request of all concerned parties, may conduct an informal hearing or consider only written material.
6. The EDS Committee may waive the hearing if requested by all concerned parties.

E. Decision of EDS Committee
1. Upon hearing the complaint, investigation report, and responses, the EDS Committee shall render a decision. Sanctions, if any, shall be directed to the emergency medical service(s) involved, not to any individual.
2. The EDS may require corrective action(s) including, but not limited to, additional training.
3. The EDS may issue a reprimand, probation, suspension, or termination of the EMS if the complaint is found to be a repeat offense; if the complaint arises from material administrative violations of the Administrative Protocols; or if the complaint involves substantial systemic problems.

F. Right-of-Appeal
1. Any concerned person or entity may appeal the decision of the EDS Committee to the Council of the Academy of Medicine.

G. There shall be no automatic stay of the decision of the EDS Committee pending appeal. Upon request, the Chair of the EDS Committee or the President of the Academy of Medicine may grant a stay pending appeal.

ALL

I. MEDICAL REPORT FORMAT: EMS agencies and personnel should use the following **MIST-R "mister"** format when contacting area hospitals/medical control facilities with patient information:

A. Ambulance identifier i.e. (*Cincinnati R-46, Anderson Medic 6, Mason Medic 51*)
B. Estimated time of arrival to hospital, including destination, if applicable.
C. Patient's age and sex.
D. **M**echanism of injury or **M**edical Complaint
E. **I**njuries (physical exam findings) or **I**llness (history of present illness)
F. **S**igns (vital signs with notable changes if applicable
G. **T**reatment given and response to the treatments.
H. **R**esources (orders, security, etc.) & **R**epeat ETA

II. REQUIRED NOTIFICATION CALL: In addition to those circumstances which are governed by the individual sections of this protocol, a call **MUST** be initiated to the receiving facility (Notifications received via Communications/Dispatch Centers/Mobile Applications and/or radio are also acceptable):

A. When there is doubt about diagnosis, treatment, or disposition of the patient.
B. When the patient meets criteria under a time critical diagnosis the provider shall notify using **"ALERT"** terminology:
   1. STEMI Alert
   2. Stroke Alert
   3. Sepsis Alert
   4. Cardiac Arrest/ROSC
   5. Trauma Alert Criteria as described in SB210 flow chart.
C. When it is believed that the patient may require resources immediately at bedside:
   1. Imminent or complicated childbirth
   2. Bariatric patient
   3. CPAP Therapy
   4. Combative/chemically restrained/physically restrained patient
   5. Security Personnel
D. During incidents deemed Mass Casualty Incidents (MCI) by the Incident Commander and/or Appendix C Management of Mass Casualty Incidents.
E. When transporting more than one pediatric patient from an incident to the same receiving facility
F. Contaminated or Highly Infectious Disease (HID) patients are being transported to emergency department.

III. OPTIONAL NOTIFICATION CALL:

A. When notification will expedite or improve patient care.
B. Whenever it is thought necessary by the EMS provider.
C. When a call is not possible, these protocols shall act as standing orders for procedures, which may be performed by certified EMS personnel and trainees under the direct supervision of certified EMS personnel. These protocols do not limit the activity of an EMS provider who is in direct contact with the medical control physician.

NOTES:

A. If the destination hospital has an established telemetry base, contact with that hospital should take precedence over contact with any other facilities.
B. An emergency department nurse at the medical control hospital may relay orders from the emergency physician in cases where it is impossible for the physician to come to the radio/telephone. It is not necessary to speak with a medical control physician concerning treatment modalities that are standing orders except if a question arises concerning the planned treatment.
C. Command Physicians may use discretion in the use of these protocols and order care, which, in their medical judgment, is in the best interest of the patient being provided with prehospital advanced life support care. The medications and procedures ordered must still fall within the approved Protocols and Procedures.

D. When giving an order for medication via radio/phone, the command physician or designee (i.e., RN) shall state the name of the drug, the dose, and the route by which that dose is to be delivered (e.g., Valium, 5 mg., slow I.V. push). The ALS provider is to repeat the exact orders back to the Command Physician before administering the drug.

E. Providers involved during Mass Casualty Incidents (MCI) should activate ***the Disaster Net*** as early into the incident as possible and utilize the ***Transportation Officer*** to facilitate patient notifications. Detailed information regarding this process is also available in Appendix C Management of Mass Casualty Incidents.

F. ***Base Station*** is defined as a hospital agreeing to accept EMS Medical Control responsibilities with an EMS phone that has recording capabilities, and these recordings need to be stored for a period of at least ninety (90) days. Some hospitals may elect not to assume EMS Medical Control and just want to be notified; therefore, EMS Command will default to the ***University of Cincinnati Medical Center.***

MEDIC

I. Pharmacologic-Assisted Intubation:

A. Definition: ***Any*** use of medication(s) to facilitate endotracheal intubation.

II. Administrative Recommendations:

A. It is *strongly recommended* that the service Medical Director adhere to the following administrative recommendations for the use of pharmacologic-assisted Intubation:

1. Medical direction with concurrent and retrospective oversight supervision.
2. Advanced training and continuing education designed to demonstrate initial, ongoing, and improving competence in the procedure, including supervised procedural experience.
3. Advanced training in airway management of patients who cannot be intubated, as well as the availability, and competence in the use of rescue airway methods in the event of failed pharmacologic-assisted intubation.
4. Standardized pharmacologic-assisted intubation protocols/procedure set forth by the services Medical Director, including the use of sedation, analgesia, and neuromuscular blockade.
5. Resources for drug storage and delivery.
6. Resources for continuous monitoring and recording of heart rate and rhythm, SpO2, and end-tidal carbon dioxide, before, during, and after pharmacologic-assisted intubation.
7. Appropriate training and equipment to confirm initial and verify ongoing tube placement, continuing quality assurance, quality control, performance review, and when necessary supplemental training.

KY-MEDIC

III. Pharmacologic-assisted Intubation:

A. This is a restricted procedure. A service will require specific authorization from the board prior to utilization of this procedure and skill. This procedure is restricted and also requires State Medical Advisor approval.

IV. **Pediatric** Pharmacologic-assisted Intubation:

A. Advanced provider certification required:

1. *Critical Care Transport Paramedic (CCP-C)*
2. *Flight Paramedic Certification (FP-C)*
3. *Certified Flight Registered Nurse (CFRN)*

V. Other certification approved by the *Kentucky Board of EMS* and the service Medical Director

ALL

I. Introduction

A. One of the most difficult situations for the paramedic is that created by the arrival of a physician at the scene. A different set of responsibilities exists when that physician knows and has established a previous doctor-patient relationship with the patient as opposed to when no such relationship exists. Physicians who are part of the EMS system such as the service's medical director or on-line medical control physician are generally responsible for patient care.

II. Physician Without Previous Doctor-Patient Relationship

A. <u>FOR A FULLY LICENSED PHYSICIAN WHO IS NOT A PART OF THE EMS SYSTEM TO ASSUME CONTROL AT THE SCENE OF AN EMERGENCY, ALL OF THE FOLLOWING MUST TAKE PLACE:</u>

1. Proof of the physician's identity and current state licensure must be provided to the senior Medic/EMT.
2. The physician must agree to accompany the patient to the hospital.
3. The on-line medical control physician must be notified and agree to relinquish control to the on-scene physician. This can usually best be accomplished by having the medical control physician speak directly with the physician at the scene.
4. The physician at the scene must agree to sign his or her orders.
5. If the on-scene physician has not given orders or performed invasive interventions, and the ongoing care of the patient is within the scope of practice of the on-scene EMS crew, the EMS crew may release the on-scene physician and not require him/her to transport.
6. Nothing within this protocol prohibits an on-scene physician from assisting an EMS crew with carrying out their normal protocol treatment. Assistance of a physician on scene does not constitute a physician taking control of the scene.

III. Physician with Previous Doctor-Patient Relationship

A. As a general rule, it is desirable that the Medic/EMTs called to the scene of an emergency, even within a physician's office, perform an assessment and manage the patient just as would be done in any other location.

B. If the physician wishes to take control of the patient's management, he or she may do so if:

1. Communication is established between on-line medical control and the physician at the scene, and
2. The scene physician agrees to accompany the patient to the hospital.

C. If control of the emergency is assumed by the on-scene physician, then:

1. The physician’s license number will be recorded on the run report.
2. Orders within the scope of training and practice of the Medic/EMT will be carried out.
3. Orders outside the scope of training and practice of the Medic/EMT will be personally carried out by the on-scene physician.
4. The on-scene physician will sign his or her orders.
5. The on-scene physician must accompany the patient in the ambulance to the hospital unless released by the on-line medical control physician.

IV. If control of the emergency is given to the on-scene physician, then the physician can only issue orders within the scope of training and practice of the Medic/EMT.

V. Any orders or procedures outside of the Medic/EMT’s scope of practice will have to be carried out personally by the on-scene physician.

Notes:

A. In a disaster or multi-casualty situation, then the on-scene physician should use his best judgment about whether or not to accompany the patient to the hospital. It may be appropriate to stay at the scene and tend to the patients remaining. Generally, these decisions should be made in consultation with the medical control physician.

B. If the physician on the scene does not accompany the patient to the hospital, then responsibility for that patient will revert to the medical control physician.

KY - ALL

VI. On-Scene Medical Personnel

A. The medical care provided at the scene is the responsibility of the highest level of EMS provider who has responded by usual dispatch system to that scene. Passersby who stop to help, even though possibly more highly trained than the system providers, may not assume responsibility (except as outlined below) but may be allowed to help in care at the discretion of the lead EMS provider and assuming they have proof of licensure.

B. When an EMS provider, under medical control (on- or off-line), arrives at the scene of an emergency, the provider acts as the agent of medical control.

C. Any healthcare provider (physician, physicians assistant, registered nurse, nurse midwife, non-KY licensed EMS provider, etc.) who is not an active member of the responding EMS unit, and who is either at the scene at the time of EMS' arrival, or arrives after an EMS unit provider has initiated care, and who desires to continue to participate, should be put in touch with the on-line medical control physician.

D. At no time should an EMS provider provide care outside of their scope of training and/or protocols.

E. In the event that a Mass Casualty Incident (MCI) is declared, all providers should follow the Mass Casualty Incidents Uniform Prehospital MCI Procedure outlined in this document or similar approved Incident Command System.

ALL	I. Basic and/or Advanced cardiac life support must be started on all patients who are found apneic and pulseless, UNLESS: A. A valid Do Not Resuscitate order is presented as defined in the Do Not Resuscitate Protocol, OR B. The patient's body is unable to undergo resuscitative measures (CPR, ventilatory management,) such as decapitation, hemicorpectomy, severe and complete crush injury, or burned beyond resuscitative capability/recognition. Isolated penetrating trauma should rarely be considered incompatible with life OR C. The victim shows signs of rigor mortis (in a warm environment), dependent lividity, or decomposition. D. During a mass casualty incident, (MCI) the patient is designated as deceased or expectant by the locally accepted MCI triage protocols. **Such patients should be reevaluated as resources allow**.
MEDIC	E. If the patient has either blunt or penetrating trauma, refer to protocol S509.
ALL	II. Resuscitation efforts may be terminated by the prehospital personnel under the following circumstances: A. If resuscitation was started prior to the discovery of an approved DNR directive OR B. If upon further examination, the patient meets the determination of death criteria above OR C. If the following Medic conditions are met
MEDIC	III. Medics may terminate resuscitative efforts and not transport patients under active CPR if all of the following exist: A. Good contact between the paramedic unit and the medical control physician. B. Successful airway management and medication administration consistent with other protocols in this document. C. At least 30 minutes of resuscitative efforts D. NO sustained return of spontaneous circulation at any time (palpable pulse greater than 60 beats per minute for at least one five-minute period). E. NO spontaneous respiration: eye opening, motor response, or other neurologic activity at the time stopping resuscitation is contemplated. F. The cardiac rhythm is NOT persistent or recurrent ventricular fibrillation or ventricular tachycardia. G. All paramedics and the medical control physician agree with termination of the resuscitation. H. The suspected cause of the cardiac arrest must be something other than hypothermia, electrocution, lightning strike. I. While patients who are pregnant may not themselves benefit from longer resuscitation, the unborn fetus may benefit from emergency c-caesarian section. Consequently, it is recommended to transport pregnant patients even if there has been no return of spontaneous circulation.
ALL	IV. Post-termination Body Movement (a good faith effort to categorize the cause of death is reasonable) A. Likely homicide – avoid body movement unless necessary for life safety; consider involving law enforcement and/or the coroners office. B. Likely natural causes – body may be relocated as appropriate for the situation and public good. C. Unclear cause – avoid disturbance unless necessary for life safety; consider involving law enforcement and/or the coroner's office.
MEDIC	V. Termination of resuscitation (TOR) inside an ambulance A. TOR enroute is reasonable if the patient meets criteria in section III. B. After TOR, the ambulance should continue non-emergency to the destination hospital. C. Body may be removed from the ambulance after TOR, assuming the ambulance is not the site of homicide. D. Such instances should be exceedingly rare.
ALL	**Notes:** A. The purpose behind the termination of resuscitation in the field is to keep EMS unit's in-service for emergencies instead of transporting non-salvageable patients under resuscitative efforts. This protocol provides a method for terminating resuscitation in hopeless cases. B. Studies have shown that manual CPR during transport is usually not performed well even with the best intentions. For adults with the current training and equipment that is available in the pre-

hospital setting clearly demonstrates that if a patient does not have a return of spontaneous circulation in the pre-hospital setting then they are very unlikely to have it after being transported to the ER. It is acceptable to have longer scene times in these cases to prevent unnecessary transport.

C. It is good to contact medical control for special situations that need further exploration.

D. Rigor mortis takes a variable amount of time to begin depending upon the physical condition of the deceased prior to death as well as the temperature of the environment. The face and neck begin to stiffen between two and five hours after death. After seven to nine hours, rigor mortis will affect the arms and chest. By twelve hours after death, rigor mortis is usually firmly established. Post-mortem lividity (the pooling of blood at the dependent portions of the body) will occur unless the victim has suffered a large blood loss. About one to two hours after death, lividity will begin and peak at about six hours.

E. Leaving a deceased person at home after termination of resuscitation efforts may present logistical challenges with what to do with the body. The Protocol Committee strongly encourages conversations between Fire/EMS and police departments to establish procedures for this situation.

If one pronounces an infant or child dead in the field, here are some helpful suggestions:

A. Pick a quiet environment to inform the family and try to be on the family's level. Sit if they are sitting and match their tone of voice and posture.
B. Refer to the child by his/her name.
C. Use concrete words such as "is dead" or "has died." Euphemisms are not "gentler" and may lead to confusion.
D. Parents and caregivers often do not want to hear the details of the resuscitation. Instead, offer statements such as "Everything was done for your child." or, "We made every effort to help your child."
E. Avoid statements like "I know how you feel." Instead, use words like "This must be so difficult."
F. Be compassionate and non-accusatory, even if you think there may have been child maltreatment. Those issues are to be worked out later and not by you.
G. If a statement of sympathy feels right, do not be afraid to express it. "I am so sorry." Families remember kindness and sincerity.
H. Take care of yourself, find a way to decompress and discuss what you have experienced. Few things are as emotionally draining and burnout inducing as witnessing the death or suffering of a child.

KY

VI. Determination of Death - Discontinuance of Resuscitation by a Paramedic

A. An EMS provider may discontinue resuscitative efforts/ CPR if, prior to transport:
1. The patient has suffered cardiac arrest.
2. The patient meets all of the following criteria:
   i. Unresponsiveness
   ii. Apnea
   iii. The absence of a palpable pulse at the carotid site
   iv. Bilaterally fixed and dilated pupils,
3. ONE OF THE FOLLOWING:
   i. The EMS provider is presented a standard form or identification evidencing a desire not to be resuscitated in accordance with KRS 311.623 (DNR regulation) or 201 KAR 9:470 (MOST regulation)

OR

   ii. The EMS provider discovers that one (1) or more of the following factors or conditions exist:
      a. Lividity of any degree
      b. Rigor mortis of any degree (In the non-hypothermic patient)
      c. The presence of venous pooling in the body
      d. Damage or destruction of the body which is incompatible with life (such as decapitation, hemicorpectomy, evisceration of heart or lungs, body burned beyond recognition, or injury that does not allow resuscitative efforts to be performed)

B. Paramedic may discontinue resuscitative efforts/ CPR if, prior to transport:
1. The patient has suffered cardiac arrest.

2. The Paramedic has attempted and documented the resuscitative efforts specified in the Asystole Protocol, including successful airway management, IV/IO access, and IV/ IO administration of epinephrine.
3. The resuscitative efforts were unsuccessful after at least 20 minutes of ALS care; and
4. The patient meets the following criteria:
    a. Unresponsiveness
    b. Apnea
    c. The absence of a palpable pulse at the carotid site
    d. Bilaterally fixed and dilated pupils
    e. Asystole determined in two (2) leads on an electrocardiograph, except in cases of trauma (Note: Slo, wide-complex agonal complexes are considered a variant of asystole).
5. The paramedic shall make reasonable efforts to contact the on duty MEDICAL CONTROL to discuss the case and intention to discontinue resuscitative efforts, and may then pronounce the patient dead.

C. If a paramedic is not available on scene and unable to respond in a timely manner, but another qualified EMS provider (EMT/ AEMT) has performed all the above resuscitative efforts that are within their scope of practice including at least 20 minutes of resuscitative effort, and the requirements of section IV.B.4 above are met (excluding EKG determination), and
1. Arrest was not witnessed by EMS
2. ROSC was not achieved in the field.
3. No AED shocks were delivered
4. The EMT/AEMT shall contact online medical control to request CPR, ventilation, and drug/fluid/electrical therapy be withheld based on medical futility. In this case, the coroner shall be called and make the final pronouncement of death. The EMS provider must remain with the patient until death is pronounced and observe for any changes in condition.

D. If the patient's medical power of attorney or legally authorized medical decision maker* is present on scene and wishes to revoke consent for further treatment (ie resuscitative efforts), medical control shall be contacted for consultation and orders. The medical control physician may order any treatment being provided to be withheld in accordance with the wishes of the medical decision maker speaking for the patient. If the patient remains in cardiac arrest, the patient may be pronounced dead by a paramedic if the patient meets the criteria laid out in VI.A or VI.B above. If a paramedic is not on scene, the crew must remain on scene and evaluate for any changes in condition until the jurisdiction's cornor or a healthcare provider authorized to pronounce death arrives on scene and pronounces the patient dead. (*Authority for decision making when the patient is not able to express their own wishes is granted to the following in decending order (KRS 311.631): legal guardian, medical power of attorney, spouse, adult children, parents, closest reasonably available next of kin.)

E. The EMS provider shall document all items required on the run report including the usual patient assessment, medical history and surrounding events information. It is especially important to note:
1. Body position and location where discovered, including differences from when last seen alive
2. Patient condition when last seen alive
3. Clothing and condition of clothing
4. Condition of residence/business/location found
5. Statements made on scene by significant individuals
6. Any unusual circumstances

IN THE EVENT OF ANY UNCERTAINTY AS TO THE PATIENT STATUS, THE CREW IS TO INITIATE NORMAL RESUSCITATIVE EFFORTS.

OH - ALL

I. General

A. In accordance with Ohio Revised Code Sections 2133.21-2133.26, providers will consider and honor all valid Ohio Do Not Resuscitate Orders/Identification.

B. There are two valid DNR orders:

1. DNR Comfort Care (DNRCC): effective as soon as an authorized healthcare provider signs the form.
2. DNR Comfort Care – Arrest (DNRCC-Arrest): does not become effective until a person experiences cardiac or respiratory arrest.

C. "DNR identification" means a standardized identification card, form, necklace, or bracelet that is of uniform size and design, that has been approved by the department of health pursuant to section 2133.25 of the Revised Code, bearing the Ohio DNR logo.

D. No other medical orders, directions, or other instructions should be written on a DNR order form. Anything written on the DNR order form other than the information required for completion of the DNR order form does not have to be followed by EMS or other health care providers.

II. Protocol

A. Individuals with either a DNRCC or DNRCC-Arrest, which is activated, **will** receive the following care:

1. Conduct an initial assessment
2. Perform basic medical care
3. Clear airway of obstruction or suction
4. If necessary, (for comfort of the patient) may administer oxygen, CPAP, or BiPAP
5. If necessary, (for comfort of the patient) may obtain IV access for hydration or pain medication to relieve discomfort, but not to prolong death
6. If possible, may contact other appropriate health care providers

B. Once the DNR protocol is activated, EMS personnel **will not**:

1. Perform CPR
2. Insert artificial airway adjunct (intubation, ventilator, etc.)
3. Administer medications with the intent of restarting the heart or breathing
4. Defibrillate, cardiovert, or initiate pacing
5. Initiate continuous cardiac monitoring

C. In the event a DNR is presented to EMS that is neither of the above (I.B.), then communication with a base hospital physician, EMS medical advisor, personal physician, physician on the scene, physician assistant, or advanced practice registered nurse I shall be established.

D. A DNR shall NOT BE HONORED where the patient is pregnant, where withholding CPR would terminate the pregnancy.

E. In the case of any doubt or reservation as to the validity or authenticity of any DNR, and absent authorization by a base hospital physician, EMS medical advisor, personal physician, physician on the scene, physician assistant, or advanced practice registered nurse I to withhold CPR, the Medic/EMT shall provide CPR to the patient and shall document the reasons for not complying with the DNR.

F. In the event resuscitation is initiated on a patient and then a valid DNR is subsequently identified, resuscitation may be terminated in compliance with that DNR. Documentation shall be made on the run sheet indicating the events that happened set forth in chronological order. In the event a DNR is identified after a patient has been intubated, the tube shall not be removed in the prehospital setting. If the initial resuscitation has restored cardiac rhythm, the patient should be transported to the nearest appropriate medical facility with no further procedures or pharmacological measures undertaken, except by authorization from the base hospital physician, medical advisor, or attending physician. Communication with a physician should be established.

G. When the DNR Comfort Care protocol is performed, the suggested documentation on the patient care report should include the following information:

1. The document identifying the DNR Comfort Care status of the patient.
2. The method of verification of the patient's identity if any was found through reasonable efforts.
3. DNR Comfort Care or DNR Comfort Care-Arrest classification.

4. All actions taken to implement the DNR Comfort Care protocol.
5. All unusual events occurring enroute or on scene including interactions with family members, bystanders, or health care providers.

REFERENCE:

A. Ohio Department of Health

KY

Kentucky Emergency Medical Services
Do Not Resuscitate (DNR) Order

Person's Full Legal Name: _____

Surrogate's Full Legal Name (if applicable): _____

I, the undersigned person or surrogate who has been designated to make health care decisions in accordance with Kentucky Revised Statutes, hereby direct that in the event of my cardiac or respiratory arrest that this ***DO NOT RESUSCITATE (DNR) ORDER*** be honored. I understand that DNR means that if my heart stops beating or if I stop breathing, no medical procedure to restart breathing or heart function, more specifically the insertion of a tube into the lungs, or electrical shocking of the heart or cardiopulmonary resuscitation (CPR) will be started by emergency medical services (EMS) personnel.

I understand this decision will *not* prevent emergency medical services personnel from providing other medical care.

I understand that I may revoke this DNR order at any time by destroying this form, removing the DNR bracelet, or by telling the EMS personnel that I want to be resuscitated. Any attempt to alter or change the content, names, or signatures on the EMS DNR form shall make the DNR form invalid.

I understand that this form, or a standard EMS DNR bracelet must be available and must be shown to EMS personnel as soon as they arrive. If the form or bracelet is not provided, the EMS personnel will follow their normal protocols which could include cardiopulmonary resuscitation (CPR) or other resuscitation procedures. I understand that should I die, EMS personnel will require this form and/or bracelet for their records.

I give permission for information about this EMS DNR Order to be given to the prehospital emergency medical care personnel, physicians, nurses, or other health care personnel as necessary to implement this directive.

I hereby state that this ***'Do Not Resuscitate (DNR) Order'*** is my authentic wish to ***not*** be resuscitated.

_____ **Person/Legal Surrogate Signature** _____ **Date**

Commonwealth of Kentucky County of _____

Subscribed and sworn to before me by _____ to be his/her own free act and deed, this _____ day of _____, 20_____.

_____, Notary Public

My commission expires: _____

In lieu of having this Form notarized, it may be witnessed by two persons not related to the individual noted above.

WITNESSED BY:

1. _____

2. _____

Verification of the original document

☐ **Upon transfer out of the facility:**
This document is a copy generated on the current date from an original document maintained in the patient's chart, is true to the original, and recognized to be in full force.

Signature of person sending patient *Date*

☐ **Upon transfer back to the facility:**
This signed copy was received during the admission of the patient and to the treatment team's reasonable knowledge, the DNR remains in effect at the date of the discharge.

Signature of person returning patient *Date*

This EMS Do Not Resuscitate Form was approved by the Kentucky Board of Medical Licensure at their March 2024 meeting.

Complete the portion below, cut out, fold, and insert in DNR bracelet.

I certify that an EMS Do Not Resuscitate (DNR) form has been executed.

Person's Name (print/type)_____ Person's / Legal Surrogate's Signature_____

KENTUCKY EMERGENCY MEDICAL SERVICES
DO NOT RESUSCITATE (DNR) ORDER

INSTRUCTIONS

PURPOSE
This standardized EMS DNR Order has been developed and approved by the Kentucky Board of Medical Licensure, in consultation with the Cabinet for Human Resources. It is in compliance with KRS Chapter 311 as amended by Senate Bill 311 passed by the 1994 General Assembly, which directs the Kentucky Board of Medical Licensure to develop a standard form to authorize EMS providers to honor advance directives to withhold or terminate care.

For covered persons in cardiac or respiratory arrest, resuscitative measures to be withheld include external chest compressions, intubation, defibrillation, administration of cardiac medications and artificial respiration. The EMS DNR Order does **not** affect the provision of other emergency medical care, including oxygen administration, suctioning, control of bleeding, administration of analgesics and comfort care.

APPLICABILITY
This **EMS DNR Order** applies only to resuscitation attempts by health care providers in the **prehospital** setting (i.e., certified EMT-First Responders, Emergency Medical Technicians, and Paramedics) — in patients' homes, in a long-term care facility, during transport to or from a health care facility, or in other locations outside acute care hospitals.

INSTRUCTIONS
Any adult person may execute an EMS DNR Order. The person for whom the Order is executed shall sign and date the Order and my either have the Order notarized by a Kentucky Notary Public or have their signature witness by two persons not related to them. The executor of the Order must also place their printed or typed name in the designated area and their signature on the EMS DNR Order bracelet insert found at the bottom of the EMS DNR Order form. The bracelet insert shall be detached and placed in a hospital type bracelet and placed on the wrist or ankle of the executor of the Order.

If the person for whom the EMS DNR Order is contemplated is unable to give informed consent, or is a minor, the person's legal surrogate shall sign and date the Order and may either have the form notarized by a Kentucky Notary Public or have their signature witnessed by two persons not related to the person for which the form is being executed or related to the legal health care surrogate. The legal health care surrogate shall also complete the required information on the EMS DNR bracelet insert found at the bottom of the EMS DNR Order form. The bracelet shall be detached and placed in a hospital type bracelet and placed on the wrist or ankle of the person for which this Order was executed.

The original, completed EMS DNR Order or the EMS DNR Bracelet must be readily available to EMS personnel in order for the EMS DNR Order to be honored. Resuscitation attempts may be initiated until the form or bracelet is presented and the identity of the patient is confirmed by the EMS personnel. It is recommended that the EMS DNR Order be displayed in a prominent place close to the patient and/or the bracelet be on the patient's wrist or ankle.

REVOCATION
An EMS DNR Order may be revoked at any time orally or by performing an act such as burning, tearing, canceling, obliterating or by destroying the order by the person on whose behalf it was executed or by the person's legal health care surrogate.

IT SHOULD BE UNDERSTOOD BY THE PERSON EXECUTING THIS EMS DNR ORDER OR THEIR LEGAL HEALTH CARE SURROGATE, THAT SHOULD THE PERSON LISTED ON THE EMS DNR ORDER DIE WHILE EMS PREHOSPITAL PERSONNEL ARE IN ATTENDANCE, THE EMS DNR ORDER OR EMS DNR BRACELET MUST BE GIVEN TO THE EMS PREHOSPITAL PERSONNEL FOR THEIR RECORDS.
The original, completed EMS DNR Order or the EMS DNR Bracelet or *a copy of the original with verification* must be available to EMS personnel in order for the EMS DNR Order to be honored.

Verification of original document

Upon transfer out of the facility:
The person sending the patient will sign and date the check box stating the document is a copy generated on the current date from an original document maintained in the patient's chart, is true to the original, and recognized to be in full force.

Upon transfer back to the facility:
The facility discharging the patient will sign and date the second box stating the signed copy was received during the admission of the patient and to the treatment team's reasonable knowledge, the DNR remains in effect at the date of the discharge.

Upon completion of the transfer:
The EMS staff should properly destroy the document or attach it to the patient care report. The document would have no force beyond the signed dates.

ALL

I. INTRODUCTION

A. Occasionally an EMS unit may be utilized for an *emergent* interfacility transfer. This should be reserved for patients in whom rapid transfer is *emergent* or under "disaster" circumstances.

B. Hospitals should only use EMS for emergency interfacility transfers in cases where there is a time-dependent test or intervention available at the receiving facility (ex: coronary angiography for STEMI, endovascular therapy for large vessel occlusion stroke, trauma services) or in cases where a patient faces risk of loss of life/limb/function if transfer is delayed.

C. Interfacility transfers are subject to Emergency Medical Treatment and Labor Act (EMTALA) regulations.

1. EMTALA requires stabilization, to the best of the hospital's ability, prior to transfer
   a. Stabilization includes delivery for a female in active labor (as defined in O800)
   b. Delivery in an Emergency Department is safer than delivery during transport
2. EMTALA requires the transferring physician to choose the appropriate level of care for transport.
3. This protocol does not prevent the transfer of unstable patients.

D. There is no "duty to act" for EMS to accept a transfer if EMS cannot provide the expected needs of the patient.

II. PROTOCOL

A. Perform a standard assessment (see protocol SB200) and confirm that EMS is an appropriate method of transfer based on patient's current condition, anticipated needs, and EMS capabilities.

1. After assessment, EMS may request that hospital personnel accompany them during transport
2. In certain cases and after assessment, EMS may decline the transfer

B. Prior to departure, EMS must obtain:

1. Accepting physicians' name
2. Accepting facility name and destination area
   a. Any destination other than the ED must be agreed upon prior to leaving the transferring facility
3. Diagnosis and reason for transfer
4. Verification that the patient is aware of, and agrees to transfer (if able)
5. Results of all diagnostic testing (labs, imaging, etc.) obtained prior to transfer, or assurance that results are available electronically at the receiving facility.

C. EMS personnel must have physician written/signed orders for any treatments that do not fall under these protocols. During transport, EMS may follow verbal orders given by a registered nurse designated by the transferring physician.

1. EMS personnel may follow these orders to the limits of their scope of practice and training.
2. If the physician written/signed orders are beyond the scope of practice and/or training of the EMS personnel and there are no specialty personnel to accompany the EMS personnel, then the orders must be changed, or alternate transportation arranged for.

D. During transport, the lead paramedic retains primary decision-making and patient care authority.

E. Hospital personnel accompanying EMS for transport operate under the scope of practice and credentials approved by their hospital.

F. If there is a problem in route, it is usually appropriate to call the transferring facility. However, depending on the situation, it may be appropriate to call the receiving facility. This should be discussed before transfer.

NOTES:

A. Certain patients require higher level of care. For example, stroke patients after they have received thrombolytics (TPA, TNK, etc.) require much more frequent vital signs. It is important to discuss with the transferring facility any special requirements a patient may have.

B. Run reports should be prepared as normal.

C. Medical directors should consider reviewing these runs as part of QA/QI.

ALL

I. Purpose

The scope of practice (SOP) for the AEMT includes all interventions within the SOP of the EMT as well as some interventions within the SOP of the Paramedic but not within that of the EMT. This protocol is intended to allow AEMTs, when approved to do so by their Fire Department and Medical Director, to utilize their full SOP without unnecessarily complicating the protocol set or adding unneeded redundancy.

OH

II. AEMT Scope of Practice

A. The State of Ohio AEMT SOP includes all interventions designated for EMTs, herein labeled "ALL".

B. The State of Ohio AEMT SOP includes the following interventions, which in this protocol set will be listed only in the section designated "MEDIC":

1. Laryngoscopy for removal of airway obstruction
2. Tracheostomy tube replacement
3. Orotracheal intubation of the apneic patient
4. Orotracheal intubation of the pulseless and apneic patient
5. Dual lumen airway use for the apneic patient
6. Extraglottic airway use for the apneic patient.
7. Manual defibrillation
8. Cardiac monitor strip interpretation
9. Epinephrine administration via SQ or IM routes
10. Nitroglycerin administration (non-patient assisted)
11. Administration of aerosolized or nebulized medications (non-patient assisted)
12. Naloxone administration via ETT, IV, IM, or SQ routes
13. Administration of intranasal medications
14. Medication administration (see section C below)
15. Intravenous access and peripheral initiation
16. IV maintenance and fluid administration
17. Intraosseous needle insertion
18. Saline lock initiation
19. Peripheral IV blood specimens
20. Needle decompression of the chest

C. Medications approved for AEMT administration* (when instructed by the protocol):

1. Benzodiazepines
2. Bronchodilators
3. Buprenorphine
4. Dextrose in water
5. Diphenhydramine
6. Epinephrine 1 mg per 1 ml SQ/IM
7. Glucagon
8. Ketamine
9. Lidocaine for pain relief after IO needle insertion
10. Nalbuphine
11. Naloxone
12. Narcotics and other analgesics for pain relief
13. Nitrous oxide
14. Oral Ondansetron for 12 years or older
15. Sublingual nitroglycerine
16. Tranexamic Acid

* ODPS mandated medication list, per Ohio EMS Scope of Practice

KY

D. The Commonwealth of Kentucky AEMT SOP includes all interventions designated for EMT's, herein referred to as "ALL".

E. The Commonwealth of Kentucky AEMT SOP includes the following interventions, herein labeled "MEDIC".

1. IV access
2. Topical medication route
3. External jugular access
4. IO access and infusion
5. IV fluid warming/cooling equipment application and monitoring
6. IV medication administration bolus
7. Venous blood sampling
8. Blind insertion airway device (e.g. King, LMA, i-gel)
9. Gastric decompression monitoring and management
10. ECG acquisition
11. Utilize computer interpretation of diagnostic ECG for transport decision
12. Infusion pump monitoring/management of scope-approved meds and fluids

F. Medications approved by the Commonweath of Kentucky for AEMT administration (when instructed by protocol):
1. Non-medicated IV fluids (Normal saline and lactated ringers)
2. Infusion pump monitoring and management of scope-approved meds and fluids
3. Nitrous oxide for pain relief
4. Sub-lingual nitroglycerin for chest pain of ischemic origin
5. Dextrose solutions in water
6. Diphenhydramine (only for allergic reaction/anaphylaxis)
7. Epinephrine
8. Fentanyl citrate
9. Glucagon
10. Ketamine (analgesic)
11. Ketorolac tromethamine
12. Lidocaine for analgesic during IO insertion procedure
13. Midazolam (only for active seizures)
14. Morphine sulfate
15. Nalbuphine hydrochloride
16. Nitropaste
17. Obidoxime chloride
18. Ondansetron
19. Promethazine

IN

G. The State of Indiana AEMT SOP includes all interventions designated for EMT's, herein referred to as "ALL".

H. The State of Indiana AEMT SOP includes the following interventions, herein labeled "MEDIC".
1. IV access
2. IO access
3. Venous blood sampling
4. Suctioning- tracheobronchial of an intubated patient.
5. Medication administration via IV, IO, IN and subcutaneous routes.
6. Gastric decompression monitoring and management
7. Utilize computer interpretation of diagnostic ECG for transport decision

I. Medications approved by the State of Indiana for AEMT administration (when instructed by protocol):
1. Inhaled-monitor patient administered (i.e., nitrous oxide)
2. Glucagon
3. IV dextrose
4. Normal saline
5. Epinephrine (1mg/10mL) for cardiac arrest
6. Ondansetron

	7. Naloxone 8. Nitroglycerin sublingual for chest pain of suspected ischemic origin
ALL	**III. Protocol** A. In all cases, the AEMT may perform all tasks and interventions listed in the "ALL" section of this protocol set. B. When a task or intervention that falls within the AEMT scope of practice is listed in the "MEDIC" section of a protocol being enacted, the AEMT may perform this task or intervention. C. The AEMT must have received appropriate training and continuous education on the task or intervention in consideration. D. The task or intervention must be approved by the AEMT's Fire Department and Medical Director.

ALL

I. Inclusion

A. Due to the variety of infectious pathogens, essentially any symptom can represent infectious disease (ID). Symptom-based inclusion criteria must be determined on a case-by-case basis during pandemic/epidemic. Among the most common are malaise, respiratory symptoms, gastrointestinal symptoms, fever (temp >100.4 F), and rash.

B. Multiple patients with similar symptoms may indicate ID (but can also represent toxin exposure).

C. For the purposes of this protocol ID refers to novel pathogens (e.g., SARS, MERS, Swine Flu, Ebola, etc) and certain more common situations (e.g., pandemic influenza). While correctly termed "ID", this protocol is not intended to directly address common diseases (e.g., "a cold", "strep throat", UTI, etc).

II. Protocol

A. EMS provider safety is paramount. Response urgency should never supersede the use of situationally appropriate personal protective equipment (PPE).

B. Maximize information gathered from the dispatch center.

C. Appropriate PPE must be determined based on the nature of the pathogen.

1. For unknown pathogens, full skin coverage with a fluid impermeable barrier and N95 or higher respiratory protection is generally advisable.
2. At minimum, universal precautions with gloves, splash protections, and mucus membrane protection should be used.
3. Aerosol-generating procedures (e.g., intubation, suction, nebulized treatments, CPAP), when performed on ID patients, typically require N95 mask or higher protection.

D. Efforts should be made to minimize the number of providers exposed to potential ID.

1. Verbal assessment of the patient can often be performed at a distance. Thorough history, including recent travel and contact with sick persons, is essential.
2. When necessary, the patient should be approached by the minimum number of providers (in PPE) needed for appropriate care.
3. During transportation only the minimum number of providers needed for appropriate care should be in the patient care compartment. If possible, the driver's compartment and patient care compartment should be physically separated.

E. Efforts should be made to minimize spread of infectious material.

1. Place simple surgical mask on the patient (NOT N95 mask) as tolerated (non-rebreather mask with oxygen flowing may be used under surgical mask).
2. Wrap the patient in a clean sheet.
3. Administer anti-emetics as appropriate.

F. Depending on the pathogen and patient condition, it may be appropriate to maximize ventilation in the patient care compartment during transport by opening windows and using non-recycling air conditioning.

G. Aeromedical Transport should not be utilized unless absolutely necessary and may not be available to certain ID patients.

H. Hospital pre-notification is always necessary with ID patients. In some circumstances, designated receiving facilities may be in place.

I. In some situations, local health department notification may be necessary.

J. PPE should worn until after transfer of care to the receiving facility.

K. PPE must be doffed, and decontamination of providers must be performed in an appropriate manner to avoid possible contamination during the doffing process.

L. Transport vehicle decontamination:

1. Some pathogens can remain active on various surfaces for prolonged periods.
2. Precisely which chemical is most appropriate will depend on the pathogen. This determination should be made with assistance from the medical director, local infection control specialists, and local health departments.
3. PPE similar to that worn during patient care should be worn during the decontamination process.

M. Appropriate disposal techniques for contaminated items will vary depending on the pathogen.

notes:

A. Universal precautions with all patient interactions are the foundation of infectious disease control.
B. EMS providers are significantly benefited by thorough, up to date vaccinations.
C. Departmental processes should be in place to minimize risk of sharps and bodily fluid exposure.
D. Departmental processes should be in place for post-infectious disease exposure reporting, evaluation, and monitoring.
E. EMS providers should always maintain awareness of the potential for infectious disease, with a heightened level of vigilance during times of pandemic/epidemic.
F. Common concepts of “Time, Distance, and Shielding” can be applied to ID.
G. If tight fitting respirators are to be employed (e.g., N95 masks, APRs, SCBA) appropriate fit testing must be conduct annually on the specific model used.
H. “Contact precautions” refers to gloves and gown/coverall; “droplet precautions” refer to simple surgical mask; “airborne” or “respiratory precautions” refers to N95 or higher protection.
I. EMS personnel should be alert to and report perceived “clusters” of patients with similar symptoms.

ALL

I. Purpose

A. The purpose of this protocol is to facilitate the timely communication of a hospital's Emergency Department (ED) status and the subsequent request that EMS inform patients another medical facility may be better prepared to administer, more timely emergency care.

II. Hospital Status Definitions

A. Normal: the hospital's ED and supporting resources are operating normally.

B. At Capacity: the hospital has determined the ED and supporting resources are fully committed (see routing decisions for exceptions).

C. Limited Operations: the hospital has normal capacity, but an area or resource is not available. (no CT or MRI, Cath Lab shut down, etc.).

D. **Closed: the hospital has activated its disaster plan due to an internal emergency, bomb threat, or other situation rendering it UNABLE to accept patients.**

III. Protocol

A. EMS personnel will continue to transport patients to a hospital reporting itself to be At Capacity or Limited Operations under the following circumstances:

1. The patient is unstable including, but not limited to having an unmanageable airway, CPR in progress, or having uncontrolled internal or external hemorrhaging; (all trauma patients will be transported to an appropriate trauma center)
2. The hospital At Capacity or Limited Operations has the specific services the patient needs (e.g., stroke, STEMI, OB patient, major burns)
3. Clinical judgement of EMS personnel determines increased transport time may place patient safety at risk.
4. EMS personnel have advised the patient that the patient's preferred hospital is At Capacity and the patient still wishes to be transported.

B. This does not apply during mass casualty events.

Notes:

A. Once notified that a hospital is At Capacity or Limited Operations EMS personnel should be prepared to counsel patients on how hospital status may affect them.

B. Additional information can be found on The Health Collaborative website - http://healthcollab.org.

ALL

I. Purpose

A. This protocol is a patient driven document and therefore the need to adequately define who is or is not a patient should be made.

1. This protocol definition is not intended to supersede an agency's SOP/SOGs in regards to how the agency's staff shall perform on encounters with persons who may or may not be considered patients, but rather offer guidance for these encounters.

II. Protocol

A. Patient - any person who identifies him/herself as requiring medical assistance or evaluation, or any person who has a physical or medical complaint or condition from an illness or injury.

B. Not a Patient - An adult may be considered *not* a patient if **all** of the following criteria are met:

1. A reasonably competent provider would deem the person in question as having a sufficient capacity to determine that they have something about which to complain.
2. Acute illness, injury, or intoxication is not suspected based on appearance.
3. The person in question denies illness or injury and presents with no signs or symptoms of illness or injury.
4. There is minimal or absent mechanism of injury.
5. The person in question clearly indicates a desire not to be a patient.
6. The person in question does not have another party acting as their medical power of attorney.
7. The person did not call 911/ask for help.

C. If all of the criteria in Section B are met, the adult may be considered not a patient and a PCR or Refusal of Care are not required. The responding agency should however create documentation as to the encounter per the agency's SOP/SOGs.

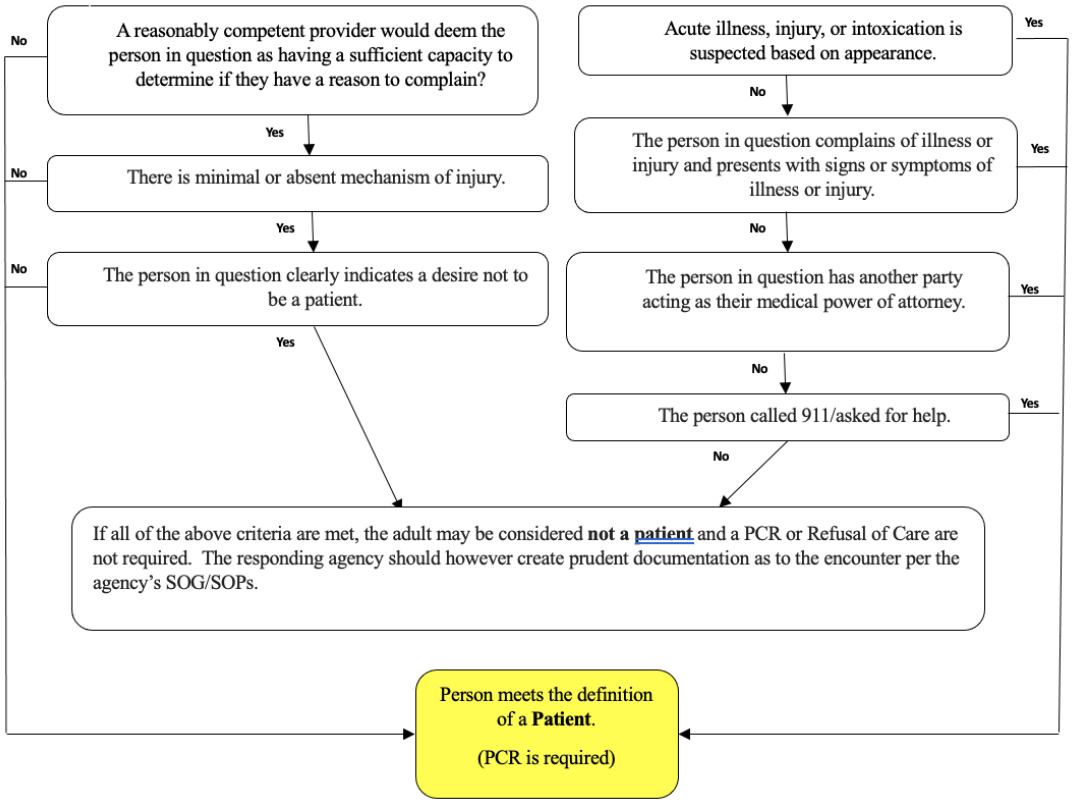
D. For the purpose of the definition of a patient and the ability to deny a capacity assessment, any person who has not attained the age of 18 or who is not a legally emancipated minor shall be considered a minor and therefore unable to make a competent medical decision for their self. Refer to SB211 Section I B for direction as to who can make a decision for a minor.

Notes:

A. This protocol is intended to refer to individual patient contacts. In the event of a multiple party incident, such as a multi-vehicle crash, it is expected that a reasonable effort will be made to identify those parties with acute illness or injuries. Adult patients indicating that they do not wish assistance for themselves or dependent minors in such a multiple party incident should be managed per agency's SOP/SOGs.

B. No protocol can anticipate every scenario and providers must use best judgement. When in doubt as to whether an individual is a "patient", err on the side of caution and perform a full assessment and documentation.

Patient – any person who identifies him/herself as requiring medical assistance or evaluation, or any person who has a physical or medical complaint or condition from an illness or injury. An adult may be considered not a patient if all the following criteria are met:



For the purpose of the definition of a patient and the ability to deny a capacity assessment, any person who has not attained the age of 18 or who is not a legally emancipated minor shall be considered a minor and therefore unable to make a competent medical decision for their self. A responsible adult is able to make a competent medical decision as to whether the minor is a patient or not a patient so long as the minor satisfies the above criteria. Refer to SB211 Section I B for direction as to who can make a decision for a minor.

This Protocol is intended to refer to individual patient contacts. In the event of a multiple party incident, such as a multi-vehicle crash, it is expected that a reasonable effort will be made to identify those parties with acute illness or injuries. Adult patients indicating that they do not wish assistance for themselves or dependent minors in such multiple party incidents should be managed and documented per agency's SOP/SOGs. No protocol can anticipate every scenario and providers must use best judgement. When in doubt as to whether an individual is a "patient", err on the side of caution and perform a full assessment and documentation/PCR.

ALL	**I. Standards** A. The purpose of this guide is to establish uniform standards for protocol appearance and organization. B. This guide is only applicable to final drafts and published versions. C. Font will be consistent at Calibri size 10. D. The protocol is single spaced. E. The table formatting shown in this document is the standard. 1. The protocol number is assigned by the chair(s) of the protocol committee. 2. The date of most recent modification is in the upper left header. 3. The year of the protocol effectiveness is in the upper right corner. 4. The heading section, in gray above, shall repeat at the top of each page of that section. 5. Sections that apply to all levels of certification are indicated in the far left column by a green background with white lettering. (This current section is an example.) 6. Sections that apply to EMT certification and above are indicated in the far left column by a red background with white lettering. 7. Sections that apply to advanced EMT's and paramedics are indicated by a blue background with white lettering. Advanced EMT's are limited in scope by their respective state scope of practice. 8. Sections that apply to Ohio are shown in a yellow background with black lettering. 9. Sections that apply to Kentucky are shown in a purple background with white lettering. 10. Sections that apply to Indiana are shown in an orange background with black lettering. 11. The outline shall follow the following order: I (roman numeral), A, 1, a, i (lower case roman numeral). F. File names shall be saved as: [protocol number][shortened name][date of last edit][author last name]. G. The protocol chair(s) are responsible for compiling the protocols, establishing a table of contents, and ensuring uniform footers. H. Major sections of the protocol are divided by a title page placed on an odd numbered page.
EMT	I. This section is an example of the EMT and above section.
MEDIC	J. This section is an example of the AEMT and Paramedic section.
OH	K. This section is an example of the Ohio specific section.
KY	L. This section is an example of the Kentucky specific section.
IN	M. This section is an example of the Indiana specific section.

KY - ALL

I. This protocol is specific to Kentucky agencies only.

II. Purpose

A. The estimated EMS fatality rate (12.7 per 100,000 workers) is more than twice the national rate. Vehicle crashes of all types remain the leading cause of death in EMS. The use of Lights and Sirens in the transport of a patient from the scene of the hospital by EMS personnel should be consistent with "best practices", be medically defensible and conform to Kentucky state law. It is not without risk and should be used only when there is a likely benefit to the patient. This is to ensure the safety of our patients, our staff, our citizens and ourselves.

III. Policy

A. KRS 189.910 to KRS 189.950 outline the legal parameters under which an emergency vehicle may be exempt from certain traffic regulations. The vehicle operator should be familiar withese these statutes. Specifically:

1. 189.940 Exemptions from traffic regulations

a. The speed limitations set forth in the Kentucky Revised Statutes do not apply to emergency vehicles:

i. When responding to emergency calls; or

ii. To police vehicles when in pursuit of an actual or suspected violator of the law; or

iii. To ambulances when transporting a patient to medical care facilities; and

iv. The driver thereof is giving the warning required by subsection 5 (a) and (b) of this section.

b. No portion of this subsection shall be construed to relieve the driver of the duty to operate the vehicle with due regard for the safety of all persons using the street or highway.

B. The law permits such emergency vehicles only <u>on emergency calls or when transporting to a medical care facility</u> to utilize lights and sirens. EMS personnel are instructed to follow the state laws and use lights and sirens while going to the hospital only when it is medically necessary for the patient to be rapidly transported. Rapid transport to the scene may be necessary in certain instances to evaluate the situation for possible life threats. It is then that the EMS personnel in charge of patient care will make the appropriate transportation decision. Although time is typically saved, studies have shown the savings to be from less than one minute to less than four minutes and rarely clinically significant to the patient. Transport in this manner is not without risk to the patient. The EMS personnel in charge will have to weight the risks and benefits to the patient, and document this rationale on the EMS run form. This policy does not restrict the EMS personnel from changing a non-emergency transport back into an emergency transport if conditions change.

KY - ALL

I. BLOODBORNE PATHOGENS

A. Emergency Medical Services personnel should assume that all bodily fluids and tissues are potentially infectious with bloodborne pathogens including HIV (causing AIDS) and HBV (causing hepatitis), and must protect themselves accordingly by use of body substance isolation (BSI).

B. Body substance isolation procedures include the appropriate use of hand washing, protective barriers (such as gloves, masks, goggles, etc.), and care in the use and disposal of needles and other sharp instruments. EMTs are also encouraged to obtain the hepatitis B vaccine series to decrease the likelihood of hepatitis B transmission. EMTs who have exudative lesions, weeping dermatitis, or open wounds should refrain from all direct patient care and from handling patient-care equipment as they are at increased risk of transmission and reception of bloodborne pathogens through these lesions. Transmission of bloodborne pathogens has been shown to occur when the blood of the infected patient is able to come in direct contact with the blood of the health-care worker.

C. EMTs who have had a direct bloodborne pathogen exposure should immediately wash the exposed area with soap and water and a suitable disinfectant. The exposed area should then be covered with a sterile dressing. Upon arrival at the destination hospital, after responsibility for the patient has been transferred to the emergency department, the EMT should thoroughly cleanse the exposed site, complete a state of Kentucky Emergency Response/Public Safety Worker Incident Report Form, and sign in to the Emergency Department as a workers-compensation patient. The only exception to this latter step is when the squad has a designated exposure officer and medical advisor wherein the exposed EMT has definitive and immediate medical care elsewhere.

II. AIRBORNE PATHOGENS

A. EMTs who believe they have been exposed to an airborne pathogen may proceed as above in getting timely medical care. It is expected that a properly filled out Patient Care Report will allow hospital infection control staff to contact EMTs involved in patient care where that patient was subsequently found to have a potential airborne pathogen such as Tuberculosis, Neisseria meningitis, SARS, etc.

B. Airborne Personal Protective Equipment (APPE)

1. Recommended APPE consists of a N95 respirator, prior fit testing is recommended.
2. Apply PPE if the patient presents with the following signs or symptoms
   - a. Cough
   - b. Rash
   - c. Fever

C. Limit the number of personnel in contact with suspected patients to reduce the potential of exposure to other providers and bystanders.

D. Patients suspected of being infected with a possible airborne pathogen should be masked if tolerated.

E. Patients requiring oxygen therapy should receive oxygen through a mask with a surgical mask placed over the oxygen mask to block pathogen release.

F. APPE should be in place when performing suctioning, airway management and ventilation assistance (Bag-Valve-Mask) for suspect patients.

G. Limit procedures that may result in the spread of the suspected pathogen, e.g. nebulizer treatments.

H. Exchange of fresh air into the patient compartment is recommended during transport of patient with a suspected airborne pathogen.

I. Early notification to the receiving hospital should be made such that the receiving hospital may enact its respective airborne pathogen procedures.

III. DECONTAMINATION

A. In addition to accepted decontamination steps of cleaning surfaces and equipment with an approved solution and proper disposal of contaminated disposable equipment, the use of fresh air ventilation should be incorporated (open all doors and windows to allow fresh air after arrival at the hospital).

B. All personnel in contact with the patient should wash their hands thoroughly with warm

water and an approved hand-cleaning solution.

C. Ambulances equipped with airborne pathogen filtration systems should be cleaned and maintained in accordance with manufacturer guidelines

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ALL

I. Purpose

A. To establish a systematic procedure for the handling of emergency medical calls to improve patient care of patients of all ages.

B. To ensure the proper and systematic documentation of EMS calls.

II. Protocol Specific Definitions

A. Incident – a dispatch of 911 resources to a location by a person or third party. This should be documented as per individual departmental policies.

1. No Incident Found on Arrival – is defined as an incident that after being dispatched, the crews arrive on scene and find that there was no incident or reason for them to be there, i.e., a person was reported to be injured from a fall but was gone upon arrival of EMS.

B. Patient – any person satisfying the definition of "Patient" in A113.

1. A pediatric patient is referred to as a patient younger than 16 years of age.
2. An adult patient is referred to as a patient 16 years and older.
3. A geriatrics patient is referred to as a patient 65 years and older.
4. No patient contact – is defined as a disregard by the requesting person or agency or an incident that EMS responds to and the patient or would be patient is gone upon arrival, i.e., EMS responds to a motor vehicle crash, where it is evident that someone was injured, but they are no longer on the scene.

C. Intoxicated – any person presenting with diminished physical or mental control or diminished ability to make decisions by reason of the influence of alcohol liquor, drugs, or other substance.

D. Patient Care Report (PCR) – this is the form (either electronic or manual) that documents the assessment and medical care provided to a patient.

III. Scope

A. This protocol shall apply to all departments utilizing these medical protocols to render medical care.

IV. Policy

A. **Responsibility:** It is the responsibility of the member with the highest level of medical training at the scene to guide the medical decisions regarding patient care and transportation. Refer to A104 Control of Emergency Medical Services at Scene of Emergency (with a physician on scene).

B. **Assessment:**

1. All subjects identified as a patient as defined above will be assessed using criteria consistent with the provider's level of training. This will include but is not limited to the following:
   a. Vital Signs – A complete set of vital signs will be assessed. This shall include evaluating blood pressure, pulse rate, respiratory rate, and pulse oximetry reading.
      i. Stable patients should have at least two sets of pertinent vital signs. Ideally, one set should be taken shortly before arrival at receiving facility.
      ii. Critical patients should have pertinent vital signs frequently monitored.
   b. Mental Status – all patients will be evaluated to establish the patient's level of consciousness (alert and oriented to person, place, time, and situation). The mental status of non-verbal pediatric patients should be assessed using the AVPU method within the context of the expected developmental level. Patients presenting with an altered mental status or level of consciousness shall have their blood glucose evaluated and documented.
   c. History of present illness/injury.
   d. History/Medications/Allergies – obtain patients past medical history, current medications, and any allergies to medications.
   e. Focused assessment/physical examination as described by the standard national EMT/Paramedic curriculum to include all pertinent positive or pertinent negative symptoms.

C. **Treatment:**

1. All patients assessed by EMS personnel will be treated as directed by the protocols contained herein. Based on the initial patient history of the presenting illness and physical exam, EMS personnel should apply the most appropriate medical protocol.
2. Appropriate body substance isolation precautions should be taken.

3. All patients regardless of age should be kept from eating or drinking anything during prehospital evaluation and transport. This aims to decrease the risk a patient will vomit and aspirate prior to arriving to the hospital. The following exceptions should be noted, however:
    a. Awake and alert patients who require their regularly scheduled oral medications.
    b. Other patients as directed specifically in the Academy of Medicine of Cincinnati Protocols.
4. Maintain Airway
    a. If the patient is in impending respiratory failure, follow the Airway Protocol T705.
5. Administer oxygen if appropriate for condition.
6. Establish IV if indicated or in patients who are at risk for clinical deterioration.
7. Apply appropriate monitoring equipment and if available; this may include:
    a. Continuous pulse oximetry
    b. Cardiac rhythm monitoring
    c. Waveform capnography
8. EMT's should request ALS back-up or intercept if they feel the patient's condition and needs exceed or may exceed their level of care.

D. **Communication with the Emergency Department** – refer to A101 Prehospital Communication.

E. **Documentation**: The Patient Care Report (PCR) is a legal document of the medical assessment and treatment of the patient. All aspects of the patient's medical assessment, treatment and transportation will be documented in the PCR. Each EMS unit that interacts with the patient shall complete a PCR on that patient.
1. Member completing the PCR will sign the form as a medical document.
2. Activities performed by any person involved with the patients' care will be documented on the PCR.
3. All patients will, as a minimum, have assessment criteria documented as in Section B-1 above. If assessment criteria are not obtained, documentation supporting the inability to gather an assessment will be included.
4. All records of cardiac rhythms (including cardiac monitor and AED tracings) should be collected and archived as part of the patient record.
5. If the incident is determined to be a No Patient Contact or a No Incident Found on Arrival, the EMS crew shall document the incident appropriately based on their departmental policies.

F. **Responsibilities at the Emergency Department**
1. Provide verbal report to appropriate ED personnel.
2. Provide access to a copy of the completed PCR.

ALL

I. Inclusion Criteria

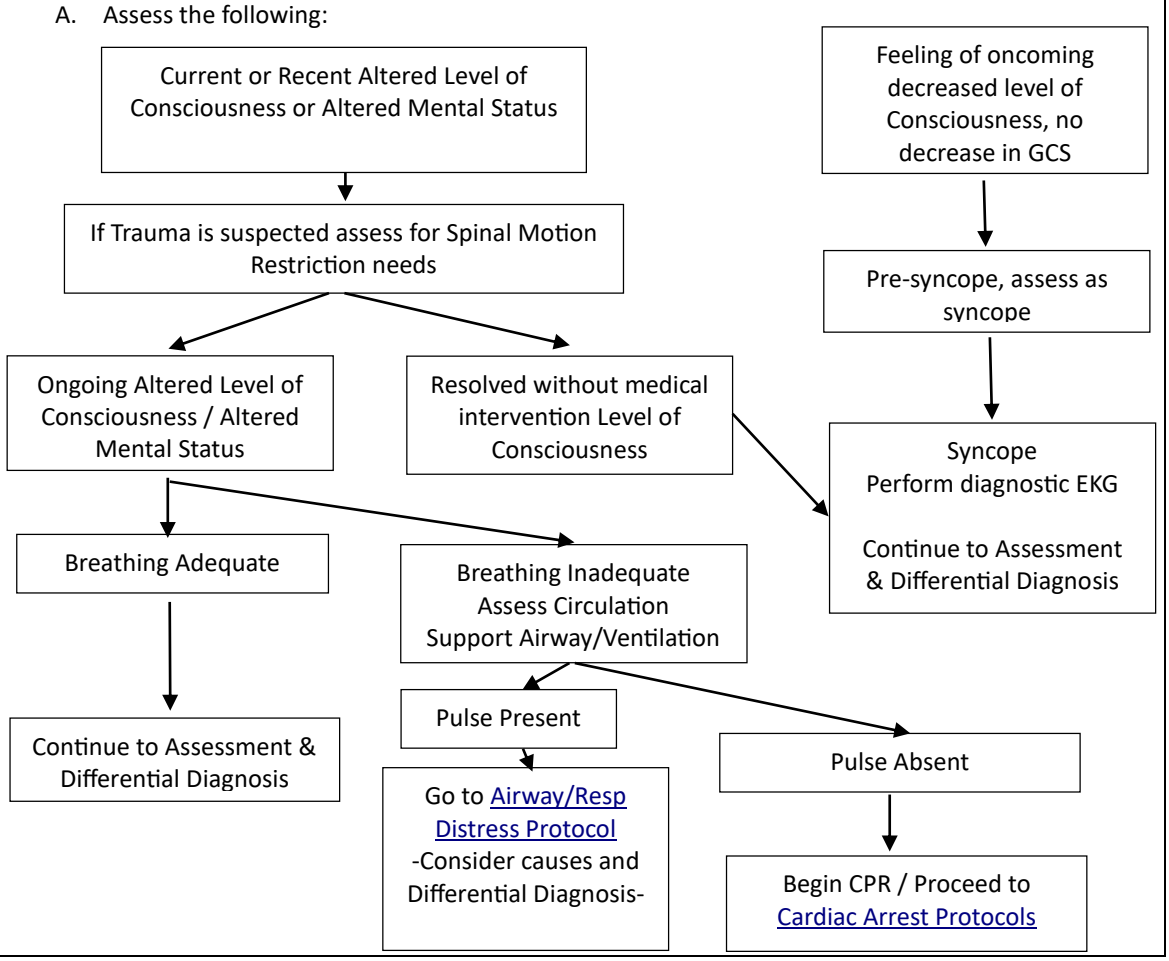
A. Patient of any age

B. Patient has one of the following:

1. Patient describes the feeling of impending loss of consciousness.
2. Patient has a decreased Level of Consciousness of any length.
   a. Altered Level of Consciousness (ALOC) is a period where GCS less than 15.
3. Patient has an Altered Mental Status
   a. Altered Mental Status (AMS) is a state where a patient is not alert and oriented to person, place, time, and situation within the context of the expected developmental level (Consistent with SB200)
4. Syncope
   a. Syncope is Loss of consciousness that resolved without medical interventions and there was loss of postural tone (typically resolved prior to arrival of EMS)
5. Pre-syncope
   a. Pre-syncope is Early signs/ symptoms of syncope. It usually lasts for seconds to minutes and may be described by the patient as "nearly blacking out" or "nearly fainting" (typically resolved prior to arrival of EMS)

II. Protocol

A. Assess the following:



III. Assessment

A. Assessment of an ALOC/AMS patient or Syncope/Pre-Syncope Patient focuses on management of immediate needs and conducting a differential diagnosis to rule-in / rule-out potential causes.

B. In addition to standard assessment in accordance with SB200 Section IV. B. Assessment, consider on all patients (but not limited to):
   1. Stroke Assessment
   2. Diagnostic EKG

C. Ongoing ALOC/AMS Patients
   1. Do not delay necessary resuscitation to conduct assessment.

D. Syncope / Pre-Syncope Patients
   1. Cardiac issues are a common cause of Syncope / Pre-Syncope. A diagnostic EKG should be conducted even in absence of other cardiovascular symptoms. Monitoring should continue throughout care.
      a. Early application of Cardiac Monitor has a higher likelihood of catching an abnormal cardiac issue, cardiac monitoring and diagnostic EKG should be conducted as soon as possible.

Syncope / Pre-Syncope patients should be transported for evaluation even in absence of symptoms during Prehospital Care

IV. Differential Diagnosis

A. Anemia
B. Drugs and Alcohol
C. Dysrhythmias
D. Electrolyte Imbalance
E. Head Injury
F. Hypertension
G. Hyperglycemia
H. Hypoglycemia
I. Hypoxia
J. Infection, especially Meningitis
K. Myocardial Ischemia / Infarction
L. Pulmonary Embolism
M. Psychiatric
N. Seizure
O. Shock
P. Stroke, Intracranial Bleeding
Q. Toxic Ingestion

** Causes of Altered Level of Consciousness or Altered Mental Status may be from conditions not listed. Proper assessment and supportive care should not be limited to the following. **

A. **Anemia**
   1. Assess/ treat supportively.

B. **Drugs and Alcohol**
   1. Alcohol
      a. Although alcohol is a common cause of altered level of consciousness, it is rarely the cause of complete unresponsiveness. Do not let the patient's alcohol intoxication cloud your judgment. It is safer to assume that the intoxicated patient has a serious medical problem and treat accordingly than it is to conclude that the patient is "just drunk."
      b. Refer to M411 for treatment.
   2. Narcotics
      a. Assess for signs of a possible narcotic overdose such as: pinpoint pupils, slow respirations, needle tracks or injection paraphernalia nearby.
      b. For suspicion of narcotic overdose refer to M411.
   3. Other Drugs
      a. Attempt to obtain the type of exposure for the patient; maintain provider safety.
      b. Refer to M411 for treatment.

C. **Dysrhythmia**
   1. Assess patient for abnormal pulse/perfusion.

MEDIC

   2. Place patient on cardiac monitor.
   3. Syncope / Pre-Syncope Patients
      a. Obtain diagnostic EKG
      b. Assess for:
         - Evidence of QT prolongation (generally over 500ms)
         - Delta waves
         - Brugada syndrome (incomplete RBBB pattern in V1/V2 with ST segment elevation)

- Hypertrophic obstructive cardiomyopathy

4. Ongoing ALOC/AMS Patients
   a. Obtain diagnostic EKG if other cause not determined for ongoing Altered LOC.
   b. Consider even in presence of other cause based on presentation / history.
5. If dysrhythmia or cardiovascular issues present proceed to appropriate Treatment Protocol.

ALL

D. **Electrolyte Imbalance**
   1. Assess for dysrhythmias and treat as appropriate.

E. **Head Injury**
   1. If suspicion of head injury refer to S501, P613 and/or SB206 for treatment.

F. **Hypertension**
   1. Symptomatic HTN (BP systolic >200 and one of the following: headache, confusion, vomiting, blurred vision, chest pain, respiratory difficulty) should not be treated for the blood pressure the pre-hospital setting.
      a. Treat patient symptoms (vomiting, chest pain, respiratory difficulty, seizures, etc.) per the appropriate protocol.
      b. Assess Patient for Stroke (CVA/TIA) Symptoms; assess Blood Pressure in opposite arm of initial reading.
      c. If positive for Stroke Symptoms, refer M414 Stroke (CVA/TIA) protocol for treatment.

G. **Hyperglycemia**
   1. Glucose Level is greater 400 mg/dL or glucometer reads "HIGH".
   2. Refer to M406 or P608 for treatment.

H. **Hypoglycemia**
   1. Glucose Level is less than 60 mg/dL or glucometer reads "LOW".
   2. If unable to assay Glucose Level but history leads to suspicion of hypoglycemia as cause of Altered Mental Status refer to M406 or P608 for treatment.
   3. Refer to M406 or P608 Hyper/Hypoglycemic Protocol for treatment.

I. **Hypoxia**
   1. Administer oxygen to correct hypoxia <95%.
   2. Refer to SB202 for treatment.
   3. Consider alternate causes of Hypoxia including Carbon Monoxide poisoning.

J. **Infection, especially meningitis**
   1. Assess for fever, if capable.
   2. Utilize appropriate level of PPE for all patients/providers/bystanders.

K. **Myocardial Ischemia / Infarction**
   1. ALOC/AMS may be a symptom of an Acute Cardiac Event (such as Myocardial Infarction – STEMI or Non-STEMI) even if patient does not present with "Chest Pain." On suspicion of myocardial ischemia / infarction Refer to the M400 and perform diagnostic EKG as soon as possible (MEDIC).
   2. Groups with Atypical AMI Presentations:
      a. Elderly
      b. Females
      c. Diabetics
      d. Chronically Hypertensive Patients

L. **Pulmonary Embolism**
   1. Treat patient supportively, including oxygenation.
   2. Limit fluid administration as possible

M. **Psychiatric**
   1. Rule out medical cause for ALOC/AMS using differential diagnosis.
   2. For medically stable patients manifesting unusual behavior including violence, aggression, altered affect, or psychosis refer to M407 for treatment.

N. **Seizure**
   1. Patient suspected to have had grand mal seizure based upon description of eyewitnesses, incontinence of urine or stool, or history of previous seizures.

2. Patient may or may not have current seizure activity.
3. Refer to M410 Seizure Protocol for treatment.

O. **Shock**
1. Identify possible causes of shock and treat via appropriate protocols.
   a. Hemorrhagic Shock refer to S500 or P612 for treatment.
   b. Cardiogenic Shock refer to M401 for treatment.
   c. Anaphylactic Shock (Allergic Reaction) refer to M409 or P609

P. **Stroke, Intracranial Bleeding**
1. Patient may NOT have altered level of consciousness.
2. Refer to M414 Stroke Protocol for treatment.

Q. **Toxins**
1. Refer to M411 Toxicological Emergencies Protocol.

ALL

I. Inclusion Criteria

A. Patients of any age.
B. Patient complains of severe/worsening shortness of breath.
C. Patient has a past medical history of Asthma, Emphysema, or COPD.
D. Patient may be prescribed inhaler and/or other respiratory medications.
E. Lung exam has stridor, rales, wheezing, decreased breath sounds, or poor air exchange.
F. Pale, cyanotic, or flushed skin.
G. Use of accessory muscles of respiration.
   1. MAY have retractions, nasal flaring, rapid respiratory rate (greater than 24), or pursed lip breathing.
   2. Tripod/positional breathing.
   3. Inability to speak in full sentences.
   4. Restlessness or anxiety.
   5. Altered/decreased mental status.
   6. MAY have jugular venous distention or peripheral edema.
   7. May have symptoms of Epiglottitis or Croup.

MEDIC

H. If EKG findings are other than normal sinus rhythm, sinus tachycardia, or atrial fibrillation with controlled ventricular response, proceed to appropriate arrhythmia protocol.

ALL

II. Protocol

A. Maintain airway and administer oxygen to correct hypoxia <95%.
B. If the patient is in impending respiratory failure, follow the T705 Airway Protocol.
C. Allow patient to sit up in a position of comfort.
D. Apply cardiac monitor, if available.
E. Obtain a diagnostic EKG, if available.
F. Consider early application of ETCO2 monitoring.

EMT

G. If available, request ALS back-up for:
   1. Adult patient with pulse greater than 120 and respiratory rate greater than 24.
   2. Patients less than 16 years old, with respiratory rate greater than 50 or who have wheezing, grunting, retractions, stridor and/or any other sign of respiratory distress.
   3. Patient who doesn't have a prescribed inhaler and the transport time is greater than 30 minutes.

ALL

H. Consider CPAP (Protocol T709).
I. Monitor Vital Signs.

MEDIC

J. Establish IV access.

ALL

K. If the patient has chest pain suggestive of cardiac origin, dyspnea, no evidence of trauma, AND
   1. Systolic blood pressure of less than 80 mm Hg, OR
   2. Systolic blood pressure of 80-100 mm Hg and a pulse greater than 120, skin changes suggestive of shock, or altered mental status,
   3. GO TO THE CARDIOGENIC SHOCK PROTOCOL M401.
L. If the patient has a dysrhythmia,
   1. GO TO THE APPROPRIATE DYSRYTHMIA PROTOCOL.
M. If the patient is unable to speak because of an airway obstruction or has a history suggestive of foreign body aspiration, i.e., sudden shortness of breath while eating, OR
   1. If the patient exhibits stridor lung sounds,
   2. GO TO THE OBSTRUCTION OR STRIDOR PROTOCOL M402 or P606.
N. If the patient has a history of Asthma, Emphysema or COPD, AND complains of a worsening shortness of breath,
   1. GO TO THE ASTHMA – COPD PROTOCOL M403 or P607.
O. If the patient has a history of heart disease, a respiratory rate greater than 24 and a systolic blood pressure greater than 100 mm HG.
   1. GO TO THE CONGESTIVE HEART FAILURE – CHF PROTOCOL M404
P. If the patient has hives, itching or swelling
   1. GO TO THE ALLERGIC REACTION/ ANAPHYLAXIS PROTOCOL M409 OR P609

Q. If Pneumothorax is suspected be aware that this can develop into a Tension Pneumothorax.
   1. GO TO THE Tension Pneumothorax Decompression PROTOCOL T701.

Notes:

A. When attempting to differentiate between COPD and congestive heart failure, the medication history will usually give more valuable information than the physical exam.

B. Do not withhold high concentrations of oxygen from the COPD patient if oxygen is needed. The risks of oxygen therapy in these patients are usually overemphasized. Any rise in PCO2, which may occur is frequently more than offset by the beneficial effects of increased oxygen delivery to the tissue.

C. Transport to the hospital should be initiated immediately if the patient's airway is compromised or the patient needs advanced airway management. Otherwise, transport should be initiated as soon as possible taking into account the time required to begin pharmacologic therapy.

D. **Transport to the closest hospital if you are unable to open or maintain the airway.**

E. In the setting of an adult submersion injury, no adjustment in treatment is required.

ALL

I. Inclusion Criteria

A. Patient's age is 16 years or older.
B. Patient complains of discomfort that may be suggestive of cardiac origin.
C. Patient has a complaint that may be suggestive of pleuritic or of respiratory origin.
D. Patient has a complaint that may be of musculoskeletal origin.

II. Differential Diagnosis

A. Acute Coronary Syndrome
B. Dysrhythmias
C. Musculoskeletal complaints
D. Respiratory complaints
E. Gastrointestinal complaints

III. General Chest Pain assessment

A. Provide care in a calm and reassuring manner.
B. Place the patient in a position of comfort.
C. Obtain a focused history and physical. If there is the complaint of chest pain, the history should include: onset, provoking factors, quality, radiation, severity, time, and pertinent negatives.
D. Maintain airway and administer oxygen to correct hypoxia <95%.
E. Patients who have a suspected diagnosis of Acute Coronary Syndrome should be treated utilizing the ACS Protocol M400.

EMT

F. If no Paramedic available, obtain diagnostic EKG (if available and appropriately trained) and transmit to receiving hospital.

MEDIC

G. Place the patient on a cardiac monitor. If the rhythm is not of sinus origin (between 60-140) go to the appropriate Dysrhythmia Protocol.
H. Obtain a diagnostic EKG and transmit if appropriate.
I. In the setting of submersion injury, no adjustment in treatment is required.

ALL

I. Inclusion Criteria

A. Patient of any age (except newborn)

B. No pulse

II. Differential Diagnosis (H'S AND T'S)

A. Potential causes should be considered and treated via the appropriate protocol simultaneously with Cardiac Arrest:

1. Hypovolemia
2. Hypoxia
3. Hydrogen Ion (Acidosis)
4. Hypo/Hyperkalemia
5. Hypothermia
6. Toxins (Drug Overdose)
7. Tamponade (Cardiac)
8. Tension Pneumothorax
9. Thrombus (Cardiac or Pulmonary)
10. Trauma

III. Protocol

A. If Traumatic Cardiac Arrest, go to Protocol S509.

B. Initiate high-quality CPR with minimal interruptions.

1. Begin the performance of 5 cycles (approximately 2 minutes) of CPR.
2. Ensure that high-quality CPR is being performed with adequate compressions.
   a. Rotate compressors every 2 minutes to maintain high quality compressions.
   b. Push hard (>2 inches in adults, or >1/3 chest diameter in pediatrics)
   c. Push fast (100-120/minute)
   d. Allow for chest recoil with each compression.
   e. Minimize interruptions in compressions.

C. Provide good ventilations.

1. Manage the airway per Protocol T705.
2. Ventilate SLOWLY with each breath over 1 second.
3. Monitor End Tidal CO2 throughout care
4. Use supplemental oxygen flow rate >10 L/minute when available.
5. Avoid excessive ventilations.
6. Give a sufficient tidal volume to produce visible chest rise.

D. Without an Advanced Airway, ventilations may be performed either:

1. Adults: 30:2 ratio with compressions, OR asynchronous to compressions at 10/minute
2. Pediatrics: 15:2 ratio with compressions (30:2 if only one rescuer)

E. Upon placement of an Advanced Airway, compressions may occur without pauses for ventilation.

1. Ventilate at 10/minute. *See Note E.

F. Continue resuscitation in 2-minute cycles of CPR, brief pulse/rhythm check, and defibrillation (if indicated) until either Return of Spontaneous Circulation occurs, or Termination of Resuscitation criteria are met.

G. Do not delay the use of an AED or Defibrillator. Use them as soon as they are available.

EMT

H. If available, request ALS back-up.

I. Apply AED and follow audio instructions.

J. If "Deliver Shock" is advised at any time by the AED, clear all people from the patient and shock.

1. Immediately resume CPR for 2 minutes before another pulse or rhythm check is performed.
2. Continue providing CPR per SB204 and following AED Instructions until transport or ALS care arrives.
3. Refer to age-appropriate VF/VT Protocol C300 or P601 for additional information.

K. If "No shock" is advised, check pulse.

1. If pulse is present, assess patient and provide post-ROSC care.
2. If pulse is absent:
   a. Immediately resume CPR for 2 minutes before another pulse or rhythm check is performed.

b. Continue providing CPR per SB204 and following AED Instructions until transport or ALS care arrives.
c. Refer to age-appropriate PEA/Asystole Protocol C301 or P602 for additional information.

L. Special Transport Considerations
1. BLS transport unit on the scene with ALS resources responding, but not yet on the scene.
a. Continue care as outlined in protocol.
b. If ALS resources will be delayed more than 10 minutes, proceed with transport, and arrange to intercept the ALS unit, if possible.
2. No ALS resources responding or available.
a. Continue care as outlined in protocol.
b. Perform at least 10 cycles of CPR (20 minutes) on scene before moving to BLS transport unit.

M. If the patient has been successfully defibrillated (has a pulse) and then re-arrests, continue with rhythm analysis and follow directions of the AED for "Deliver Shock" or "No Shock" advisories.

N. The AED is to remain attached to the patient and left in the "on" position during the entire management of the patient, unless stated otherwise by the manufacturer's instructions.

MEDIC

O. Apply quick look paddles or pads if not already monitored. Do this IMMEDIATELY if arrest is witnessed by EMS or bystander CPR is in progress upon arrival.

P. Establish vascular access while continuing CPR and rhythm specific care.
1. IV access is preferred, and it is recommended to attempt IV access for drug administration.
2. IO access should be attempted if IV access is unsuccessful OR not feasible.

Q. During rhythm specific care, perform CPR for 2 minutes before another pulse or rhythm check is done.
1. Continue cycles of CPR throughout treatment.
2. Chest compressions should be interrupted for as short of a time period as possible.
3. Conduct brief pulse/rhythm checks after every cycle.
4. Deliver defibrillations at end of every cycle if rhythm remains shockable.
5. Defibrillators should be charged during CPR, with defibrillation delivered only when safe.

R. If VF/VT, proceed to age-appropriate VF/VT Protocol C300 or P601.

S. If PEA/Asystole, proceed to age-appropriate PEA/Asystole Protocol C301 or P602.

ALL

NOTES:

A. For High Quality CPR:
1. The 5 components of high-quality CPR are:
a. Ensuring chest compressions of adequate rate
b. Ensuring chest compressions of adequate depth
c. Allowing full chest recoil between compressions
d. Minimizing interruptions in chest compressions
e. Avoiding excessive ventilation
2. In order to maintain high quality compressions, the person doing compressions should consider change with either every 2-minute cycle or when end tidal CO2 goes down.

B. Given the time-sensitive nature of cardiac arrest, treatment is most effective when performed ON SCENE. Except when noted in this protocol, transportation to an Emergency Department should be delayed.

C. Whenever possible, provide family members with the option of being present during resuscitation.
1. If the presence of family members creates undue staff stress or is considered detrimental to the resuscitation, then family members should be respectfully asked to leave.

D. Literature indicates that the use of a mechanical "thumper" is not superior to high quality compressions by a sufficient number of rescuers.

E. When performing CPR in infants and children with an advanced airway, it may be reasonable to target a respiratory rate range of 1 breath every 2–3 s (20–30 breaths/min), accounting for age and clinical condition. Rates exceeding these recommendations may compromise hemodynamics.
1. This is based on one small, multicenter observational study of intubated pediatric patients found that ventilation rates (at least 30 breaths/min in children less than 1 year of age, at

	least 25 breaths/min in older children) were associated with improved rates of ROSC and survival.[1] However, increasing ventilation rates are associated with decreased systolic blood pressure in children. The optimum ventilation rate during continuous chest compressions in children with an advanced airway is based on limited data and requires further study. F. In the setting of an adult submersion injury, no change to the resuscitation is required.
MEDIC	G. In the setting of adrenal insufficiency, resuscitation efforts may be unsuccessful without the administration of steroids. See M417. H. In the setting of hypothermia refer to M412: Hypothermia.
ALL	I. In the setting of CPR-Induced Consciousness: 1. Patient may show signs of awareness during cardiac arrest that may interfere with CPR such as but not limited to: a. Extremity movement b. Attempting to rise c. Purposeful movements d. Gag reflex e. Vocalizing distress 2. Continue providing high-quality CPR despite consciousness, maintaining a minimization in interruptions, adequate compressions and ventilation, and defibrillation. 3. Once CPR-IC is diagnosed, continue with 2-minute cycles and do not stop mid-cycle to confirm. Care must be taken to ensure this reaction is the result of CPR-Induced Consciousness. Confirmation occurs when a loss of consciousness/cognitive function occurs during breaks in compressions and/or Asystole is confirmed on the ECG. J. Physical restraints may be necessary and should be accompanied by chemical restraint.
MEDIC	1. Consider administration of Midazolam (Versed) 2-5 mg IV/IO every 10 minutes as necessary to provide sedation if CPR-IC interferes with CPR. 2. Maintain cardiac monitoring and airway management includes SpO2 and ETCO2 monitoring.
ALL	**NOTES:** A. CPR-Induced Consciousness is an increasingly frequent phenomenon that is most often associated with: 1. Minimal downtime 2. High Quality CPR 3. CPR performed by an external mechanical compression device B. Studies have shown that CPR-IC is mostly associated with increased neurological function and high rate of neurologically intact survival. C. CPR-IC is most commonly linked to amnesia of the event post-ROSC and most patients do not remember the encounter. However, some patients do recall, and this must be considered while treating the patient. D. CPR-IC can be extremely distressing for both the patient and the crew. Management of the interference is beneficial for all involved.

[1] Sutton RM, Reeder RW, Landis WP, Meert KL, Yates AR, Morgan RW, Berger JT, Newth CJ, Carcillo JA, McQuillen PS, Harrison RE, Moler FW, Pollack MM, Carpenter TC, Notterman DA, Holubkov R, Dean JM, Nadkarni VM, Berg RA; Eunice Kennedy Shriver National Institute of Child Health and Human Development Collaborative Pediatric Critical Care Research Network (CPCCRN). Ventilation Rates and Pediatric In-Hospital Cardiac Arrest Survival Outcomes. Crit Care Med. 2019;47:1627–1636. doi: 10.1097/CCM.0000000000003898

ALL

I. Purpose

A. Hypotension (low blood pressure) is a condition that if not addressed can lead to circulatory shock, a state of inadequate tissue perfusion. Shock can cause multi-organ failure and eventually death. There are four main categories of shock, and they have specific causes:

1. Hypovolemic shock can be caused by blood loss (hemorrhage), third spacing of fluid (pancreatitis, ascites), or fluid loss (vomiting, diarrhea, burns, sweating).
2. Cardiogenic shock can be secondary to myocardial infarction, arrhythmias, valvular disease, or cardiomyopathy.
3. Obstructive shock is caused by pulmonary embolism, pericardial tamponade, or tension pneumothorax.
4. Distributive shock by sepsis, anaphylaxis, neurogenic or adrenal crisis.

B. Hypotension Caveats

1. Not all hypotension will lead to shock and not all hypotension needs to be treated in the field.
2. Allowing a patient to have hypotension during resuscitation has been shown to improve outcome in some forms of trauma.
3. Not all forms of hypotension can be treated with fluids, and some may be made worse with fluid administration.
4. Level of consciousness and pulse character and/or presence can help determine if the patient is hypotensive or in shock.
5. If the patient is thought to be in shock and the cause is known, then the appropriate treatment should be started.
6. In an adrenal insufficiency patient, hypotension/shock can be signs of adrenal crisis. See M417.

II. Treatment of hypotension depends on the type and whether shock is present or not

A. **Hypovolemic shock** (see S500 or P614 Hemorrhagic Shock with/without suspected head injury)

1. With ongoing bleeding, should be treated if the mental status deteriorates (in the absence of head trauma) or the pulse is lost.
2. Without bleeding or with controlled bleeding (fluid loss secondary to vomiting, >20% burns or amputation with a tourniquet in place) shock can be treated with crystalloid, colloid, or blood products. Elevating the legs can predict whether the blood pressure will respond to fluids. If the pressure increases, then fluids can be given as a bolus.

B. **Cardiogenic shock** – (see M401 Cardiogenic Shock)

1. Treat with vasopressor drugs such as push dose epinephrine. The dose should be titrated to clinical effect. These agents increase blood pressure (increase heart rate, contractility, and systemic vascular resistance) but also increase the risk for tachyarrhythmias.

C. **Obstructive shock** from cardiac tamponade or pulmonary embolus may respond to a fluid bolus but the underlying cause must be addressed. Push dose epinephrine may maintain blood pressure but are not ideal drugs for this condition.

D. **Distributive shock** from anaphylaxis (see M409 or P609 Anaphylaxis Protocol), neurogenic, or septic shock can be treated with a fluid bolus and then push dose epinephrine.

1. Septic shock (see M419 Sepsis) is the most common type of distributive shock and one of the most common types of shock overall. Sepsis is a deadly condition caused by a body's response to infection. It is critical for providers to suspect the presence of sepsis in any patient who is at high risk for infection regardless of vital signs. Patients may be in septic shock with a normal blood pressure. The key to improve patient outcomes in septic shock is early recognition of sepsis, IV fluid resuscitation, O_2 therapy, and alerting the receiving hospital staff.
2. Septic shock is very difficult to identify. Systemic Inflammatory Response Syndrome (SIRS) criteria can be used to help identify patients before hypotension develops:
   a. Temp >38°C (100.4°F) or < 36°C (96.8°F)
   b. Elevated Heart Rate
   c. Elevated Respiratory Rate or PaCO2 < 32 mm Hg

MEDIC

III. Push Dose Epinephrine

A. Inclusion Criteria
   1. All ages.

B. See mixing recommendations below.

C. Dose:
   1. Adult: 0.5-2 ml of a 10mcg/ml solution every 2-5 minutes (5-20 mcg)
   2. Pediatric: 1mcg/kg (0.1mL/kg) of 10mcg/ml solution every 2-5 minutes (Max of 20mcg every 2-4 min)

Notes:

Mixing push dose epinephrine

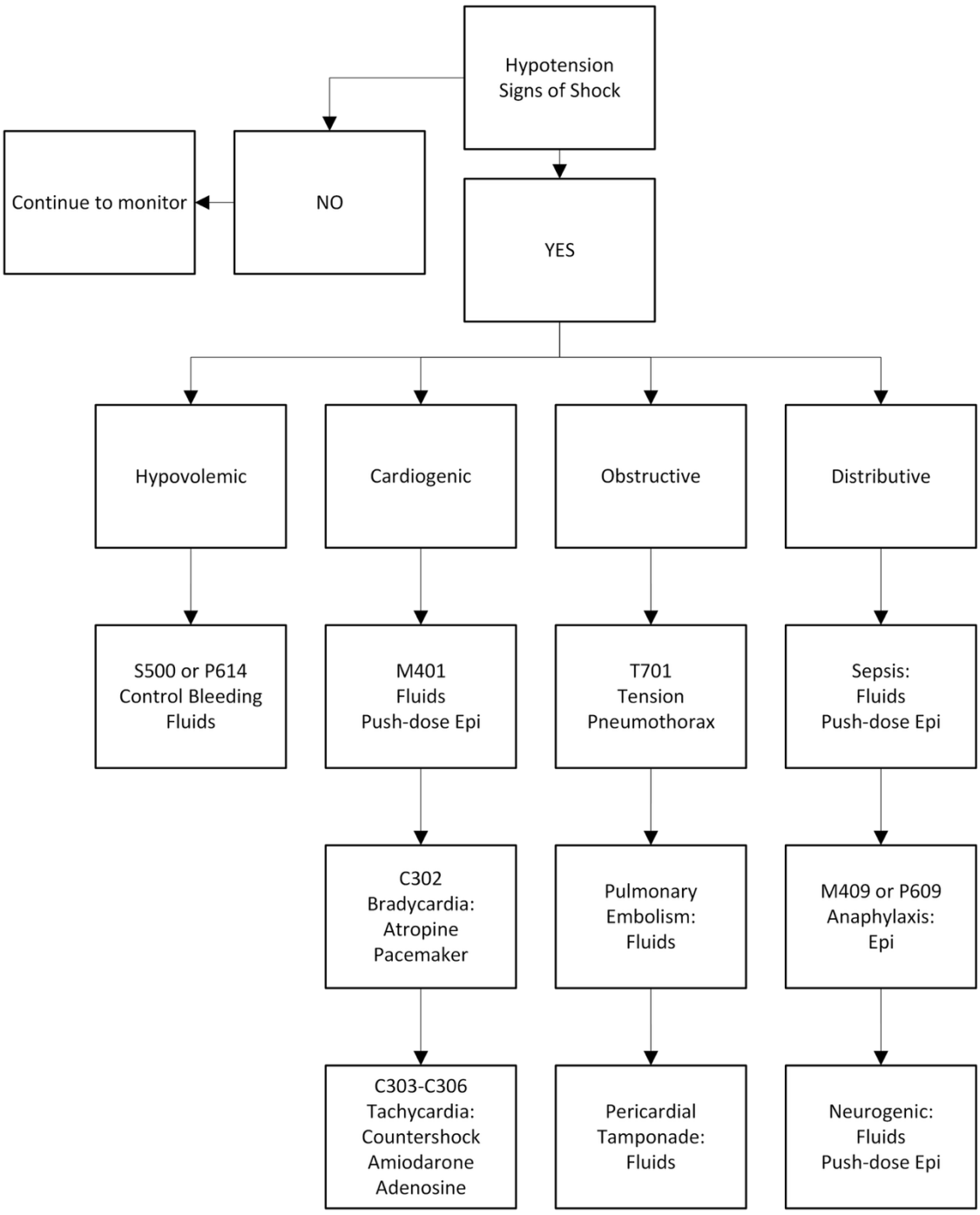
A. Method 1
   1. Take a 10 ml syringe with 9 ml of normal saline.
   2. Into this syringe, draw up 1 ml of epinephrine (0.1 mg/mL)
      a. This can be drawn up using a needle or stopcock.
   3. Now you have 10 mls of Epinephrine 10 mcg/ml.

B. Method 2
   1. Withdraw 10ml of normal saline from a 100 ml bag and discard.
   2. Inject 1 mg of epinephrine (0.1 mg/mL) into 100ml bag of normal saline.
   3. Withdraw 10 ml of solution.
   4. Now you have 10 mls of Epinephrine 10 mcg/ml.

C. Method 3
   1. Inject 1ml of 1 mg/ml epinephrine into 100ml normal saline.
   2. Withdraw 10 ml of solution.
   3. Now you have 10 mls of Epinephrine 10 mcg/ml.

--NEXT PAGE--

Flow Diagram



ALL

I. Introduction

A. The goal of any trauma patient assessment and transportation guideline is to facilitate "whatever gets the patient to the most appropriate level of care in the most expeditious manner." There is strong evidence that shows that reducing the time interval from the moment of injury to delivery/arrival at a definitive care site will reduce morbidity and mortality.

B. These guidelines were developed to assist the emergency responder to determine what constitutes a trauma patient and where to transport the trauma patient.

C. In the prehospital care environment, time, distance, patient condition, and level of care are important variables when making decisions for transporting the trauma patient. These variables are frequently hard to assess in the field and are ever changing. These guidelines are meant to supplement, but not replace the judgment of the on-scene Medic/EMT.

D. *The Tri-state Trauma Coalition encourages all Fire and EMS Agencies and their personnel to review the Trauma Patient Assessment and Transportation guidelines on an annual basis.*

E. *The Ohio Prehospital Trauma Triage Decision Tree SB210 may be used as an aide in determining the appropriate facility for the patient.*

II. Concepts

A. Rapid field evaluation, treatment, and transport are vital to the overall outcome of the trauma patient. After the trauma patient's extrication, the on-scene time should be limited to TEN MINUTES or less, except when there are extenuating circumstances.

B. Trauma Center means a facility with a current A.C.S. verification certificate, or a hospital meeting A.C.S. guidelines with a known A.C.S. verification in process. *

C. Use of on-line, active medical control for medical direction in the field, particularly for difficult cases, is encouraged.

- Pre-arrival notification of the receiving facility is essential! **Use EXACT phrase "Trauma Alert"**

III. Trauma Center/Facility Capabilities: The Regional Trauma Plan is an inclusive model that integrates the resources of all facilities throughout the region in providing care to the severely injured trauma patient.

A. Level I and II Trauma Centers offer the same level of care for the incoming trauma patient and may be used interchangeably.

B. Level III Trauma Centers offer services, based on individual hospital resources that provide for initial assessment, resuscitation, and stabilization, which may include emergency surgery, for the trauma patient.

1. The Level III Trauma Center will have established Transfer Agreements with the NEAREST Level I and II Trauma Centers in the region.
2. In the areas of the region where the Level III Trauma Center is the only verified trauma facility, (within 30 minutes ground transport time), this hospital will act as the primary receiving facility for the critically injured patient.
3. *In areas where the trauma patient is in close proximity to a Level III trauma center and a Level I or II trauma center is still within the 30 minute transport guidelines established in this document, the EMS Provider should exercise professional judgment as to whether the patient would benefit more from an immediate evaluation and stabilization at the proximate Level III trauma center or from direct transport by ground EMS Provider or air to the Level I or II trauma center.*

C. Other general acute care hospitals not verified/designated as Trauma Centers, but having 24-hour Emergency Department capabilities, can and should be used in certain situations to stabilize the "critically injured" trauma patient. In areas of the region where there are no verified Trauma Centers (within 30-minute ground transport time) the general acute care hospital will act as the primary receiving facility for all critically injured trauma patients. (See air medical utilization guidelines).

D. *The general acute care hospital will have established Transfer Agreements with the NEAREST Level I and II Trauma Centers in the Region*

E. The pediatric trauma patient should be transported to the NEAREST Pediatric Trauma Center!

F. All pregnant trauma patients should be transported to the NEAREST Adult Trauma Center regardless of where they are supposed to deliver.

IV. Use of Guidelines

A. Determine if the patient qualifies as a trauma patient.
   1. Note the differences in inclusion criteria for Pediatric (younger than 16 years) Adult (16-65 yrs.), and Geriatric (greater than 65 yrs.).

B. Determine where and how the trauma patient is to be transported.

C. Go to the appropriate facility.

V. Hospital / Inter-Hospital Transfer of Trauma Patients

A. Written protocols and agreements between facilities for transport/transfer of trauma patients are required.

B. EMS and local facility should have active discussion regarding each other's capabilities.

C. The ED Capability Study may be used as a resource.

D. The Division of EMS posts on the Internet the list of trauma centers recognized by the Ohio Department of Public Safety and the Ohio Department of Health

VI. Exceptions:

A. Emergency medical service personnel shall transport a trauma victim, as defined in section 4765-14-01 of the Revised Code, directly to an adult or pediatric trauma center that is qualified to provide appropriate adult or pediatric care, unless one or more of the following exceptions apply:
   1. It is medically necessary to transport the victim to another hospital for initial assessment and stabilization before transfer to an adult or pediatric trauma center.
   2. It is unsafe or medically inappropriate to transport the victim directly to an adult or pediatric trauma center due to adverse weather or ground conditions or excessive transport time.
   3. Transporting the victim to an adult or pediatric trauma center would cause a shortage of local emergency medical service resources.
   4. No appropriate adult or pediatric trauma center is able to receive and provide adult or pediatric trauma care to the trauma victim without undue delay.
   5. Before transport of a patient begins, the patient requests to be taken to a particular hospital that is not a trauma center or, if the patient is less than eighteen years of age or is not able to communicate, such a request is made by an adult member of the patient's family or a legal representative of the patient.

Notes:

A. If the state trauma triage protocols are amended to include criteria that do not appear in a region's (or organization's) protocols, such amendments will automatically be applied to the region's protocols until such time as the region amends their protocols, in accordance with section 4765.40 of the Revised Code.

B. The American College of Surgeons (ACS) Trauma Center Verification guidelines describe a range of clinical services that might be offered by Level II and level III trauma centers (for example – Level III trauma centers are not required to have neurosurgery or thoracic surgery, although a number of Level III centers may have these clinical services available). Information on how to obtain a copy of the Resources for Optimal Care of the Injured Patient: 2014 (ACS trauma center standards) can be found at https://www.facs.org/quality-programs/trauma/tqp/center-programs/vrc/resources. This information was taken from the State of Ohio's Document "What EMS Providers Should Know about Trauma Triage."

C. Protocol SB210 is a document that EMS providers may find helpful with deciding who needs to be transported directly to a trauma center. Based on Ohio's trauma triage criteria, this form was developed by the Academy of Medicine of Cincinnati SW Ohio Protocol Subcommittee and was approved by the State EMS Board for use by EMS personnel in the prehospital setting.

KY

I. **Purpose**

A. Victims of major trauma have better outcomes when transported to a designated trauma center in a timely manner. The American College of Surgeons (ACS) has developed triage criteria that is useful in identifying patients that may benefit from evaluation at a trauma center.

B. In general consider the following guidelines:

1. It is in the best interest of the patient to be transported to a designated trauma center if the patient meets ACS criteria and a designated trauma center is within thirty minutes transport time.
2. Patients with a compromised airway may be best served by transport to the closest hospital with rapid transfer to a trauma center.
3. Consider air medical resources but do not delay transport unnecessarily. (See Helicopter Criteria for Scene Transport.)

–NEXT PAGE--

National Guideline for the Field Triage of Injured Patients

RED CRITERIA
High Risk for Serious Injury

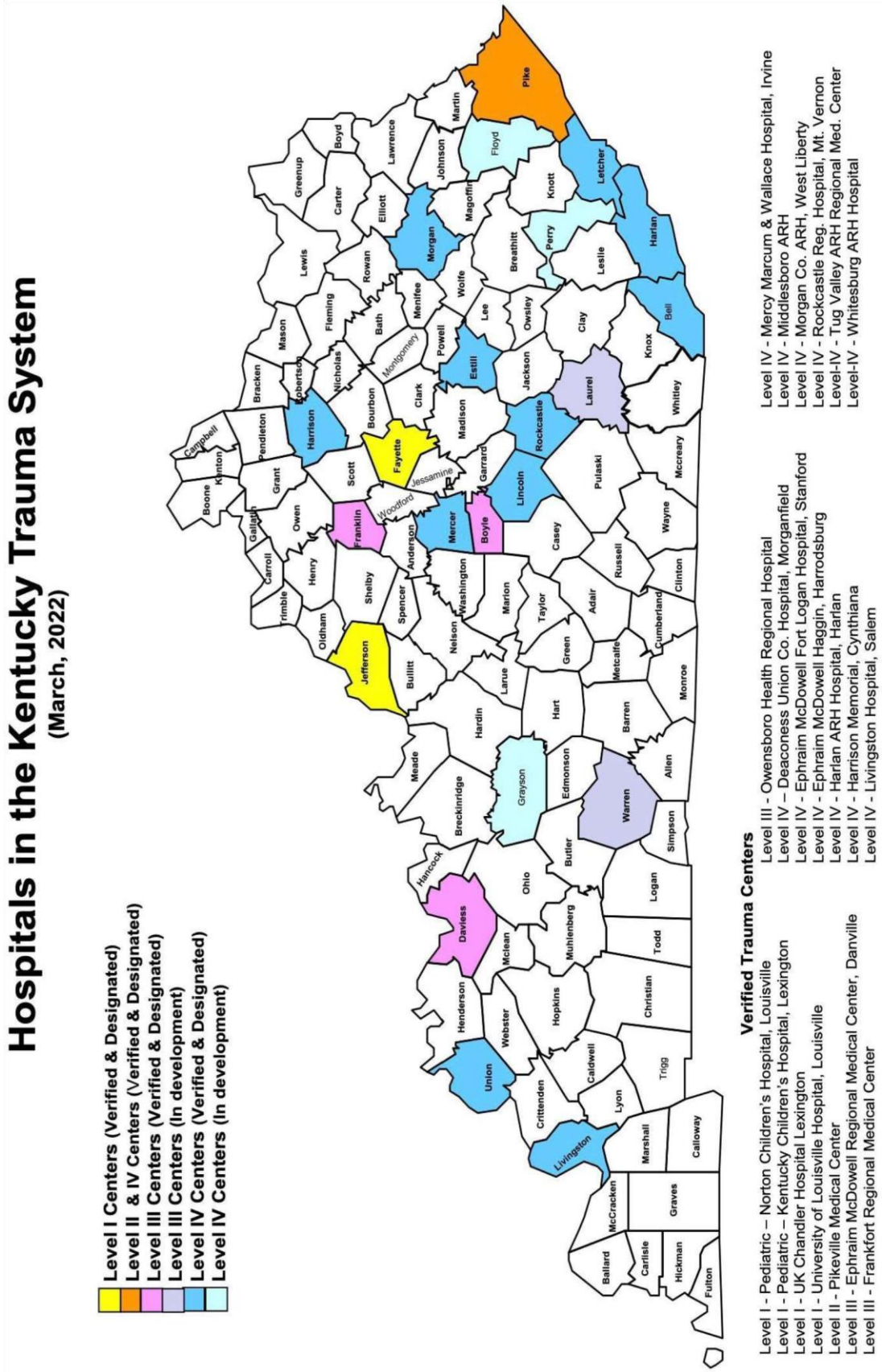
Injury Patterns	Mental Status & Vital Signs
• Penetrating injuries to head, neck, torso, and proximal extremities • Skull deformity, suspected skull fracture • Suspected spinal injury with new motor or sensory loss • Chest wall instability, deformity, or suspected flail chest • Suspected pelvic fracture • Suspected fracture of two or more proximal long bones • Crushed, degloved, mangled, or pulseless extremity • Amputation proximal to wrist or ankle • Active bleeding requiring a tourniquet or wound packing with continuous pressure	**All Patients** • Unable to follow commands (motor GCS < 6) • RR < 10 or > 29 breaths/min • Respiratory distress or need for respiratory support • Room-air pulse oximetry < 90% **Age 0–9 years** • SBP < 70mm Hg + (2 x age in years) **Age 10–64 years** • SBP < 90 mmHg or • HR > SBP **Age ≥ 65 years** • SBP < 110 mmHg or • HR > SBP

Patients meeting any one of the above RED criteria should be transported to the highest-level trauma center available within the geographic constraints of the regional trauma system

YELLOW CRITERIA
Moderate Risk for Serious Injury

Mechanism of Injury	EMS Judgment
• High-Risk Auto Crash – Partial or complete ejection – Significant intrusion (including roof) • >12 inches occupant site OR • >18 inches any site OR • Need for extrication for entrapped patient – Death in passenger compartment – Child (age 0–9 years) unrestrained or in unsecured child safety seat – Vehicle telemetry data consistent with severe injury • Rider separated from transport vehicle with significant impact (eg, motorcycle, ATV, horse, etc.) • Pedestrian/bicycle rider thrown, run over, or with significant impact • Fall from height > 10 feet (all ages)	**Consider risk factors, including:** • Low-level falls in young children (age ≤ 5 years) or older adults (age ≥ 65 years) with significant head impact • Anticoagulant use • Suspicion of child abuse • Special, high-resource healthcare needs • Pregnancy > 20 weeks • Burns in conjunction with trauma • Children should be triaged preferentially to pediatric capable centers **If concerned, take to a trauma center**

Patients meeting any one of the YELLOW CRITERIA WHO DO NOT MEET RED CRITERIA should be preferentially transported to a trauma center, as available within the geographic constraints of the regional trauma system (need not be the highest-level trauma center)


Hospitals in the Kentucky Trauma System
(March, 2022)
Level I Centers (Verified & Designated)
Level II & IV Centers (Verified & Designated)
Level III Centers (Verified & Designated)
Level III Centers (In development)
Level IV Centers (Verified & Designated)
Level IV Centers (In development)
Pike
Martin
Floyd
Johnson
Lawrence
Boyd
Greenup
Letcher
Harlan
Knott
Magoffin
Morgan
Elliott
Carter
Perry
Breathitt
Leslie
Bell
Knox
Clay
Owsley
Lee
Wolfe
Menifee
Rowan
Bath
Fleming
Lewis
Mason
Robertson
Nicholas
Montgomery
Powell
Estill
Jackson
Laurel
Whitley
Mccreary
Wayne
Clinton
Cumberland
Russell
Pulaski
Rockcastle
Madison
Clark
Bourbon
Harrison
Bracken
Pendleton
Campbell
Kenton
Boone
Grant
Scott
Fayette
Jessamine
Garrard
Lincoln
Casey
Boyle
Mercer
Woodford
Franklin
Owen
Gallatin
Carroll
Henry
Trimble
Oldham
Shelby
Anderson
Spencer
Washington
Marion
Taylor
Adair
Green
Metcalfe
Jefferson
Bullitt
Nelson
Larue
Hart
Barren
Allen
Simpson
Monroe
Meade
Hardin
Grayson
Edmonson
Warren
Breckinridge
Butler
Ohio
Muhlenberg
Logan
Todd
Hancock
Daviess
Mclean
Christian
Henderson
Hopkins
Webster
Union
Caldwell
Trigg
Crittenden
Lyon
Livingston
Marshall
Calloway
McCracken
Graves
Ballard
Carlisle
Hickman
Fulton
Verified Trauma Centers
Level I - Pediatric – Norton Children's Hospital, Louisville
Level I - Pediatric – Kentucky Children's Hospital, Lexington
Level I - UK Chandler Hospital Lexington
Level I - University of Louisville Hospital, Louisville
Level II - Pikeville Medical Center
Level III - Ephraim McDowell Regional Medical Center, Danville
Level III - Frankfort Regional Medical Center
Level III - Owensboro Health Regional Hospital
Level IV – Deaconess Union Co. Hospital, Morganfield
Level IV - Ephraim McDowell Fort Logan Hospital, Stanford
Level IV - Ephraim McDowell Haggin, Harrodsburg
Level IV - Harlan ARH Hospital, Harlan
Level IV - Harrison Memorial, Cynthiana
Level IV - Livingston Hospital, Salem
Level IV - Mercy Marcum & Wallace Hospital, Irvine
Level IV - Middlesboro ARH
Level IV - Morgan Co. ARH, West Liberty
Level IV - Rockcastle Reg. Hospital, Mt. Vernon
Level-IV - Tug Valley ARH Regional Med. Center
Level-IV - Whitesburg ARH Hospital

ALL

I. Evaluation of the Adult Trauma Patient - Any of these constitute a "trauma patient"

A. Age 16 to 64 years

B. Physiological Criteria

1. Significant signs of shock or evidence of poor perfusion (cold, clammy, decreased mental status, weak pulse, pallor) or:
   a. Pulse greater than 120 or less than 50 or
   b. Systolic blood pressure (SBP) less than 90
   c. Absence of radial pulse when carotid pulse is present or change in pulse character.
   d. Geriatric patients (>65 years old) may be in shock with a SBP less than 110.
2. Airway or Breathing Difficulties or evidence of respiratory distress or failure.
   a. Respiratory rate of less than10 or greater than 29
   b. Need for ventilator support.
3. Neurologic Considerations
   a. Evidence of Head Injury
      i. GCS scale ≤ 13 or AVPU scale that does not respond to Pain or Unresponsive.
      ii. Alteration in LOC during examination or thereafter; loss of conscious > 5 min.
      iii. Failure to localize pain.
   b. Suspected spinal cord injury (paralysis due to an acute injury, sensory loss)

C. Anatomic Criteria

1. Penetrating trauma (to head, chest or abdomen, neck, and extremities proximal to knee or elbow)
2. Injuries to the extremities where the following physical findings are present:
   a. Amputations proximal to the wrist or ankle
   b. Visible crush injury
   c. Fractures of two or more proximal long bones
   d. Evidence of neurovascular compromise
3. Tension pneumothorax that is relieved (an unrelieved tension pneumothorax would fit the definition of an unstable ABC needing immediate treatment at the closest ER)
4. Injuries to the head, neck, or torso where the following physical findings are present:
   a. Visible crush injury
   b. Abdominal tenderness, distention, or seat belt sign
   c. Suspicion of a Pelvic fracture
   d. Flail chest
   e. Open skull fracture
5. Signs or symptoms of spinal cord injury.
6. Submersion Injuries, Strangulation & Asphyxia
7. Second degree or third degree burns greater than ten percent total body surface area, or other significant burns involving the face, feet, hands, genitalia, or airway.

D. Other Criteria/Considerations that alone do not constitute a trauma patient

1. Significant Mechanisms of Injury Should Prompt a High Index of Suspicion
   a. ATV/Motorcycle crashes
   b. Significant Falls- 20'
   c. High Risk Auto crash
   d. MVC Ejection.
   e. Death in same compartment.
   f. Auto vs. pedestrian/bicycle thrown, ran over, > 20mph.
   g. Vehicle telemetry data consistent with high risk of injury.
2. Age greater than 65 Should Prompt a High Index of Suspicion
   a. See Geriatric Specific Inclusion Criteria listed in SB209 Geriatric Trauma Patients.
3. Anticoagulation and evidence of traumatic brain injury.
   i. GCS scale ≤ 13 or AVPU scale that does not respond to Pain or Unresponsive.
   ii. Alteration in LOC during examination or thereafter; loss of conscious > 5 min.
   iii. Failure to localize pain.
4. Pregnancy

a. The best initial treatment of the fetus is the provision of optimal resuscitation of the mother (**babies don't do well if mothers don't do well**).
b. Because of their increased intravascular volume, pregnant patients can lose a significant amount of blood before tachycardia, hypotension, and other signs of hypovolemia occur.
c. The highest incidence of **fetal deaths occurs secondary to severe maternal shock**, which is associated with a fetal mortality rate of 80%.
d. The fetus may be in distress and the placenta deprived of vital perfusion while the mother's condition and vital signs appear stable.
e. Oxygen supplementation should be given to **maintain maternal oxygen saturation >95%** to ensure adequate fetal oxygenation.
f. Because of their adverse effect on utero-placental perfusion, vasopressors in pregnant women should be used only for intractable hypotension that is unresponsive to fluid resuscitation.
g. After mid-pregnancy, the gravid uterus should be moved off the inferior vena cava to increase venous return and cardiac output in the acutely injured pregnant woman. This may be achieved by **manual displacement of the uterus or left lateral tilt (30°)**. Care should be taken to secure the spinal cord when using left lateral tilt.
h. Fetal loss can occur even when the mother has incurred no abdominal injuries.
i. In a case-by-case analysis, severe injuries are MUCH more likely to result in fetal loss. However, because there is a much higher frequency of minor trauma during pregnancy most fetal losses due to trauma result from minor maternal injury mechanisms.
j. Intubation is more difficult with failed intubations 8x more likely. **A smaller size ET Tube is recommended**.
k. Insertion of **2 large bore IV's is recommended for all seriously injured pregnant trauma patients** to facilitate initial rapid crystalloid infusion, intravascular volume expansion, and possible further blood transfusion as required.
l. **Avoid distractions** and avoid the urge to focus on the fetus.
m. Every woman who sustains trauma should be questioned specifically about domestic or intimate partner violence.
n. Call medical control if any questions. **Notify receiving hospital**.

II. Transportation of the Adult Trauma Patient

A. Ground Transportation Time Guidelines
1. 30 minutes or less from a Trauma Center → TRAUMA CENTER (excluding uncontrolled airway or traumatic CPR)
2. Greater than 30 minutes to a trauma center → may consider nearest appropriate facility.

B. Ground Transportation Guidelines
1. Patients should be transported to the nearest appropriate facility if any of the following exists:
   a. Airway is unstable and cannot be controlled/managed by conventional methods
   b. Potential for unstable airway, i.e., (facial/upper torso burn)
   c. Blunt trauma arrest (no pulses or respirations) if indicated per S509.
   d. Patient does "NOT" meet criteria for a trauma patient as defined above.

   *** Pre-arrival notification of the receiving facility is essential!!! ***

C. Air Medical Transportation
1. General principles:
   a. Prolonged delays at the scene waiting for air medical transport should be avoided.
   b. If air medical transportation is unavailable (e.g., weather conditions), patient should be transported by ground guidelines as listed above.
   c. Air transport, if dispatched to the scene, should be diverted to the hospital if the patient appeared appropriate for air transport but the decision was made to transport to the nearest facility (non-trauma center) in the interim.
   d. Air Medical Programs share the responsibility to educate EMS units and facilities on appropriate triage. They should also institute an active utilization and quality review

program that provides feedback to EMS units.

e. Patients with uncontrolled ABCs should be taken to the closest appropriate facility (24-hour emergency department) if that can be achieved prior to the arrival of air medical transport.

f. Traumatic cardiac arrest due to blunt trauma is not appropriate for air transport.

2. Reasons to Consider a Call for Air Transport:

a. Prolonged extrication

b. Multiple victims/trauma patients

c. Time/distance factors:

i. If the transportation time to a trauma center by ground is greater than 30 minutes AND the transport time by ground to the nearest trauma center is greater than the total transport time** to a trauma center by helicopter.

ii. **Total transport time includes any time at scene waiting for helicopter and transport time to trauma center.

iii. In the rural environment, immediate transfer with severely traumatized patients by air medical transport may be appropriate and should be encouraged if it does not significantly delay intervention for immediate life-threatening injuries.

NOTES:

A. Exceptions to these Trauma Triage Guidelines are listed in the Trauma Patient Assessment and Transport Guidelines Protocol SB206 under Section VI. These same exceptions apply to pediatric, adult, and geriatric trauma patients.

ALL

I. Evaluation of the Pediatric Trauma Patient: age is younger than 16 years old

A. Physiological Criteria
1. Significant signs of shock or evidence of poor perfusion (cold, clammy, decreased mental status, weak pulse, pallor) or:
   a. Tachycardia or bradycardia
   b. Hypotension
2. Airway/Breathing difficulties; Evidence of respiratory distress or failure, including:
   a. Intubated patient
   b. Tachypnea
   c. Stridor
   d. Hoarse voice or difficulty speaking
   e. Significant grunting, retractions
   f. Respiratory rate less than 20 in infants less than 1 year old
   g. Cyanosis or need for supplemental oxygen.
   h. Unable to maintain or difficult airway.
3. Neurologic considerations
   a. Evidence of head injury
      i. Glasgow Coma Scale less than or equal to 13 or AVPU scale that does not respond to Pain or Unresponsive.
      ii. Alteration in LOC during examination or thereafter; loss of conscious greater than 5 minutes
      iii. Failure to localize pain.
   b. Suspected spinal cord injury (paralysis or alteration in sensation)

B. Anatomic Criteria
1. Penetrating trauma (to the head, chest or abdomen, neck, including groin and buttocks)
   a. GSW proximal to the knee and elbow.
2. Injuries to the extremities where the following physical findings are present:
   a. Amputations proximal to the wrist or ankle
   b. Visible crush injury
   c. Fractures of two or more proximal long bones
   d. Evidence of neurovascular compromise
3. Tension pneumothorax which is relieved (an unrelieved tension pneumothorax would fit the definition of an unstable ABC, needing immediate treatment at the closes ER)
4. Injuries to the head, neck or torso where the following physical findings are present:
   a. Visible crush injury
   b. Abdominal tenderness, distention, or seat belt sign
   c. Suspicion of a pelvic fracture.
   d. Flail chest
5. Signs or symptoms of spinal cord injury.
6. Submersion injury, Strangulation and Asphyxia.
7. Full thickness or partial thickness greater than ten percent total body surface area, or other significant burns involving the face, feet, hands, genitalia, or airway. 1st degree burns are not calculated in TBSA.

C. Other Criteria/Considerations that alone do not CONSTITUTE A Pediatric trauma patient:
1. Significant mechanism of injury should prompt a high index of suspicion and should be considered in the evaluation. Mechanisms particularly dangerous for pediatric patients include:
   a. Improperly restrained child in MVC (airbag injuries included)
   b. ATV/Motorcycle crashes
   c. Significant Falls- 10’ or 2 to 3 times body height
   d. High Risk Auto crash
   e. MVC with Ejection.
   f. Death in same compartment.

g. Auto vs. pedestrian/bicycle thrown, ran over, greater than 20mph.
h. Vehicle telemetry data consistent with high risk of injury.

2. Special situations that may require the resources of a pediatric trauma center.
   a. Congenital defects
   b. Suspected Child Abuse
   c. Chronic respiratory illness
   d. Diabetes
   e. Bleeding disorder or anticoagulants
   f. Immuno-suppressed patients (i.e., patients with cancer, organ transplant patients, HIV/AIDS, long-term use of corticosteroids, etc.)

*****Pre-arrival notification to the receiving facility is essential! *****

II. Transportation of the Pediatric trauma patient:

A. Ground transportation guidelines – time considerations
   1. 30 minutes or less from a Pediatric Trauma Center (excluding uncontrolled airway or traumatic arrest): Transport to a Pediatric Trauma Center
   2. Greater than 30 minutes to a Pediatric Trauma Center: May consider transport to nearest appropriate facility.

B. Ground transportation guidelines
   1. Patients should be transported to the nearest appropriate facility if any of the following exists:
      a. Airway is unstable and cannot be controlled/managed by conventional methods.
      b. Potential for unstable airway, (i.e., facial/upper torso burn)
      c. Blunt trauma arrest (no pulses or respirations)
      d. Patient does NOT meet criteria for a trauma patient as defined above.

C. Air Medical Transportation
   1. General principles
      a. Prolonged delays at the scene waiting for air medical transport should be avoided.
      b. If air medical transportation is unavailable. (e.g., weather conditions), patient should be transported by ground guidelines as listed above.
      c. Air transport, if dispatched to the scene, should be diverted to the hospital if the patient appeared appropriate for air transport but the decision was made to transport to the nearest facility (non-trauma center) in the interim.
      d. Air Transport Programs share the responsibility to educate EMS units and facilities on program that provides feedback to EMS units.
      e. Patients with uncontrolled ABCs should be taken to the closest appropriate facility (24-hour emergency department) if that can be achieved prior to the arrival of air medical transport.
      f. Traumatic cardiac arrest due to blunt trauma is not appropriate for air transport.
   2. Reasons to consider a call for air transport:
      a. Prolonged extrication
      b. Multiple victims/trauma patients
      c. Time/distance factors:
      d. If the transportation time to a trauma center by ground is greater than 30 minutes AND the transport time by ground to the nearest trauma center is greater than the total transport time** to a trauma center by helicopter.
         i. **Total transport time includes any time at the scene waiting for a helicopter and transport time to the trauma center.
         ii. In the rural environment, immediate transfer with severely traumatized patients by air transport may be appropriate and should be encouraged if it does not significantly delay intervention for immediate life-threatening injuries.

Notes:

A. Exceptions to these Trauma Triage Guidelines are listed in the Trauma Patient Assessment and Transport Guidelines Protocol SB206 under Section VI. These same exceptions apply to pediatric, adult, and geriatric trauma patients.

Age	Pulse Beats/min	Respirations Breaths/min	Avg. Systolic BP
Infant(1-12mo)	90-180	30-53	>70
Toddler (1-2 yrs)	80-140	22-37	>70
Preschool (3-5 yrs)	60-120	20-28	>80
School age (6-12 yrs)	58-118	18-25	>85
Adolescent (12+ years)	50-100	12-20	>90

ALL

I. Trauma patients greater than 65 years of age should be defined as geriatric trauma.

A. The criteria listed below are in addition to the Adult Trauma Triage Guidelines. Geriatric trauma patients should be triaged for evaluation in a trauma center for:

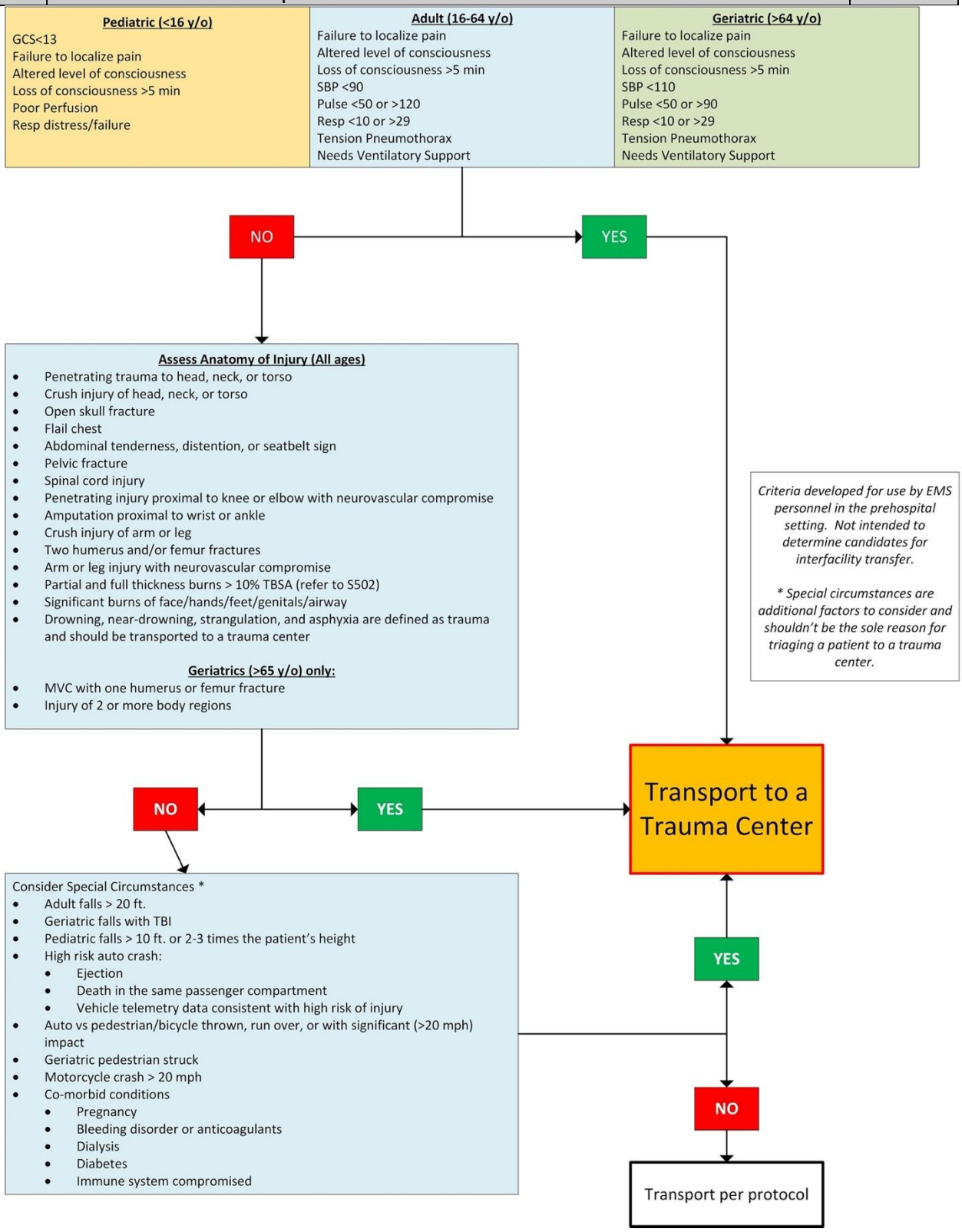
1. Glasgow Coma Score less than or equal to 14 with known or suspected traumatic brain injury.
2. Systolic blood pressure less than 110 mmHg or pulse greater than 90.
3. Falls with from any height, including standing falls, with evidence of traumatic brain injury.
4. Pedestrian struck by motor vehicle.
5. Known or suspected proximal long bone fracture sustained in a motor vehicle crash.
6. Injury sustained in two or more body regions.
7. Anticoagulation and evidence of traumatic brain injury.
   a. GCS scale < 13 or AVPU scale that does not respond to Pain or Unresponsive.
   b. Alteration in LOC during examination or thereafter; loss of conscious > 5 min.
   c. Failure to localize pain.

Notes:

A. Geriatric trauma patients should be given special consideration for evaluation at a trauma center if they have diabetes, cardiac disease, congestive heart failure, CVA, pulmonary disease (COPD), clotting disorder (including anticoagulants), immunosuppressive disorder (i.e., *HIV/AIDS, Organ Transplant, Chemotherapy, Long-term use of corticosteroids, etc),* or require dialysis.

B. The geriatric trauma recommendations were taken from the Geriatric Trauma Task Force report released in December of 2007 by the State of Ohio Board of Emergency Medical Services, Trauma Committee. The data used to make these recommendations came directly from the Ohio Trauma EMS Registry. Supplemental data from the CDC /MMWR Guidelines for Field Triage of Injured Patients, January 2012.

C. Exceptions to these Trauma Triage Guidelines are listed in the Trauma Patient Assessment and Transport Guidelines Protocol SB206 under Section VI. These same exceptions apply to pediatric, adult, and geriatric trauma patients.


Pediatric (<16 y/o)
GCS<13
Failure to localize pain
Altered level of consciousness
Loss of consciousness >5 min
Poor Perfusion
Resp distress/failure
Adult (16-64 y/o)
Failure to localize pain
Altered level of consciousness
Loss of consciousness >5 min
SBP <90
Pulse <50 or >120
Resp <10 or >29
Tension Pneumothorax
Needs Ventilatory Support
Geriatric (>64 y/o)
Failure to localize pain
Altered level of consciousness
Loss of consciousness >5 min
SBP <110
Pulse <50 or >90
Resp <10 or >29
Tension Pneumothorax
Needs Ventilatory Support
NO
YES
Assess Anatomy of Injury (All ages)
Penetrating trauma to head, neck, or torso
Crush injury of head, neck, or torso
Open skull fracture
Flail chest
Abdominal tenderness, distention, or seatbelt sign
Pelvic fracture
Spinal cord injury
Penetrating injury proximal to knee or elbow with neurovascular compromise
Amputation proximal to wrist or ankle
Crush injury of arm or leg
Two humerus and/or femur fractures
Arm or leg injury with neurovascular compromise
Partial and full thickness burns > 10% TBSA (refer to S502)
Significant burns of face/hands/feet/genitals/airway
Drowning, near-drowning, strangulation, and asphyxia are defined as trauma and should be transported to a trauma center
Geriatrics (>65 y/o) only:
MVC with one humerus or femur fracture
Injury of 2 or more body regions
Criteria developed for use by EMS personnel in the prehospital setting. Not intended to determine candidates for interfacility transfer.
* Special circumstances are additional factors to consider and shouldn't be the sole reason for triaging a patient to a trauma center.
NO
YES
Transport to a Trauma Center
Consider Special Circumstances *
Adult falls > 20 ft.
Geriatric falls with TBI
Pediatric falls > 10 ft. or 2-3 times the patient's height
High risk auto crash:
Ejection
Death in the same passenger compartment
Vehicle telemetry data consistent with high risk of injury
Auto vs pedestrian/bicycle thrown, run over, or with significant (>20 mph) impact
Geriatric pedestrian struck
Motorcycle crash > 20 mph
Co-morbid conditions
Pregnancy
Bleeding disorder or anticoagulants
Dialysis
Diabetes
Immune system compromised
YES
NO
Transport per protocol

ALL

I. **Purpose**
   A. Adult patients with present mental capacity retain the right to refuse care and/or transport against medical advice.
   B. Parents or guardians of minor children may refuse on behalf of a minor child but must meet capacity requirements for informed refusal. In the absence of a parent or guardian, a minor can be left in the care of a responsible adult. Contact medical control, if necessary, for assistance.
   C. Legal guardians/caregivers of adult patients with proper documentation of medical power of attorney may also refuse care on behalf of adult patients if capacity requirements are met for the caregiver.
   D. This protocol does NOT apply in mass casualty incidents.

II. **Patient Refusal**
   A. If a patient (or the parent or legal guardian of the patient) refuses care and/or transport to a hospital after EMS have been called to the scene, EMS should determine the patient's capacity to make decisions. Competency is a legal definition that is determined by the court of law.
   B. Assessment
      1. Decision-Making Capacity
         a. A patient (or the parent or legal guardian of the patient) who is alert, oriented, and can understand the circumstances surrounding his/her illness or impairment, as well as the possible risks associated with refusing treatment and/or transport, typically is considered to have decision-making capacity.
         b. The patient's (or the parent or legal guardian of the patient) judgment must also not be significantly impaired by illness, injury, or drugs/alcohol intoxication. Individuals who have attempted suicide, verbalized suicidal intent, or had other factors that lead EMS to suspect suicidal intent, should not be regarded as having decision-making capacity. It is highly recommended to discuss the best course of action with the police.
      2. Treatment and Interventions
         a. Obtain a complete set of vital signs and complete an initial assessment, paying particular attention to the individual's neurologic and mental status.
         b. Determine the patient's capacity (or the parent or legal guardian of the patient) to make a valid judgment concerning the extent of his/her illness or injury; if EMS has doubts about whether the individual has the mental capacity to refuse or if the patient lacks capacity, EMS should contact medical control.
         c. If patient (or the parent or legal guardian of the patient) has capacity, clearly explain to the individual and all responsible parties the possible risks and overall concerns with regards to refusing care and that they may reengage the EMS system if needed.
         d. Perform appropriate medical care with the consent of the patient.
         e. Complete the patient care report, including patient refusal form, clearly documenting the initial assessment findings and the discussions with all involved individuals regarding the possible consequences of refusing additional prehospital care and/or transportation.
   C. Non-Transport Guidelines:
      1. Patient's presenting with upper respiratory infection (URI) symptoms such as runny nose, measured or subjective fever, cough, nasal/chest congestion, body aches, and/or sore throat should be properly examined and should they meet below criteria, may be candidates for non-transport and home care.
      2. Non-transport decision **MUST** be made and well documented in the PCR by highest certified personnel on the scene, preferably a paramedic.

3. Patient or guardian must have mental capacity and consent to non-transport as noted in sections above.
4. Home care must be suitable for the patient meaning they have caregivers if needed, suitable living conditions, and access to food/water.
5. Encourage patient to call 911 for worsening or serious symptoms

D. Non-Transport Inclusion Criteria: **(meet all of the following)**
1. Age >15 and <50
2. URI symptoms present as noted above
3. Vitals Signs:
   a. Respiratory Rate 8-20 breaths/min
   b. Pulse oximetry >94% on room air
   c. Heart rate <100 BPM
   d. Systolic BP >100mmHg

E. Non-Transport Exclusion Criteria:
1. Chest pain, other than with mild coughing
2. Shortness of breath at rest
3. Syncope/loss of consciousness
4. Altered mental status
5. History of diabetes, heart disease, lung disease, immunocompromise, cancer, or currently pregnancy
6. Any other concern by on-scene personnel that it would be unsafe to not transport patient

ALL

I. PURPOSE

A. EMS frequently encounters patients that are critically ill and quickly deteriorating. Stabilization on scene, prior to loading and transporting, prevents further deterioration and leads to better morbidity and mortality.

B. This protocol serves as a guideline of critical actions that should be considered prior to loading and transporting.

II. CRITERIA

A. Inclusion

1. Patient in whom cardiac or respiratory arrest appears imminent.
2. Patient suspected of having a critical illness such as altered mental status, airway compromise, respiratory distress/failure, signs/symptoms of shock/poor perfusion.

B. Exclusion

1. Life-threatening trauma that has not been corrected.

III. PROCEDURE

A. Critical Actions (ideally accomplished before moving the patient)

1. Airway
   a. Insert nasopharyngeal or oropharyngeal airway as indicated if not following commands or no response to verbal stimulus per (T705 Airway).
2. Breathing
   a. If respiratory failure or distress, sit patient up if tolerated and not contraindicated.
   b. Provide oxygen per (SB200 Clinical Practice Standards).
   c. If respirations are below age-appropriate normal, ventilate by BVM. Two-person, two handed technique is most effective.
   d. If adult and tachypneic but respirations inadequate, apply CPAP for respiratory distress/hypoxia per (T709 CPAP/BiPAP Procedure).
   e. Consider PPV via BVM if not following commands or SpO2 <90%.
   f. Consider initiating bronchodilator therapy per (M403 Asthma-COPD Protocol)
3. Monitoring
   a. Frequent NIBP
   b. SpO2
   c. Continuous waveform capnography
   d. Monitor

B. Immediate actions (ideally before moving the patient)

1. Circulation

MEDIC

   a. Electrical therapy if dysrhythmia is primary cause of shock per relevant cardiac protocol.
   b. Emergent IV/IO access per T711 IO Procedure as applicable.
   c. Administer IV fluid bolus per SB205 Hypotension/Shock protocols.
   d. Consider push-dose epinephrine per SB205 Hypotension/Shock protocol.

ALL

C. Ongoing Assessments

1. Reassess vital signs frequently.
2. Reassess response to treatments.

MEDIC

3. Circulation
   a. Repeat fluid bolus if indicated.
   b. Consider push-dose epinephrine if indicated.
   c. Contact Medical Control for additional fluids/vasopressors.
4. Airway
   a. Consider advanced airway if indicated per T705 Airway

ALL

D. Loading/transporting
   1. Once critical and immediate actions have been completed, consider movement to the ambulance for transport. Frequently reassess patient status during movement. Transport may be initiated earlier per provider discretion.

E. Unloading/arrival to hospital
   1. Keep the patient on continuous monitoring until care is safely transitioned to hospital equipment.
   2. Early notification to the hospital of a critical patient is recommended.
   3. If the patient is on CPAP/BiPAP, keep the patient on this intervention until the hospital staff are prepared to switch to their equipment, whenever possible.

IV. NOTES

A. Time lengths are approximate and are intended to create urgency with actions. When unable to meet these goals, note barriers to care in documentation.

B. Actions should be simultaneous and are not in a specific order for a given timeframe.

C. This protocol is a supplement to other protocols and is not intended to supersede others.

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ALL

I. Inclusion Criteria

A. Patient's age is 16 years and older.
B. Patient is unresponsive.
C. Patient is without a pulse (pulse should be checked for a maximum of 10 seconds, when in doubt start CPR).

II. AED Findings

A. Shock Advised

MEDIC

III. EKG Findings

A. Ventricular fibrillation, or
B. Ventricular tachycardia without a pulse

ALL

IV. Protocol

A. Continue CPR and care per SB204.

MEDIC

B. If rhythm is ventricular fibrillation or ventricular tachycardia, DEFIBRILLATE IMMEDIATELY AT MAXIMUM ENERGY PER DEFIBRILLATOR MANUFACTURER'S RECOMMENDATION and immediately resume CPR.
C. Perform CPR for 2 minutes before another pulse or rhythm check is done.
D. Administer Epinephrine 1 mg (10 ml of 0.1 mg/mL) IV/IO push. Repeat every 3 to 5 minutes as long as arrest continues.
E. Administer Amiodarone 300 mg IV/IO push. Repeat Amiodarone 150 mg IV/IO push in 3 - 5 minutes if still in VF/VTach
   1. Lidocaine may be substituted as: Lidocaine 1.5 mg/kg IV/IO push. Repeat Lidocaine 0.5 to 0.75 mg/kg IV/IO in 3-5 minutes if still in VF/VTach
F. Recheck rhythm after each 2-minute cycle of CPR is complete and defibrillate if indicated.
G. Consider pad placement change after three unsuccessful defibrillation attempts.
H. If ventricular fibrillation or pulseless ventricular tachycardia persists, transport to an Emergency Department could be considered.
I. Consider probable causes per SB204.
J. If return of spontaneous circulation is achieved, continue care per Protocol C307 (Post-Return of Spontaneous Circulation Care).
K. If rhythm changes to another rhythm, go to the appropriate protocol.

ALL

Notes:

A. High Quality CPR (SB204) is considered the mainstay of therapy for Cardiac Arrest victims.
B. If a pulseless patient is found to have agonal or gasping-type respirations that have no pattern and occur very infrequently, the AED or quick-look paddles should be applied immediately.

MEDIC

A. Consider H's and T's (see SB204)
B. Endotracheal (ET) administration of drugs is acceptable but not preferable. Amiodarone cannot be given ET. ET administration is double the normal dose with 10 ml NS flush afterwards.
C. Medications given through a peripheral vein or IO should be followed by a 10 mL bolus of fluid.
D. Waveform End Tidal CO2, if available, should be routinely used in cardiac arrests.
E. An abrupt sustained increase in ETCO2 may indicate ROSC.
F. ETCO2 (<10) should prompt re-evaluation of endotracheal tube's correct placement, quality of compressions, or consideration that future treatment is futile.
G. "See-through CPR" monitor technology is still developing. It is recommended to continue compressions until scheduled pulse checks per ACLS.

ALL

I. **INCLUSION CRITERIA**
   A. Patient's age is 16 years and older.
   B. Patient is unresponsive.
   C. Patient has no pulse (pulse should be checked for a maximum of 10 seconds, when in doubt start CPR).
   D. AED FINDINGS
      - No shock advised.

MEDIC

   E. **EKG FINDINGS**
      1. Organized cardiac rhythm with QRS complexes indicating PEA, or
      2. Asystole on the cardiac monitor in two or more leads.

ALL

II. **Protocol**
   A. Continue CPR and care per SB204.

MEDIC

   B. Administer Epinephrine 1 mg (10 ml of 0.1 mg/mL) IV/IO push.
      1. Repeat every 3 to 5 minutes as long as cardiac arrest continues.
   C. Search for possible causes of Asystole/PEA as listed in SB204.
   D. Consider the following:
      1. In the setting of renal failure/ESRD, consider management of hyperkalemia early in resuscitation. See protocol M418.
      2. For preexisting metabolic acidosis or tricyclic antidepressant overdose, administer sodium bicarbonate 1 mEq/kg IV/IO push.
      3. For hypovolemic arrest, administer 1-liter normal saline bolus. Chilled saline may be used if available.
      4. For suspected pneumothorax, perform needle thoracostomy.
   E. After 30 minutes, consider termination of resuscitative efforts as detailed in the Determination of Death / Termination of ACLS protocol (A105).
   F. If transporting, notify receiving hospital.
   G. If return of spontaneous circulation is achieved, continue care per Protocol Post-Return of Spontaneous Circulation Care C307.
   H. If rhythm changes to another rhythm, go to the appropriate protocol

ALL

NOTES:
   A. High Quality CPR (SB204) is considered the mainstay of therapy for Cardiac Arrest victims.
   B. A main cause of PEA is hypoxia, and the effectiveness of ventilation should be evaluated constantly.

MEDIC

   C. Consider H's and T's (see SB204)
   D. Endotracheal (ET) administration of drugs is acceptable but not preferable. ET administration is double the normal dose with 10 ml NS flush afterwards.
   E. Medications given through a peripheral vein or IO should be followed by a 10 mL bolus of fluid.
   F. Waveform End Tidal CO2 if available should be routinely used in Cardiac Arrests.
   G. An abrupt sustained increase in ETCO2 may indicate ROSC.
   H. ETCO2 (<10) should prompt re-evaluation of endotracheal tube's correct placement, quality of compressions or consideration that future treatment is futile.
   I. "See-through CPR" monitor technology is still developing. It is recommended to continue compressions until scheduled pulse checks per ACLS.

ALL

I. Inclusion Criteria

A. Patient's age is 16 years and older.

B. Chest pain, shortness of breath or inability to give history due to alteration in level of consciousness, which is thought to be related to the slow heart rate.

C. Palpable pulse < 60

1. Heart rate typically < 50 for bradyarrhythmia.
2. Electrical Heart Rate and palpable pulse rate may differ in some arrhythmias, consider palpable pulse rate for effectiveness of circulation

D. Systolic blood pressure less than 80 mmHg, cardiogenic shock, or pulmonary edema.

E. Signs of inadequate perfusion such as acute heart failure, delayed capillary refill, diaphoresis, or altered mental status.

MEDIC

II. EKG Findings

A. Ventricular rate less than 60.

B. Evaluate for Heart Block.

ALL

III. Protocol

A. Maintain airway and administer oxygen to correct hypoxia <95%.

B. Check vital signs frequently.

EMT

C. If available, request ALS back-up for:

1. Systolic Blood Pressure <100mmHg.
2. Patient complains of chest pain, trouble breathing, or dizziness.
3. Patient has altered mental status.
4. Patient has suffered syncope.
5. Patient has a pacemaker or defibrillator in place.

MEDIC

D. Apply quick look paddles if not already monitored.

E. Place on cardiac monitor, obtain diagnostic EKG.

F. Initiate IV/IO access.

G. Administer atropine 1 mg IV/IO push.

1. If no response to initial measures, repeat atropine 1 mg IV/IO push every 3-5 minutes up to a total of 3 mg.

H. Repeat diagnostic EKG after any clinically significant rhythm change.

I. Consider external pacing if patient is unstable on initial assessment or if remains symptomatic (Hypotension, altered mental status, syncope, shock, etc) after attempting atropine.

1. Contraindications
   a. Patient's age is younger than 16 years.
   b. Cardiac arrest.
2. Procedure
   a. Connect pacing electrodes and cables.
   b. Do not place over existing implanted pacemaker or defibrillator
   c. Cardiac monitor/pacer/defib devices require the limb leads to be placed for demand mode pacing.
   d. Asynchronous (non-demand) pacing mode is generally not desired, pacer should normally be in demand-mode.
   e. Begin pacing at a rate of 60-80 with current output at 20 mA. Increase current output every 10 seconds until either cardiac (electrical and mechanical) capture occurs or maximal output is reached.
   f. Do not discontinue pacer if the patient complains of significant pain from the pacemaker when treatment is necessary for stability.
   g. Do NOT delay initial treatment of unstable patients for IV/IO access or drug administration.
   h. For sedation, consider administration of midazolam 2-5mg IV/IM/IN/IO if blood pressure allows.

Medication	Route	Dose	Frequency
midazolam	IN	2-5 mg	5-15 minutes
midazolam	IM	2-5 mg	10-15 minutes
midazolam	IV / IO	2-5 mg	5 minutes

i. If capture occurs, reassess peripheral pulses and vital signs.
j. If bradycardia and hypotension continue consider push dose epi per SB205 Hypotension/Shock.

ALL

Notes:

A. Consider bradycardia to be a *symptom* of an underlying problem and not a diagnosis.
B. If a transcutaneous pacemaker is available, its use may be preferable to the administration of atropine for the patient with chest pain and a Mobitz II second-degree heart block or third-degree heart block with wide QRS complexes.
C. Do not delay initiation of transcutaneous pacing while awaiting IV access or for atropine to take effect in the patient with serious signs or symptoms.
D. Transport patients with transcutaneous pacing to a hospital with cath lab capabilities (see Hospital Capabilities Survey).
E. Consider 3rd degree Heart Block as an MI until proven otherwise. Administer Aspirin 324mg by mouth (unless contraindicated) and transport patient to a hospital with cath lab capabilities (see Hospital Capabilities Survey).
F. It is important to treat the patient and not the number. Remember that athletes may have heart rates of 40-60.

MEDIC

G. Remove any nitroglycerin or other transdermal patches or pads before pacing or defibrillating.
H. Consider sedating fully conscious patients prior to pacing.
   1. Consider other treatment options for fully conscious patients prior to sedation solely for pacing treatment.
   2. Initially unconscious patients may require sedation after treatment due to improving mental status.

ALL

I. Inclusion Criteria

A. Patient's age is 16 years and older.
B. Patient complains of chest pain, or shortness of breath, dizziness, or syncope.
C. Palpable pulse with a rate greater than 150.
D. Systolic blood pressure less than 90 mm Hg, or
E. Signs of inadequate perfusion such as acute heart failure, delayed capillary refill, diaphoresis, or altered mental status.

MEDIC

II. EKG Findings

A. Ventricular Rate above 150.
B. Wide QRS (greater than 0.12 sec or 3 little blocks).
C. Absent P waves.

ALL

III. Protocol

A. Maintain airway and administer oxygen to correct hypoxia <95%.

EMT

B. If available, request ALS back-up.
C. If no ALS available, initiate rapid transport to closest appropriate facility and provide pre-notification.
D. Apply AED.
   1. If patient is conscious and has a palpable pulse, do not shock.
   2. If patient becomes unconscious or loses a palpable pulse, press "Analyze" and follow AED instructions. Provide care per Protocol C300 (Ventricular Tachycardia/Ventricular Fibrillation).

MEDIC

E. If rhythm is Torsades de Pointes, then give magnesium sulfate 2 g IV/IO diluted in at least 10mL normal saline over 10-15 minutes.
F. If the patient is to be cardioverted and does not have an altered level of consciousness, consider administer of Midazolam (Versed) until patient's speech slurs.

Medication	Route	Dose	Frequency
midazolam	IN	2-5 mg	until effect, max 10 mg
midazolam	IM	2-5 mg	until effect, max 10 mg
midazolam	IV / IO	2-5 mg	until effect, max 10 mg

G. If VT persists, cardiovert at 100 joules (or biphasic equivalent). Cardioversion should be synchronized unless it is impossible to synchronize a shock (i.e., the patient's rhythm is irregular).
H. If VT persists, repeat cardioversion at 200 joules (or biphasic equivalent).
I. If VT persists, repeat cardioversion at 300 joules (or biphasic equivalent).
J. If VT persists, repeat cardioversion at 360 joules (or biphasic equivalent).
K. If ventricular tachycardia recurs, repeat synchronized cardioversion at previously successful energy level. If cardioversion is not successful, repeat at next higher energy level and continue with the protocol.
L. Obtain a diagnostic EKG after successful cardioversion.

ALL	**I. Inclusion Criteria** A. Patient's age is 16 years and older. B. No associated symptoms such as chest pain, shortness of breath, depressed or altered level of consciousness. C. Patient is conscious. D. Pulse rate is greater than 150. E. Systolic blood pressure greater than 90 mmHg. F. Patient is without signs of inadequate perfusion (heart failure, delayed capillary refill, and diaphoresis).
MEDIC	**II. EKG Findings** A. Rate above 150. B. Wide QRS (greater than 0.12 sec or 3 little blocks). C. Absent P waves.
ALL	**III. Protocol** A. Maintain airway and administer oxygen to correct hypoxia <95%. B. Obtain vital signs frequently.
EMT	C. If available, request ALS back-up. D. If no ALS available, initiate rapid transport to closest appropriate facility and provide pre-arrival notification. E. Do not apply AED to a conscious patient or a patient with a palpable pulse. 1. If patient becomes unconscious or loses a palpable pulse, apply AED, press "Analyze" and follow AED instructions. Provide care per Protocol C300 (Ventricular Tachycardia/Ventricular Fibrillation).
MEDIC	F. Maintain cardiac monitoring at all times. G. Obtain diagnostic EKG of initial rhythm. H. Initiate IV/IO access. I. If rhythm is Torsades de Pointes then give magnesium sulfate 2 g IV/IO diluted in at least 10mL normal saline over 10-15 minutes. J. If the wide complex tachycardia persists, administer Amiodarone 150 mg IV/IO over 10 minutes. K. If the wide complex tachycardia persists, Amiodarone may be repeated after 3-5 minutes at 150 mg over 10 minutes. L. Only in cases of drug shortages, lidocaine may be substituted for amiodarone as follows: 1. Lidocaine 2% 0.5-1mg/kg 2. May repeat dose every 5-10 minutes with maximum total dose of 3mg/kg. M. Obtain a diagnostic EKG after any rhythm change.
ALL	N. If the patient becomes unstable, then proceed to the Wide Complex Tachycardia with Pulse (Unstable) Protocol (C303). **Notes:** A. The trial of adenosine was removed in 2023. B. Lidocaine is not as effective as amiodarone in sustained wide complex tachycardia.[2]

[2] Armengol, RE, et al. (1989). Lack of effectiveness of lidocaine for sustained wide QRS complex tachycardia. AnnEmergMed 18 (3): 254-257.

ALL

I. INCLUSION CRITERIA

A. Patient's age is 16 years and older.
B. No history of trauma or fever.
C. Patient is alert.
D. Pulse rate is greater than 150.
E. Systolic blood pressure is above 90 mm Hg.
F. Patient is without signs of inadequate perfusion (for example: acute heart failure, delayed capillary refill, diaphoresis or altered mental status).
   1. For patients with signs of inadequate perfusion go to C306 Narrow Complex Tachycardia w/Pulse (Unstable).

MEDIC

II. EKG FINDINGS

A. Rapid (greater than 150), regular atrial rate.
   1. If irregular consult medical control prior to any antiarrhythmic treatment
B. QRS duration of less than 0.12 seconds.
C. P waves are usually absent.

ALL

III. PROTOCOL

A. Assure airway patency and administer oxygen to correct hypoxia <95%.
B. Place patient on cardiac monitor.
C. Have patient perform Valsalva and evaluate for any changes.
   1. AHA guidelines suggest augmenting the Valsalva maneuver with passive leg raise is more effective.

EMT

D. If available, request ALS back-up or arrange to intercept an ALS unit as appropriate.
E. If no ALS available, initiate rapid transport to closest appropriate facility and provide pre-notification.

MEDIC

F. Establish vascular access. Proximal IV access is preferred.
G. Perform a diagnostic EKG. Repeat a diagnostic EKG after any rhythm change.
H. Administer adenosine. If tachycardia persists and is still thought to be narrow complex tachycardia, continue to administer adenosine to a maximum of three doses.
   1. **If under 90kg (200lbs)**, administer adenosine 6mg rapid IV push followed by 10-20 ml of normal saline. One additional dose at 12mg may be attempted if the first dose is unsuccessful.
   2. **If over 90kg (200lbs)**, administer adenosine 12 mg rapid IV push followed by 10-20 ml of normal saline. This may be repeated one time if the first dose is unsuccessful.
I. Notify the receiving hospital.
J. Monitor patient frequently. If patient deteriorates, move to C306 Narrow Complex Tachycardia w/Pulse (Unstable)

NOTES:

A. Adenosine has a short half-life of about ten seconds. For the drug to be effective, it must be able to reach the heart prior to being metabolized in the bloodstream. To achieve a high concentration of drug at the heart, a large IV, preferably in the antecubital fossa, should be established. Then when the adenosine is given, it should be followed by a bolus of saline that will swiftly empty the intravenous catheter of the drug and push it on its way to the cardiac circulation.
B. If there is a significant AV nodal block after a dose of adenosine and if an underlying atrial rhythm of atrial fibrillation or atrial flutter is observed, then an additional dose of adenosine is NOT indicated.
C. If the initial rhythm is tachycardic and irregular, then an atrial fibrillation rhythm is likely. Do not treat with adenosine.
D. Adenosine side effects include flushing, chest pain, and dizziness, impending doom. These last only a short time because of adenosine's short half-life.

ALL

I. Inclusion Criteria

A. Patient's age is 16 years and older.
B. No history of trauma or fever.
C. Pulse rate greater than 150.
D. Patient has signs of inadequate perfusion (for example: acute heart failure, delayed capillary refill, diaphoresis or altered mental status).

MEDIC

II. EKG Findings

A. Rapid (greater than 150), regular atrial rate.
B. Normal QRS duration of less than 0.12 seconds.
C. P waves are usually absent.

ALL

III. Protocol

A. Assure airway patency and administer oxygen to correct hypoxia <95%.
B. Place patient on cardiac monitor.

EMT

C. If available, request ALS back-up or arrange to intercept an ALS unit as appropriate.
D. If no ALS available, initiate rapid transport to closest appropriate facility and provide pre-notification.

MEDIC

E. Assess stability and if patient requires sedation prior to synchronized cardioversion consider following C305 Narrow Complex Tachycardia w/Pulse (Stable) Protocol
F. Do not delay Synchronized cardioversion for an unstable patient. Start with initial energy levels:
   a. Narrow regular: 50-100 J;
   b. Narrow irregular: 120-200 J biphasic or 200 J monophasic
G. If initial energy level fails, energy should be increased in a stepwise fashion from starting point for each subsequent shock: 100 J, 200 J, 300 J, and 360 J.
H. If the patient is to be cardioverted and does not have an altered level of consciousness, consider administer of Midazolam (Versed) until patient's speech slurs.

Medication	Route	Dose	Frequency
midazolam	IN	2-5 mg	until effect, max 10 mg
midazolam	IM	2-5 mg	until effect, max 10 mg
midazolam	IV / IO	2-5 mg	until effect, max 10 mg

I. Perform a diagnostic EKG when possible
J. If still no change, contact medical control for treatment options.
K. Notify the receiving hospital.
L. Establish proximal IV access when feasible
M. If patient converts out of Narrow Complex Tachycardia, perform diagnostic EKG.

Notes:

A. Do not delay cardioversion if symptoms are severe.
B. Severe symptoms related to tachycardia are uncommon if heart rate less than 150.

ALL

I. INCLUSION CRITERIA

A. Recent cardiac arrest.
B. Patient has a palpable pulse.
C. Patient's mental status may range from awake/alert to unresponsive.
D. Patient of any age.

MEDIC

II. EKG FINDINGS

A. May vary from bradycardia to ST-segment elevation or depression.

ALL

III. PROTOCOL

A. Continue to follow protocol covering presumptive underlying cause of arrest.
B. In the first 10 minutes post ROSC, emerging data suggests a "stay and play" model to optimize care and interventions on the patient prior to transport. This may include preparing pressors, optimizing access and the airway, obtaining the diagnostic, and planning transport/moving the patient.
C. Maintain patent airway as needed and administer oxygen to correct hypoxia <95%.
   1. Until reliable measurement of SpO2 is established, it is reasonable to use the highest available oxygen concentration
   2. Hyperoxia can be damaging on a cellular level. Avoid hyperoxia with oxygen titration
   3. If patient shows signs of discomfort or pain, may consider the T715: Sedation after Intubation protocol.
D. Provide ventilatory support as needed. Avoid hyperventilation.
   1. Adults – Respiratory rate of 10/minute
   2. Pediatrics – Respiratory rate for age/weight (utilize chart or see Appendix I)
   3. Ventilation may be titrated with capnography once effective perfusion & ventilation have been established and maintained
   4. Capnography is the best tool to guide ventilations. Maintain $EtCO_2$ within target range (typically 35–45 mmHg in adults) once effective circulation is established. Avoid hyperventilation. Use trends to guide care: stable values reflect adequate support; a gradual rise may indicate improving perfusion; a sudden fall may signal deterioration or impending arrest. In shock states, low $EtCO_2$ may reflect poor perfusion rather than inadequate ventilation—always interpret in context.

Age	Pulse Beats/min	Respirations Breaths/min	Avg. Systolic BP
Infant(1-12mo)	90-180	30-53	>70
Toddler (1-2 yrs)	80-140	22-37	>70
Preschool (3-5 yrs)	60-120	20-28	>80
School age (6-12 yrs)	58-118	18-25	>85
Adolescent (12+ years)	50-100	12-20	>90

E. Keep defibrillator pads on patient, connected, and tracing cardiac electrical activity.
F. Monitor vital signs frequently. Rearrest after initial return of spontaneous circulation is common.
G. Notify receiving hospital and transport the patient.

EMT

H. If available, request ALS back-up.
I. If no ALS available, initiate rapid transport to closest appropriate facility.

ALL

J. Transport destination determination
   1. Refer to the AOM ED capabilities survey for appropriate hospitals.
   2. Follow Trauma Triage Guidelines if applicable.
   3. If cause of arrest is presumed cardiac, the patient should go to a hospital with 24-hour cardiac catheter lab availability.
   4. In the setting of prolonged transport, if the patient is stable and has no STEMI, it is reasonable to consider transport to cath lab capable center rather than critical access hospital

5. If STEMI is identified in the setting of a prolonged transport time, consider transport by critical care transport team.
6. If patient is unresponsive and not following commands, transport to a hospital capable of therapeutic hypothermia / targeted temperature management.

MEDIC

K. Initiate IV/IO access if not complete. Second access point is beneficial if possible.

L. Patients age 16 years old and older: aggressively treat hypotension (with MAP goal of > 65 mmHg) with fluid bolus and push dose epinephrine per SB205 Hypotension.
   1. Patients almost always have severe cardiogenic shock after cardiac arrest. This can manifest as pulmonary edema or vasodilation which makes vasopressor support the most effective management strategy. Crews should plan and prepare medications/therapeutics to manage impending hypotension from severe cardiogenic shock immediately after obtaining ROSC.
   2. Prepare push dose epinephrine as described in SB205 Hypotension. Administer 10-20 mcg every 2 minutes to maintain MAP > 65 mmHg.

M. Maintain cardiac monitoring and continuous capnography.
   1. Treat arrhythmias per appropriate protocol

N. A diagnostic ECG must be obtained as soon as feasible after ROSC.
   1. If a STEMI is identified, the patient should go to a hospital with 24-hour cardiac catheter lab availability.
   2. Given frequent changes over the initial post ROSC period, it is helpful to obtain an initial ASAP diagnostic EKG and one 10 minutes later.

ALL

NOTES:

A. Over-ventilation reduces cerebral perfusion and may worsen neurologic outcomes after cardiac arrest. Maintaining a normal ventilation rate may be helpful. Monitoring capnography can assist in the evaluation of ventilation.

B. Acute Coronary Syndromes (including ST-elevation myocardial infarction) are common causes of sudden cardiac arrest. Coronary thrombosis is one of the “T’s” to consider when managing a patient in cardiac arrest. Urgent reperfusion in a cardiac catheter lab with percutaneous coronary intervention (PCI) is safe and effective in survivors of cardiac arrest. Thrombolytics are relatively contra-indicated after prolonged CPR, and urgent cardiac catheterization is better for those in cardiogenic shock.

C. Prehospital administration of a 2-liter bolus of chilled saline after ROSC is no longer recommended.

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ALL

I. **Inclusion Criteria**
   A. Patient's age is 25 years or older.
   B. Patient complains of discomfort suggestive of cardiac origin (heaviness, pressure, tightness, or dull sensations with or without radiation to other body areas) and may be accompanied by other associated signs and symptoms such as: dyspnea, diaphoresis, nausea, vomiting, or general weakness.
   C. If any doubt about pain/discomfort or related symptoms, treat as cardiac.
   D. Patient may have a history of cardiac disease.
   E. Patient may have risk factors associated with cardiac disease.
   F. Atypical signs and symptoms that may be seen in women, the elderly, chronic hypertensives, and diabetics.

II. **Treatment**
   A. Obtain a diagnostic EKG as soon as possible.
      1. Goal is within 10 minutes of EMS arrival.
      2. If no paramedic is available, transmit to receiving hospital.
      3. If STEMI is present:
         a) Immediately initiate transportation to a facility that offers percutaneous coronary interventions. Refer to the ED Capability survey for guidance of facility capabilities.
         b) Goal scene time is <15 minutes.
         c) Transmit EKG to receiving hospital if possible.
         d) Pre-notify the receiving hospital, use the word "STEMI" and request "cath lab activation".
         e) Provide all treatment en route to the hospital.
         f) Refer to treatment pearls in Notes.
      4. If STEMI is not present:
         a) Initiate transport to an appropriate facility as soon as possible in concert with treatment.
         b) Transmit EKG to receiving hospital if possible.
   B. Administer/assist patient with chewing four chewable baby aspirin (total dose 324mg) if the patient is not allergic. Aspirin should be withheld if the patient has had gastrointestinal bleeding, active ulcer disease, hemorrhagic stroke, or major trauma within the past two weeks.
   C. Administer oxygen to correct hypoxia <94%.

EMT

   D. Consider immediate ALS back-up.

MEDIC

   E. Place the patient on a cardiac monitor. If the rhythm is not of sinus origin (between 60-140) go to the appropriate arrhythmia protocol. Once arrhythmia is resolved then proceed.
   F. Establish IV access.

EMT

   G. Interview patient if they have prescribed Nitroglycerin and if it is present. Verify medication prescription, date, and proper condition.
   H. If there are no contraindications (see Notes), and the patient is alert and responsive, assist the patient in taking 1 dose of nitroglycerin (1 tablet or spray; 0.4mg).
   I. Reassess the blood pressure and chest discomfort in 5 minutes. Evaluate the patient for feeling faint, lightheaded, dizzy, and/or hypotension. If the patient is symptomatic after administration of nitroglycerin, place the patient flat or in the shock position, if tolerated by the patient.
   J. If the patient experiences no relief and the BP remains greater than 100 mm Hg systolic, contact medical control for direction regarding assisting with additional doses of nitroglycerin.

MEDIC

   K. If there are no contraindications to nitroglycerin (see III), and the patient is alert and responsive, administer either:
      1. Nitroglycerin 0.4 mg sublingual every 3-5 minutes to a max of 3 doses only if SBP remains greater than 100.

2. Topical nitroglycerin (Nitropaste) may be used in lieu of sublingual nitroglycerin. Apply 1 inch of nitropaste to the anterior chest wall one time.

L. If an Inferior MI is suspected, do **NOT** administer nitroglycerin as it can cause life-threatening hypotension.

M. Reassess the blood pressure and chest discomfort in 5 minutes. Evaluate the patient for feeling faint, lightheaded, dizzy, and/or hypotension. If the patient is symptomatic after administration of nitroglycerin, place the patient flat or in the shock position, if tolerated by the patient. Remove nitropaste.

N. If the patient is experiencing symptomatic hypotension and their lungs are clear, administer 500-ml normal saline fluid bolus. If lungs are not clear, run IV at keep open rate.

O. For persistent symptomatic hypotension or pulmonary edema, see Cardiogenic Shock Protocol M401.

P. For chest pain not relieved by nitrates, administer either:

1. Fentanyl 25-100 micrograms IV/IO as long as systolic BP greater than 100 and pain persists. May repeat every 5 min to a total of 200 micrograms.
2. Morphine sulfate 1-5 mg IV/IO over 2 minutes as long as systolic BP greater than 100 and pain persists. May repeat every 5 minutes to a total of 10 mg.

Q. Nausea and vomiting may be managed with ondansetron (Zofran) 4mg PO/IM/IV/IO. See Nausea & Vomiting Protocol M405.

ALL

III. **Nitroglycerin Contraindications:**

A. Systolic BP < 100mmHg
B. Patient has taken sildenafil (Viagra) in the last 24 hours.
C. Patient has taken vardenafil (Levitra, Staxyn) in the last 48 hours.
D. Patient has taken tadalafil (Cialis) in the last 72 hours.
E. Patient is on medication for Pulmonary Hypertension (ex: Flolan, Revatio, Adcirca).

MEDIC

Notes:

A. Nitroglycerin administration may change a patient's diagnostic EKG. Acquisition prior to nitroglycerin administration may help in patient's end outcome.

B. There is very little evidence for narcotic pain medication in STEMI and actually a slight recommendation against its use in non-STEMI. The protocol however includes the use of pain medication for patient comfort and anxiolysis.

C. For patients meeting STEMI criteria, shaving the patient's chest (if needed) and placing defibrillation pads should be done as soon as possible in order to quickly identify and correct arrhythmias that may occur including lethal arrhythmias and profound bradycardia/heart blocks.

D. STEMI Treatment Pearls:

1. Inferior Wall:
   1. (Leads II, III, aVF; supplied by the Right Coronary Artery)
   2. Aggressive fluid administration may be required (i.e., Fluid boluses) due to cardiogenic shock, reassess lungs frequently.
   3. Attempt to capture Lead V4R to determine right ventricular involvement.
   4. Patient may be sensitive to Fentanyl/Morphine administration, monitor BP frequently.
   5. If 2nd degree type II or 3rd degree block, prepare to pace immediately see C302.
   6. Push dose epi use is discouraged.
2. Anterior Wall:
   1. (Leads V1-V4; supplied by Left Anterior Descending Artery)
   2. ST elevation in more than 2 leads is at higher risk for sudden cardiac death.
   3. High risk for developing CHF or cardiogenic shock.
   4. May also develop bundle branch blocks, PVCs or 3° blocks.
   5. Push dose epi per SB205 Hypotension/Shock should be the first treatment for significant hypotension rather than fluid boluses.
3. Lateral Wall:
   1. (Leads I, aVL, V5-V6; supplied by Circumflex)

2. May have some LV dysfunction but not as severe as Anterior Wall AMI.
3. May also develop AV Nodal Block

ALL

I. Inclusion Criteria

A. Patient's age is 16 years or older.
B. The patient has chest pain suggestive of cardiac origin, dyspnea, no evidence of trauma, AND
C. Systolic blood pressure less than 80mm Hg supine, OR
D. Systolic blood pressure 80-100mm Hg and one of the following:
   1. Pulse greater than 120,
   2. Skin changes suggestive of shock, OR
   3. Altered mental status, agitation, or restlessness.

MEDIC

II. Protocol

A. Initiate large bore IV and administer 500ml normal saline fluid challenge if lungs are clear. If lungs are not clear, run IV at keep open rate. May repeat if lungs remain clear.
B. Consider Push dose epi per SB205 Hypotension. Multiple doses of fluid are preferred if the patient has an inferior MI.

ALL

I. Inclusion Criteria

A. Patient's age is 16 years or older.

B. The patient is unable to speak because of an airway obstruction or has a history suggestive of foreign body aspiration, i.e., sudden shortness of breath while eating.

C. The patient exhibits stridor lung sounds.

MEDIC

D. EKG Findings indicate normal sinus rhythm, sinus tachycardia or atrial fibrillation with controlled ventricular response. If other rhythm is present, then refer to the appropriate arrhythmia protocol.

ALL

II. Protocol

A. If the patient is alert but obviously choking from a presumed foreign body:

1. Have the patient cough forcefully, if possible.
2. Provide supplemental oxygen.
3. Perform the Heimlich maneuver until successful.
   i. If Heimlich successful, encourage transport for evaluation.

B. If the patient is found unconscious or becomes unconscious:

1. Begin CPR and attempt to bag valve mask ventilate while preparations are made to intubate. Visually inspect upper airway prior to delivering all breaths during CPR in case foreign body has been successfully dislodged from airway.
2. Consider early transport.

MEDIC

3. Using the laryngoscope, visualize the posterior pharynx and vocal cords for evidence of a foreign body. Utilize video laryngoscopy, if available.
4. Remove any foreign bodies very carefully with suction device or Magill forceps. If available, use large bore suction tubing and tip.
5. If no foreign body is seen or patient does not begin breathing spontaneously, intubate the trachea. If you suspect a foreign body is below the vocal cords but above the carina, it may be necessary to push the foreign body down the right mainstem bronchus with the ET tube in order to aerate at least the left lung.
6. If unable to pass an orotracheal tube due to obstruction, perform a surgical airway as described in the Airway Protocol (T705).
7. If wheezing and no stridor, consider an albuterol nebulizer treatment.

ALL

I. Inclusion Criteria

A. Patient's age is 16 years or older.

B. The patient has a history of asthma, emphysema or COPD AND complains of a worsening shortness of breath.

C. Lung exam has wheezing, rales/rhonchi, or poor air exchange.

MEDIC

D. EKG Findings indicate normal sinus rhythm, sinus tachycardia or atrial fibrillation with controlled ventricular response. If other rhythm is present, then proceed to the appropriate arrhythmia protocol.

EMT

A. Protocol

1. If available, request ALS back-up for:
    1. Pediatric patient, who is wheezing, grunting, has retractions, stridor, or any other signs of respiratory distress.
    2. Patient who doesn't have a prescribed inhaler and the transport time is greater than 30 minutes.
2. Confirm that the patient has a prescribed inhaler, such as Proventil/Ventolin/ProAir (generic Albuterol, Alupent/Metaprel (generic Metaproteranol). An over-the-counter medication such as Bronkaid Mist, Primatene Mist, Bronitin Mist, Asthma-Haler, and Epinephrine cannot be used.
3. If the patient only has a home nebulizer, you may assist with administering prescribed doses Albuterol (Proventil) aerosol 2.5mg in 2.5ml normal saline via handheld nebulizer, Duoneb (Albuterol plus Ipratropium Bromide that is premixed) or Xopenex (levalbuterol).
4. Check to see if the patient has already taken any doses prior to arrival. Note time and amount.
5. Do not use the inhaler if any of the following are present:
    1. Inability of patient to use device.
    2. Inhaler is not prescribed for the patient.
    3. Medication is expired.
    4. If the patient has met the maximum prescribed dose of their inhaler according to prescription label, contact medical control.
6. To assist with administration of a metered-dose inhaler:
    1. Make sure inhaler is at room temperature and shake several times to mix the medication.
    2. Take oxygen mask off the patient.
    3. Tell the patient to exhale deeply and put the mouthpiece in front of the mouth. If the patient has a spacer device, it should be used.
    4. Have patient depress the metered-dose inhaler as they begin to inhale deeply.
    5. Instruct the patient to hold their breath for as long as comfortable, so the medication can be absorbed.
    6. Put oxygen mask back on the patient.
    7. Repeat a dose after one minute. If further medication is necessary beyond the patient's prescribed number of doses, contact medical control.
    8. Recheck vital signs (including pulse oximetry if available) and perform focused assessment.

MEDIC

A. Administer Albuterol (Proventil) aerosol 2.5mg/2.5ml via nebulizer. Consider adding 1 vial Ipratropium Bromide (0.5mg of 0.017%) to the Albuterol aerosol. May substitute Duoneb (Albuterol plus Ipratropium Bromide that is premixed) for all Albuterol treatments.

B. If the patient is in impending respiratory failure, obtain IV access.

C. If multiple Albuterol treatments are anticipated, administer Prednisone 60 mg PO or Solu-Medrol (Methylprednisolone) 60 mg IV or PO.

D. If signs of impending respiratory failure (see notes):

A. Consider initiating non-invasive positive pressure ventilation (BIPAP or CPAP). Start at 5 cmH_2O and titrate higher as tolerated by patient.

B. **ASTHMA ONLY**: Consider administering epinephrine 0.3 mg IM (1mg/ml) followed by magnesium sulfate 2 g IV/IO diluted in 100 ml normal saline over 20 minutes.

E. Consider repetitive Albuterol treatments if needed, up to a total of three treatments.

ALL

F. Consider PAP, reference protocol T709.

Notes:

A. When attempting to differentiate between COPD and congestive heart failure, the medication history will usually give more valuable information than will the physical exam.

B. Ipratropium Bromide is an anticholinergic medication and may cause tachycardia. Do not use on patients with narrow angle glaucoma or patients with bladder neck obstruction (history of urinary retention).

C. There is growing evidence that steroids (Prednisone or Solu-Medrol (Methylprednisolone) for adults may be beneficial.

D. Solu-Medrol (Methyprednisolone) can be given orally to adult patients, though the IV route is preferred.

E. Signs of impending respiratory failure
   1. Depressed mental status or excessive sleepiness
   2. Agitation, panic, or sensation of drowning
   3. Inability to maintain respiratory effort.
   4. Cyanosis or worsening hypoxia

ALL

I. **Inclusion Criteria**
   A. Patient's age is 16 years or older.
   B. History of heart disease.
   C. Respiratory rate greater than 20.
   D. Systolic pressure greater than 100mm Hg.
   E. Rales on lung exam.
   F. Evidence of respiratory insufficiency such as air hunger, accessory muscle use or altered mental status.
   G. MAY have jugular venous distention or peripheral edema.

MEDIC

   H. EKG Findings indicate normal sinus rhythm, sinus tachycardia or atrial fibrillation with controlled ventricular response. If other rhythm is present, then proceed to the appropriate arrhythmia protocol.

ALL

II. **Exclusion Criteria**
   A. Clinical impression consistent with an infection (e.g., fever)
   B. Clinical impression consistent with asthma/COPD – See protocol M403.

III. **Protocol**
   A. Consider advanced airway management if required.
   B. Consider PAP, reference protocol T709.
   C. Nitroglycerin Contraindications:
      1. Systolic BP < 100mmHg
      2. Patient has taken sildenafil (Viagra) or avanafil (Stendra) in the last 24 hours.
      3. Patient has taken vardenafil (Levitra, Staxyn) in the last 48 hours.
      4. Patient has taken tadalafil (Cialis) in the last 72 hours.
      5. Patient is on medication for Pulmonary Hypertension. (ex: sildenafil (Revatio), macitentan/tadalafil (Opsynvi), tadalafil (Adcirca), vardenafil (Levitra, Staxyn), riociguat (Adempas), vericiguat (Verquvo)).

MEDIC

   D. Establish IV access.
   E. Obtain diagnostic EKG.
   F. Consider nitroglycerin.
      1. For patients with mild symptoms (eg. HR < 100, SBP 100-150, RR <25, no accessory muscle use, retractions, fatigue or O2 sats >94%) administer LOW DOSE nitroglycerin 0.4 mg sublingual every 3-5 minutes to a max of 3 doses.
      2. For patients with moderate to severe symptoms (eg. HR >100, SBP >150mmHg, RR >25, accessory muscle use, retractions, fatigue, O2 sats <94%) consider HIGH DOSE nitroglycerin 0.8 mg SL (2 tablets or 2 sprays of 0.4mg nitroglycerin) q 3-5 minutes for max 3 doses. Don't remove CPAP to provide additional doses of nitroglycerine.
      3. Topical nitroglycerin (nitropaste) may be used in lieu of sublingual nitroglycerin. Apply the nitropaste to the anterior chest wall one time. Dosing is 1" for SBP 100-150, 1.5" for 150-200, and 2" for SBP>200.
      4. Blood pressure must be reassessed after each dose of nitroglycerin is given. Repeat doses should not be given if SBP is less than 100mmHg. The goal is for a 20% reduction in patient's blood pressure.
      5. In addition to blood pressure, carefully monitor level of consciousness and respiratory status. Do not administer NTG tablets if decreased respiratory rate, level of consciousness or other concerns for aspiration exist based on patient's clinical status.

ALL

Notes:

A. When attempting to differentiate between COPD and congestive heart failure, the medication history will usually give more valuable information than will the physical exam.
B. Transport to the hospital should be initiated immediately if the patient's airway is compromised. Otherwise, transport should be initiated as soon as possible taking into account the time required for pharmacologic therapy.

MEDIC

I. Inclusion Criteria
- A. Patient's age is 12 months or older.
- B. Patient has nausea or vomiting.

II. Exclusion Criteria
- A. Known allergies to 5-HT(3) receptor antagonists such as Kytril (granisetron) and Aloxi (palonosetron).
- B. Known allergy to promethazine (Phenergan).

III. Protocol
- A. Administer ondansetron (Zofran):
  1. Dosing:
     - a. Adult: 4 - 8mg IV/IO/IM or PO (orally disintegrating tablet) if IV access not available; May repeat 4 mg dose IV/IO in 5 minutes if symptoms persist (do not repeat IM/PO doses).
     - b. Pediatric: 0.15 mg/kg (max 4 mg) IV/IO/IM or 4 mg PO for patients 15 kg and above; do not repeat.
       - i. IV weight-based solution may be given PO as an ODT alternative.
  2. Pharmacokinetics
     - a. Onset of IM is approximately 30 minutes with half-life similar to IV dose.
     - b. Onset of PO dose is more rapid than IM.
  3. Administration: IV/IO slow IV push (over at least 30 seconds, preferably over 2-5 minutes).
- B. Administer Promethazine (Phenergan) as an alternative to ondansetron (Zofran)
  1. Dosing:
     - a. Adult: 12.5mg – 25mg Deep IM.
  2. Pediatric: not for use in pediatrics

Notes:
- A. The frequency of side effects is extremely low, but may include:
  1. Headache and/or dizziness, fever, urinary retention, rash, agitation, mild sedation and extra pyramidal (dystonic) reaction; may cause bronchospasm and arrhythmias, but incidence is uncommon.
  2. Ondansetron does not prevent motion sickness.
- B. The side effect profile of ondansetron is extremely low favoring the use of this medication.
- C. Ondansetron can increase the QT interval and should be used with caution in patients who are on other medications that can increase the QT interval, or have a prolonged QTc.
- D. In an adrenal insufficiency patient, nausea and vomiting can be signs of adrenal crisis. See M417.
- E. Promethazine may increase, prolong, or intensify the sedative action of CNS depressants, such as alcohol, sedative/hypnotics (including barbiturates), general anesthetics, narcotics, and narcotic analgesics.

ALL

I. Inclusion Criteria

A. Patient's age is 16 years or older.

B. Patients identified or suspected of diabetic problems - hyper/hypoglycemia.

II. Protocol

A. Assess Blood Glucose

1. If unable to assess blood glucose use history and other assessment means to proceed with treatment. Treatment can be life saving for a hypoglycemic patient but will not necessarily cause a hyperglycemic patient excessive harm.

B. **Hypoglycemia**

1. Glucose Level is less than 60 mg/dL or glucometer reads "LOW."
2. For hypoglycemia defined above, treat in one of the following manners until an improvement in mental status:
   a. If patient is able to swallow and protect airway administer oral glucose 15g or appropriate rapidly absorbed carbohydrate (high sugar content) fluid or food (such as orange juice). Dispense in small amounts; keep fingers out of mouth; EMS provider can lightly massage the area between the cheek and gum to enhance swallowing.

MEDIC

3. If patient is unable to protect airway, administer the following until an improvement in mental status:
   a. 6.25-25g (62.5-250mL) Dextrose 10% IV/IO
   b. Only if Dextrose 10% is not available one of the following methods may be used. Dextrose 10% is the preferred medication.
      1. Mix Dextrose 10% by diluting Dextrose 50% with normal saline to make Dextrose 10%. 1-part D50 and 4 parts normal saline. Ex: 50 mL D50 and 200 mL normal saline makes 250mL D10.
      2. Administer 6.25-25g (12.5-50mL) Dextrose 50% IV/IO.
      3. Administer 6.25-25g (25-100mL) Dextrose 25% IV/IO.
   c. Doses may be repeated if repeat blood glucose assessment remains below levels noted above.
   d. Dextrose must be given through a patent IV/IO. If any suspicion of extravasation is present notify receiving Emergency Department.
   e. It is acceptable to dilute Dextrose with normal saline due to the high viscosity based on IV size and vein conditions.
4. If unable to establish IV/IO access, administer 1mg Glucagon (Glucagen) IM.

ALL

5. Glucagon (given prior to EMS or by EMS providers) should improve the patient's level of consciousness within about 10 minutes of administration. However, Glucagon must be followed with some Dextrose either IV/IO, if the patient does not awaken, or orally as noted above.
6. Treatment with Dextrose via IO device should be a last resort or coincide with a patient that requires an IO for other reasons. All patients with an IO should be seen at an Emergency Department.
7. See "Non-Transport of Diabetics" section below for "Treat and Release" Criteria.

C. **Hyperglycemia**

1. Glucose Level is greater than 400 mg/dL or glucometer reads "HIGH."

MEDIC

2. If no evidence of pulmonary edema, administer a fluid bolus of 500-1000mL IV/IO during transport.
3. Place patient on cardiac monitor for possibility of dysrhythmia.

ALL

Notes:

A. D10 is made by mixing D50 1:4 with normal saline.

B. D25 is made by mixing D50 1:1 with normal saline.

C. It is very important that you verify that you have a working IV/IO. Dextrose which infiltrates into the surrounding tissues can be damaging to the tissues and blood vessels.

D. Blood glucose level can be measured in mmol/l as well as mg/dl.
Conversion: mmol/l x 18 = mg/dl or mg/dl ÷ 18 = mmol/l

E. In an adrenal insufficiency patient, hypoglycemia can be a sign of adrenal crisis. See M417.
F. Hyperglycemic patients with a BGL > 400 mg/dL often are profoundly hypovolemic. A fluid bolus will start replenishing the volume, encourage diuresis, and facilitate the glucosuria that is already occurring.
G. Hyperglycemia can be secondary to underlying processes such as Sepsis/infection, Myocardial Infarction, Stroke, and trauma, among others. Refer to the respective protocols if you suspect any underlying process.

Non-Transport of Hypoglycemic Patients – Treat and Release Criteria

1. Patient must be able to refuse transport as per the SB211 Refusal of Treatment and/or Transport.
2. Following treatment of a hypoglycemic state, patient is conscious, alert to time, date and place, and requests that they not be transported to the hospital.
3. Certain patients (see below) should be informed that their hypoglycemic state may not be an isolated issue and it is recommended that they be transported.
    a. Patients with other associated findings of serious illnesses or circumstances that may have contributed to the hypoglycemic episode, including excessive alcohol consumption, shortness of breath, chest pain, headaches, fever, etc.
    b. Patients on oral hypoglycemic medication such or long-acting insulin (hypoglycemic episode may last hours or days). Examples:
        1) Oral hypoglycemia medication: glipizide, glyburide, or chlorpropamide.
        2) Intermediate Insulin Types: NPH (Humulin N, Novolin N).
        3) Long-acting Insulin Types: Insulin detemir (Levemir) and insulin glargine (Lantus).
    c. Patients who when treated with Dextrose take greater than 10 minutes to return to a normal level of consciousness (treatment with other concentrations of dextrose may have different times until resolution of symptoms).
    d. Patient's history does not reveal circumstances that may have contributed to the hypoglycemic episode such as recent illness, lack of oral intake, or insulin reaction.
4. Repeat rapid glucose test is greater than or equal to 100 mg/dL.
5. The patient has a repeat systolic blood pressure of at least 100 mm Hg, pulse rate is greater than or equal to 60.

Protocol for Treat and Release

6. If the criteria above are met, then the patient is a candidate for Treat and Release.
7. The patient must be released to the care of a responsible individual who will remain with the patient as an observer for a reasonable time and can request assistance (i.e., Call 911) should the symptoms recur.
8. The patient should be given instructions for follow-up care prior to being released. They should be able to repeat back the instructions.
    a. Instructions for follow-up care should include the following or similar:
    b. Take action to prevent a recurrent episode such as:
        1) Remain in the care of a responsible individual.
        2) Consume a meal immediately.
        3) Monitor their blood glucose.
        4) Advise their personal physician of this episode.
    c. Watch for signs and symptoms of another episode. Those signs and symptoms include:

Anxiousness	Impaired vision
Dizziness	Personality change
Excessive Sweating	Pounding heartbeat
Extreme hunger	Trembling
Faintness	Unable to awaken
Headache	Weakness & fatigue
Irritability	

    d. If another episode occurs, request medical assistance (i.e., Call 911) immediately.

ALL

I. Inclusion Criteria

A. Patient's age is 16 years or older.
B. A medically stable patient who is manifesting unusual behavior including violence, aggression, altered affect, or psychosis. Note, patients exhibiting life-threatening agitation are not considered medically stable. See Lift-Threatening Agitation section below for further detail.
C. Patient demonstrates behavior including violence, delirium, altered effect, psychosis.
D. If obtainable, serum blood sugar greater than or equal to 70 mg/dl (if assessment cannot be obtained prior to physical restraint, then measurement should occur after patient restraint whenever safe or feasible to do so).
E. If obtainable, systolic blood pressure greater than or equal to 90 mm Hg and less than180 mm Hg (if assessment cannot be obtained prior to physical restraint, then measurement should occur after patient restraint whenever safe or feasible to do so).
F. If obtainable, heart rate greater than or equal to 50 bpm (if assessment cannot be obtained prior to physical restraint, then measurement should occur after patient restraint whenever safe or feasible to do so).

II. Exclusion Criteria and Differential Diagnosis

A. Anemia
B. Cerebrovascular accident
C. Drug / Alcohol intoxication
D. Dysrhythmias
E. Electrolyte imbalance
F. Head Trauma
G. Hypertension
H. Hypoglycemia
I. Hypoxia
J. Infection (especially meningitis / encephalitis)
K. Metabolic disorders
L. Myocardial ischemia / infarction
M. Pulmonary Embolism
N. Seizure
O. Shock
P. Life Threatening Agitation

III. Protocol

A. If EMS personnel have advanced knowledge of a violent or potentially dangerous patient or circumstance, consideration should be given to staging in a strategically convenient but safe area prior to police arrival. If staging is indicated and implemented, dispatch should be notified that EMS is staging, the location of the staging area, and to have police advise EMS when scene is safe for EMS to respond.
B. If EMS intervention is indicated for the violent or combative patient, patients should be gently and cautiously persuaded to follow EMS personnel instructions. If EMS has cause to believe the patient's ability to exercise an informed refusal is impaired by an existing medical condition, EMS shall, if necessary, cause the patient to be restrained for the purpose of providing the EMS intervention indicated. Such restraint shall, whenever possible, be performed with the assistance of police personnel (see M408 Restraint Protocol). It is recognized that urgent circumstances may necessitate immediate action by EMS prior to the arrival of police.
    1. Urgent circumstances requiring immediate action are defined as:
        i. Patient presents an immediate threat to the safety of self or others.
        ii. Patient presents an immediate threat to EMS personnel.
C. Urgent circumstances authorize, but do not obligate, restraint by EMS personnel prior to police arrival. The safety and capabilities of EMS is a primary consideration. Police shall immediately be requested by EMS in any urgent circumstance requiring restraint of a patient by EMS personnel.

OH - ALL	D. If police initiate restraint inconsistent with the medical provisions of the Restraint Protocol, with the intent that EMS will transport the patient, police must prepare to submit an APPLICATION FOR EMERGENCY ADMISSION in accordance with Section 5122.10 ORC, or the patient must be placed under arrest with medical intervention indicated. Police shall, in either instance, accompany EMS to the hospital. E. APPLICATION FOR EMERGENCY ADMISSION can only be implemented by a: 1. Psychiatrist 2. Licensed clinical psychologist 3. Licensed physician 4. Health or police officer 5. Sheriff or deputy sheriff
KY - ALL **IN - ALL**	F. If police initiate restraint inconsistent with the medical provisions of the Psychiatric Protocol M407 and/or Restraint Protocol M408, with the intent that EMS will transport the patient, police must submit written documentation which describes the behavior of the person which caused the peace officer to take the person into custody, or the patient must be placed under arrest with medical intervention indicated. Police shall, in either instance, accompany EMS to the hospital.
ALL	G. EMS shall not be obligated to transport, without an accompanying police officer, any patient who is currently violent, exhibiting violent tendencies, or has a history indicating a reasonable expectation that the patient will become violent. H. If the patient is medically stable, then he/she may be transported by police in the following circumstances: 1. Patient has normal orientation to person, place, time, and situation. 2. Patient has no evidence of medical illness or injury. 3. Patient has exhibited behavior consistent with mental illness. **Life-Threatening Agitation** A. Agitation is a non-specific mental state that can be seen in various clinical situations and be a result of various stimuli (psychiatric illness, substance use, new environments, medical conditions). When the state of agitation includes metabolic derangement (ie. acidosis) causing pathologic changes (ie. respiratory depression), this is considered **life-threatening agitation**. In this state, the patient is at risk of disability or death if not appropriately recognized or treated. **Life-threatening agitation** is a critical syndrome for EMS providers to be familiar with, recognize, and know how to treat. B. Signs and symptoms of life-threatening agitation may include (note, this list is not all-inclusive): 1. Bizarre, aggressive behavior. 2. Elevated body temperature. 3. Fear and Panic. 4. Excessive tear production. 5. Nakedness or desire to remove clothing. 6. Head trauma. 7. Dilated pupils. 8. Incoherent speech. 9. Profuse sweating. 10. Shivering. 11. Hypoglycemia. C. Life-threatening agitation should be treated in a similar fashion to all other forms of agitation with attempts at verbal de-escalation, when possible, followed by chemical sedation and physical restraint, if necessary. A key symptom to the potential onset of sudden death from life-threatening agitation is "instant tranquility." The patient who was initially very violent and combative suddenly becomes calm and docile. This is a serious and ominous sign; patient should be constantly monitored and transported for further evaluation by EMS.

ALL

I. INCLUSION CRITERIA

A. Patient's age is 16 years or older.

B. This protocol is intended to address the need for medically indicated and necessary restraint. It shall not be used to regulate, or restrict in any way, operational guidelines adopted by a provider agency addressing use of force related to non-medical circumstances (i.e., civil disturbances, legitimate self-defense relative to criminal behavior).

C. Patient restraints are to be used only when necessary and in situations where the patient is violent or potentially violent and may be a danger to themselves or others. EMS providers must remember that aggressive or violent behavior may be a symptom of a medical condition including, but not limited to:

1. Anemia
2. Cerebrovascular accident
3. Drug / Alcohol intoxication
4. Dysrhythmias
5. Electrolyte imbalance
6. Head Trauma
7. Hypertension
8. Hypoglycemia
9. Hypoxia
10. Infection (especially meningitis / encephalitis)
11. Metabolic disorders
12. Myocardial ischemia / infarction
13. Pulmonary Embolism
14. Seizure
15. Shock
16. Toxicological ingestion

II. PROTOCOL

A. Patient health care management remains the responsibility of the EMS provider. The method of restraint shall not restrict the adequate monitoring of vital signs, ability to protect the patient's airway, compromise peripheral neurovascular status or otherwise prevent appropriate and necessary therapeutic measures. It is recognized that the evaluation of many patient parameters requires patient cooperation and thus may be difficult or impossible.

B. It is recommended to have Law Enforcement on scene.

C. Refer to Psychiatric Emergencies Protocol (M407) for aid in dealing with the combative patient.

D. **The least restrictive means shall be employed.**

E. Verbal de-escalation

1. Speak in a calm, normal volume voice. Engage the patient by their name.
2. Validate the patient's feelings by verbalizing the behaviors the patient is exhibiting and attempt to help the patient recognize these behaviors as threatening.
3. Openly communicate, explaining everything that has occurred, everything that will occur, and why the imminent actions are required.
4. Respect the patient's personal space (i.e., asking permission to touch the patient, take pulse, examine patient, etc.).

III. PHYSICAL RESTRAINTS

A. All restraints should be easily removable by EMS personnel without the use of a key.

B. Restraints should be secured to the stretcher and not to the vehicle.

C. EMS should only use purpose-built restraints following the manufacturer's instructions.

D. Seatbelts and cot straps should not be modified or used as medical restraints.

E. Restraints applied by law enforcement (i.e., handcuffs) require a law enforcement officer to remain available to adjust the restraints as necessary for the patient's safety. The protocol is not intended to negate the ability for law enforcement personnel to use appropriate restraint equipment to establish scene control. Handcuffs should not be applied to the stretcher or other equipment and should only be applied to the patient by law enforcement.

F. Departments are encouraged to work with their respective law enforcement agencies to develop restraint processes that respect patient and provider safety and comfort, while permitting medical care. The goal is to maximize safety to the provider while providing care to the patient.
G. To ensure adequate respiratory and circulatory monitoring and management, patients shall NOT be transported in a face down prone position.
H. Restrained extremities should be monitored for color, nerve, and motor function, pulse quality and capillary refill at the time of application and at least every 5 minutes. Providers should document every 5 minutes a GCS/AVPU score along with vital signs. If vitals are unable to be obtained because of agitation, this should be noted.

MEDIC

IV. CHEMICAL RESTRAINTS

A. Chemical restraints may be required before, after, or in place of physical restraints. Any patient who continues to be a danger to themselves or others despite physical restraints, or those who present a danger while attempting physical restraint, may be chemically restrained as follows.
   1. Determine and document the patient's level of agitation using the RASS scale.
      0 – Alert and Calm
      +1 – Restless: Anxious. Apprehensive but movements are not aggressive or vigorous
      +2 – Agitated: uncooperative; resists care; frequent non-purposeful movement
      +3 – Very agitated: cannot focus, pulls/removes IVs/canula; fights environment
      +4 – Combative: violent, immediate danger to staff
   2. EMS should plan and prepare for advanced airway management regardless of medication used. In patients receiving ketamine, laryngospasm or hypersalivation necessitating oral suctioning may occur.
   3. For RASS +2: consider midazolam (Versed) 5 mg IM. For smaller adults and the elderly consider lower dose.
   4. For RASS +3: Administer midazolam (Versed) 10 mg IM. A lower dose of 5mg IM may be used for smaller adults or the elderly. Exposure and cleaning of skin is highly recommended but may not be feasible; injection through clothing and prior to skin cleaning is allowed if crew safety would otherwise be compromised. Repeat dose(s) of midazolam (Versed) may be ordered by on-line medical control. Ensure that the on-line medical control physician understands the level of agitation the patient is experiencing and whether this compromises patient or provider safety.
   5. For RASS +4: consider administering ketamine 4mg/kg IM ideal body weight or as indicated in the chart below (of at least 50mg/1mL concentration), instead of midazolam (Versed), once into a large muscle when possible. Exposure and cleaning of skin is highly recommended but may not be feasible; injection through clothing and prior to skin cleaning is allowed if crew safety would be compromised.
      a. Patients that have ketamine administered should only be taken to a hospital-based Emergency Department, which does not include UC PES.
   6. When able and safe, place patient on cardiac monitor, continuous pulse oximetry and ETCO2.
   7. When able and safe, administer oxygen to correct hypoxia <95%.
   8. When able and safe, check blood glucose level.
   9. When chemical restraint is used, vitals, including GCS/AVPU should be assessed and recorded every 5 minutes.
   10. At no time shall a patient be left unattended after receiving chemical restraint.
   11. Any patient receiving chemical restraint must be attended to and transported by a paramedic.
   12. Pre-arrival notification is highly recommended so the receiving Emergency Department can be prepared for the safe transfer of a combative or violent patient.

--NEXT PAGE--

KETAMINE RASS +4 (COMBATIVE) DOSING

Height	Dose (IM) 4mg/kg	mLs (50mg/mL)	mLs (100mg/mL)
<4'11"	150mg	3mL	1.5mL
5'-5'5"	220mg	4.4mL*	2.2mL
5'6"-5'11"	290mg	5.8mL*	2.9mL
6'-6'5"	365mg	7.3mL*	3.65mL*
>6'5"	425mg	8.5mL*	4.25mL*

*** Ideally should be given in more than one IM site**

ALL

V. Documentation Of Restraints

A. Patient restraint shall be documented on the run sheet and address any or all the following appropriate criteria:
   1. That an emergency existed and the need for treatment was explained to the patient.
   2. That the patient refused treatment or was unable to consent to treatment (such as unconscious patient).
   3. Evidence of the patient's incompetence (or inability to refuse treatment).
   4. Failure of less restrictive methods of restraint (e.g., if conscious, failure of verbal attempts to convince the patient to consent to treat).
   5. Assistance of law enforcement officials with restraints, or orders from medical control to restrain the patient, or any exigent circumstances requiring immediate action, or adherence to system restraint protocols.
   6. That the treatment and/or restraint were for the patient's benefit and safety.
   7. The type of restraint employed (soft, mechanical, chemical).
   8. Any injuries that occurred during or after the restraint.
   9. The limbs restrained ("four points").
   10. Position in which the patient was restrained.
   11. Circulation checks every 5 minutes or less (document findings and time).
   12. The behavior and/or mental status of the patient before and after the restraint.

MEDIC

Notes:

1. Intramuscular midazolam is more rapidly absorbed than other benzodiazepines, including diazepam and lorazepam, making it uniquely ideal for treatment of the acutely agitated patient. Onset 5-10 minutes.
2. Midazolam is as effective as haloperidol in acutely agitated and combative patients (Am J Emerg Med 8:97) and has less potential cardiovascular side effects and drug-drug interactions than haloperidol.
3. Respiratory depression is a known side effect of benzodiazepines and ketamine. Monitor and treat respiratory depression as needed. The use of flumazenil is not recommended and is potentially harmful because it may cause uncontrollable seizures. The risk of harm is especially present when the patient history is unknown, unclear, or incomplete.
4. Midazolam may be administered intranasal (IN); however, its efficacy in agitated and combative patients is unknown.
5. Use of benzodiazepines, including intramuscular Midazolam, for acutely agitated and combative patients is supported by American College of Emergency Physicians clinical policy [Ann Emerg Med 47(1): 79, 2006].
6. In rare cases, patients receiving ketamine for chemical restraint may experience an emergence delirium. This is characterized by: hallucinations, flashbacks, unusual thoughts, extreme fear, excitement, and irrational behavior. If this occurs, immediately contact medical control. Treatment typically is a small dose of a benzodiazepine but must be approved by medical control.
7. Positional asphyxia has been implicated in prior restraint-associated deaths. The patient must be given adequate room and positioning to avoid interfering with normal respiration. Patients while restrained or sedated should never be transported prone, hog-tied, compressed, or otherwise prevented from repositioning to ensure adequate normal respiration.
8. Agencies opting to utilize ketamine are suggested to have training on its' indications,

contraindications, side effects, and dosing. Robust medical director support is recommended.

9. Ketamine use for pre-hospital chemical restraint is supported by ACEP and NAEMSP. [ACEP task force report on hyperactive delirium with severe agitation in emergency settings. (2021)] and [PHEC 21(3): 395-6, (2017)]

ALL

I. **Inclusion Criteria**
   A. Patient's age is 16 years or older.
   B. Suspected exposure to allergen (insect sting, medications, foods, or chemicals).
   C. Patient has or complains of any of the following:
      1. Respiratory difficulty
      2. Wheezing or stridor
      3. Tightness in chest or throat, weakness, or nausea.
      4. Flushing, hives, itching, or swelling.
      5. Anxiety or restlessness.
      6. Pulse greater than 100 or Systolic Blood Pressure less than 80 mm Hg.
      7. Gastrointestinal symptoms
      8. Swelling of the face, lips, or tongue

II. **Anaphylaxis Definition**
   A. Serious, rapid onset (minutes to hours) reaction to a suspected trigger **AND**
   B. Two or more body systems involved (e.g., skin/mucosa, cardiovascular, respiratory, GI) **OR**
   C. Hemodynamic instability **OR**
   D. Respiratory compromise

III. **Protocol**
   A. Maintain airway and administer oxygen to correct hypoxia <95%.
   B. **Airway assessment and management are extremely important since airway compromise may develop rapidly at any time during the call.**

EMT

   C. Request ALS back-up for a patient who has <u>any</u> of the following:
      1. Hypotension
      2. Tachycardia
      3. Noisy/difficult breathing (including but not limited to wheezing & stridor)
      4. Received epinephrine by auto-injector, if indicated
   D. Determine if the patient has a prescribed epinephrine auto-injector (EpiPen, EpiPen Jr.) and/or albuterol metered dose inhaler available. Even if the patient's condition does not warrant medication at the time, before you leave the scene, ask to take them and any spares for the trip to the hospital. This allows for treatment enroute if the patient's condition should warrant or if a second dose is ordered by medical command.
   E. Some patients may have multiple-dose auto-injectors.

ALL

   F. Remove allergen if possible (stinger from skin, etc).
   G. Check vital signs frequently, reactions may quickly grow more severe.

EMT

   H. For patients with anaphylaxis, epinephrine should be administered as soon as possible.
      1. For patients who have been prescribed an auto-injector administer it in accordance with manufacturer's directions after obtaining patient consent.
      2. If there is no patient-supplied auto-injector immediately available, you may administer an EMS supplied auto-injector in accordance with the manufacturer's directions after obtaining patient consent.
      3. In the absence of auto-injectors, EMT's may administer IM epinephrine is trained on, and approved by the medical director, as below.
      4. Auto-injector and EMT IM administration may be repeated every 5 – 15 minutes as needed.
   I. If epinephrine auto-injector is to be administered, then:
      1. Assure injector is prescribed for the patient. (If patient's personal injector).
      2. Check medication for expiration date.
      3. Check medication for cloudiness or discoloration.
      4. Remove safety cap from injector.
      5. Select appropriate injection site (see notes). If possible, remove clothing from the injection site. If removing the clothing would take too much time, the auto-injector can be administered through clothing.
      6. Push injector firmly against site.
      7. Hold injector against the site for a <u>minimum of ten seconds</u>.
      8. Keep injector to give to hospital personnel upon arrival.

	9. If bronchospasm or wheezing is present assist patient with inhaler if they have one per Respiratory Distress Protocol M403. J. If epinephrine auto-injector is not available, then: 1. Administer epinephrine 0.3 mL (1 mg/mL) intramuscularly (IM) if patient is in anaphylaxis. (See notes). May repeat dose every 5 - 15 minutes as needed.
MEDIC	K. Administer epinephrine 0.3 ml (1 mg/ml) intramuscularly (IM) if patient is in anaphylaxis. (See notes) May repeat dose every 5 – 15 minutes as needed. L. Monitor cardiac rhythm. M. If bronchospasm or wheezing is present, administer albuterol (Proventil) 2.5mg via nebulizer, and treat per Respiratory Distress protocol M403. Albuterol may be used without preceding epinephrine in patients with isolated, very minimal respiratory symptoms. N. Initiate IV access. If the patient is hypotensive, begin 1-liter normal saline IV wide open. O. Administer diphenhydramine 25 - 50 mg IV/IM/PO. Diphenhydramine may be used without preceding epinephrine in patients with isolated rash and no other symptoms. P. If hypotension still persists, consider SB205 Hypotension/Shock. If push-dose IV epinephrine initiated, discontinue IM dosing. Q. For persistent symptoms in a patient taking a β-blocker, consider 1 mg glucagon IM/IV.
ALL	**Notes:** A. Anterolateral thigh is the preferred IM administration site for 1mg/ml epi autoinjector. Other sites may be used if preferred site would cause unneeded delay. Absorption is fastest with IM injection in the thigh.

ALL

I. **Inclusion Criteria**
   A. Patient's age is 16 years or older.
   B. Patient has a decreased Level of Consciousness (GCS less than 15).

II. **Differential Diagnosis**
   A. Refer to Altered Level of Consciousness Protocol.
   B. Identify and rule out possible causes.

III. **Physical Findings (one or more)**
   A. Patient suspected to have had grand mal seizure based upon description of eyewitnesses, incontinence of urine or stool, or history of previous seizures.
   B. Patient may or may not have current seizure activity.
   C. May have altered mental status.
   D. May be incontinent of urine or stool.
   E. May be salivating.
   F. May have depressed respiratory status.

IV. **Protocol**
   A. Maintain airway and administer oxygen to correct hypoxia <95%.
   B. Assess for spinal injuries and treat/immobilize appropriately. Refer to Spinal Motion Restriction Protocol T704.

EMT

   C. If available, request ALS back-up for a patient who meets one or more of the following criteria:
      1. Is actively seizing.
      2. Has been seizing for 15 minutes or longer.
      3. Has airway compromise.
      4. Has had more than two seizures without gaining consciousness.
      5. Has a history of diabetes and is seizing.
      6. Is in the third trimester of pregnancy and seizing.

MEDIC

   D. Administration via the IM route is preferred in all cases, but if patient is actively seizing administer midazolam (Versed) IM.

Medication	Route	Dose	Frequency
midazolam	IN	5-10 mg	Every 10 minutes until seizure resolves, max 10mg
midazolam	IM	10 mg	single dose
midazolam	IV / IO	2-5 mg	Every 10 minutes until seizure resolves, max 10mg

      1. Be prepared to support the patient's respirations and place patient on continuous ETCO2 monitoring.

ALL

   E. Check Glucose per M406.
   F. Place on Cardiac monitor if available.
   G. If suspicious for overdose refer to M411 Toxicological Emergencies.

Notes:

- If seizures develop for the first time in a patient over the age of 50, suspect a cardiac cause.
- Trauma to the tongue is unlikely to cause serious problems, but trauma to the teeth may. Attempts to force an airway into the patient's mouth can completely obstruct the airway. Use of a nasopharyngeal airway may be helpful.
- Most seizures that patients experience are self-limited to 1-3 minutes and will need only oxygen and attention to airway management and will not need treatment with Versed (midazolam).
- Each department should have training on using Intranasal Versed with an atomizer device. This route may take longer for a response than the IV method.
- Be aware that rectal Valium (Diastat) may have been administered to some patients with known seizure disorders prior to EMS arrival. Adding Versed on top of rectal Valium will exacerbate respiratory depression.

ALL

I. INCLUSION CRITERIA

A. Patients of any age.
B. History of actual poisoning either through ingestion, inhalation, injection, or absorption.
C. Scene size-up that indicates possible poisoning.
D. Presentation may vary depending on the concentration and duration of exposure. There could be a long list of signs and symptoms. There are thousands of chemicals, drugs, plants, and animals that can cause poisoning in humans.

II. RELATED APPENDICES

A. Appendix A: Chemical Agent Exposure
B. Appendix B: Transport of Contaminated Patients

III. PROTOCOL

A. First priority is scene safety.
B. Evaluate scene for provider safety and take appropriate precautions.
   1. Remove or have patients removed from trigger area once appropriate safety standards have been implemented.
   2. Park vehicles a safe distance away, uphill and upwind of incident.
   3. Utilize appropriate monitoring and safety equipment.
   4. Decontaminate patient as called for depending on agent and exposure.
   5. Consider requesting additional appropriate resources (HAZMAT, etc.).
C. Assess airway, breathing, circulation, and disability.
D. Maintain airway and administer high flow oxygen as appropriate.
E. Obtain vital signs, including temperature, end tidal-carbon dioxide, finger stick blood glucose, and apply cardiac monitor, if available.
   1. All patients with abnormal mental status should be considered hypoglycemic until proven otherwise.
F. If patient has ingested toxins, medications or other substances obtain container(s), if available, and bring them with the patient.
   1. Try to ascertain how much has been consumed, strength, formulation (immediate release IR or extended-release ER) and time of ingestion.
   2. Be aware of poly-pharmacy overdoses and lack of patient compliance with the intentional overdose patient.
   3. Be prepared for the possibility of patients who have may have multiple intoxicants on board.
G. If suicide notes are present, take to hospital or leave with police as appropriate.
H. The mainstay of treatment is supportive care of ABCDs.
   1. Treat hypotension with Push Dose Epinephrine as outlined in SB205 Hypotension/Shock.
   2. If patient has seizure activity reference appendices C and D. If seizure is not due to chemical agent exposure treat according to M410 or P610.
I. When in doubt contact Poison Control/Medical Control (**National Poison Control Center: 1-800- 222-1222**).
   1. EMS may contact medical command or Poison Control for toxin information.
   2. Direct contact with EMS to poison control for treatment orders is discouraged, medical command must give treatment orders. If necessary medical command will contact Poison Control.
J. Because of the wide variety of possible adverse effects of assorted toxins, it is not practical to detail the management of various toxic exposures. Consultation with the medical control physician can enhance the prehospital care of patients with potentially dangerous exposures and is encouraged.
K. All Toxicological Emergency Patients should be transported as soon as possible EXCEPT ref to next section L.
   1. Transport via police is not appropriate in many situations.

2. Reassess frequently and notify receiving facility if there are changes in patient condition or decontamination will be necessary.

L. If exposure is an unintentional pediatric patient who is less than 12 years old AND has stable ABCs and vital signs:

1. Obtain all history of ingestion, including time, all substances, amounts, strengths, formulations as applicable.
2. Have legal guardian or parent contact the **National Poison Control Center (PCC) at 1-800-222-1222** for further assessment and treatment recommendations including referral to the emergency department. Once they obtain the recommendation from the poison center, allow them to make informed decision on treatment and transport.
   - EMS provider may make contact with PCC but must relay all pertinent information from the PCC back to the legal guardian or parent for an informed decision.
   - Up to 90% of all unintentional pediatric exposures do not need immediate referral to the emergency department.

EMT

M. If available, request ALS back-up for patient who has any of the following:

1. An exposure that will require ALS intervention prior to arrival at the Emergency Department.
2. Is unresponsive.
3. Airway compromise.
4. Is an adult with a pulse rate of less than 50 or greater than 130 beats per minute, or a systolic blood pressure less than 90 or greater than 180 mmHg.
5. Is a pediatric patient with a respiratory rate greater than 50 or a heart rate less than 60 or greater than 180.
6. A patient with blood glucose less than 60 mg/dL.

MEDIC

N. Establish IV/IO Access.

ALL

O. If toxins remain on the patient wash, brush, and remove clothing as appropriate and depending on type of toxic exposure.

P. **External Exposure (Skin and Eye Contact)**

1. If eye exposure, flush the eyes with normal saline or clean water.
2. If patient has been sprayed with pepper spray (OC spray) or tear gas Sudecon® wipes can assist in decontamination.
3. Encourage patient not to rub skin or eyes as this will spread the toxin and cause increase irritation.

Q. **Inhaled Poisons**

1. Remember that many inhaled toxins can also be absorbed through the skin and that further decontamination may be necessary depending on toxic agent.
2. Detect and treat any life-threatening problems immediately.

R. **Ingested Poisons**

1. Be prepared to manage the airway if ingested poison is corrosive or caustic.

IV. Specific Toxins:

A. **CARBON MONOXIDE (SUSPICION OF)**

1. Common human exposures occur through inhalation. Toxicity results in cellular hypoxia and ischemia.
2. Treatment should occur when any of the following are present:
   - CNS depression
   - Nausea
   - Vomiting
   - Headache
3. Treatment
   1. You can assess carboxyhemoglobin level (COHb) device assessment, if available. But understand some of these devices may be inaccurate.

2. If carbon monoxide is suspected administer oxygen at 10-15 LPM regardless of oxygen saturation or COHb.

B. **CYANIDE (SUSPICION OF)**

1. Cyanide poisoning can occur through inhalation, ingestion, and absorption.
2. Treatment should occur when any of the following are present:
   - CNS depression
   - Hypotension
   - Tachypnea
3. There are no absolute contraindications to treatment.

MEDIC

4. If patient was exposed to fire/smoke in confined space and cyanide poisoning is suspected or known, then administer Cyanokit® if available (this is an optional drug). (There is a difference between Cyanokit® and Nithiodote®. Nithiodote should not be used. See notes)
   a. Cyanokit: Adult dose is 5 g (both 2.5 g vials or one 5 g vial) IV/IO over 15 minutes (~15 mL/minute or 7.5 minutes/vial) as per Manufacturer's recommendations (see below).
   b. Cyanokit: Pediatric dose is 70 mg/kg (max 5 g) IV/IO.
   c. The 5 g vial must be reconstituted with 200 mLs of 0.9% NaCl using supplied sterile transfer spike. Use the transfer spike to transfer the contents of two (2) 100 mL bags of normal saline into the Cyanokit® bottle (Normal Saline is the recommended diluent)
   d. Once filled gently rock or invert the vial to mix until the powder goes into solution. DO NOT shake the vial.
   e. If solution does not turn dark red or particulate is still present after mixing dispose of solution and do not administer.
   f. Spike the bottle and run the solution from the bottle over 15 minutes.
   g. Depending on severity or clinical response a repeat dose of 5 g (adults) or 70 mg/kg, max 5 g (pediatrics) may be given. The infusion rate for this dose can range from 15 minutes to 2 hours.
   h. Due to potential incompatibility with drugs commonly used in resuscitation effort and drugs in the cyanide antidote kit, DO NOT administer other drugs through the line supplying the Cyanokit®.
5. Treatment will temporarily turn the victim's skin and bodily secretions (tears, urine, etc) red.
6. If patient has seizure activity reference Appendices A and B.

ALL

C. **OPIATE OVERDOSE**

1. Consider restraining patient before administration of Naloxone especially if patient is unconscious upon initial contact.
2. If patient is able to self-maintain their airway and hemodynamically stable, treatment should be supportive.
3. If patient has a pulse but is unconscious and there is suspicion of opiate overdose (evidenced by miosis, CNS depression, hypotension, hypoxia), perform basic airway maneuvers (assisted respiration with BVM and NP/ OP airway) to maintain airway and ventilation. **Assisted respirations and basic airway maneuvers are the mainstay of treatment in an otherwise stable patient until the overdose can be reversed with naloxone.**
   - Advanced airway management with supraglottic/extraglottic airway or intubation should be deferred until appropriate dose of naloxone can be given as long as the patient is otherwise stable.
4. Patients in extremis may require advanced airway management (i.e., if vomiting or not able to maintain airway with good basic maneuvers and good BVM), patients in cardiac arrest should be managed per protocol (SB204).

EMT

5. Administer Naloxone

a. Intranasal (IN)
   1) Do not use more than 1 ml of medication per nostril (0.2 to 0.3 is the ideal volume). If a higher volume is required, apply it in two separate doses allowing a few minutes between for the previous dose to absorb.
   2) Always deliver half the medication dose up each nostril. This doubles the available mucosal surface area (over a single nostril) for drug absorption and increases rate and amount of absorption.
   3) Naloxone may be administered by intranasal atomizer in the 0.4mg to 4 mg range. The IV/IM/IO dose remains the same.

b. Auto Injector - follow manufacturer recommendations.

MEDIC

c. Administer Naloxone with an initial dose of 0.4 mg - 4 mg IV/IM/IN/IO (adult) or 0.1 mg/kg (max 4 mg) for pediatrics. EMT's may administer IN naloxone (see note below).
   1) *The clinical goal of naloxone administration is improvement in the patient's respirations, not complete resolution of their mental status*. Starting with a lower dose is preferred to prevent negative side effects. Example dosing sequence: 0.4 mg, then 1mg then 2 mg until respiratory status improves.
   2) While IV/ IO naloxone may be effective within 1-2 minutes, IM and IN may take up to 5 minutes or more for full clinical effect.
   3) Naloxone may be administered by intranasal atomizer in the 0.4 mg to 4 mg range for adults and pediatrics. The IV/IM/IO dose remains the same.
   4) In patients who are completely apneic or peri-arrest (ie. bradycardic, hypotensive), a larger first dose may be appropriate (ie. 1-2 mg IV).
   5) In a patient who has a pulse and whose respirations can be assisted without difficulty via BVM, the preferable route of naloxone administration initially is intranasal 2 mg (1 mg per nostril) or 4 mg using a pre-dosed atomizer. If patient condition allows, allow at least 5 minutes after IN administration before redosing.

d. If breathing is not improved after 3-5 minutes, administer a second dose of naloxone. Continue to repeat as necessary up to total of 10 mg.

e. If no improvement after 10 mg total of naloxone has been given, consider other possible causes for patient's symptoms.

f. IV naloxone typically has onset (ie. improvement in breathing) within 1-2 minutes, while the time to onset of IN/ IM naloxone is generally 5-8 minutes. As long as the airway can be maintained with basic maneuvers and BVM, a second dose of naloxone may be delayed beyond 5 minutes if the initial dose was IM/ IN, though up to 25% of patients may need an additional dose.

g. Be cautious to avoid aggressive use of Naloxone in patients with suspected opiate overdose as a rapid administration may cause acute withdrawal symptoms. The opiate may also be controlling aggressive side effects of other drugs that have been consumed.

h. After naloxone administration, transport to an emergency department is recommended.

i. The effective half-life of naloxone is between 45 and 90 minutes depending on the dose. The half-life of many narcotic agents is longer (2-3 hours up to 20+ hours, ie. Methadone, Fentanyl, Talwin, Oxycontin), and patients generally warrant observation to avoid rebound respiratory depression when the naloxone wears off.

j. If after giving naloxone the patient refuses transportation to the hospital for observation, they must sign to leave against medical advice per protocol SB200.

	6. If the patient is suspected of having opioid withdrawal, refer to M420 Opioid Withdrawal protocol.
ALL	D. **ORGANOPHOSPHATE POISONINGS** 1. Refer to Hamilton County Fire Chief's Website. 2. Keep in mind tachycardia is not a contraindication for Atropine administration in the Organophosphate poisoning patient. E. **SODIUM CHANNEL BLOCKERS OVERDOSE** 1. Benadryl (diphenhydramine). 2. Tricyclic antidepressants are used to treat patients with major depressive disorders and bipolar disorder. Tricyclic drugs may be found under the following names: • Amitriptyline (Elavil, Endep, Etrafon, Limbitrol) • Nortriptyline (Palelor, Aventyl) • Amoxapine (Asendin) • Clomipramine (Anafranil) • Desipramine (Norpramine • Doxepin (Sinequan) • Imipramine (Tofranil) • Protriptyline (Vivactil) • Trimipramine (Surmontil) 3. Initial treatment is supportive if patient is conscious.
MEDIC	4. Observe patient for hypotension and a monitor cardiac rhythm for symptomatic bradycardia or tachycardia with a prolongation of the QRS complex. a. If patient has prolonged QRS, is hypotensive, or has Ventricular Tachycardia administer Sodium Bicarbonate 1 mEq/kg, slow IV/IO over 2 minutes. b. Repeat Sodium Bicarbonate 0.5 mEq/kg, IV/IO for persistent QRS prolongation. 5. Consider push dose epi per SB205 Hypotension titrated to maintain systolic blood pressure greater than 100 mmHg for hypotension unresponsive to fluids or sodium bicarbonate.
ALL	**NOTES:** 1. There is a difference between **Cyanokit®** (a B12 vitamin derivative) and **Nithiodote®** (Sodium Nitrate and Sodium Thiosulfate). The sodium nitrate in Nithiodote® is contraindicated for use in patients with smoke inhalation and CO poisoning. 2. For more information on Cyanokit® refer to www.cyanokit.com 3. Evzio (naloxone) is an auto-injector for treating suspected opioid overdose, (analogous to an EpiPen). Evzio comes in a kit with two auto-injectors and a "trainer" device that also has voice guidance. As of 2019, the AWP for Evzio is $2250 for 0.4 mg in 0.4 mL and $2460 for 2 mg in 0.4 mL. The standard 2 mg / 2 mL injectable dose of naloxone, which can be given intranasally, has an AWP of ~$20. 4. For more information on Cyanokit® refer to www.cyanokit.com. 5. Evzio (naloxone) is an auto-injector for treating suspected opioid overdose, (analogous to an EpiPen). Evzio comes in a kit with two auto-injectors and a "trainer" device that also has voice guidance. As of 2019, the AWP for Evzio is $2250 for 0.4 mg in 0.4 mL and $2460 for 2 mg in 0.4 mL. The standard 2 mg / 2 mL injectable dose of naloxone, which can be given intranasally, has an AWP of ~$20.
MEDIC	**--NEXT PAGE--**

Cyanokit® (Hydroxocobalamin) PEDIATRIC Dosing and Administration

1. Reconstitute and mix 5-gram Cyanokit® vial with 200mL normal saline as directed on the packaging
2. Connect included tubing to vial. If needed, attach 3-way stop-cock to IV/IO
3. Draw up appropriate volume based on patient age in syringe attached to stop-cock (may require multiple syringes to administer dose)
4. Administer dose via IV/IO* over 15 minutes

*No other medications can be administered through this line

Age-Based Dosing of Cyanokit®

Age	**Less than 3 years**	**3-7 years**	**7 years or older**
Dose (gram)	1 gram	2 grams	5 grams
Volume (mL)	40 mL	80 mL	200 mL

ALL

I. Definitions

A. True hypothermia is a body temperature less than 95° F (35°C).
B. Mild hypothermia is a body temperature from 86 to 93°F (30-34°C).
C. Severe hypothermia is less than 86°F (less than 30°C).

II. Inclusion Criteria

A. Patients of all ages
B. High risk groups: elderly, infants, outdoor workers, homeless individuals, patients with central nervous system disorders and alcoholics/drug abusers.
C. Predisposing factors
   1. Decrease of body heat due to:
      a. Prolonged exposure to cold
      b. Inadequate clothing
      c. Intoxication
      d. Illness and injury
   2. Decrease heat production due to:
      a. Malnutrition
      b. Endocrine disorders
   3. Impaired thermoregulation due to:
      a. Hypoglycemia
      b. Alcohol or drug abuse (barbiturates, phenothiazines)
      c. Sepsis
      d. Central nervous system disorders
D. Hypothermia can occur under relatively mild weather conditions.
E. Variable presentations with a range of presenting symptoms from mild non-specific complaints to unresponsiveness.
F. Mild symptoms include decreases in coordination, reflexes, and alertness.
G. If unresponsive, the patient may appear pulseless with pupils fixed and dilated.
H. Pulse rate may be severely bradycardic making a radial pulse difficult to palpate. Pulse rates should be obtained with palpation of central pulses, carotid or femoral, for at least one minute.
I. Extremities may be stiff and resemble rigor mortis or they may be cyanotic or edematous (Frost bite).
J. Altered/decreased mental status.

MEDIC

K. Bradycardia
L. If the core temperature falls below 89.6°F (32°C), a characteristic "J" wave, Osborne wave, can be seen. The J wave occurs at the junction of the QRS complex and the ST segment.

EKG IN HYPOTHERMIA

ALL

III. Differential Diagnosis

A. Cardiac arrest
B. Coma
C. Narcotic abuse
D. Severe shock

IV. Protocol

A. Gentle handling of the patient is important to avoid introducing ventricular fibrillation.

MEDIC	B. If a rapid glucose test is less than 60 mg/dL, refer to M406 or P608. C. If considering opiate overdoes, refer to M411 Toxicological Emergencies.
	D. **Absent pulse and breathing** 1. Follow Cardiac Arrest Protocol SB204. a) Continue CPR. 2. Defibrillate normally. 3. Maintain airway and administer oxygen to correct hypoxia <95%. If available heat air to 108-115°F (42-46°C).
EMT	4. If available request ALS.
ALL	5. If possible, a patient's temperature should be documented. 6. Notify the receiving hospital. F. **Spontaneous respirations and pulses** 1. Maintain airway and administer oxygen. (Heated to 42 C – 46 C {108 F – 115 F} if possible). 2. If the patient is unconscious and not able to protect their airway, refer to Airway Protocol T705.
MEDIC	3. Initiate IV/IO access and begin to administer 1 Liter of normal saline (child 20 ml/kg) fluid bolus. 4. Monitor cardiac rhythm.
ALL	5. Notify the receiving hospital. G. Do not massage extremities as it will cause increased cutaneous vasodilatation and decrease shivering. H. Do not use hot packs, these can cause serious burns as well as possibly increase mortality. I. Gentle evacuation is needed. Remove the victim from the cold environment, remove wet clothing, insulate with dry warm covering, cover patient's head (not face) and immobilize the patient to prevent exertion by patient. J. If patient also presents with frost bite: • Protect injured areas. • Remove clothing and jewelry from injured parts. • Do not attempt to thaw injured parts with local heat. • Maintain core temperature. • Severe frost bite should be transported to a burn center.
MEDIC	• Consider vascular access and consider warmed fluids. • Apply cardiac monitor. • For pain relief when the patient is conscious, alert, not hypotensive, and is complaining of severe pain, consider pain management protocol S505 and P611.

ALL

I. Inclusion Criteria

A. Patients of all ages
B. High risk groups: elderly, infants, outdoor workers, and athletes.
C. Impaired thermoregulation due to:
   1. Hypoglycemia
   2. Drugs (Anticholinergics, phenothiazines, antidepressants, diuretics)
   3. Infection
   4. Central nervous system disorders.
D. Hyperthermia can occur with strenuous physical exertion and/or severe environmental conditions.

II. Physical Findings

A. Variable presentations with a range of presenting symptoms from mild nonspecific complaints to unresponsiveness.
B. Heat cramps are characterized by:
   1. Muscle cramps
   2. Hyperventilation
C. Heat exhaustion is characterized by:
   1. Volume depletion, sweating
   2. Fatigue
   3. Lightheadedness
   4. Headache
   5. Tachycardia
   6. Hyperventilation
   7. Hypotension
   7. Body temperature may be normal
D. Heat Stroke is a true medical emergency, it is characterized by:
   1. Elevated temperature, usually >104 F
   2. Neurological symptoms:
      1. Syncope
      2. Irritability
      3. Combativeness
      4. Bizarre behavior
      5. Hallucinations
      6. Hemiplegia
      7. Seizures
      8. Coma
      8. Decorticate/decerebrate posturing
   3. Classic lack of sweating can be delayed.

III. Protocol

A. Remove patient from external heat sources and remove patient's clothing.
B. If possible, document a temperature. Rectal temperatures are the gold standard for EMS core temperatures. Other sources of temperature are not reliable.
C. Patients without a temperature recorded, but heat stroke is suspected, cool until mental status returns. Consider dilutional hyponatremia as a possible alternate diagnosis.
D. Promote evaporative cooling by positioning fans close to undressed patient and spraying patient with tepid water. **Do Not** cover patient with wetted sheets as this will impair evaporation.
E. Promote conductive cooling by applying ice bags, if available, to hands, feet, face.
F. In cases of heat stroke, the patient should be cooled as quickly as possible. Immersion cooling is the most effective method to lower core body temperature. If the resources are readily available (ex. ice bath, swimming pool, tarp, body bag) and no other emergency intervention is needed (seizure, airway compromise, etc.), then it is preferable to cool the patient prior to transport.

MEDIC

G. Establish IV access.
H. Apply cardiac monitor.
I. If patient appears dehydrated administer 500-1000 ml saline bolus or 20 mL/kg for children. Heat cramps and heat exhaustion patients can be given oral rehydration if appropriate.

ALL

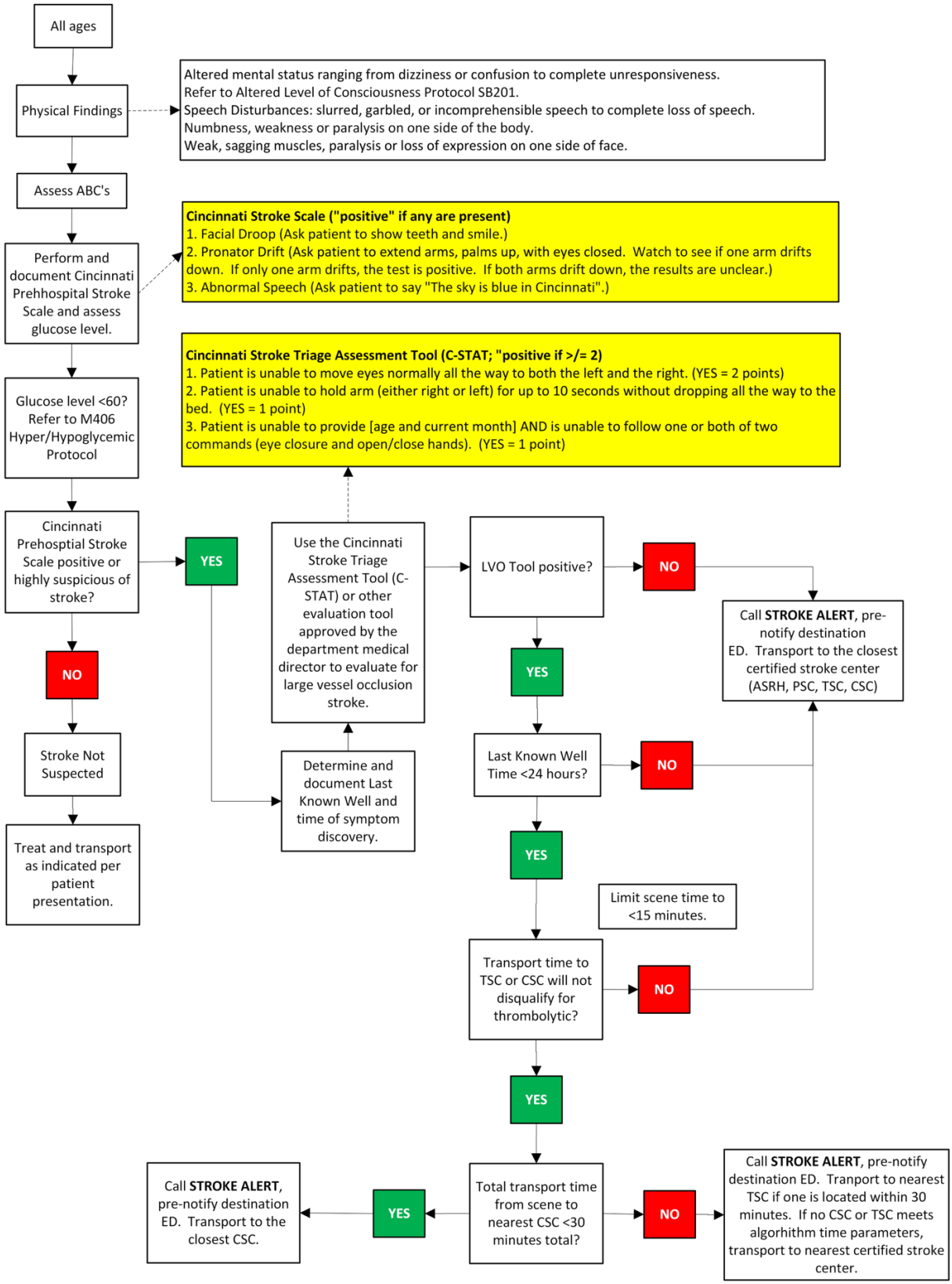
J. When core temperature (if available) reaches 101°F (38°C) discontinue cooling efforts to prevent "overshoot" hypothermia. In the absence of recorded temperature, cool until mental status improves or 20 minutes of active cooling have elapsed. Call medical control if the patient's mental status has not improved after 20 minutes of active cooling.

Notes:

1. There is no minimum body temperature for heat related illnesses. Patients can be normo-thermic

with heat cramps and heat exhaustion but are usually hyperthermic with heat stroke.

2. Many patients with classic heat stroke are not dehydrated, while exertional heat stroke and heat exhaustion patients usually are.
3. Measuring core temperature in the prehospital setting is difficult and does not correlate well to skin/temporal/tympanic temperature.
4. If the conditions for on-site cooling are not met, particularly if the patient has additional problems requiring medical intervention, the patient should be transported immediately to the closest ED. Cooling should be initiated during transport in the most effective manner possible.
5. **COOL FIRST TRANSPORT SECOND**
6. Dilutional hyponatremia may look like heat stroke in persons drinking free water


All ages
Physical Findings
Altered mental status ranging from dizziness or confusion to complete unresponsiveness.
Refer to Altered Level of Consciousness Protocol SB201.
Speech Disturbances: slurred, garbled, or incomprehensible speech to complete loss of speech.
Numbness, weakness or paralysis on one side of the body.
Weak, sagging muscles, paralysis or loss of expression on one side of face.
Assess ABC's
Perform and document Cincinnati Prehhospital Stroke Scale and assess glucose level.
Cincinnati Stroke Scale ("positive" if any are present)
1. Facial Droop (Ask patient to show teeth and smile.)
2. Pronator Drift (Ask patient to extend arms, palms up, with eyes closed. Watch to see if one arm drifts down. If only one arm drifts, the test is positive. If both arms drift down, the results are unclear.)
3. Abnormal Speech (Ask patient to say "The sky is blue in Cincinnati".)
Glucose level <60? Refer to M406 Hyper/Hypoglycemic Protocol
Cincinnati Stroke Triage Assessment Tool (C-STAT; "positive if >/= 2)
1. Patient is unable to move eyes normally all the way to both the left and the right. (YES = 2 points)
2. Patient is unable to hold arm (either right or left) for up to 10 seconds without dropping all the way to the bed. (YES = 1 point)
3. Patient is unable to provide [age and current month] AND is unable to follow one or both of two commands (eye closure and open/close hands). (YES = 1 point)
Cincinnati Prehosptial Stroke Scale positive or highly suspicious of stroke?
YES
Use the Cincinnati Stroke Triage Assessment Tool (C-STAT) or other evaluation tool approved by the department medical director to evaluate for large vessel occlusion stroke.
LVO Tool positive?
NO
Call STROKE ALERT, pre-notify destination ED. Transport to the closest certified stroke center (ASRH, PSC, TSC, CSC)
NO
Stroke Not Suspected
Treat and transport as indicated per patient presentation.
Determine and document Last Known Well and time of symptom discovery.
YES
Last Known Well Time <24 hours?
NO
YES
Limit scene time to <15 minutes.
Transport time to TSC or CSC will not disqualify for thrombolytic?
NO
YES
Total transport time from scene to nearest CSC <30 minutes total?
YES
Call STROKE ALERT, pre-notify destination ED. Transport to the closest CSC.
NO
Call STROKE ALERT, pre-notify destination ED. Tranport to nearest TSC if one is located within 30 minutes. If no CSC or TSC meets algorhithm time parameters, transport to nearest certified stroke center.

MEDIC

1. Obtain IV access (20 gauge or larger) in the right arm proximal to the wrist, if possible
   i. This specific access is required for advanced neuroimaging.

ALL

Notes:

A. Refer to ED Capability Survey for stroke center certifications.
B. Stroke Center means one of the following: Joint Commission Certified Comprehensive (CSC), Thrombectomy-Capable Stroke Center (TSC), Primary Stroke Center (PSC), Acute Stroke Ready Hospital (ASRH).
C. The **Last Known Well time** is the time that the patient, or others, confirm that they were completely normal (or normal for them) prior to the onset of symptoms. This is NOT the time that the patient or bystanders first noted symptoms. If a patient woke up with symptoms present, then establish the last time the patient was noted to be at their baseline prior to going to sleep. (For example, the patient may have woken up in the middle of the night to go to the bathroom. This is the last known normal time.) If possible, bring a witness of last known normal time to the ED with the patient, and/or gather their contact information for the Stroke Team.
D. **Time of Symptom Discovery** refers to the time at which the symptoms were first noticed by a reliable witness. These terms are often mistakenly used interchangeably, and so explicit capture of both ensures accuracy. Among patients with a witnessed stroke onset, these two times will be the same.
E. Patients who experience transient ischemic attack (TIA) develop most of the same signs and symptoms as those who are experiencing a stroke. The signs and symptoms of TIAs can last from minutes up to one day. Thus the patient may initially present with typical signs and symptoms of a stroke, but those findings may progressively resolve. The patient needs to be transported to the hospital for further evaluation.
F. Some patients who have had a stroke may be unable to communicate but can understand what is being said around them.
G. Place the patient's affected or paralyzed extremity in a secure and safe position during patient movement and transport.
H. In general, hypertension in stroke patients should not be treated in the prehospital setting. Treatment should only be at the direction of online medical control.
I. Do not discount rapid transport just because the “window” is over; allow the ED to determine timeframes for treatment.
J. Patients under 16 years of age, consider preferential transport to Cincinnati Children’s Hospital.
K. A Mobile Stroke Unit (MSU) is able to diagnose and treat acute ischemic stroke and intracranial hemorrhage patients and may be an available prehospital resource for patients with suspected stroke. EMS may hand-off patient care to the MSU in the same way an ED hand-off occurs. If the MSU is en route but not yet on scene, EMS will assess the risk/benefit of immediate transport vs. a minor extension of scene time. The <15-minute scene time guidance does not apply to the MSU.
L. Stroke stickers should be used to improve communications between EMS and the hospital.

References:

American Heart Association. American Heart Association Mission Lifeline: Stroke Severity-based Stroke Triage Algorithm for EMS. 2020; https://www.heart.org/-/media/files/professional/quality-improvement/mission-lifeline/2_25_2020/ds15698-qi-ems-algorithm_update-2142020.pdf?la=en. Accessed July 7, 2020.

ALL

I. INCLUSION CRITERIA

A. Patients of any age.

B. Patient has a Pre-Existing Medical Device or Drug Administrations.

1. Prehospital patient with a pre-existing physician-ordered medical device or drug administration ("MDDA") not covered in the provider's scope of practice.
2. These may include but are not limited to: ventilatory adjuncts (CPAP, BiPAP), continuous or intermittent IV medication infusions (analgesics, antibiotics, chemotherapeutic agents, vasopressors, cardiac drugs), and nontraditional out-of-hospital drug infusion routes (subcutaneous infusaports, central venous access lines, direct subcutaneous infusions, self-contained implanted pumps).
3. Patient may have implanted adjuncts or other accompanying mechanical devices.

II. PROTOCOL

A. When encountering a patient who has medical treatments that a Prehospital Provider has not been trained on it is the responsibility of the provider to determine the best course of treatment by utilizing (but not limited to) the following resources:

1. The patient themselves.
2. The patient's family.
3. Online Medical Control.
4. MDDA product literature/company representative (in person or via telecommunication).
5. Other patient care staff such as MD, RN, LPN, CNA, etc.
6. Any other individual who has been trained in the specific care of the patient (i.e., Day Care Worker).

EMT

7. EMT-Basics should request ALS back-up or intercept if they feel the patient's condition and needs exceed or may exceed their level of care.

ALL

B. Pre-existing MDDA functioning normally:

1. The Prehospital Provider should provide usual care and transportation while maintaining the pre-existing MDDA.

C. Pre-existing MDDA not functioning normally:

1. Provider is to determine if it is in the patient's best interest to re-establish the treatment or allow the preexisting MDDA to remain as found. The Prehospital Provider is to take all reasonable steps to support the course of treatment decided upon.

D. The best course of treatment may include medication administrations outside the provider's normal operations and prior training.

1. The Prehospital Provider is to determine the appropriate course of medical administration by utilizing available resources.

E. If appropriate transport any extra resources/persons with the patient.

1. Some medications may not be safe for an EMT-Basic or Paramedic to continue to administer without accompaniment by appropriately trained personnel most likely from a treatment clinic. If no personnel will accompany the EMS crew, discontinue medication administration. (Ex: Chemotherapy)
2. If transporting a patient from the care of a higher-level provider the Prehospital Providers may, if comfortable, use on-scene training during transport without the accompaniment of the higher-level provider (MD, RN). The Prehospital Providers have the right to request the higher-level provider accompany the patient during transport.

III. SPECIAL SITUATIONS

A. Ventricular Assist Devices (LVAD, RVAD, BiVAD)

1. Appropriate interventions vary by device, recommend using a reference such as the Mechanical Circulatory Support Organization EMS Guide.
2. Always contact the appropriate VAD program coordinator
   a. Cincinnati Children's Hospital Medical Center 513-926-6788
   b. St. Elizabeth 859-301-4823
   c. The Christ Hospital 859-572-1609
   d. TriHealth 513-865-5823

e. University of Cincinnati Medical Center 513-264-3841

3. **The VAD program may be difficult to reach during the time constraints of EMS care. If unable to contact the patient's VAD Program coordinator immediately, contact medical control at receiving ED.**
4. **See VAD Algorithm on the next page.**

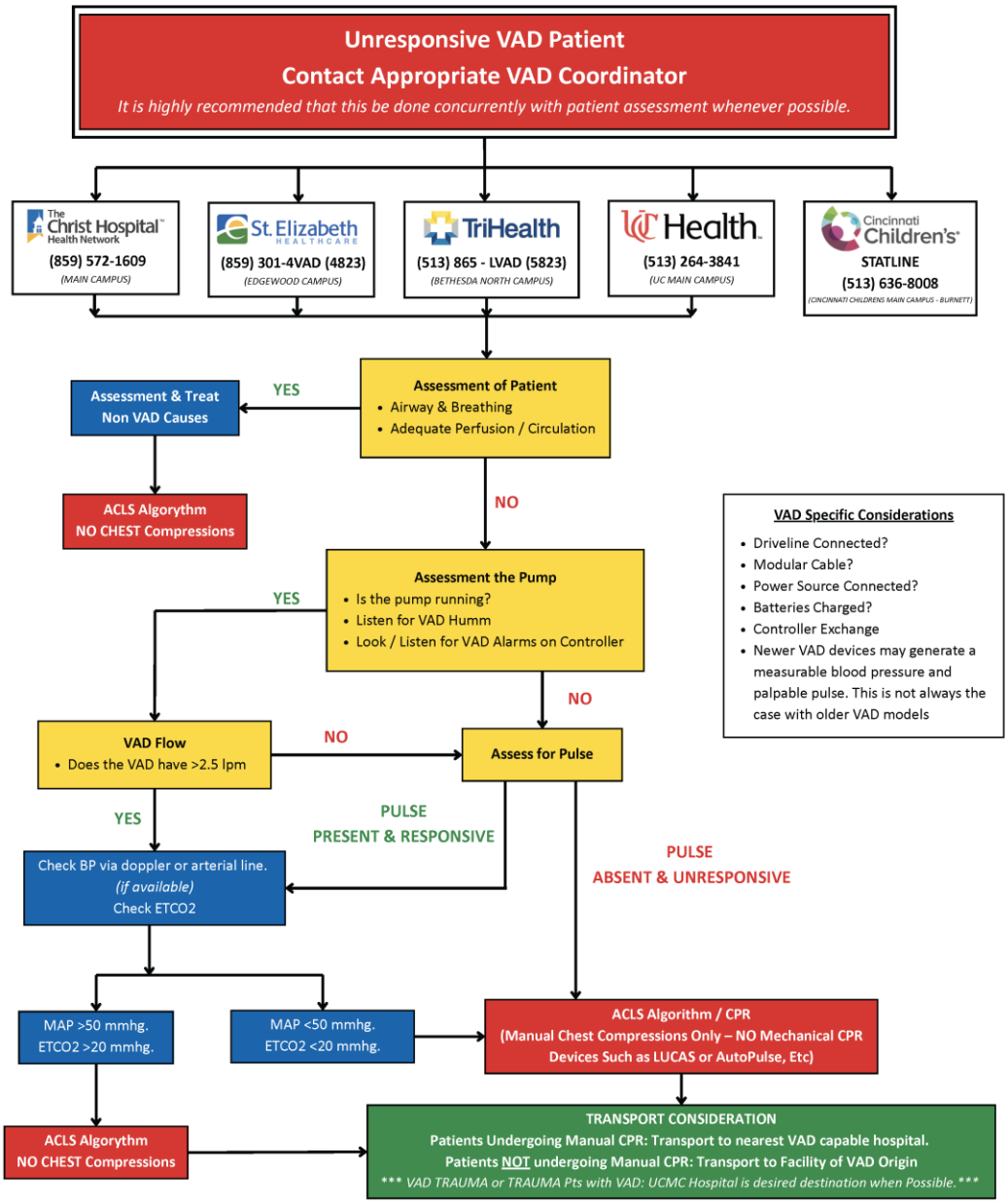
B. Adrenal Insufficiency – follow M417

NOTES:

1. This protocol intends to supply the framework for Prehospital Providers to support existing medical care to provide the best outcome for patient.
2. Under Ohio Scope of Practice EMT-Paramedics are listed as capable of "Medication administration (Protocol approved)." This protocol serves to provide this capability for patients with a pre-existing MDDA. EMT-Basics cannot exceed their particular scope of medications for patient care.
3. In the ever-evolving realm of medical care, it is not practical to create specific guidelines for each individual pre-existing MDDA, the provider should utilize all resources necessary to assist with patient care.
4. Some hospitals/emergency departments are not equipped to handle complications of certain pre-existing MDDAs. The provider should make an effort to transport to the appropriate facility based on each particular patient's situation.
5. **This protocol is NOT intended to give EMT-Basics or Paramedics authorization to attempt procedures or administer medicines outside of a patient's previously established course of care as determined by a physician**.
6. For patients with a Central Venous Access Device in situations requiring emergent venous access due to patient's life being in imminent danger or if patient is in cardio-respiratory arrest refer to the protocol, T703 Emergency Access of CVAD.
7. The best way to handle patients with special situations is proper identification and pre-incident planning. This will allow for the appropriate training and potential to carry pertinent supplies and information should they be needed.

ALL

VAD Emergency Assessment & Interventions



Special Note: VAD patients may not have a palpable pulse, even when clinically stable. When possible, use a Doppler device to obtain blood pressure, or assess perfusion by evaluating skin color and capillary refill. Pulse oximetry is not a reliable indicator of oxygenation in these patients. End-tidal CO_2 monitoring may only be used to assess perfusion if the patient has an endotracheal tube or tracheostomy.

MEDIC

I. Inclusion Criteria

A. The patient expressly requests treatment for a minor medical concern by a specific over the counter (OTC) medication.

B. No sign or symptom of a significant medical condition exists.

C. The paramedic has access to the official manufacturer's list of indications, contraindications, and administration instructions.

II. Definition

A. OTC medications are those that can be obtained by non-medical personnel without prescription.

B. These may include, but are not necessarily limited to:

1. NSAIDS (ibuprofen and naproxen)
2. Acetaminophen
3. Antihistamines
4. Decongestants
5. Antacids
6. Loperamide
7. Antibiotic ointment

III. Protocol

A. Medication allergies, current medications, and medical diagnoses must be reviewed immediately prior to medication administration.

B. OTC medications may be used only for those conditions indicated in writing on the medication's original manufacturer's packaging and insert.

C. OTC medications should not be used if any contraindications / warnings indicated on the medication's original manufacturer's packaging and/or insert apply.

D. OTC medications should ONLY be used in dosages and frequencies indicated on the medication's original manufacturer's packaging and/or insert.

E. Official documentation should be produced and maintained for ALL medical care rendered in the course of a paramedic's duties.

F. This documentation should include, at a minimum: patient identifier, complaint, medical history including allergies and medications, evaluation performed, and treatment rendered.

G. This protocol is not intended for use with patients being transported to the hospital, but instead for patients seeking care at "special events" where paramedics are stationed or for emergency personnel on critical scene assignments.

ALL

I. Definitions

A. *Adrenal Insufficiency (AI)* – potentially life-threatening condition in which the adrenal glands do not produce sufficient quantities of the hormone's cortisol and aldosterone. Addison's Disease and Congenital Adrenal Hyperplasia are two forms of the disease.

B. *Adrenal Crisis* – life threatening condition in which someone with AI fails to mount an adequate response to acute physiologic stress.

1. Early symptoms – non-specific, may resemble viral illness or hypoglycemia.
2. Late symptoms – altered mental status, hypotension, hypoglycemia, seizures, dysrhythmia, cardiopulmonary failure.

II. Inclusion Criteria

A. All patients with known diagnosis of AI who exhibit signs/symptoms of adrenal crisis.

B. Evidence of AI diagnosis may include medical alert tags, patient, or family statement, notes or care description letter from physician, possession of injectable corticosteroids for self or family administration.

III. PROTOCOL

A. If available, allow patient/family to SELF-ADMINISTER steroid therapy (usually in the form of injectable hydrocortisone sodium succinate / Solu Cortef 100mg IM).

MEDIC

B. If self-administration not possible or undesirable, immediately give:

1. Solu-Medrol (Methylprednisolone) 125 mg IM/IV/IO (Adult).
2. Solu-Medrol (Methylprednisolone) 2 mg/kg IM/IV/IO (Pediatric).

ALL

C. Assess blood glucose. If glucose < 60 mg/dl, follow protocol M406 / P608.

D. Manage airway as appropriate.

E. Initiate supplemental oxygen by nonrebreather mask to correct hypoxia <95%.

MEDIC

F. Place patient on cardiac monitor and obtain diagnostic EKG.

G. Administer IV bolus.

1. 500 - 1000 ml normal saline IV/IO (Adult).
2. 20 ml/kg normal saline IV/IO (Pediatric).

H. If hypotension or signs of shock persist, follow protocol SB205.

I. Consider antiemetic treatment M405.

ALL

J. Notify receiving facility and transport patient.

NOTES:

A. Paramedic administration of the patient's own injectable steroid (hydrocortisone sodium succinate 100mg IM) is allowed if the patient/family are unable to do so, EMS agency supplied Solu-Medrol (methylprednisolone) is not available, AND the medication is in a factory sealed container (e.g. vial) with valid expiration date.

B. Any patient-supplied medications given by the patient, family, or EMS should be brought to the hospital with the patient.

ALL

I. **Inclusion Criteria**
   A. Patient's age is 16 years or older.
   B. Symptomatic hyperkalemia with EKG changes.

II. **Protocol**

EMT

   A. Maintain airway and administer oxygen to correct hypoxia <95%.
   B. Place on cardiac monitor.
   C. Obtain diagnostic if able and transmit.

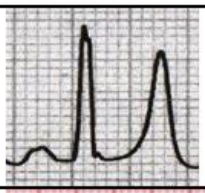
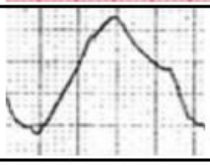
MEDIC

   D. Obtain IV/IO access.
   E. Treat with the following:
      1. Calcium per T714 Calcium Administration.
      2. Sodium bicarbonate 1 mEq/kg IV/IO.
      3. Albuterol/duoneb nebulized continuously (may discontinue with EKG improvement).

ALL

Notes:

A. Hyperkalemia is the serum potassium above the reference range of 5.5 mmol/L that can lead to severe cardiac, hemodynamic, and metabolic dysfunction. Signs and symptoms of severe hyperkalemia include:
   1. Peaked T waves, QRS > 0.12 ms, +/- hypotension
   2. Bicarbonate and calcium can precipitate in same line, therefore, must be given with adequate flushing of the line or in a separate line.

Serum potassium	Typical ECG	Possible ECG abnormalities
Mild (5.5-6.5 mEq/L)		•Peaked T waves •Prolonged PR segments
Moderate (6.5-8.0 mEq/L)		•Loss of P waves •Prolonged QRS complex
Severe (>8.0 mEq/L)		•Widening of QRS complex •Sine wave

B. Consider these treatments early in known end-stage renal disease (ESRD) that are in cardiac arrest.
   1. In these situations, substitute Calcium chloride 20mg/kg (max 1000mg) IVP.

ALL

I. **Inclusion Criteria**
- A. All ages
- B. Provider suspects infection and
- C. Adults: At least one (1) of the following abnormalities:
  1. SBP ≤ 90 mmHg
  2. HR ≥ 90 bpm
  3. Visible tachypnea
  4. Acute altered mental status / confusion
- D. Pediatrics: At least one (1) of the following abnormalities:
  1. Hypotension → a sign of uncompensated shock
     - a. Neonates (0-28 days): SBP < 60 mmHg
     - b. Infants (1 mo – 12 months): SBP < 70 mmHg
     - c. Children (1 yr – 10 years): SBP < 70 + (2 x age in years) mmHg
     - d. Children (>10 years): SBP ≤ 90 mmHg
  2. Sustained tachycardia for age
  3. Tachypnea for age
  4. Cool/pale/mottled skin
  5. Delayed capillary refill (>2 seconds)
  6. Altered mental status – sleepy, drowsy, fussy, irritable.
  7. Weak peripheral pulses.
  8. In warm shock: flash capillary refill, bounding pulses.

II. **Protocol**
- A. Place patient on continuous $ETCO_2$ monitor and record both the $ETCO_2$ and measured respiratory rate.
- B. Record temperature
- C. If altered mental status, check fingerstick glucose and treat per M406 or P608.

III. **Hospital Pre-Notification**
- A. If the following criteria are met, pre-notify the receiving hospital with a "**Sepsis Alert**":
  1. $ETCO_2$ ≤ 25 and
  2. At least two (2) of the following:
     - a. T ≥ 100.4 F (38 C) OR ≤ 96.0 F (~36 C)
     - b. Hypotension
       1. Adults: SBP ≤ 90 mmHg
       2. Pediatric:
          - a. Neonates (0-28 days): SBP < 60 mmHg
          - b. Infants (1 mo – 12 months): SBP < 70 mmHg
          - c. Children (1 yr – 10 years): SBP < 70 + (2 x age in years) mmHg
          - d. Children (>10 years): SBP ≤ 90 mmHg
     - c. HR ≥ 90 bpm for adults; sustained tachycardia for age in pediatric patients (see chart above)
     - d. RR ≥ 20 bpm for adults; tachypnea for age in pediatric patients
     - e. Altered mental status / confusion

MEDIC

IV. **If "Sepsis Alert" criteria met:**
- A. Establish IV (or IO if indicated)
  1. Initiate IV fluids:
     - a. Adult: (30 mL/kg crystalloid fluid; maximum of 500 milliliters) over less than 15 minutes.
     - b. Pediatric: (20mL/kg crystalloid fluid; using a push-pull method of drawing up the fluid in a syringe and pushing it through the IV (preferred for pediatric patients) - may repeat up to 3 times based on patient's condition and clinical impression.
  2. Do not delay transport to initiate IV/IO or fluid bolus.
  3. For persistent/worsening hypotension in non-pediatric patients, consider Push-Dose Epinephrine per SB205 Hypotension/Shock.
  4. Most pediatric patients in the prehospital arena will need FLUIDS pushed/pulled and

	have not been adequately fluid resuscitated to the point of needing pressors administered by a Paramedic.
ALL	**Notes:** A. There are many disease processes that can cause abnormal vital signs. History and physical are important to inform your suspicion of an infection (inclusion criteria): 1. Urinary: Indwelling catheter, history of UTI, urinary symptoms, etc. 2. Pulmonary: Cough, shortness of breath, aspiration, etc. 3. Bloodstream: IV drug use, wounds, indwelling lines, recent infections, etc. 4. Skin: Decubitus ulcer, diabetic wounds, cellulitis, etc. 5. CNS: Confusion, seizures, photophobia, neck stiffness, etc. 6. Abdomen: Ascites with worsening abdominal pain or confusion, recent surgery, etc. B. When obtaining temperature, oral or rectal measurements are likely to be more accurate than superficial measurements, which often underestimate core temperature. C. Any crystalloid fluid is appropriate for initial bolus (Normal Saline, Lactated Ringers, Normosol, Plasmalyte, etc.).

M420	**M420: Opioid Withdrawal**	M420
Last Review: NEW	Academy of Medicine of Cincinnati – Protocols for SW Ohio Prehospital Care Clinical Practice Guidelines	2026

MEDIC

I. INCLUSION CRITERIA

A. Patient's age is 16 years or older
B. Withdrawal from opioids due to the administration of naloxone
C. Withdrawal from opioids due to 24 hours or greater of no use

Opioid Withdrawal Signs/Symptoms:

- Yawning
- Rhinorrhea
- Lacrimation
- Dilated Pupils
- Tachycardia
- Diaphoresis
- Restlessness
- Agitation
- Vomiting/Diarrhea
- Piloerection
- Nausea
- Stomach Cramps
- Body Aches
- Bone/Joint Aches
- Hot/Cold Temp.
- Nasal Congestion

II. EXCLUSION CRITERIA AND DIFFERENTIAL DIAGNOSIS

A. Patient's age is under 16 years
B. Any methadone uses within 10 days
C. COWS (clinical opioid withdrawal scale) score less than 8
D. Other severe medical illness aside from or in addition to opioid withdrawal
E. Altered mental status or inability to give consent or understand potential risks and benefits

III. PROTOCOL

A. If EMS personnel suspect opioid withdrawal either from administration of naloxone or abstinence from opioids, a COWS score should be performed and documented.
B. If COWS score 8 or greater, discuss buprenorphine initiation with patient.
C. If patient consents, administer 16mg of buprenorphine SL and recommend transport to most appropriate facility.
D. If prolonged transport or scene time, reassess patient after 10 minutes following administration of buprenorphine and perform and document an additional COWS score. If still experiencing nausea, see protocol M405 Nausea/Vomiting. If still restless or agitated, see protocol M408 Restraint.

Notes:

A. Buprenorphine can be purchased in multiple formulations, the most common brand names being Suboxone and Subutex. Suboxone includes both buprenorphine and naloxone whereas Subutex is just buprenorphine. Be sure that the initial dose of buprenorphine administered is 16mg regardless of the formulation.
B. If patient refuses transport, every effort should be made to provide the patient with a leave-behind naloxone kit. This should be attempted regardless of whether the patient receives buprenorphine or not.

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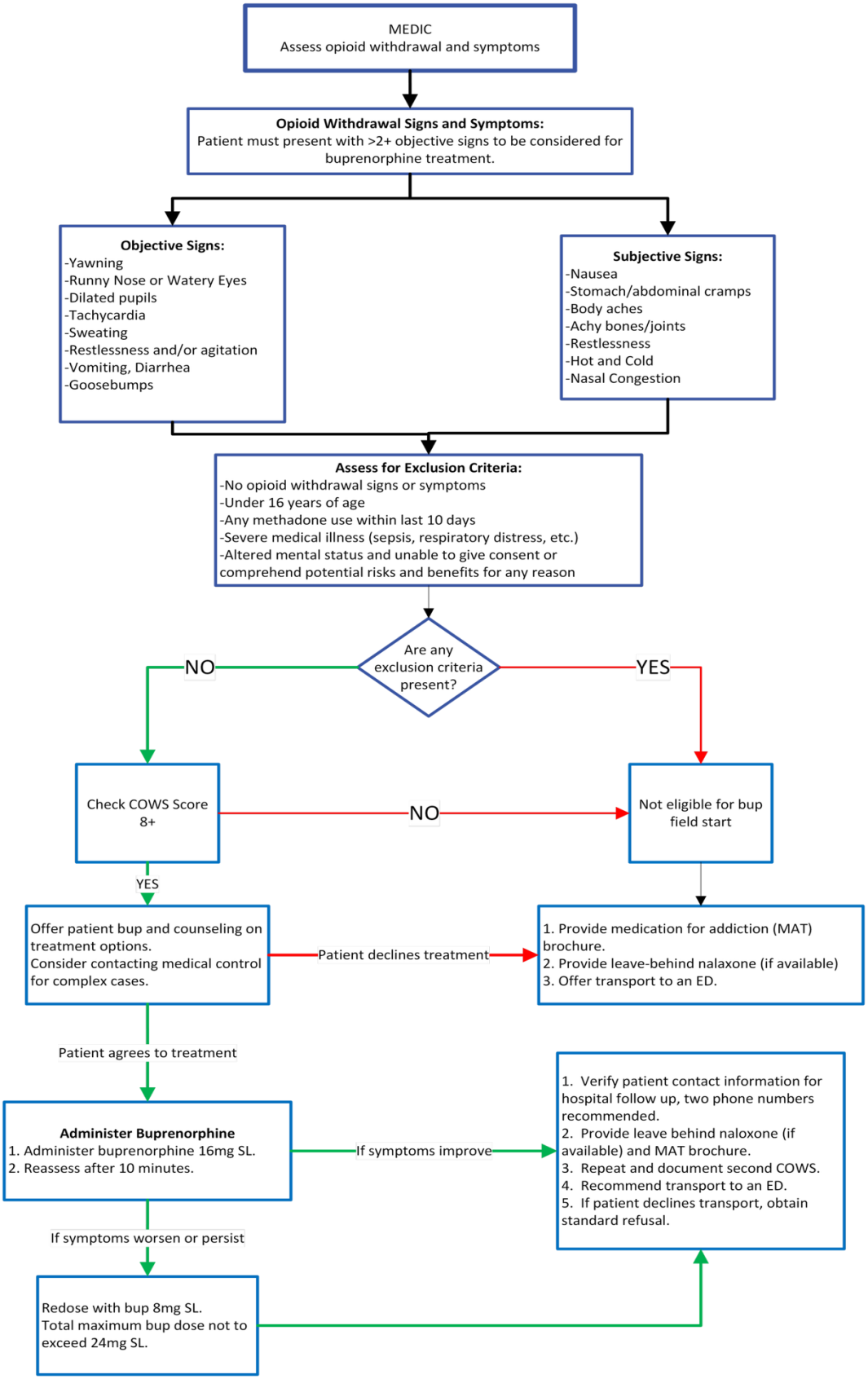


Based on California BRIDGE Program.

Wesson & Ling, J Psychoactive Drugs. 2003 Apr-Jun;35(2):253-9.

COWS Clinical Opiate Withdrawal Scale

Resting Pulse Rate: _____beats/minute *Measured after patient is sitting or lying for one minute* 0 Pulse rate 80 or below 1 Pulse rate 81-100 2 Pulse rate 101-120 4 Pulse rate greater than 120	GI Upset: *over last 1/2 hour* 0 No GI symptoms 1 Stomach cramps 2 Nausea or loose stool 3 Vomiting or diarrhea 5 Multiple episodes of diarrhea or vomiting
Sweating: *over past 1/2 hour not accounted for by room temperature or patient activity.* 0 No report of chills or flushing 1 Subjective report of chills or flushing 2 Flushed or observable moistness on face 3 Beads of sweat on brow or face 4 Sweat streaming off face	Tremor *observation of outstretched hands* 0 No tremor 1 Tremor can be felt, but not observed 2 Slight tremor observable 4 Gross tremor or muscle twitching
Restlessness *Observation during assessment* 0 Able to sit still 1 Reports difficulty sifting still, but is able to do so 3 Frequent shifting or extraneous movements of legs/arms 5 Unable to sit still for more than a few seconds	Yawning *Observation during assessment* 0 No yawning 1 Yawning once or twice during assessment 2 Yawning three or more times during assessment 4 Yawning several times/minute
Pupil size 0 Pupils pinned or normal size for room light 1 Pupils possibly larger than normal for room light 2 Pupils moderately dilated 5 Pupils so dilated that only the rim of the iris is visible	Anxiety or irritability 0 None 1 Patient reports increasing irritability or anxiousness 2 Patient obviously irritable anxious 4 Patient so irritable or anxious that participation in the assessment is difficult
Bone or Joint aches *If patient was having pain previously, only the additional component attributed to opiates withdrawal is scored* 0 Not present 1 Mild diffuse discomfort 2 Patient reports severe diffuse aching of joints/ muscles 4 Patient is rubbing joints or muscles and is unable to sit still because of discomfort	Gooseflesh skin 0 Skin is smooth 3 Piloerrection of skin can be felt or hairs standing up on arms 5 Prominent piloerrection
Runny nose or tearing *Not accounted for by cold symptoms or allergies* 0 Not present 1 Nasal stuffiness or unusually moist eyes 2 Nose running or tearing 4 Nose constantly running or tears streaming down cheeks	Total Score _____ The total score is the sum of all 11 items Initials of person completing Assessment:_____

Score: 5-12 mild; 13-24 moderate; 25-36 moderately severe; more than 36 = severe withdrawal

ALL

A. **Inclusion Criteria**
   A. Age: 6 months and up.
   B. Presence of fever is defined as oral, temporal, tympanic or non-contact thermometer reading obtained by EMS of >100.4°F.
   C. Patient has the ability to swallow liquids.
B. **Exclusion Criteria**
   A. Patient received acetaminophen or acetaminophen-containing products within the last six hours.
   B. The patient is allergic to acetaminophen.
C. **Protocol**
   A. Obtain temperature and document method used to obtain temperature.
   B. If the patient is febrile, remove excessive blankets and clothing to facilitate passive cooling.
   C. If the patient or guardian has provided a room temperature wet washcloth, EMS is permitted to continue its' use.
   D. If the patient is suspected of being septic, refer to M419 Sepsis.

MEDIC

   E. If the patient's weight is known, utilize that weight for dosing.
   F. If the patient's weight is unknown, utilize length-based tape to determine weight.
   G. Dosing questions should be directed to medical control.
   H. **PEDIATRIC DOSING** - Administer acetaminophen orally per the dosing chart below.

PEDIATRIC DOSING	
Patient Weight (kg)	Children's Acetaminophen Suspension Liquid (160mg/5mL)
6-12 lbs. (3-5 kg)	¼ tsp or 1.25 mL (40 mg)
13-16 lbs. (6-7 kg)	½ tsp or 2.5 mL (80 mg)
17-25 lbs. (8-11 kg)	¾ tsp or 3.75 mL (120 mg)
26-31 lbs. (12-14 kg)	1 tsp or 5 mL (160 mg)
32-51 lbs. (15-23 kg)	1.5 tsp or 7.5 mL (240 mg)
52-64 lbs. (24-29 kg)	2 tsp or 10 mL (320 mg)
65-79 lbs. (30-35 kg)	2.5 tsp or 12.5 mL (400 mg)
80+ lbs. (36+ kg)	3 tsp or 15mL (480mg)

   I. **ADULT DOSING** - Adults may be given oral tablet or caplet form.
      1. Administer 650-1000mg PO with a sip of water.

KY - EMT

   J. In Kentucky, EMT's are permitted to administer acetaminophen. As such, KY EMT's may administer acetaminophen as shown in the above "Medic" section.

ALL

Notes:
   A. As a reminder, hyperthermia has causes other than fever. Assess the patient for other factors, such as environmental causes, and treat per relevant protocol.
   B. Do not split tablets or caplets to give to children. Only use the liquid formulation as the dosing is more exact.

ALL

I. Introduction

A. The purpose of this protocol is to provide a reference for EMS when dealing with the legal system. This can include but is not limited to suspected abuse or neglect, crime scene management, sexual assault.

II. Suspected Child Abuse

A. In the States of Ohio and Indiana, and in the Commonwealth of Kentucky, healthcare professionals are "mandatory reporters" when dealing with suspected child abuse.

B. Abuse is defined as a victim of sexual activity, is endangered, exhibits evidence of physical or mental injury inflicted other than by accidental means, suffers physical or mental injury because of a guardian's acts.

C. A form of abuse is neglect. Neglect is defined as: abandoned, lacks adequate parental care, guardian neglects to provide subsistence, education, medical/surgical care, or other necessary care; guardian refuses to provide special care; guardian has attempted to place the child in permanent custody of an institution or foster agency; because of parental neglect suffers physical or mental injury.

D. In cases of suspected abuse, one member of the crew must report the suspected abuse to the proper authorities. This may include local law enforcement, a state department tasked with this responsibility, or to an investigator with Child Protective Services.

1. Ohio Dept. of Job and Family Services: 855-642-4453
2. Kentucky Child/Adult Protective Services: 877-597-2331
3. Indiana Child Abuse Hotline: 800-800-5556

E. When documenting physical findings, avoid attempting to document the age of the bruising or injury, and what you suspect caused the injury. Document objectively what you find. You are not required to perform an investigative exam with measurements and photographs.

F. The EMS crew must report their suspicions of abuse to either the nurse or physician assuming care of the patient in the Emergency Department.

G. Investigators may request additional information following a verbal report. These disclosures are expressly permitted by HIPAA.

H. Information that you may be asked to provide include:

1. The name and address of the child
2. Age
3. Name and address of the guardian
4. Name of the person(s) you suspect are abusing or neglecting the child.
5. The reason you suspect the child is being abused or neglected.
6. Any other information you believe may be helpful to the investigation.

I. If you have suspicion of child abuse, you believe the patient needs medical care, and the guardian is refusing transport, get local police involved immediately. Medical control can also be engaged to help with decision making.

III. Elder Abuse

A. The States of Ohio and Indiana, and the Commonwealth of Kentucky made all firefighters and EMS professionals "mandatory reporters" of suspected elder abuse or neglect.

B. Elder abuse refers to any knowing, intentional, or negligent act by a caregiver or any other person that causes harm or a serious risk of harm to a vulnerable adult.

C. **Neglect or isolation occurs when someone's basic needs are not being med, putting them at higher risk for getting sick or hurt. Neglect can result from the patients' own wishes, or the inaction of another.**

D. **Financial abuse and exploitation occur when one person uses another person's money, information, or belongings for their own personal benefit.**

E. In cases of suspected abuse, exploitation, or neglect, one member of the crew must report the suspected abuse to the proper authorities. This may include local law enforcement, a state department tasked with this responsibility, or to an investigator with Adult Protective Services.

F. The following numbers are for reference but are not for emergency requests. These should still be made with local law enforcement.

1. Ohio Dept. of Job and Family Services: 855-644-6277
2. Kentucky Child/Adult Protective Services: 877-597-2331
3. Indiana Child Abuse Hotline: 800-992-6978

G. When documenting physical findings, avoid attempting to document the age of the bruising or injury, and what you suspect caused the injury. Document objectively what you find. You are not required to perform an investigative exam with measurements and photographs.

H. The EMS crew must report their suspicions of abuse to either the nurse or physician assuming care of the patient in the Emergency Department.

I. Investigators may request additional information following a verbal report. These disclosures are expressly permitted by HIPAA.

J. Information that you may be asked to provide include:

1. The name and address of the person
2. Name and address of the person responsible for the victim's care
3. Name of the person(s) you suspect are abusing or neglecting the elder
4. The reason you suspect the elder is being abused, exploited, or neglected.
5. Any other information you believe may be helpful to the investigation.

K. If you have suspicion of elder abuse, you believe the patient needs medical care, and a guardian is refusing transport, get local police involved immediately. Medical control can also be engaged to help with decision making.

IV. Crime Scene Management

A. Patient care is prioritized over evidence preservation. However, every attempt should be made to preserve evidence when doing so does not interfere with patient care.

B. Only enter and exit through one location, trying to keep footsteps within one path.

C. Do not walk in fluids present on scene when able.

D. If you must move something (furniture, personal effects), note its location prior to movement.

E. Avoid touching anything without gloves. Minimize surfaces touched.

F. Leave the victim undisturbed as able if attempting to determine death.

G. If clothing must be cut, avoid cutting through any holes, slits, or other damage/contamination to the clothing. Cut along seams if possible.

H. Any removed clothing should be placed into a paper grocery type bag, or onto a clean sheet and presented to law enforcement when able. If unable to hand over to law enforcement, sign the clothing over to the ED RN or hospital security. Note the time and person you handed it over to.

I. Avoid cleaning skin except as needed for patient care.

J. Do not remove garbage generated on scene or attempt to clean the scene in any way. Sharps generated as part of patient care should be placed into a sharps container.

V. Suspected Sexual Assault

A. Medical or trauma complaints take priority over destination or care modification as below.

B. Pediatric victims of suspected sexual assault should preferentially be transported to Cincinnati Children's Hospital Main Campus.

C. Adult victims of suspected sexual assault should be taken to an emergency department. All local emergency departments have Sexual Assault Nurse Examiners on-call.

D. Have the patient remain in their current clothing. If the patient has changed since the assault, have the patient bring the prior clothes.

E. Avoid letting the patient use the restroom, wash anything, eat, drink, use chewing gum, brush teeth, or use mouthwash as these actions may contaminate or wash away evidence.

F. Avoid performing any medical treatment, including invasive procedures (such as FSBG, IV access) unless necessary. Avoid contact with the patient to avoid disturbing possible evidence. You may take vital signs but note which arm you performed a BP and which finger for pulse ox.

G. Avoid going into detail about the assault. This will be done by the SANE nurse and law enforcement. The patient may omit important information if they tell the story repeatedly. Always document patient statements in quotation marks.

H. Drug-facilitated sexual assault may occur. Refer to M411 Toxicological Emergencies if needed.

I. Patients have the right to receive a medical screening examination, prophylaxis for sexually

transmitted diseases and pregnancy, and medical evidence collection without filing a police report. Criminal investigations are separate from this process in adults.

KY - ALL

VI. Safe Infants Act – Safe Infants Protocol for Prehospital Providers

A. Any parent or person acting on behalf of the parent may come to a police station, firehouse, EMS station, or hospital unannounced and leave a newborn infant. When this event occurs, the police officer, firefighter, EMS worker, or hospital worker SHALL accept the infant. This situation must meet the following criteria.
   1. The newborn infant must be medically determined to be less than 72 hours old.
   2. The newborn infant cannot have indicators of child abuse, maltreatment, or neglect after birth.

B. Perform a primary and secondary survey of the infant and initiate any necessary procedure to protect the health and safety. Keep the newborn warm especially the head.

C. Consider rapid glucose determination.

D. Kentucky law requires that any care provider who suspects child abuse, neglect, or maltreatment SHALL report it. You should call the Department for Community Based Services (DCBS) hotline at 1-800- 752-6200 to make your report. You have no authority to detain, follow or pursue the parent.

E. Summon EMS for transport of the infant.

F. Notify your supervisor and follow any policies and procedures your agency has implemented.

G. Retrieve and open an "Abandoned Infant" packet. Complete the enclosed checklist.

H. Place the numbered band around the ankle of the infant.

I. Ensure that the bands stub remains attached to the Medical Information Form and copy the stub number directly onto the Medical Information Form.

J. You will offer the parent information regarding medical needs of the mother who is post-partum rights, and services available to the parent, which have been provided in the packet.

K. Newborn infants should be transported in an age appropriate car seat if available. Otherwise, newborns should be transported using appropriate immobilization measures.

L. Newborn infants may be fed with SIMILAC or ENFAMIL if a lengthy transport time is anticipated. Newborns normally eat 2-2.5 ounces of formula at feeding. Feeding is not advised for any infant that is experiencing any respiratory or circulatory abnormality.

M. KRS211.951, 2216B.190, 311.6526, 405.075 and 620.355 is known as the Thomas J. Burch Safe Infants Act. The law provides a safe place for unwanted newborn babies. Parents may now leave an unwanted infant with any Kentucky EMS provider, police station, fire station or hospital without consequence. I hope that preventing any unwanted newborn from being left in a dangerous or deadly environment.
   Provide the mother with the "How to Keep Yourself Healthy" brochure found at: https://www.chfs.ky.gov/agencies/dcbs/dpp/cpb/Documents/Safeinfantkeephelathy210.pdf and the "A Safe Place for your Baby" brochure found at: https://chfs.ky.gov/agencies/dcbs/dpp/cpb/Documents/Safeinfantsafeplace210.pdf

ALL

I. Inclusion Criteria

A. Patient's age is 16 years or older.

B. Any significant extremity or truncal wound (neck, chest, abdomen, pelvis), with or without obvious blood loss or hypotension, irrespective of blood pressure. If the patient is coherent, and has a palpable radial pulse, the blood loss has likely stopped.[1]

C. The trauma patient **with a head injury** requires special consideration.

1. Hypotension (Systolic Blood Pressure (SBP) less than 90 mmHg) and hypoxia (oxygen saturation (SpO_2) less than 90%) are known to exacerbate secondary brain injury.
2. The target SBP is 90 mmHg or greater, and improvement in any initial altered mental status.

D. Patients experiencing hemorrhagic shock **without a head injury** are only volume resuscitated when they have a decreased mental status or absent radial pulses.

II. Protocol

A. Aggressively manage the airway and administer oxygen to correct hypoxia <95%.

B. If the patient is a victim of trauma, immobilize the patient as per T704 Spinal Immobilization Protocol.

MEDIC

C. If the patient is not maintaining adequate respirations, intubate with C-spine precautions if the patient will tolerate the attempt. No more than one minute should be spent attempting endotracheal intubation in patients with spontaneous breathing.

D. Identify and treat life-threatening respiratory problems (i.e., open chest wounds, flail chest, etc.). For treatment of tension pneumothorax see T701 Tension Pneumothorax Decompression Protocol.

ALL

E. Control all external bleeding.

F. Begin transport as soon as possible to appropriate hospital as directed in SB207 Guidelines for Assessment/Transport of Adult Trauma Patients Protocol. Unless the patient is entrapped, scene time should be less than 10 minutes. Hospital notification should be made whenever possible.

MEDIC

G. Without delaying transport, initiate 2 large bore IVs of Normal Saline (NS). Begin with a fluid bolus of 500 mL NS and reassess the patient's mental status. If no improvement, continue with an additional fluid bolus of 500 mL NS.

H. In patients that do not respond to fluid resuscitation, consider untreated tension pneumothorax as possible cause of refractory shock.

ALL

I. In patients with penetrating trauma who are mentating normally and/or have a palpable radial pulse, it is acceptable to initiate and continue transport without the administration of IV fluids.

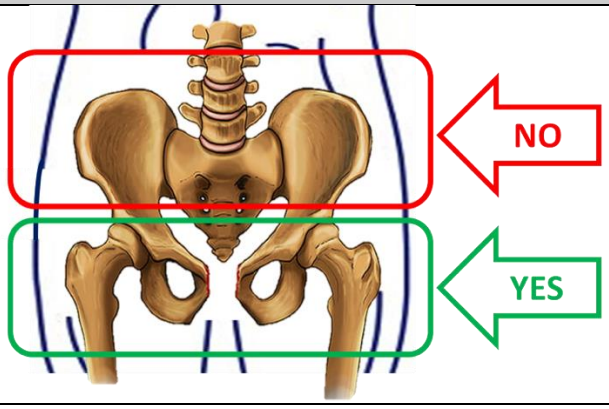
J. Hypothermia prevention measures should be initiated while fluid resuscitation is being accomplished including removal of wet clothing, blankets, or anything that will retain heat and keep patient dry.

K. Patients who are hypovolemic quickly become hypothermic. All patients should be aggressively managed to decrease body-heat loss.

L. Continue secondary assessment throughout transport and continuously reassess mental status, perfusion and vital signs, and breath sounds at least every 5 minutes.

M. In patients with blunt trauma and pelvic pain or who have altered mental status and a mechanism consistent with possible open book pelvic fracture (i.e., high-speed MVC, motorcycle/ATV crashes, pedestrian struck, and falls from significant height), consider the placement of a pelvic binder.

1. A pelvic binder SHOULD NOT be used in elderly patients with isolated falls from standing height with hip or pelvic pain.
2. Any commercially available pelvic binder may be used.
3. If no commercial pelvic binder is available, a properly placed improvised pelvic binder with a bed sheet can be substituted.

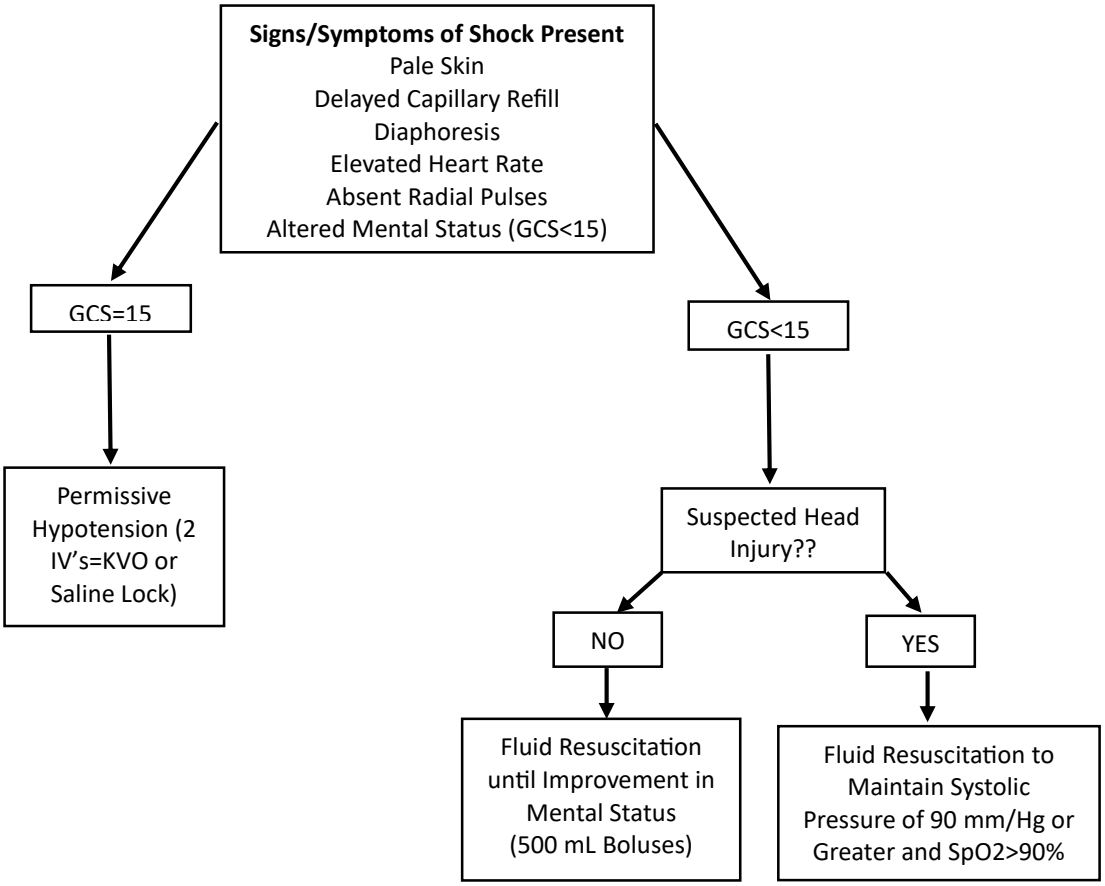


Notes:

A. A reasonable performance goal for an EMS system is that 90% of patients who have traumatic shock and are not entrapped should be delivered to a definitive trauma care facility within 30 minutes from the time of injury.

B. Patients with penetrating chest trauma, abnormal mental status, and absence of a radial pulse are especially in need of immediate transport to definitive care. Early airway management per T705 - Airway Management.

Fluid Management for Suspected Hemorrhagic Shock from Trauma



ALL

I. Inclusion Criteria

A. Patient's age is 16 years or older.
B. History of loss of consciousness following head injury, OR
C. History of motor vehicle accident, diving accident, fall, or other trauma.
D. Head contusions, abrasions, or lacerations, OR
E. Evidence of significant facial trauma (i.e., fractures) OR
F. Fluid or blood from nose, ears, or mouth, OR
G. Altered mental status.
H. May have loss of sensation or movement.
I. May have pain in back or neck.
J. No signs of shock. If shock is present, refer to S500 Hemorrhagic Shock and/or Suspected Head Injury Protocol.

II. Protocol

A. Aggressively manage the airway:
1. Assess for hypoxemia (SpO2 <95%) continuously. Hypoxemia should be avoided.
2. If the patient has a patent airway and is breathing adequately, administer oxygen to maintain SpO2 > 95%. If hypoxemia cannot be corrected with supplemental oxygen, initiate Airway Management Protocol (T705).
3. If the patient does not have a patent airway, is not breathing adequately or has an altered mental status initiate Airway Management Protocol (T705).
4. Maintain a respiratory rate of 10 breaths per minute. Goal end tidal CO2 is 35-45 mmHg.
5. ONLY if patient has asymmetric pupils (>1mm difference) and is comatose, hyperventilate to an ETCO2 of 3-5 mmHg lower than established value. STOP if pupils normalize.

B. Frequently monitor VS (approximately every 5 minutes) and reassess for signs of shock. If shock becomes present, refer to S500 Hemorrhagic Shock and/or Suspected Head Injury Protocol.
1. Target systolic blood pressure is 100 mm Hg or greater.
mmobilize the patient with full spinal precautions as per T704 Spinal Motion Restriction Protocol. Elevate the head of the bed/top of the backboard whenever possible.

D. Measure GCS initially and after airway management. Measure GCS before any sedative drugs are given.
E. Measure pupil size initially. Reassess pupil size frequently.
F. Begin transport as soon as possible to appropriate hospital as directed in SB207 or Geriatric Guidelines for Assessment/Transport of Adult Trauma Patients Protocol SB209.
G. If GCS is less than 14, or spinal cord injury is suspected, then hospital notification should be made whenever possible.
H. If signs and symptoms of altered mental status are present (i.e., suspected hypoglycemia or narcotic overdose), then check Blood Glucose and refer to SB201 Altered Mental Status Protocol.

MEDIC

I. Place patient on cardiac monitor. If a dysrhythmia is present, then proceed to the appropriate protocol.
I. Establish IV/IO access.
J. If patient has signs of cerebral herniation which include coma and unilateral or bilateral blown pupil, posturing, or decline in GCS during transport >2 points then consider administration of 500 mL 3% saline solution if available.

ALL

Notes:

A. Shock is not usually due to head injuries. If patient is in shock, consider another cause for the hypotension.
B. Remember that restlessness can be due to hypoxia and shock, not just head injury.
C. Patients with traumatic brain injuries have worse outcomes when they are suffering from the "H Bombs." These are hyperventilation, hypotension, and hypoxia.
1. Unless a patient is actively herniating (AMS with unequal pupils) target their end tidal CO2 to 35-45 mmHg, which avoids hyperventilation. Often this is accomplished with a respiratory rate of 10 breaths a minutes.
2. Aggressively treat hypotension with IV fluids. While 100 mmHg is listed as the optimal target,

there is some research suggesting the target number may be higher. One hypotensive prehospital blood pressure is related to worse patient outcomes.

3. Aggressively treat hypoxia with high flow oxygen to maintain oxygen saturations greater than 95%.

SOURCES:

1: Al Lulla, Angela Lumba-Brown, Annette M. Totten, Patrick J. Maher, Neeraj Badjatia, Randy Bell, Christina T. J. Donayri, Mary E. Fallat, Gregory W. J. Hawryluk, Scott
A. Goldberg, Halim M. A. Hennes, Steven P. Ignell, Jamshid Ghajar, Brian P. Krzyzaniak, E. Brooke Lerner, Daniel Nishijima, Charles Schleien, Stacy Shackelford, Erik Swartz, David W. Wright, Rachel Zhang, Andy Jagoda & Bentley J. Bobrow (2023): Prehospital Guidelines for the Management of Traumatic Brain Injury – 3rd Edition, Prehospital Emergency Care, DOI: 10.1080/10903127.2023.2187905

2: Spaite DW, et al. Optimal prehospital blood pressure in major traumatic brain injury: a challenge to the current understanding of hypotension. Ann Emerg Med 2022;80(1)Jul:46-59. DOI 10.1016/j.annemergmed.2022.01.045.

ALL

I. INCLUSION CRITERIA

A. Patient of any age.
B. Partial thickness burns greater than 20% of body surface area, OR
C. Full thickness burns greater than 15% of body surface area, OR
D. Any patient with electrical injury.
E. Singed nasal or facial hair, soot or erythema of mouth, or respiratory distress.

MEDIC

F. If EKG findings are other than normal sinus rhythm, sinus tachycardia, or atrial fibrillation with controlled ventricular response, proceed to appropriate arrhythmia protocol.

ALL

II. PROTOCOL

A. Evaluate scene for safety.
B. Remove patient from source of burn including all clothing. Cover with clean/dry sheet.
C. Maintain airway and administer oxygen to correct hypoxia <95%. If there is suspicion for carbon monoxide or cyanide poisoning, provide supplemental oxygen regardless of pulse oximetry reading.
D. If patient is pulseless and apneic, begin CPR

MEDIC

E. If patient is unconscious or has any respiratory distress, intubate immediately.

ALL

F. Remove all rings, constricting bands and prostheses from all extremities.
G. Cover with blankets to avoid hypothermia.

MEDIC

H. Initiate IV/IO access. Provide crystalloid fluids: 5 y/o 125 ml/hr. | 6-13y/o 250ml/hr. | 14+ 500ml/hr.
I. Consider the administration of pain medication in alert and hemodynamically stable patients, per protocol S505.

ALL

J. Transport patient to an appropriate facility capable of treating major burns.
K. Notify the receiving facility.
L. Consider Carbon Monoxide and Cyanide poisoning refer to M411 Toxicological Emergencies.
M. Burn Gel Pads such as Hydro Gel may be used as a dressing on most minor superficial and partial thickness burns. These products may provide a soothing/cooling effect to the burn area without the risk of hypothermia that may be induced by a moist saline dressings. Some of the Hydro Gel type pads require a secondary dressing (Kerlix/Kling, etc) to secure the pad over the burn.

ALL

NOTES:

A. Two methods to estimate the percentage of body burned
(*This includes partial and full thickness burns only)*

Rule of 9's		
	Adults	**Children**
Head	9%	18%
Anterior Trunk	18%	18%
Posterior Trunk	18%	18%
Each Upper Extremity	9%	9%
Each Lower Extremity	18%	14%
Genitals/Perineum	1%	-

Patient's entire palmar surface is approximately 1%

Rule of 9's		
	Adults	**Children**
Head	9%	18%
Anterior Trunk	18%	18%
Posterior Trunk	18%	18%
Each Upper Extremity	9%	9%
Each Lower Extremity	18%	14%
Genitals/Perineum	1%	-

S503	**S503: Superficial Tranexamic Acid (TXA) Administration**	S503
Last Modified: NEW	Academy of Medicine of Cincinnati EMS Protocols Prehospital Care Clinical Practice Guidelines	2026

ALL

I. INCLUSION CRITERIA

A. Any age

B. Superficial bleeding injury without hemostasis from pressure alone, such as:

1. Anterior epistaxis not hemostatic after pinching nose while leaning forward for 10 minutes
2. Superficial skin injury not hemostatic after 10 minutes of pressure

C. Non-profuse hemorrhage where application of direct pressure isn't ideal (ex. penile lacerations)

II. EXCLUSION CRITERIA

A. Previous allergic reaction to TXA.

B. Patients with clear contraindications for anti-fibrinolytic agents (evidence of active intravascular thrombotic disease such as PE or DVT or disseminated intravascular coagulation).

C. Deep or penetrating injury(ies) (e.g. GSW, tracking wounds, wounds with pulsatile/arterial bleeding).

1. For these injuries, follow currently established protocols.

D. Preceding administration of IV TXA.

E. Not for use with gauze prior to being used as packing into wounds

F. Bleeding from a dialysis fistula.

III. PROTOCOL

A. Secure airway following T705 Airway Procedure.

B. Control all other bleeding sources and manage any hemorrhagic shock.

C. Obtain vitals

D. Transport patient to appropriate facility

E. Notify receiving hospital with patient information as soon as possible

MEDIC

F. After ensuring patient meets all inclusion criteria:

1. For superficial wounds:
   a. Soak gauze in the undiluted contents (100 mg/mL) of a standard ampule of tranexamic acid solution used for injection.
   b. Place TXA soaked gauze over wound and apply pressure for 10 minutes.
   c. After 10 minutes of applied pressure, if not yet at receiving hospital, wrap wound with dressing leaving TXA soaked gauze in place over wound.
2. For Epistaxis Refer to Epistaxis protocol S508.

ALL

I. INCLUSION CRITERIA

A. History of actual or suspected eye injury.

B. Examination consistent with suspected eye injury.

II. PROTOCOL

A. OPEN GLOBE INJURY:

1. If there is an impaled object, stabilize it in place and cover other eye to prevent movement.
2. If there is evidence of a penetrating eye injury such as visible globe laceration or fluid draining from the globe, cover the affected eye with a metal eye patch or other similar ridged, non-absorbent material. Do not wrap eye under pressure or press on the globe.
3. Do not use Morgan Lens, proparacaine, or topical medications if open globe injury is suspected.
4. Displacement of eye should be treated with moist sterile dressing and prehospital notification made.

B. CHEMICAL EXPOSURE OR NO EVIDENCE OF OPEN GLOBE INJURY:

1. If the patient has a chemical exposure to the eye or a non-penetrating foreign body in the eye, proceed in the following manner:
2. Begin irrigation by instilling copious amounts of tap water, sterile water, or normal saline for at least 15 minutes.
3. Use of an on-site commercial eye-wash station is also acceptable prior to transport.

MEDIC

4. Administer Pain Medication per S505.
5. Administer Ondansetron per M405.
6. If **no** suspected open globe injury:
   a. Instill two drops of 0.5% proparacaine (Alcaine) or tetracaine into the affected eye.
   b. Warn the patient not to rub the eye while the cornea is anesthetized, since this may cause corneal abrasion and greater discomfort when the anesthesia wears off.
   c. After 20 minutes, a second dose of proparacaine may be given if needed.
   d. Do not use Morgan Lens, proparacaine, or topical medications with an open globe injury.

ALL

NOTES:

- Proparacaine administration may cause burning or stinging of the eye initially. The time until onset of anesthesia after proparacaine instillation ranges from 6 to 20 seconds.
- Local instillation in the eye rarely produces adverse effects. Systemic reactions are unlikely when used in recommended doses.
- Remember that eye injuries can cause a great deal of patient anxiety. Provide reassurance.
- When not contraindicated by other injuries or need for spinal immobilization, then transport the patient with the head of the bed elevated at least 30 degrees.
- Morgan Lens, bulb syringes, nasal cannulas, or IV tubing can be used to flush eyes.

ALL

I. General Considerations

A. This protocol is for the management of acute pain, including pain from suspected trauma, including but not limited to thermal and chemical burns, frostbite, crush injuries, fractures, dislocations, sprains, and abdominal pain including unilateral flank pain.

B. This protocol is NOT for the treatment of chronic pain.

C. Medical Control must be contacted if you feel that narcotics are needed for pain from a chronic condition or disorder.

D. There must be documentation of patient's pain during the initial patient contact, during treatment, and after any interventions made for pain, as well as vital signs before each administration of medications.

E. Always consider the weight of your patient when dosing pain medication, especially in the elderly.

II. Historical Findings

A. Patient's age is 16 years and old. (Patients <16 years old, refer to P611 Pediatric Pain Management)

B. Patient is experiencing acute moderate to severe pain.

III. Physical Findings (applies to Fentanyl and Morphine ONLY)

A. No signs or symptoms of circulatory shock.

B. Systolic BP is greater than 100 mmHg.

C. No signs of respiratory depression.

D. No altered level of consciousness, mental status change, or suspected head injury.

IV. Protocol

EMT

A. Consider calling for ALS response to the scene or set up a rendezvous if transport to the hospital is longer than 10 minutes.

B. Determine patient's pain score assessment using standard pain scale.

C. Consider initial use of non-pharmaceutical pain management techniques.

1. Position of comfort.
2. Use of ice packs and/or splints
3. Verbal reassurance or distraction to minimize anxiety.

KY - EMT

D. **Mild Pain**

1. Administer acetaminophen (Tylenol®) 650-1000mg PO.
   a. Only consider if patient able to swallow and maintain patent airway.
   b. Do not administer if patient has taken acetaminophen (Tylenol®) or acetaminophen-containing products (e.g., Vicodin, Norco, Percocet, or certain cold/flu remedies) within the past six hours or if actively vomiting.
   c. Acetaminophen (Tylenol®) when used in conjunction with opioids can result in more effective pain control and lower total opioid requirements.

MEDIC

E. **Mild Pain**
   2. Administer acetaminophen (Tylenol®) 650-1000mg PO.
      a. Only consider if patient able to swallow and maintain patent airway.
      b. Do not administer if patient has taken acetaminophen (Tylenol®) or acetaminophen-containing products (e.g., Vicodin, Norco, Percocet, or certain cold/flu remedies) within the past six hours or if actively vomiting.
      c. Acetaminophen (Tylenol®) when used in conjunction with opioids can result in more effective pain control and lower total opioid requirements.

F. **Moderate to Severe Pain**
   1. Administer acetaminophen as directed above and/or one of the following:
   2. Fentanyl 25-100 micrograms IV/IO/IN/IM/SC, repeated every 5 minutes as needed (IV/IO/IN) or every 15 minutes as needed (IM/SC) **OR**
   3. Morphine Sulfate 2-10 mg IV/IO/IM/SC, repeated every 5 minutes as needed (IV/IO) or every 15 minutes as needed (IM/SC) **OR**
   4. Ketamine can be administered according to the dosing chart below or 0.2mg/kg IV/IO (SLOW PUSH OVER 1 MINUTE or infusion in 100ml NS or D5W over 15 minutes) or 0.5-1 mg/kg IM/SC
      a. Ketamine dosing is based on ideal body weight.
      b. Use first when there is a concern for opioid addiction or if already on high doses of opioids for pre-existing medical conditions.
      c. Ketamine when used in conjunction with opioids can result in more effective pain control and lower total opioid requirements.

G. Perform continuous pulse oximetry and closely monitor patient's respiratory status.

H. Recheck BP, respirations, and mental status.

I. Consider administration of antiemetics to prevent nausea (See M405 Nausea and Vomiting)

J. If the patient experiences persistent respiratory depression after receiving Fentanyl or Morphine, Naloxone can be administered 0.4 to 4 mg IV/IO/IN/IM. Refer to M411 Toxicological Emergencies protocol.

KETAMINE PAIN DOSING					
	IV DOSING			*IM DOSING*	
Height	**Dose**	***mLs (10mg/mL)***	***mLs (50mg/mL)***	**Dose**	**mLs (50mg/mL)**
<4'11"	7.5mg	0.75Ml	0.15mL	30mg	0.6mL
5'-5.5"	10mg	1mL	0.2mL	40mg	0.8mL
5.5'-5'11"	15mg	1.5mL	0.3mL	60mg	1.2mL
6'-6'5"	17.5mg	1.75mL	0.35mL	70mg	1.4mL
>6'5"	20mg	2mL	0.4mL	80mg	1.6mL

ALL

NOTES:

A. Care should be taken when administering narcotics IM/SC to avoid dose stacking. Only administer one dose except in cases of prolonged extrication or transport.

B. Parental medications come in various concentrations — double check all calculations prior to administration.

C. If indicated, pain medication should be given prior to splinting.

MEDIC

I. Inclusion Criteria

A. **Evidence of significant blunt or penetrating trauma** based on the history of present illness and or physical exam findings. (ex: ejection from automobile, rollover MVC, fall > 20 feet, pedestrian struck, penetrating injury to neck, torso, etc.

B. **Age All** (pediatrics and adult) with evidence of or concern for severe internal or external hemorrhage. (ex: bleeding requiring a tourniquet, unstable pelvic fracture, two or more proximal long-bone fractures, flail chest etc.)

C. Evidence of or concern for severe internal or external hemorrhage or patient will likely be a candidate for a blood transfusion (e.g.: rollover/ejection MVA, fall >20ft., pedestrian struck, external bleeding requiring tourniquet application, unstable pelvic fracture, two or more long-bone fractures, 1 or more amputations, flail chest, penetrating injury to neck, torso, etc.)

AND

D. **Presence of hemodynamic instability as evidenced by**
1. Sustained systolic blood pressure < 90mmHg or <100mmHg if patient age is > 55 years (sustained is defined as 2 independent blood pressure measurements)
2. Sustained heart rate > 110 beats per minute
3. Pediatric Hypotension → a sign of uncompensated shock
   a. Neonates (0-28 days): SBP < 60 mmHg
   b. Infants (1 mo – 12 months): SBP < 70 mmHg
   c. Children (1 yr – 10 years): SBP < 70 + (2 x age in years) mmHg
   d. Children (>10 years): SBP ≤ 90 mmHg
4. Sustained tachycardia for age (see chart below)
5. Tachypnea for age (see chart below)
6. Cool pale skin with cap refill >2 seconds

Age	Pulse Beats/min	Respirations Breaths/min	Avg. Systolic BP
Infant (1-12mo)	90-180	30-53	>70
Toddler (1-2 yrs)	80-140	22-37	>70
Preschool (3-5 yrs)	60-120	20-28	>80
School age (6-12 yrs)	58-118	18-25	>85
Adolescent (12+ years)	50-100	12-20	>90

AND

E. **Time since the initial injury is KNOWN to be less than 3 hours.** It is preferable that TXA be administered as soon as possible after the initial traumatic insult. The greatest benefit to patients is seen when TXA is administered within 1 hour of injury.

II. Protocol

A. Aggressively manage the airway and administer oxygen to correct hypoxia <95%.

B. Control all external bleeding and manage hemorrhagic shock per protocol S500

C. If the patient meets the above inclusion criteria administer TXA as follows:
1. **Mix 1 g of TXA in 100 mL of 0.9% Normal Saline and infuse over approximately 10 minutes IV or IO.** (If given as an IV push, may cause hypotension)
   Pediatric < 12 years: 15 mg/kg IV over 10 mins (max 1 g)
   Pediatric ≥ 12 years: 1 g IV over 10 mins
2. Use dedicated IV/IO line if possible and ***Do NOT administer in the same IV or IO line as blood products, factor VIIa, or Penicillin***
3. During radio report, notify the receiving trauma center that TXA was initiated during

transport per protocol.

4. When transferring care to hospital staff and completing PCR: note the time of injury and time of TXA administration.

III. Exclusion Criteria:

A. Time elapsed from initial injury is unknown or is known to be greater than 3 hours.
B. Patients with clear contraindications for anti-fibrinolytic agents (evidence of active intravascular thrombotic disease or disseminated intravascular coagulation, etc.).
C. TXA should not be given to isolated closed head injury.
D. TXA should NOT be given to a patient who has received or will receive prothrombin \ complex concentrate (PCCs), factor VIIa, or factor IX complex concentrates as this may increase the risk of thrombotic events.
E. TXA should be used carefully in the setting of urinary tract bleeding as ureteral obstruction due to clotting has been reported.
F. Previous allergic reaction to TXA
G. Medical control discretion as to the appropriateness of TXA administration in any particular patient.

Notes:

A. Tranexamic Acid is an anti-fibrinolytic synthetic lysine analogue that inhibits clot breakdown and thus reduces hemorrhage.[1,2,3] Other potential beneficial mechanisms of action including decreasing the systemic inflammatory response to trauma are currently being explored.[3]
B. Part of the physiologic response to surgery or trauma in any patient is the formation and subsequent breakdown (fibrinolysis) of intravascular clots.[4] In some cases, clot break down can become excessive (hyper-fibrinolysis) thus causing increased hemorrhage and blood loss.[4]
C. Since 2010, two large clinical trials (CRASH-2 and MATTERs) have examined the specific role for TXA in adult trauma patients with evidence of or concern for severe hemorrhage. These studies found significantly favorable reductions in all-cause mortality when victims of trauma received TXA.[4,6]
D. TXA is now a Class I recommendation in the U.S. Military's Tactical Combat Casualty Care Guidelines and is included in the World Health Organization list of essential medicines.[1,7]
E. There have been some questions about how to administer TXA over 10 minutes. This is an approximate time. Infusing 100 mL over approximately 10 minutes can be done by a variety of methods including but not limited to: counting drops of a macro or mico drip set; on a pump; or just estimating. The range of infusion should be between 5 and 15 minutes.

References:

1. Roberts I, Kawahara T. Proposal for the inclusion of Tranexamic acid (anti-fibrinolytic-lysine analogue) in the WHO model list of essential medicines. June 2010.
2. Roberts I, Shakur H, Ker K, Coats T, on behalf of the CRASH-2 Trial Collaborators. Antifibrinolytic drugs for acute traumatic injury. Cochran Database of Systematic Reviews 2011, Issue 1. Art. No.: CD004896.
3. Pusateri AE, Weiskopf RB. et al. Tranxexamic Acid and Trauma: Current Status and Knowledge Gaps with Recommended Research Priorities. *Shock* 2013;39:121-126.
4. CRASH-2 collaborators. Effects of Tranexamic acid on death, vascular occlusive events, and blood transfusion in trauma patients with significant Haemorrhage (CRASH-2): a randomized placebo controlled trial. *Lancet* 2010; 367:23-32.
5. CRASH-2 collaborators. Effects of Tranexamic acid in traumatic brain injury: a nested randomized, placebo controlled trial (CRASH-2 Intracranial bleeding study). *BJM* 2011.
6. Morrison JJ, Dubose JJ, Ramussen TE, and Midwinter MJ. Military application of tranexamic acid in trauma emergency resuscitation (MATTERs) study. *Arch Surg* 2011;287.
7. Tactical Combat Casualty Care Guidelines available from URL: https://www.naemt.org/education/trauma-education/naemt-tccc

ALL

I. Introduction

A. The following situations may develop rapidly into a long-term technical rescue event involving complicated medical and extrication techniques. This requires constant reevaluation of treatments with the overall goal being the safety, treatment, removal, and rapid transport of the patient.

B. Trapped extremities should be considered for those involving lower and upper long-bone areas and not finger/toe injuries.

C. Providers should consider consultation with on-scene experts in removal/disassembly of articles entrapping patients. Providers should also consider early consultation with:

1. On-line Medical Control physician.
2. HEMS activation for evacuation and/or on-scene physician.
3. Early treatment collaboration with industrial response teams, technical rescue teams, and fire- based responders.

II. Inclusion

A. Patients of any age

B. Mechanism of injury concerning for any/all of the following:

1. Suspension Trauma
   a. Patient suspended above the ground with or without a harness.
2. Crush Injury
   a. Patient currently or recently with one or more trapped extremity.
3. Compartment syndrome
   a. Victim with injury to an extremity that may cause bleeding into a closed compartment of same extremity.
4. Rhabdomyolysis
   a. Victim unable to move for an extended period of time or as a consequence of the above situations.

III. Treatment

A. <u>Suspension Trauma Management:</u>

1. Ensure scene safety and remove victim to ground safely and quickly as possible.
2. If unable to get to ground quickly, have victim assume a horizontal position, or take pressure off legs.
3. When victim on ground place patient in POC and initiate rapid transport.
4. Recheck neurological status and PMS on frequent basis.

B. <u>Crush injury Management:</u>

1. While attempting to extricate:
   a. Ensure scene safety and remove victim as safely and quickly as possible.
   b. Consider early application of PPE to patient to prevent further injury including coverings for debris and respirator for airway protection.
   c. Maintain patent airway & ventilation status with emphasis being placed on freeing space around patients' chest.
   d. Coach patient/provide hemorrhage control as situation and safe access allows.
   e. Consider early temperature management.
   f. Coordinate with Rescue Team Leader/Incident Command for administration of oxygen/nebulized treatments if this can be done without creating dangerous atmosphere or consider fresh air delivery system during rescue operation.
   g. Assess mentation and PMS status on frequent basis.

ALL

I. Inclusion Criteria

A. Age >16

B. Epistaxis of either traumatic or non-traumatic causes

II. Exclusion Criteria

A. Known allergy to oxymetazoline (Afrin), neosynephrine, or tranexamic acid (TXA).

B. Known or suspected skull fracture.

C. Known or suspected intranasal foreign body.

D. Known or suspected intranasal surgery within 45 days.

III. Protocol

A. Instruct the patient to blow the nose hard to remove all blood clots. This may take multiple attempts to achieve clot removal. The patient should state that they can now breathe through the nares.

MEDIC

B. Oxymetazoline or Neosynephrine – preferred initial treatment

1. Spray 4 puffs of oxymetazoline or neosynephrine into the bleeding nostril. Attempt to time the puff while the patient is inhaling to facilitate further deeper application of the medication into the nasal passage.

C. Tranexamic Acid – secondary treatment

1. Draw up the undiluted contents of a standard ampule of tranexamic acid (100 mg/ml) solution used for injection into a syringe and place an atomizer to the syringe tip.
2. Spray 0.5 ml of the tranexamic acid into the bleeding nostril. Attempt to time the puff while the patient is inhaling to facilitate further deeper application of the medication into the nasal passage.

D. If unclear as to which nostril is bleeding, apply nasal spray treatment into both nostrils.

E. Instruct the patient to either swallow or spit out any excess medication.

ALL

F. Apply a standard nose clip to the nares. It should compress the soft tissue of the distal nose to the septum. The nose clip should not compress the bony portion of the nasal bridge.

G. Have the patient maintain their head tilted forward or in a position of comfort. The patient should avoid swallowing or aspirating blood.

H. Obtain vital signs.

I. Establish whether the patient is on any type of blood thinner (aspirin, Plavix, warfarin, Eliquis, Xarelto, Pradaxa).

MEDIC

J. If the patient is on a blood thinner, or exhibits abnormal blood pressure or pulse, treat per SB205 SHOCK.

K. If bleeding from nostril(s) persists, repeat dose of nasal spray after 10 minutes.

ALL

IV. Notes

A. It is highly recommended that prior to initiating treatment, the crew don appropriate PPE, including facial and eye protection.

B. It is department preference on selection of which initial treatment medication to utilize.

ALL

I. Inclusion Criteria

A. Patients of all ages.
B. Patient is without a palpable pulse.
C. Obvious traumatic mechanism of injury (blunt or penetrating).
D. Trauma as the cause of arrest.

II. DO NOT INITIATE RESUSCITATIVE EFFORTS IF

A. Patient has injuries not compatible with life such as:
1. Decapitation or hemicorporectomy.
2. Burn beyond recognition.
3. Obvious signs of prolonged death including rigor mortis (in the absence of hypothermia), decomposition, or lividity.
4. Isolated penetrating trauma should rarely be considered incompatible with life.

III. Transportation/Disposition

A. Initiate rapid transport (expedite scene time and provide treatment enroute) for the following patients:
1. Penetrating trauma causing cardiac arrest with arrest witnessed by EMS providers – rapid transport to nearest Trauma Center.
2. Traumatic arrest in a female patient with known pregnancy >24 weeks or with uterine fundus palpable at or above the umbilicus – rapid transport to nearest Emergency Department for potential of post-mortem Caesarean section.
3. Traumatic arrest patients that are under 18 can be transported to a Pediatric Trauma Center.

IV. Protocol

A. If patient is unresponsive and has no palpable pulse and has evidence of trauma being the most likely cause of cardiac arrest:
1. Position patient in position where resuscitative efforts can be initiated.
   a. Apply manual c-spine stabilization or c-collar (T704) if situation allows.
2. Start chest compressions at a rate of 100 per minute.
3. Control obvious external hemorrhage by application of pressure dressing or tourniquet as needed (T710).

MEDIC

4. If the mechanism of injury was blunt trauma or penetrating injury to the torso, perform bilateral needle thoracostomy for decompression of tension pneumothorax (T701).
5. Provide oxygenation and ventilation through bag-valve-mask or advanced airway as indicated (T705).
6. Obtain vascular access through placement of intravenous or intraosseous line (T711) and initiate fluid resuscitation with normal saline (1 liter or 20ml/kg for pediatric patients) with open flow or on pressure bag (IO).
7. Apply cardiac monitor and treat the displayed rhythm as per table 1.
8. Contact Medical Control for Termination of Resuscitation.
9. Transport immediately if ROSC is achieved.

V. Cardiac Rhythm Interpretation

A. Table 1 illustrates recommendations on treatment and termination of resuscitative efforts.

Table 1

Cardiac Rhythm on Monitor		
Asystole or PEA < 40 bpm	**PEA >40 bpm**	**VFib/VTach**
Contact Medical Control regarding Termination of Resuscitation	Fluid Resuscitation, Consider repeat needle decompression, Transport to nearest trauma center	Defibrillate per protocol C300 or P601, Fluid Resuscitation, Consider repeat needle decompression, Transport to nearest trauma center

ALL

VI. Post-Termination Body Movement (a good faith effort to categorize the cause of death is reasonable)

A. Likely homicide or child abuse – avoid body movement unless necessary for life safety.
B. Likely natural causes – body may be relocated as appropriate for the situation and public good.
C. Unclear cause – avoid disturbance unless necessary for life safety; consider involving law enforcement and/or the coroner's office.

MEDIC

VII. Termination Of Resuscitation (TOR) Inside an Ambulance

A. TOR within an ambulance is reasonable if the patient meets S509 criteria (unless < 16 years old).
B. After TOR, the ambulance should continue to the destination hospital.
C. Body may be removed from the ambulance after TOR, assuming the ambulance is not the site of homicide.

ALL

Notes:

A. Traumatic arrest from both blunt and penetrating trauma carries high rates of mortality with poor rates of resuscitation in the prehospital setting.
B. The preferred management of the traumatic arrest patient is surgical intervention at an appropriate verified trauma center.
C. Due to the mechanism of injury and cause of cardiopulmonary arrest, traumatic arrest is approached in a separate fashion from primary cardiac arrest. A state of post-traumatic circulatory arrest may exist due to severe hypovolemia, tension pneumothorax, or cardiac tamponade, conditions that may be treatable in the prehospital setting.
D. The protocol aims to delineate patients who would benefit best from resuscitative efforts and recommend termination of unnecessary resuscitative efforts and transports on patients with minimal chance of survival through a systematic approach.
E. Currently there is significant controversy concerning the use of ACLS/PALS-type medications including epinephrine/atropine in the setting of traumatic, hypovolemic, arrest. At present time, we DO NOT recommend the use of these drugs in the treatment approach described above.
F. In a situation where the mechanism of injury appears inconsistent with the patient's condition and not severe enough to induce traumatic arrest, consider a primary medical cause for the patient's cardiac arrest and defer to protocol SB204.
G. All patients that are being transported should go to the nearest verified trauma center, except the situation described in III.A.2 above.
H. Post-ROSC cooling as described in C307 is CONTRAINDICATED in the traumatic arrest patient and should NOT be initiated.
I. TXA is not beneficial in traumatic cardiac arrest.
J. The use of a backboard for full spinal immobilization can be foregone in favor of rapid transport in the traumatic arrest patient if manual c-spine stabilization or collar is applied.
K. In ambulance TOR should be an exceedingly rare event, and the ability to do so should not alter sound principles of field resuscitation.

ALL

H. **Inclusion Criteria**
   A. Newborn infant.
   B. Not crying, poor or no respiratory effort, and limp muscle tone.

II. Protocol
   A. Ensure adequate airway. Suction mouth, oropharynx, and then nose.
   B. Dry infant to provide stimulation and prevent chilling. Keep the infant warm, especially the head.
   C. Check heart rate by palpating the umbilical cord or listening to the heart with a stethoscope. If less than 100, bag-valve-mask (BVM) with **ROOM AIR** at a rate of 60 per minute. If heart rate is less than 60 beats/min, despite 30 seconds of adequate BVM ventilation, begin chest compressions using the 2 thumb-encircling hands technique at a ratio of 3:1 with breaths.
   D. Consider use of a pulse-oximeter, with the probe attached to the right upper extremity (if possible), to assess any need for supplementary oxygen.
   E. Once positive-pressure ventilation or supplementary oxygen administration is begun, reassessment should consist of simultaneous evaluation of 3 clinical characteristics: heart rate, respiratory rate, and evaluation of the state of oxygenation (optimally determined by pulse oximetry rather than assessment of color). If heart rate remains less than 100 after 30 seconds of BVM ventilation, request ALS back-up.

MEDIC

   F. If heart rate remains less than 100 after 30 seconds of BVM ventilation, reassess airway and consider intubation per T705.
      1. FULL TERM: 3.0 - 3.5 ET tube
      2. PREMATURE: 2.5 - 3.0 ET tube
   G. Assess response to intubation, again using the 3 clinical characteristics. Check the position of the endotracheal tube using an exhaled CO2 detector and document the centimeter mark at the gum line. If heart rate less than 60, initiate cardiac compressions (1/2 – 1-inch depth) at 120 per minute. In the newborn, a chest compression to ventilation ratio of 3:1 is used. It is important that you use only enough bag pressure to move the chest. This limits the chance for pneumothorax.
   H. If heart rate is still less than 60 after 30 seconds of chest compressions and adequate assisted ventilation, consider epinephrine 0.04 mg of 0.1 mg/mL (0.4 mL IV/IO, 0.2 mL for preterm newborn). If vascular access is not available, then give epinephrine 0.1mg/kg (0.1 mg/mL at 0.1mL/kg mL via ETT, roughly 1mL for full-term newborn, 0.5mL for pre-term). Repeat epinephrine every 3 to 5 minutes until heart rate is greater than or equal to 60.
   I. If hypovolemia is suspected due to blood loss at delivery, then give normal saline 20 mL/kg (roughly 40 mL IV: 20 mL for preterm newborn).
   J. Provide medical control with patient update.

ALL

Notes:
   A. Every effort should be made to transport both the mother and infant to the same hospital.
   B. Resuscitations on newborns should begin with a BVM without supplemental oxygen. Even healthy newborns that do not require resuscitation can take more than 10 minutes to reach SpO2 of greater than 90%. Using supplemental oxygen for newborns requiring resuscitation may worsen their neurological outcomes because of injury due to oxygen free radicals.
   C. Newborns lose heat rapidly and need to be kept warm to decrease oxygen demands and prevent metabolic acidosis.
   D. When dealing with such a short trachea, remember that slippage of even a centimeter in endotracheal tube position can result in inadvertent extubation. Reassess the airway frequently.
   E. Intubation and suctioning are reserved for newborns with thick meconium who are NON-VIGOROUS (poor respiratory effort, decreased muscle tone, AND heart rate less than 100).
   F. It is important that you inform medical control of the length of your resuscitation since the new AHA guidelines (Dec. 2010) support the PHYSICIAN discontinuation of resuscitation for newborns born without a heartbeat and respirations after 10 minutes.
   G. Decisions about resuscitating newborns with stigmata of extreme prematurity (i.e., very small, fused eyelids, gelatinous skin, etc.) should involve online medical control.
   H. Term infants who have undergone prolonged resuscitation should not be actively warmed in the prehospital setting.

ALL

I. Inclusion Criteria

A. Age is younger than 16 years.
B. Patient is unconscious.
C. Patient is apneic.
D. Patient has no pulses.

MEDIC

II. EKG Findings

A. Ventricular fibrillation, or
B. Ventricular tachycardia without a pulse.

ALL

III. Protocol

A. Continue CPR and care per SB204.

MEDIC

B. If rhythm is ventricular fibrillation or ventricular tachycardia without a pulse, defibrillate immediately at 2 joules/kg (not to exceed the adult dose).
C. Perform CPR for 2 minutes before another pulse or rhythm check is done.
D. Defibrillation energy sequence should continue as follows:
   1. Second dose: 4 joules/kg not to exceed the adult dose.
   2. Third and successive doses: Defibrillation at 4 joules/kg up to 10 joules/kg not to exceed the adult dose.
E. Search for possible causes as listed in SB204.
F. Administer Epinephrine 0.01 mg/kg IV/IO (0.1 mL/kg of 0.1 mg/ml Epinephrine, maximum 1 mg). If IV or IO is unattainable, give Epinephrine 0.1 mg/kg via endotracheal tube (0.1 mL/kg of 1 mg/ml Epinephrine, maximum 2.5 mg). Repeat Epinephrine every 3 to 5 minutes.
G. Administer Amiodarone 5 mg/kg (max 300 mg) IV/IO.
   1. Amiodarone dose may repeat up to 2 times for refractory VF/pulseless VT.
   2. Lidocaine may be substituted as: Lidocaine 1 mg/kg IV/IO push
H. After resuscitation has been initiated arrange for early transport and notify receiving hospital.
I. If return of spontaneous circulation is achieved, continue post-resuscitative care per C307: Post-ROSC.
J. If rhythm changes to another rhythm, go to the appropriate protocol.

ALL

Notes:

A. High Quality CPR (SB204) is considered the mainstay of therapy for Cardiac Arrest victims.
B. As in all pediatric cardiac arrests, airway control is a key factor in improving the odds of successful resuscitation.
C. AEDs may be used on children of ALL ages. For infants, a manual defibrillator is preferred to an AED for defibrillation. If a manual defibrillator is not available, an AED equipped with a pediatric dose attenuator is preferred. If neither is available, an AED without a pediatric dose attenuator may be used.

MEDIC

D. Unlike adults, ventricular fibrillation is rare in children. Cardiac arrest is usually due to hypoxia or cardiac disease.
E. Both cuffed and uncuffed endotracheal tubes are acceptable for intubating infants and children. Training in inflating cuffed tubes to minimal airway occlusion pressure is important. In certain circumstances (e.g., poor lung compliance, high airway resistance, or a large glottic air leak) a cuffed endotracheal tube may be preferable to an uncuffed tube, provided that attention is paid to endotracheal tube size, position, and cuff inflation pressure.
F. Consider the use of a stopcock for the administration of Amiodarone and fluid boluses.
G. When choosing joules for defibrillation in pediatric patients, round up.

ALL

I. Inclusion Criteria

A. Age is younger than 16 years.
B. Patient is unconscious.
C. Patient is apneic.
D. Patient has no pulse.

MEDIC

II. EKG Findings

A. Organized cardiac rhythm with QRS complexes indicating PEA, or
B. Asystole on the cardiac monitor in two or more leads.

ALL

III. Protocol

A. Continue CPR and care per SB204.
   1. 15:2 ratio with compressions if no physical signs of puberty (facial/axillary hair) - 30:2 if only one rescuer
B. Reassess airway and breathing frequently, as hypoxia is a common cause of PEA/asystole.
C. Check a glucose, as hypoglycemia is another common cause of arrest in children.

MEDIC

D. Search for possible causes of Asystole/PEA as listed in SB204.
E. Epinephrine 0.01 mg/kg IV/IO (0.1 mL/kg of 0.1 mg/mL, maximum 1 mg).
   1. Repeat every 3-5 minutes.
   2. If vascular access is not available, then give Epinephrine 0.1 mg/kg via endotracheal tube (0.1 mL/kg of 1 mg/mL, maximum 2.5 mg).
F. Administer normal saline 20 mL/kg IV/IO.
G. Contact medical control. Medical control may consider the following:
   1. Additional 20 mL/kg fluid boluses.
   2. Placement of size-appropriate supraglottic airway.
   3. Needle decompression of the chest.
H. After 30 minutes, consider termination of resuscitative efforts as detailed in the Determination of Death / Termination of ACLS protocol (A105).
I. If transporting, notify receiving hospital.
J. If return of spontaneous circulation is achieved, continue post-resuscitative care.
K. If rhythm changes to another rhythm, go to the appropriate protocol.

ALL

Notes:

A. High Quality CPR (SB204) is considered the mainstay of therapy for Cardiac Arrest victims.
B. As in all pediatric cardiac arrests, airway control is a key factor in improving the odds of successful resuscitation.

MEDIC

C. Since a main cause of PEA/asystole is hypoxia, airway management with adequate bag-valve-mask (BVM) ventilation is a priority. Placement of size-appropriate supraglottic airway or intubation should be considered if ventilation and oxygenation with BVM is difficult to maintain.
D. Both cuffed and uncuffed endotracheal tubes are acceptable for intubating infants and children. Training in inflating cuffed tubes to minimal airway occlusion pressure is important. In certain circumstances (e.g., poor lung compliance, high airway resistance, or a large glottic air leak) a cuffed endotracheal tube may be preferable to an uncuffed tube, provided that attention is paid to endotracheal tube size, position, and cuff inflation pressure.

ALL	**I. Inclusion Criteria** A. Age is younger than 16 years. B. Alteration of level of consciousness OR C. Evidence of poor circulation (delayed capillary refill, or weak peripheral pulses) OR D. Evidence of respiratory distress or failure.
MEDIC	**II. EKG Findings** A. Cardiac rhythm is sinus bradycardia for child's age. B. **General Guide for Pediatric Bradycardia:** 1. 0-3 years old: HR < 100 bpm 2. 3-9 years old: HR < 60 bpm 3. 9-16 years old: HR < 50 bpm
ALL	**III. Protocol** ***<u>The patient must be symptomatic before proceeding with this protocol.</u>*** A. Ensure airway, apply 100% oxygen, bag-valve-mask (BVM) ventilate as needed, and recheck pulse rate. B. If despite adequate oxygenation and ventilation, the heart rate is less than 60 in a newborn or child, perform chest compressions at a rate of 100 per minute.
EMT	C. If available, request ALS back-up or arrange to intercept an ALS unit as appropriate.
MEDIC	D. Establish IV/IO access. E. Epinephrine (0.1 mg/ml) 0.01 mg/kg (0.1 ml/kg IV/IO). If vascular access is not available, then give epinephrine (1 mg/ml) 0.1 mg (0.1 mL/kg via ETT, maximum dose 2 ml).
ALL	F. Reassess airway and breathing frequently. G. Contact medical control.
MEDIC	H. If symptomatic bradycardia persists, repeat epinephrine IV/IO every 3 to 5 minutes. I. If symptomatic bradycardia persists, give atropine 0.02 mg/kg (min 0.1 mg, max 0.5 mg) IV/IO. ETT-0.04 mg/kg (max 2mg).
ALL	J. Reassess airway and breathing.
MEDIC	K. If hypotensive, normal saline 20 mL/kg IV push.
ALL	**Notes:** A. The most common cause of bradycardia in the child is hypoxia. Therefore, attention to airway is the most important intervention. B. It is important to treat the patient and not the number. Remember that athletes may have heart rates of 40-60.

ALL

I. Inclusion Criteria

A. Age is younger than 16 years.
B. Older child may complain of chest pain or rapid heartbeat.
C. Heart rate in infants less than 2 years is usually greater than 220. Heart rate in older children is usually greater than 180.
D. The unstable patient displays signs of shock with weak or no distal pulse, delayed capillary refill, poor skin perfusion, and change in mental status.

MEDIC

II. EKG Findings

A. QRS duration less than 0.08 (2 little boxes).
B. P waves may or may not be seen.
C. Little variability in heart rate noted with respiration and movement.

ALL

III. Protocol

A. Maintain airway and administer oxygen to correct hypoxia <95%.

EMT

B. If available, request ALS back-up or arrange to intercept an ALS unit as appropriate.

MEDIC

C. Obtain diagnostic EKG if available.
D. ***Stable Patient with Adequate Perfusion***
1. Consider one attempt at vagal maneuvers (crushed ice to the mid face for 15 seconds in infants; ask older patient to blow into occluded straw or bear down like having a bowel movement).
2. Attempt vascular access preferably in an antecubital vein or as close to the heart as possible. (Placing an IV sometimes converts the rhythm.)
3. Contact medical control.
4. Administer Adenosine 0.1 mg/kg (max 6 mg) rapid IV push followed by rapid 10 mL NS flush. Adenosine should be administered as close to the heart as possible, preferably in the antecubital vein. Consider use of a stopcock to administer 10 mL normal saline flush immediately following adenosine.
5. May double the dose (0.2 mg/kg, max 12 mg) and repeat Adenosine administration once via rapid IV push followed by rapid 10 mL normal saline flush immediately following adenosine.

E. ***Unstable Patient (Poor Perfusion):***
1. Contact medical control.
2. If IV access has been established, preferably in an antecubital vein, medical control may consider administration of adenosine (see above – stable patient with adequate perfusion).
3. If IV has not been established, prepare for immediate cardioversion.
4. If the patient is conscious and **only on the order of a medical control physician** give midazolam 0.1 mg/kg (max 5 mg) IV/IO or other medications as directed by medical control.
5. **Only on the order of a medical control physician**: synchronized cardioversion 0.5 J/kg.
6. If unsuccessful, repeat synchronized cardioversion at 1 J/kg.
7. If unsuccessful, repeat synchronized cardioversion at 2 J/kg.
8. Reassess ABCs, consider CPR, and transport.

ALL

Notes:

A. Children without underlying heart disease or myocardial dysfunction will often tolerate SVT for up to 24 hours without compromise.
B. Round up when selecting joules on a defibrillator for cardioversion

A. Age 6 months to 6 years.
B. Barky "seal" sounding cough.
C. Stridor at rest.
D. Retractions in chest or neck
E. May have fever and cold symptoms.
F. No history of foreign body aspiration.

DIFFERENTIAL DIAGNOSIS

1. Croup
2. Foreign Body Aspiration
3. Epiglottitis
4. Bacterial tracheitis
5. Asthma
6. Anaphylaxis

Keep the patient calm. You may have a parent or other trusted adult administer

If available, request ALS back-up or arrange to intercept an ALS unit as appropriate.

- Place the patient on a cardiac monitor and pulse oximetry.
- Consider normal saline mist via nebulizer. This can be very helpful in croup patients.
- Contact medical control if considering nebulized epi.
- Medical control may order epinephrine 0.5mL of 1mg/mL mixed in 2.5mL of normal saline, administered via hand-held nebulizer with oxygen and a facemask.
- Continue normal saline mist via nebulizer when the epinephrine nebulizer is complete. Keep the patient calm. You may have a parent or other trusted adult administer oxygen.

NOTES
Pediatric patients with fever, drooling and stridor should be suspected to have epiglottitis or other potential source of airway obstruction. Epiglottitis is a bacterial infection of the epiglottis that sometimes obstructs the tracheal opening. These may worsen from sticking objects such as fingers or tongue depressors in the patient's throat. These patients are best treated by reassurance and immediate transportation to the hospital. Have the patient breathe oxygen by mask or blow-by as long as this does not cause the patient to become upset.

NOTES
The purpose of the medical control call is to allow the medical control physician input into the decision to administer nebulized epinephrine.

ALL

I. Inclusion Criteria

A. Patient's age is younger than 16 years
B. Sudden onset shortness of breath in a previously well pediatric patient
C. Patient MAY have history suggestive of foreign body (FB) aspiration such as sudden onset of shortness of breath while eating or playing with a small toy/object.
D. May have on exam:
1. Unilateral, decreased, or no air movement
2. Retractions and accessory muscle use
3. Drooling
4. Cyanosis or unconsciousness secondary to hypoxia.

II. Differential Diagnosis

A. Anaphylaxis
B. Croup
C. Epiglottitis
D. Bacterial tracheitis
E. Asthma

III. Protocol

A. If the patient is alert, awake, and still breathing on his or her own (partial airway obstruction) minimize upsetting procedures:
1. Perform patient assessment. Do NOT perform a throat exam (may convert partial to full obstruction).
2. Administer oxygen to correct hypoxia <95%. If patient is a young child, have the parent help administer the oxygen.
3. Allow patient to sit up in a position of comfort. If the patient is a young child, keep the patient with the parent and avoid unduly upsetting the child.
4. Apply cardiac monitor.

MEDIC

5. Do not start an IV to avoid aggravating the child and worsening the airway obstruction.
6. If wheezing with known FB aspiration, consider an albuterol nebulizer treatment.
7. For diffuse wheezing **without** known FB aspiration, consider Pediatric Respiratory Distress (Wheezing or Asthma) Protocol P607 or Pediatric Anaphylaxis Protocol P609.

ALL

B. If the patient is alert, awake, and obviously choking (complete airway obstruction):
1. For the infant less than one year, give 5 back slaps and up to 5 chest thrusts. Repeat this until the obstruction is relieved or the patient is unconscious.
2. For the child from older than 1 year old, give abdominal thrusts or Heimlich maneuver until obstruction is relieved or patient is unconscious.
3. If the obstruction is relieved, follow Protocol Section III, 1 through 4 above.

C. If the patient is unconscious:
1. Begin CPR and attempt to bag-valve-mask ventilate while preparations are made to intubate.

MEDIC

2. Using the laryngoscope, visualize the posterior pharynx and vocal cords for evidence of a foreign body.
3. Remove any foreign bodies very carefully with a suction device or Magill forceps.
4. If no foreign body is seen or patient does not begin breathing spontaneously, intubate the trachea. If you suspect a foreign body is below the vocal cords but above the carina, it may be necessary to push the foreign body down the right main stem bronchus with the ET tube to aerate at least the left lung.
5. If above methods fail, perform needle cricothyrotomy (See Needle Cricothyrotomy—Pediatrics Protocol T708).

EMT

6. If available, request ALS back-up or arrange to intercept an ALS unit as appropriate.

Inclusion Criteria

1. Age 3-15 years
2. Patient complains of worsening shortness of breath or trouble breathing.
3. Patient USUALLY has a past medical history of asthma or seasonal allergies.
4. Lung exam has wheezing, decreased breath sounds, or poor air exchange.
5. May have retractions, rapid respiratory rate, or pursed lip breathing.

DIFFERENTIAL DIAGNOSIS

- Bronchiolitis
- Foreign body aspiration
- Pneumonia

1. Maintain airway and administer oxygen to correct hypoxia <95%.
2. If the patient is in impending respiratory failure (i.e., extreme retractions, pale or cyanotic skin, and slow respirations), begin bag-valve-mask ventilation, consider intubation.
3. Allow patient to sit up in a position of comfort.
4. Apply cardiac monitor.

PRAM Scoring Table

Criterion	Description	Score
O2 saturation	≥ 95%	0
	92-94%	1
	< 92%	2
Suprasternal retraction	Absent	0
	Present	2
Scalene muscle contraction	Absent	0
	Present	2
Air entry	Normal	0
	↓ at the base	1
	↓ at the apex and the base	2
	Minimal or absent	3
Wheezing	Absent	0
	Expiratory only	1
	Inspiratory (± expiratory)	2
	Audible without stethoscope or silent chest (minimal or no air entry)	3
	PRAM score: (max. 12)	

Score	0-3	4-7	8-12
Severity	Mild	Moderate	Severe

PRAM SCORE
max. 12

Mild
0-3

- 1 nebulized albuterol

-OR-

- Albuterol MDI & Spacer:
  - <15kg: 4 puffs
  - >= ≥15kg: 8 puffs
- Corticosteroids – If ALS is available

Moderate
4-7

- 3 back-to-back (BTB) nebulized albuterol/atrovent
- Corticosteroids

Severe
8-12

- 3 back-to-back (BTB) nebulized albuterol/atrovent
- Corticosteroids
- IV placement + NS bolus
- Maintenance IVF after bolus.

Impending Respiratory Failure

CALL MEDICAL CONTROL

Lethargy
Cyanosis
↓Respiratory Effort
↑pCO2

Consider epinephrine 1 mg/mL IM. The dose is 0.01 mg/kg (max 0.3 mL)

MEDICATIONS IN EMS

I. Albuterol and Atrovent
<30kg: Albuterol 2.5mg, Atrovent 0.5mg
≥30kg: Albuterol 5mg, Atrovent 0.5mg

II. Corticosteroids:
a. Prednisone tablets (20mg) **-OR-**
b. Solumedrol IV solution given PO (125mg/2mL) **-OR-**
1mg/kg IV, IM, or IO load (Max: 60 mg/dose)
Age 3-7 years: Prednisone 30mg (1.5 tabs)
Solumedrol 30mg PO (0.5mL)
Age 8-16 years: Prednisone 60mg (3 tabs)
Solumedrol 60mg PO (1mL)

EMT

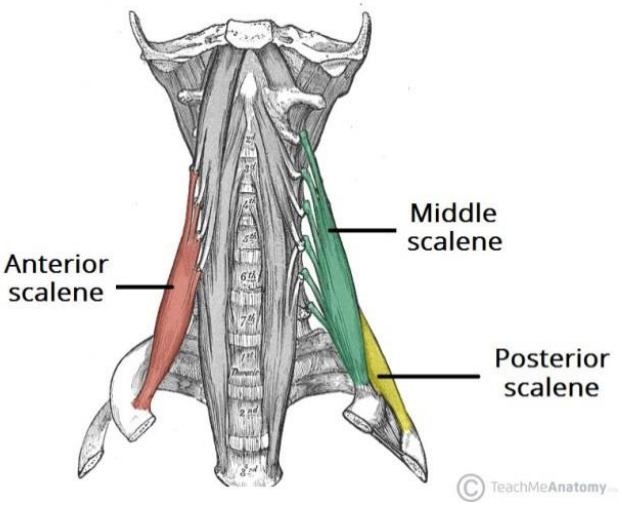
A. If available, request ALS back-up for:
   1. Patient who is wheezing, grunting, has retractions, stridor or any other signs of respiratory distress.
   2. Patient who doesn't have a prescribed inhaler and the transport time is greater than 30 minutes.
B. Confirm that the patient has a prescribed inhaler, such as Proventil/Ventolin/ProAir (generic Albuterol). An over-the-counter medication such as Bronkaid Mist, Primatene Mist, Bronitin Mist, Asthma-Haler, and Epinephrine cannot be used.
C. If the patient only has a home nebulizer, you may assist with administering prescribed doses Albuterol (Proventil) aerosol 2.5 mg in 2.5 ml normal saline via handheld nebulizer, Duoneb (Albuterol plus Ipratropium Bromide that is premixed) or Xopenex (levalbuterol).
D. Check to see if the patient has already taken any doses prior to arrival. Note time and amount.

E. Do not use the inhaler if any of the following are present:
   1. Inability of patient to use device.
   2. Inhaler is not prescribed for the patient.
   3. Medication is expired.
   4. If the patient has met the maximum prescribed dose of their inhaler according to prescription label, contact medical control.
F. Make sure inhaler is at room temperature and shake several times to mix the medication.
G. Take oxygen mask off the patient.
H. Tell the patient to exhale deeply and put the mouthpiece in front of the mouth. If the patient has a spacer device, it should be used.
I. Have patient depress the metered-dose inhaler as they begin to inhale deeply.
J. Instruct the patient to hold their breath for as long as comfortable, so the medication can be absorbed.
K. Put oxygen mask back on the patient.
L. Repeat a dose after one minute. If further medication is necessary beyond the patient's prescribed number of doses, contact medical control.
M. Recheck vital signs (including pulse oximetry if available) and perform focused reassessment.

ALL

Notes:

1. Wheezing in a patient WITHOUT a past medical history of asthma, may still be asthma, but should alert you to the possibility of a foreign body aspiration or pneumonia.
2. Steroids work by reducing airway inflammation, mucous plugging, and secretions, which can be seen within 1-2 hours after administration. Oral corticosteroids have been proven to reduce rates of hospital admission and length of ED stay if given early for children presenting to the ED with asthma exacerbations.
3. For patients who vomit their oral steroids, please document the episode and make sure it is part of handoff to the receiving institution, but do not re-dose the medication.
4. The scalene muscles are three paired muscles (anterior, middle and posterior), located in the lateral aspect of the neck. Collectively, they form part of the floor of the posterior triangle of the neck.



ALL

I. Inclusion Criteria

A. Age is younger than 16 years.

B. Neonates less than 30 days with a blood glucose level less than 45 mg/dL.

C. Pediatric patients older than 30 days with a blood glucose level less than 60 mg/dL.

II. Hypoglycemia

A. Consider possible reasons for hypoglycemia including but not limited to toxic ingestion.

MEDIC

B. Place patient on cardiac monitor and obtain rhythm strip. If dysrhythmia is present, proceed to the appropriate protocol.

C. Although the patient may have a normal systolic blood pressure, if he or she is tachycardic for their age or shows other signs of hemodynamic shock, start a 20 mL/kg IV/IO bolus of normal saline (max 1 liter).

ALL

D. For hypoglycemia defined above, treat in one of the following manners until an improvement in mental status:

1. If patient is able to swallow and protect airway administer oral glucose 5 - 15g or appropriate rapidly absorbed carbohydrate (high sugar content) fluid or food (such as orange juice). Dispense in small amounts; keep fingers out of mouth; EMS provider can lightly massage the area between the cheek and gum to enhance swallowing.
2. If oral glucose administration is not feasible due to patient age proceed to IV/IO method.

MEDIC

E. If patient is unable to protect airway, administer the following until an improvement in mental status:

1. 5mL/kg of Dextrose 10% IV/IO
2. For children less than 3 years of age or less than 15kg, use D10 only.
3. Only if Dextrose 10% is not available one of the following methods may be used. Dextrose 10% is the preferred medication.
   a. Mix Dextrose 10% by diluting Dextrose 50% with normal saline to make Dextrose 10%. One part D50 and 4 parts normal saline. Ex: 50 mL D50 and 200 mL normal saline makes 250mL D10.
   b. 1 mL/kg of Dextrose 50% IV/IO
   c. 2 mL/kg of Dextrose 25% IV/IO

F. Doses may be repeated if repeat blood glucose assessment remains below levels noted above.

G. If peripheral IV/IO access is unobtainable, administer Glucagon 1 mg IM for children 6 years of age and older. For children less than 6 years of age, use 0.5 mg of Glucagon IM. Glucagon does not work reliably in younger children, however; so, after Glucagon administration, continue to attempt IV/IO access.

III. Hyperglycemia

A. Glucose Level is greater 400 mg/dL or glucometer reads “HIGH.”

B. If no evidence of pulmonary edema, administer a fluid bolus of 20mL/Kg not to exceed 1000mL IV/IO during transport.

C. Place patient on cardiac monitor for possibility of dysrhythmia.

ALL

Notes:

A. D10 is made by mixing D50 1:4 with normal saline.

B. D25 is made by mixing D50 1:1 with normal saline.

C. It is very important that you verify that you have a working IV/IO. Dextrose which infiltrates into the surrounding tissues can be damaging to the tissues and blood vessels.

D. Especially for adolescent patients, although alcohol is a common cause of altered level of consciousness, it is rarely the cause of complete unresponsiveness. Do not let the patient's alcohol intoxication cloud your judgment. It is safer to assume that the intoxicated patient has a serious medical problem and treat accordingly than it is to conclude that the patient is "just drunk."

E. Younger children are particularly prone to developing hypoglycemia from alcohol ingestions.

F. Anticipate nausea/vomiting after administration of Glucagon.

ALL

I. Inclusion Criteria

A. Patient's age under 16 years.
B. Suspected exposure to allergen (insect sting, medications, foods, or chemicals).
C. Patient has or complains of any of the following:
1. Respiratory difficulty, wheezing, or stridor
2. Tightness in chest or throat
3. Tachycardia or hypotension for age
4. Flushing, hives, itching
5. Swelling of the face, lips, or tongue
6. Gastrointestinal symptoms: nausea, vomiting, diarrhea
7. CNS symptoms: anxiety, restlessness, weakness

II. Anaphylaxis Definition

1. Serious, rapid onset (minutes to hours) reaction to a suspected trigger **AND**
2. Two or more body systems involved (e.g., skin/mucosa, cardiovascular, respiratory, GI) **OR**
3. Hemodynamic instability **OR**
4. Respiratory compromise.

III. Protocol

A. Maintain airway and administer oxygen to correct hypoxia <95%.
B. **Airway assessment and management are extremely important since airway compromise may develop rapidly at any time during the call.**

EMT

C. Request ALS back-up for a patient who has <u>any</u> of the following:
1. Hypotension
2. Tachycardia
3. noisy/difficult breathing (including but not limited to wheezing & stridor)
4. received epinephrine by auto-injector, if indicated

D. Determine if the patient has a prescribed epinephrine auto-injector (EpiPen, EpiPen Jr., Auvi-Q, Symjepi, generic epinephrine auto-injector) and/or albuterol metered dose inhaler available. Even if the patient's condition does not warrant medication at the time, before you leave the scene, ask to take them and any spares for the trip to the hospital. This allows for treatment enroute if the patient's condition should warrant or if a second dose is ordered by medical command.

ALL

E. Remove allergen if possible (stinger from skin, etc.)
F. Check vital signs frequently; reactions may quickly grow more severe.
G. For patients with anaphylaxis, epinephrine should be administered as soon as possible.
1. For patients who have been prescribed an auto-injector, administer it in accordance with manufacturer's directions after obtaining patient consent.
2. For EMS supplied epinephrine auto-injectors, VERBAL MEDICAL DIRECTION must be obtained.
3. For patients 7.5 kg-10 kg, Auvi-Q® 0.1 mg, is appropriate. Otherwise, no auto-injector available for patients <10 kg.
4. For patients ≥10 kg and <25 kg, an 0.15 mg epinephrine auto-injector (i.e., EpiPen Jr®) is appropriate.
5. For patients ≥25 kg, 0.3 mg epinephrine auto-injector (i.e., EpiPen®) is appropriate.

H. Auto-injector administration may be repeated every 5 – 15 minutes as needed.
1. If epinephrine auto-injector is to be administered, then:
a. Assure injector is prescribed for the patient (if patient's personal injector).
b. Check medication for expiration date (do not use if expired).
c. Remove safety cap from injector and double-check safety versus needle side.
d. Select appropriate injection site (see notes). If possible, remove clothing from the injection site. If removing the clothing would take too much time, the auto-injector can be administered through clothing avoiding seams.
e. Ensure injection site is properly restrained.

	f. Push injector firmly and hold against the site for a minimum of 2-3 seconds then massage for 10 seconds. I. Administer epinephrine (1mg/mL) intramuscularly in the anterolateral thigh. May repeat dose every 5-15 minutes as needed. 1. <15kg: 0.15mg (0.15mL) 2. 15-30kg: 0.3mg (0.3mL) 3. >30kg: 0.5mg (0.5mL) J. If bronchospasm or wheezing is present assist patient with inhaler if they have one per Pediatric Respiratory Distress Protocol P607.
MEDIC	K. Monitor cardiac rhythm L. If bronchospasm or wheezing is present, administer albuterol (Proventil) 2.5 mg (<30 kg) or 5 mg (≥30kg) via nebulizer, and treat per Pediatric Respiratory Distress protocol P607. Albuterol may be used without preceding epinephrine in patients with isolated, very minimal respiratory symptoms. M. Administer diphenhydramine 1 mg/kg IV/IM/PO (max 50 mg). Diphenhydramine may be used without preceding epinephrine in patients with isolated rash and no other symptoms. N. Initiate IV access. If the patient is hypotensive, begin 20 mL/kg normal saline or ringer's lactate IV bolus (max 1 L) wide open.
ALL	**NOTES:** 1. Anaphylaxis is extremely rare in babies. Without the history of sudden onset of rash and difficulty breathing, most babies with rashes and tachypnea have respiratory infections responsible for their symptoms. 2. Epinephrine is the drug of choice and the first drug that should be given in acute anaphylaxis. 3. Intramuscular injection leads to faster and more consistent blood levels than subcutaneous administration and is thus the standard of care. 4. Anterolateral thigh IM injection is preferred over deltoid IM injection. 5. As injection into purely adipose tissue may be less effective, it may be preferable to use the distal anterolateral thigh rather than the proximal anterolateral thigh in obese patients. 6. In the absence of reliable weight estimates, age 1 year may be used to initiate the use of the 0.15 mg auto-injector (i.e., EpiPen Jr®), and age 7 years may be used to initiate the use of the 0.3 mg auto-injector (i.e., EpiPen®).

ALL

I. Inclusion Criteria

A. Age is younger than 16 years.
B. Recent suspicion of seizure activity based upon description from eyewitnesses, parents, or caretakers.
C. Patient may or may not have a known history of seizure disorder.
D. The patient may currently display seizure activity.
E. The patient may now be postictal ("after seizure") with a decreased level of consciousness.
F. The patient may have focal neurological deficits, which should be noted.
G. The patient may have a fever.

II. Differential Diagnosis

A. Refer to Altered Level of Consciousness Protocol SB201.

III. Protocol

A. Maintain airway and administer oxygen to correct hypoxia <95%.
B. Immobilize C-spine if evidence or history of significant trauma, otherwise position the patient in the lateral recumbent position to reduce the risk for aspiration with vomiting.
C. Suction as needed.

MEDIC

D. If patient is actively seizing administer midazolam (Versed) IM. IM is preferred route.

Pt weight	Medication	Route	Dose	Frequency
less than 13 kg	midazolam	IN / IM	0.2 mg/kg	one, max 2.4 mg
less than 13 kg	midazolam	IV / IO	0.1 mg/kg	once, max 5 mg
13 - 40 kg	midazolam	IN / IM	5 mg	once, max 5 mg
13 - 40 kg	midazolam	IV/ IO	0.1 mg/kg	once, max 5 mg
greater than 40 kg	midazolam	IN / IM	M410 dosing 10 mg	once, max 10 mg
greater than 40 kg	midazolam	IV / IO	2-5 mg	once, max 5 mg

E. Be prepared to support the patient's airway (nasopharyngeal airway) and breathing (bag valve-mask ventilation with 100% O2). Monitor ventilations with capnography.

ALL

F. Check Glucose per protocol P608.
G. Place on cardiac monitor (if available).
H. For suspicion of overdose go to the Toxicological protocol M411.

Notes:

A. Trauma to the tongue is unlikely to cause serious problems, but trauma to teeth may. Attempts to force an airway into the patient's mouth can completely obstruct the airway. Use of a nasopharyngeal airway may be helpful.
B. Most patients will be postictal upon your arrival, needing only oxygen and airway maintenance.
C. In children and especially infants, seizure activity may not always be in the form of generalized tonic-clonic activity (i.e., grand-mal). Sometimes eye-deviation or unusual repetitive movements like lip smacking may be the only indication of seizure. Trust the parent's or caretaker's impressions of what is and is not seizure activity in a child with a known seizure disorder (e.g., children with special needs).

MEDIC	D. Please be aware that rectal diazepam (Valium) may have been administered to children with known seizure disorders prior to EMS arrival. This is especially true of children with special healthcare needs. Adding Versed on top of rectal Valium will exacerbate respiratory depression. E. Most typical febrile seizures last less than 5 minutes and stop on their own without medications. A seizure, which has lasted longer than 5 minutes and is associated with fever, may not be a typical febrile seizure, and should be treated with Versed just as any other seizure lasting longer than 5 min.

ALL

I. INCLUSION CRITERIA

A. **Ages 5 to less than 16 years of age**
B. Patients experiencing acute pain.
C. No signs or symptoms of hemodynamic shock
D. Normo-/hypertensive
   1. Children (5-10 years): SBP > 70 + (2 x age in years) mmHg
   2. Children (>10 years): SBP > 90 mmHg
E. No signs of respiratory depression
F. No altered level of consciousness, mental status change, or suspected head injury

II. PROTOCOL

EMT

A. Consider calling for ALS response to the scene or set up a rendezvous if transport to the hospital is longer than 10 minutes.

KY - EMT

B. Administer acetaminophen (Tylenol®) 15 mg/kg (max 975 mg) PO; see Pediatric Medication Chart for weight-based dosing.
   1. Only consider if patient able to swallow and maintain patent airway.
   2. Do not administer if patient has taken acetaminophen (Tylenol®) or acetaminophen-containing products (e.g., Vicodin, Norco, Percocet, or cold/flu remedies) within the past six hours or if actively vomiting.
   3. Acetaminophen (Tylenol®) when used in conjunction with opioids can result in more effective pain control and lower total opioid requirements.

MEDIC

C. Administer acetaminophen (Tylenol®) 15 mg/kg (max 975 mg) PO; see Pediatric Medication Chart for weight-based dosing.
   1. Only consider if patient able to swallow and maintain patent airway.
   2. Do not administer if patient has taken acetaminophen (Tylenol®) or acetaminophen-containing products (e.g., Vicodin, Norco, Percocet, or cold/flu remedies) within the past six hours or if actively vomiting.
   3. Acetaminophen (Tylenol®) when used in conjunction with opioids can result in more effective pain control and lower total opioid requirements.
D. Perform continuous pulse oximetry and closely monitor patient's respiratory status.
E. For moderate to severe pain, administer a **single dose** of one of the following:
   1. Fentanyl 1 microgram/kg IV/IO/IM/SC (max 50 mcg) – administer over 3-5 minutes slow IV push to prevent rigid chest.
   2. Fentanyl 2 micrograms/kg Intranasal (max 100 mcg) – Use the undiluted injectable fentanyl product (100 mcg/2 mL), draw up an extra 0.1 mL of drug solution to prime the atomizer and administer a max of 1 mL per nostril (if giving to larger kid and need to use 100 mcg, you should use the same atomizer for both nostrils).
   3. Morphine sulfate 0.1 mg/kg IV/IO/IM/SC (maximum dose 5 mg).
   4. Ketamine 0.6 mg/kg Intranasal (50mg/mL preferred concentration). Draw up an extra 0.1 mL of drug solution to prime the atomizer and administer a max of 1 mL per nostril.
   5. Ketamine 0.2 mg/kg IV/IO – administer over 1 minute slow IV push
F. Recheck blood pressure, respirations, and mental status.
G. If the patient experiences a drop in systolic blood pressure to less than (2 x age in years) + 70, give a 20 mL/kg (max 500 mL) normal saline IV bolus.
H. **If patient has an allergy to Opioids, pain is not relieved, or for subsequent doses, contact online medical control.**

ALL	**NOTES:** A. It is appropriate to give acetaminophen and fentanyl or morphine concurrently for moderate to severe pain. B. Care should be taken when administering Morphine IM/SC to avoid dose stacking. Only administer one dose except in cases of prolonged extrication or transport. C. Parenteral medications come in various concentrations – double check all calculations prior to administration. D. If indicated, pain medications should be given prior to splinting. E. **When dosed appropriately, complications such as respiratory depression and hypotension are rare in children.** F. Pain control is an important medical intervention. Studies show that children are treated for pain much less often than adults with the same injuries. It is the intention of the Protocol Subcommittee that pediatric patients with burns and isolated fractures/dislocations who meet the above criteria be given pain relief medication.

ALL

I. INCLUSION CRITERIA

A. Age is younger than 16 years.
B. History of MVC, diving accident, fall or other trauma.
C. History of a loss of consciousness following head injury.
D. Infant "found down" from unknown etiology or infant with suspicion of physical abuse.
E. Head contusions, abrasions, or lacerations.
F. Fluid or blood from nose, ears, or mouth.
G. Altered mental status.
H. May have loss of sensation or movement.
I. May have pain in back or neck.
J. No signs of shock. If shock is present, refer to Hemorrhagic Shock Protocol P613.

II. PROTOCOL

A. Control the airway and administer oxygen to correct oxygen saturation <95%.
B. If altered mental status, assure good oxygenation and ventilation of the patient and maintain control of the C-spine.
   1. Elevate the head to 30 degrees while following T704 Spinal Motion Restriction Protocol.
   2. Ventilate the patient normally with a goal of $EtCO_2$ of 35-45 mmHg.

MEDIC

   3. ONLY if the patient has obvious asymmetric pupils with altered mental status, administer 3% saline solution if available.
      PEDIATRIC DOSE: 4 mL/kg IV/IO ONCE; max 500 mL.

ALL

C. Immobilize patient with appropriately sized equipment.
D. Begin transport as soon as possible to destination hospital as directed in Trauma Triage Protocol SB208.
E. Obtain vital signs and monitor cardiac rhythm.
F. Assess a GCS or level of consciousness using the AVPU scale.
G. If hypoglycemia is suspected, then check glucose. If glucose is less than 60 mg/dL then refer to Pediatric Hypoglycemia protocol P608.
H. If GCS is less than 14 or the patient is not an "A" on the AVPU scale or spinal cord injury is suspected, then contact the receiving hospital.
I. If narcotic overdose is suspected, then refer to M411 Toxicologic Emergencies.

NOTES:

A. Cardiovascular shock is not usually due to head injuries. If patient is in shock, consider another cause for hypotension.
B. Remember that restlessness can be due to hypoxia and shock, not just head injury.
C. In any multiple injury or multi-organ trauma patient, spine trauma should be assumed until proven otherwise in a hospital emergency department.

ALL

I. Inclusion Criteria

A. Patient's age is younger than 16 years

B. Significant penetrating injury to extremities or trunk (neck, chest, abdomen, pelvis), with suspected blood loss and risk for hypotensive shock.

C. The trauma patient with suspected head injury in addition requires special considerations.

1. Hypotension and Hypoxia (Oxygen Saturation (SpO2) less than 90%) are known to secondarily exacerbate brain injury.
2. The target SBP is [70+ (2 x age)] or greater, with a goal of improvement in any initial altered mental status.

II. Protocol

A. Aggressively manage the airway; if patient is maintaining adequate respirations, administer Oxygen.

1. If patient is not maintaining adequate respirations, support with bag-valve-mask ventilations.

B. Identify and treat life-threatening respiratory problems (i.e., open chest wounds, flail chest). See Protocol T701 for management of Tension Pneumothorax.

C. If patient is a victim of any blunt trauma, or a penetrating injury to the head or neck, immobilize patient with full spinal precautions as per Protocol T704.

D. Control all external bleeding.

E. Aggressively manage to decrease body-heat loss. Hypovolemic patients rapidly become hypothermic.

F. Transport as soon as possible to appropriate hospital as directed in Trauma Triage Protocol. Unless the patient is entrapped, scene time should be less than 10 minutes. Hospital notification should be made whenever possible.

G. Continuously reassess mental status, breath sounds, perfusion, and vital signs at least every 5 min.

H. Continue secondary assessment throughout transport.

I. For patients with penetrating trauma and no suspected head injury who are mentating normally with palpable peripheral pulses, it is acceptable to initiate and continue transport without IV/IO fluids.

MEDIC

J. For patients whose mental status and/or peripheral pulses require IV/IO fluids resuscitation, initiate a minimum of one IV/IO without delaying transport. Syringe push 20 mL/kg of normal saline and reassess the patient's mental status and/or peripheral pulses. If no improvement, repeat fluid bolus and contact medical control.

ALL

I. Inclusion Criteria

A. Patient's age under 16 years

B. Patients submerged under water or recently pulled from the water with coughing, respiratory distress, or lifelessness.

II. Exclusion Criteria

A. The victim shows signs of rigor mortis, lividity, or injury incompatible with life.

III. Protocol

A. Remove the victim from the water if still required. Perform warming as described in protocol M412.

B. If there is suspicion that the events involved a diving accident or axial load to the head, apply cervical spine precautions as described in protocol T704.

C. Ensure adequate airway, breathing, and oxygenation.

1. Note coughing, cyanosis, or respiratory distress.
2. Administer oxygen via non-rebreather mask for all patients with cough, cyanosis, hypoxia, or respiratory distress. Consider BVM ventilating if patient remains hypoxic despite this or is not breathing adequately.
3. All victims of submersion events for which EMS responds should be transported for medical evaluation. Even patients with mild residual symptoms may develop significant pulmonary edema in the hours to come.

D. **For patients with lifelessness,** establish if the water has obvious signs of ice and, if possible, an estimate of the duration of submersion. Proceed with one of the following pathways:

1. ***If there are obvious signs of ice on the water (or in the area in the case of moving water)***, ensure ALS back-up and proceed with protocols M412 Hypothermia and Cold Emergencies and SB204 Cardiac Arrest.
   a. Maintain airway and administer oxygen to correct hypoxia <95%.
   b. Initiate transport to a Pediatric Level 1 Trauma Center capable of performing pediatric extracorporeal membrane oxygenation (ECMO). In our region, this is Cincinnati Children's in Cincinnati.
   c. Notify receiving facility.
2. ***If there are NO obvious signs of ice, and the patient has been submerged for 30 minutes or longer***, the evidence suggests the patient is unlikely to survive. Ensure ALS back-up and proceed with the cardiac arrest protocols P601 or P602 depending on whether their initial presentation is VF/VT or PEA/asystole. Contact medical control to discuss CPR limits and destination.
3. ***If there are NO signs of ice, and the patient has been submerged for less than 30 minutes or the time is unknown***, ensure ALS back-up and proceed with the cardiac arrest protocols P601 or P602 depending on whether their initial presentation is VF/VT or PEA/asystole). Transport to the closest Pediatric Level 1 Trauma Center. Notify receiving hospital.

Notes:

A. Patients experiencing drowning have been noted to have their largest fall in temperature after being removed from the water. Efforts should be made to remove wet clothing, insulate with dry warm covering, and cover patient's head (not face) to begin the rewarming process.

B. It is unnecessary to perform spinal immobilization on every submersion injury patient. Patients at highest risk for spinal injury tend to be adolescents and those who drown after diving and horse playing.

C. Evidence for survival after ice water submersion exists in the form of case reports, with variable outcome. These patients may benefit from ECMO. Although there are hospitals in the region capable of performing ECMO on infants and adults, **currently, Cincinnati Children's Burnet Campus is the only hospital prepared to perform ECMO on children.**

D. Submersion time has been noted in literature to be the most important factor related to patient outcome.

E. Hypoxic arrest is the most common etiology of arrest in drowning victims.

F. It is generally unnecessary to obtain the victim's temperature in the field.

ALL

I. Inclusion Criteria

A. Patient's age is under 16 years.

B. A medically stable patient who is manifesting unusual behavior including violence, aggression, altered affect, or psychosis.

C. Patient demonstrates behavior including violence, delirium, altered effect, or psychosis.

D. Normal vital signs and blood glucose for the patients' age. (see Appendix I)

II. Exclusion Criteria and Differential Diagnosis

A. Anemia

B. Cerebrovascular accident

C. Drug / Alcohol intoxication

D. Dysrhythmias

E. Electrolyte imbalance

F. Head Trauma

G. Hypertension

H. Hypoglycemia

I. Hypoxia

J. Infection (especially meningitis / encephalitis)

K. Metabolic disorders

L. Myocardial ischemia / infarction

M. Pulmonary Embolism

N. Seizure

O. Shock

III. Protocol

A. If EMS personnel have advanced knowledge of a violent or potentially dangerous patient or circumstance, consideration should be given to staging in a strategically convenient but safe area prior to police arrival. If staging is indicated and implemented, dispatch should be notified that EMS is staging, the location of the staging area, and to have police advise EMS when scene is safe for EMS to respond.

B. If EMS intervention is indicated for the violent or combative patient, patients should be gently and cautiously persuaded to follow EMS personnel instructions. If EMS has cause to believe the patient's ability to exercise an informed refusal is impaired by an existing medical condition, EMS shall, if necessary, restrain the patient for purposes of providing appropriate care. Such restraint shall, whenever possible, be performed with the assistance of police (see Restraint Protocol P616). It is recognized that urgent circumstances may necessitate immediate action by EMS prior to the arrival of police.

1. Urgent circumstances requiring immediate action are defined as:
2. Patient presents an immediate threat to the safety of self or others.
3. Patient presents an immediate threat to EMS personnel.

C. Urgent circumstances authorize, but do not obligate, restraint by EMS personnel prior to police arrival. The safety and capabilities of EMS is a primary consideration. Police shall immediately be requested by EMS in any urgent circumstance requiring restraint of a patient by EMS personnel.

OH - ALL

D. If police initiate restraint inconsistent with the medical provisions of the Restraint Protocol P616, with the intent that EMS will transport the patient, police must prepare to submit an APPLICATION FOR EMERGENCY ADMISSION in accordance with Section 5122.10 ORC, or the patient must be placed under arrest with medical intervention indicated. Police shall, in either instance, accompany EMS to the hospital.

E. APPLICATION FOR EMERGENCY ADMISSION can only be implemented by a:

1. Psychiatrist
2. Licensed clinical psychologist
3. Licensed physician
4. Health or police officer
5. Sheriff or deputy sheriff

KY - ALL **IN - ALL**	F. If police initiate restraint inconsistent with the medical provisions of the Psychiatric Protocol M408 and/or Pediatric Restraint Protocol P616, with the intent that EMS will transport the patient, police must submit written documentation which describes the behavior of the person which caused the peace officer to take the person into custody, or the patient must be placed under arrest with medical intervention indicated. Police shall, in either instance, accompany EMS to the hospital.
ALL	G. EMS shall not be obligated to transport, without an accompanying police officer, any patient who is currently violent, exhibiting violent tendencies, or has a history indicating a reasonable expectation that the patient will become violent. H. If the patient is medically stable, then he/she may be transported by police in the following circumstances: 1. Patient has normal orientation to person, place, time, and situation. 2. Patient has no evidence of medical illness or injury. 3. Patient has exhibited behavior consistent with mental illness.

ALL

I. Inclusion Criteria

A. Patient's age is under 16 years.

B. This protocol is intended to address the need for medically indicated and necessary restraint. It shall not apply to regulate, or restrict in any way, operational guidelines adopted by a provider agency addressing use of force related to non-medical circumstances (i.e., civil disturbances, legitimate self-defense relative to criminal behavior).

C. Patient restraints are to be used only, when necessary, in situations where the patient is violent or potentially violent and may be a danger to themselves or others. EMS providers must remember that aggressive violent behavior may be a symptom of a medical condition such as but not limited to:

1. Anemia
2. Cerebrovascular accident
3. Drug / Alcohol intoxication
4. Dysrhythmias
5. Electrolyte imbalance
6. Head Trauma
7. Hypertension
8. Hypoglycemia
9. Hypoxia
10. Infection (especially meningitis / encephalitis)
11. Metabolic disorders
12. Myocardial ischemia / infarction
13. Pulmonary Embolism
14. Seizure
15. Shock
16. Toxicological ingestion

II. Protocol

A. Patient health care management remains the responsibility of the EMS provider. The method of restraint shall not restrict the adequate monitoring of vital signs, ability to protect the patient's airway, compromise peripheral neurovascular status or otherwise prevent appropriate and necessary therapeutic measures. It is recognized that the evaluation of many patient parameters requires patient cooperation and thus may be difficult or impossible.

B. It is recommended to have Law Enforcement on scene.

C. Refer to Pediatric Psychiatric Emergencies Protocol (P615) for aid in dealing with the combative patient.

D. **The least restrictive means shall be employed.**

E. Verbal de-escalation

1. Validate the patient's feelings by verbalizing the behaviors the patient is exhibiting and attempt to help the patient recognize these behaviors as threatening.
2. Openly communicate, explaining everything that has occurred, everything that will occur, and why the imminent actions are required.
3. Respect the patient's personal space (i.e., asking permission to touch the patient, take pulse, examine patient, etc.).

III. Physical Restraints

A. All restraints should be easily removable by EMS personnel.

B. Restraints applied by law enforcement (i.e., handcuffs) require a law enforcement officer to remain available to adjust the restraints as necessary for the patient's safety. The protocol is not intended to negate the ability for law enforcement personnel to use appropriate restraint equipment to establish scene control.

C. To ensure adequate respiratory and circulatory monitoring and management, patients shall NOT be transported in a face down prone position.

D. Restrained extremities should be monitored for color, nerve, and motor function, pulse quality and capillary refill at the time of application and at least every 15 minutes.

MEDIC

IV. Chemical Restraints

A. Chemical restraints may be required before, after, or in place of physical restraints. Any patient who continues to be a danger to themselves or others despite physical restraints, or those who present an extreme danger while attempting physical restraint, may be chemically restrained as follows.

B. Administer midazolam (Versed) 0.1 mg/kg (max 5 mg) IV/IO or 0.2 mg/kg (Max 10mg) IN/IM Exposure and cleaning of skin is highly recommended but may not be feasible; injection through clothing and prior to skin cleaning is allowed if crew safety would be compromised.

C. When able and safe, place patient on cardiac monitor and continuous pulse oximetry and end-tidal capnography.

D. When able and safe, administer oxygen to correct hypoxia <95%.

E. When able and safe, check blood glucose level.

F. At no time shall a patient be left unattended after receiving chemical restraint.

G. Any patient receiving chemical restraint must be attended to and transported by a paramedic.

H. Repeat dose(s) of midazolam (Versed) may be ordered by on-line medical control.

I. Pre-arrival notification is highly recommended so the receiving Emergency Department can be prepared for the safe transfer of a combative or violent patient.

ALL

V. Documentation of Restraints

A. Patient restraint shall be documented on the run sheet and address any or all the following appropriate criteria:

1. That an emergency existed and the need for treatment was explained to the patient.
2. That the patient refused treatment or was unable to consent to treatment (such as unconscious patient).
3. Evidence of the patient's incompetence (or inability to refuse treatment).
4. Failure of less restrictive methods of restraint (e.g., if conscious, failure of verbal attempts to convince the patient to consent to treat).
5. Assistance of law enforcement officials with restraints, or orders from medical control to restrain the patient, or any exigent circumstances requiring immediate action, or adherence to system restraint protocols.
6. That the treatment and/or restraint were for the patient's benefit and safety.
7. The type of restraint employed (soft, leather, mechanical, chemical).
8. Any injuries that occurred during or after the restraint.
9. The limbs restrained ("four points").
10. Position in which the patient was restrained.
11. Circulation checks every 15 minutes or less (document findings and time).
12. The behavior and/or mental status of the patient before and after the restraint.

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Notes:

A. Intramuscular midazolam is more rapidly absorbed than other benzodiazepines, including diazepam and lorazepam, making it uniquely ideal for treatment of the acutely agitated patient. Onset 5-10 minutes.

B. Midazolam is as effective as haloperidol in acutely agitated and combative patients (Am J Emerg Med 8:97) and has less potential cardiovascular side effects and drug-drug interactions than haloperidol.

C. Respiratory depression is a known side effect of benzodiazepines. Monitor and treat respiratory depression as needed. The use of flumazenil is not recommended and is potentially harmful because it may cause uncontrollable seizures. The risk of harm is especially present when the patient history is unknown, unclear, or incomplete.

D. Midazolam may be administered intranasal (IN); however, its efficacy in agitated and combative patients is unknown.

E. Use of benzodiazepines, including intramuscular Midazolam, for acutely agitated and combative patients is supported by American College of Emergency Physicians clinical policy [Ann Emerg Med 47(1): 79, 2006].

ALL

I. Introduction

A. Patients < 1 year of age

B. Some infants have transient events involving a combination of altered consciousness, respiration and muscle tone that are alarming for caregivers. In the past these events have been referred to as an "apparent life-threatening event" (ALTE). However, the American Academy of Pediatrics recommended removing the term “life-threatening” so that caregivers are not unnecessarily alarmed. The new term is "brief, resolved, unexplained event" (BRUE).

C. Indications:

1. In general, BRUE refers to events lasting < 1 minute with one or more of the following:
   a. Absent, decreased, or irregular breathing
   b. Cyanosis or pallor
   c. Altered level of responsiveness.
   d. Marked change in muscle tone.
2. In addition, infants must otherwise appear well and be back at their baseline state of health at the time of presentation. Thus, infants who are febrile, coughing or showing any signs of distress or other deviations from their baseline are not considered to have a possible BRUE.

D. The term BRUE only applies to events for which there is no underlying cause, which can be determined after a thorough history and physical examination.

II. **Protocol**

A. Ensure adequate airway.
Perform a thorough history and physical examination. Routine monitoring should include Pulse Oximetry. Blood sugar and capnography assessment should be conducted when patient condition indicates.

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Establish cardiac monitoring when patient condition indicates.

ALL

B. Determine if the event was high risk by one or more of the following:

1. Criteria of a high-risk BRUE:
   a. Age < 60 days
   b. The patient was born before 32 weeks gestation or has a corrected gestational age (post-conception age) < 45 weeks.
      i. Gestational weeks at birth plus weeks since birth equals corrected age.
      ii. Example: Born at 36 weeks gestation. Now 7 Weeks old. Corrected age = 43 weeks
   c. CPR was performed by a trained medical professional.
   d. Event lasted >1 minute.
   e. Has had a BRUE/ALTE in the past
   f. Features of concern in the patient’s history such as concern for child abuse, family history of sudden death or SIDS.

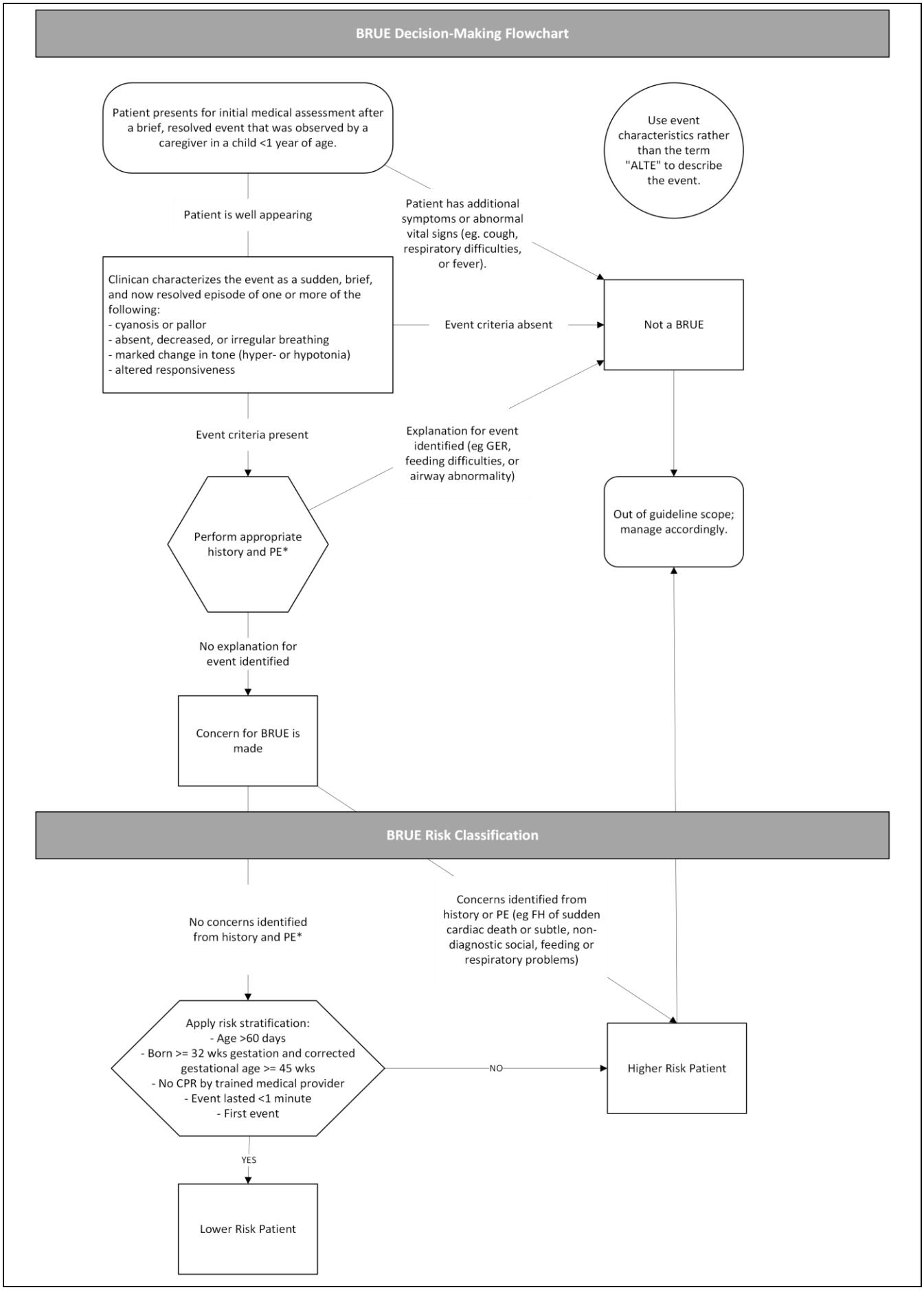
C. High risk BRUE should be transported to a pediatric hospital / pediatric Emergency Department as they may be admitted for observation.

D. **BRUE not established as High Risk by above criteria, routine transport is recommended for evaluation at an Emergency Department – contact Medical Control prior to obtaining refusal. Consider letting patient guardian talk with Medical Control Physician if they insist on refusal. All refusals obtained should be advised to follow up with primary care and report BRUE.**

E. Continually reassess throughout transport

MEDIC

F. Do NOT establish IV/IO Access unless specific indicator noted, or treatment required.


BRUE Decision-Making Flowchart
Patient presents for initial medical assessment after a brief, resolved event that was observed by a caregiver in a child <1 year of age.
Use event characteristics rather than the term "ALTE" to describe the event.
Patient is well appearing
Patient has additional symptoms or abnormal vital signs (eg. cough, respiratory difficulties, or fever).
Clinican characterizes the event as a sudden, brief, and now resolved episode of one or more of the following:
- cyanosis or pallor
- absent, decreased, or irregular breathing
- marked change in tone (hyper- or hypotonia)
- altered responsiveness
Event criteria absent
Not a BRUE
Event criteria present
Explanation for event identified (eg GER, feeding difficulties, or airway abnormality)
Perform appropriate history and PE*
Out of guideline scope; manage accordingly.
No explanation for event identified
Concern for BRUE is made
BRUE Risk Classification
Concerns identified from history or PE (eg FH of sudden cardiac death or subtle, non-diagnostic social, feeding or respiratory problems)
No concerns identified from history and PE*
Apply risk stratification:
- Age >60 days
- Born >= 32 wks gestation and corrected gestational age >= 45 wks
- No CPR by trained medical provider
- Event lasted <1 minute
- First event
NO
Higher Risk Patient
YES
Lower Risk Patient

ALL	**Notes:** A. The BRUE Definition has a strict age limit. B. The BRUE diagnosis is based on characterization of features for the event not on the caregiver's perception that the event was life threatening. C. A determination should be made whether the infant had cyanosis or pallor, rather than determining whether "color change" occurred. Episodes of flushing or redness are not consistent with BRUE. Child abuse is a serious and common cause of a BRUE. Patients who have experienced abusive head trauma may present with a BRUE. Consider child abuse when the event is inconsistently reported or is incompatible with the child's developmental age. Also consider child abuse when the patient has unexplained bruising and/ or a torn frenulum in the mouth.

KY - ALL

Patient Transport

An ill or injured child must be restrained directly to the cot in a manner that prevents ramping or sliding in a collision.

- A belt/strap looped over each shoulder and attached to a non-sliding cot member.
- A soft, sliding, or breakaway connector holding the shoulder straps together on chest.
- Belt/strap anchored to non-sliding cot member and routed over thighs, not around waist.

Note: Standard belt systems do not adequately secure child to the cot during a crash.

Ill or injured child/infant (5 to 80 lbs) who can tolerate a semi-upright position may be secured using a child passenger safety seat.

- Use a convertible child safety seat that has a front and rear belt path.
- Position safety seat on cot facing the foot-end with backrest fully elevated.
- Consider removing mattress.
- Secure safety seat with 2 pairs of belts in both the forward & rear positions.
- Place the shoulder straps of the harness through slots just below child's shoulders.
- For infants, place rolled towels on sides of child to maintain centered position.

Note: Non-convertible safety seats cannot be secured properly to the cot.

- For infants who cannot tolerate a semi-upright position or who must lie flat:
  - Use car bed, if available, that can be secured against both rearward and forward motion.
  - Position car bed across cot so child lies perpendicular to cot.
  - Fully raise cot's backrest and anchor car bed to cot with 2 belts.
  - Fasten car bed harness snugly to infant

Use of Child Passenger Safety Seat after Involvement in Motor vehicle Crash:

Child safety seats may be used after involvement in a minor crash.

All of the following must apply to be considered a minor crash.

- Visual inspection including inspection under movable seat padding does not reveal any cracks or deformation.
- The vehicle in which the child safety seat was installed was capable of being driven from the scene of the crash.
- The vehicle door nearest the child safety seat was undamaged.
- There were no injuries to any of the vehicle occupants.
- The air bags (if any) did not deploy.

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MEDIC

II. INCLUSION CRITERIA

A. Clinical suspicion for significant blood loss with signs and/or symptoms of inadequate tissue perfusion concerning suggestive of SHOCK.
   1. Penetrating trauma
   2. Unstable pelvic fracture or multiple long bone fractures
   3. Blunt Trauma
   4. Observed significant external blood loss
   5. Signs and symptoms of massive GI bleed, ruptured abdominal aortic aneurysm, post-partum hemorrhage, or ruptured ectopic pregnancy.

B. AND Presence of hemodynamic instability as evidenced 2 or more physiological criteria:
   1. EtCO2 < 25
   2. Shock index > 1.0
   3. Sustained systolic blood pressure < 90mmHg or map 65 mmHg (sustained is defined as 2 independent blood pressure measurements)
   4. If patient has polytrauma with concurrent TBI with systolic blood pressure < 100
   5. Sustained heart rate > 120 beats per minute
   6. Pediatric hypotension (a sign of uncompensated shock)
      i. Neonates (0-28 days): systolic blood pressure < 60 mmHg
      ii. Infants (1 month – 12 months): systolic blood pressure < 70mmHg
      iii. Children (1 year – 10 years): systolic blood pressure < 70 + (2 x age in years) mmHg
      iv. Children (>10 years): systolic blood pressure ≤ 90 mmHg
   7. Sustained tachycardia for age (see chart below)
   8. Tachypnea for age (see chart below)
   9. Cool pale skin with cap refill >2 seconds

Age	Pulse Beats/min	Respirations Breaths/min	Avg. Systolic Blood Pressure
Infant (1-12 mo)	90-180	30-53	>70
Toddler (1-2 yrs)	80-140	22-37	>70
Preschool (3-5 yrs)	60-120	20-28	>80
School age (6-12 yrs)	58-118	18-25	>85
Adolescent (12+ years)	50-100	12-20	>90

C. OR witnessed traumatic or medical cardiac arrest reasonably suspected have a hemorrhagic component, and blood products are available for administration within 5 minutes of loss of pulses, or a narrow-complex rhythm >40BPM is present

III. CONTRAINDICATIONS

A. Personal or religious objection to receiving blood products.

IV. PROTOCOL

A. Ensure applicable hemorrhage control and shock interventions have been performed:
   1. Tourniquet
   2. Wound packing
   3. Pelvic binder
   4. Needle decompression

B. Ensure adequate personnel are on scene to adequately manage all concurrent priorities.

C. Ensure patent IV/IO access preferably 18 gauge or larger (IV is preferred over IO).

D. Document pre-transfusion vital signs, including heart rate, respiratory rate, blood pressure, ETCO2, SPO2, and body temperature.

E. Only remove blood products from cooler immediately before transfusion.

F. Examine unit of blood (looking for discoloration, clots, and sediment) and ensure the

temperature indicator on the blood product bag indicates the appropriate temperature.

G. Gently agitate the blood product bag and use only filtered blood tubing for administration.
H. Prime blood tubing and warming unit. (If available commercial warming device).
I. Initiate transfusion
    1. Adult patients: 1 unit
    2. Pediatric patients: 10 mL/kg
J. Reassess for clinical improvement
    1. Patients with non-compressible hemorrhage:
        i. Look for signs of improved perfusion
            A. Presence of radial pulses
            B. Improved mentation
            C. Use the permissive hypotension approach
                a. 90 mmHg for patients < 35kg
                b. 100 mmHg for patients ≥35kg
                c. 110 mmHg for patients >35kg with significant TBI
K. If inadequate clinical improvement, repeat transfusion
    1. Adult patients: 1 unit
    2. Pediatric patients: 10 mL/kg
L. Maintain normal body temperature
    1. Apply thermal cap to the patient
    2. Cover the patient with a sheet and Ready Heat Blanket, if available
M. Administer 30mL of 10% Calcium Gluconate or 10mL of 10% Calcium Chloride through a separate IV/IO line during or immediately after the first unit of blood is administered.
    1. Pediatric patients: < 12 years: 10% Calcium Chloride 20 mg/kg slow IV/IO
N. Administer tranexamic acid through a separate IV/IO line
    1. Adult patients: 1 gram IVPB over 10 minutes
    2. Pediatric patients > 12 years: 1 gram IVPB over 10 minutes
    3. Pediatric patients < 12 years: 15 mg/kg IV/IO IVPB over 10 minutes
O. Continue to reassess and monitor for signs of a blood transfusion reaction
    1. Signs and symptoms of a transfusion reaction may include sudden onset fever (this may be the first sign), wheezing, dyspnea, flushing, chills, sudden worsening of hypotension, tachycardia not consistent with the underlying condition, feeling of impending doom or worsening anxiety, new abdominal, chest, or back pain.
    2. For any suspected transfusion reaction, immediately STOP the transfusion, flush the IV/IO, and contact medical control
    3. Retain the blood product and tubing and report the reaction in accordance with Department SOP.
    4. Treat anaphylaxis per the Allergic Reaction/Anaphylaxis protocol M409.

V. Notes: Every agency who will be carrying blood products should develop an operating procedure in concert with the issuing blood bank covering storage requirements, daily quality assurance procedures, reporting requirements with the blood bank, and required hand-off paperwork with the receiving hospital.

MEDIC

I. INDICATIONS

A. Patients of all ages.

B. Patient with confirmed or suspected pneumothorax, including:

1. Patient with confirmed or suspected chest trauma
2. Patient receiving positive pressure ventilation
3. High suspicion for spontaneous pneumothorax

AND one or more Signs of Shock/Tension Pneumothorax

4. Hypotension
5. Persistent Hypoxia
6. Traumatic cardiac arrest without obviously fatal wounds
7. Severe or progressive respiratory distress
8. Severe or progressive tachypnea
9. Difficulty with manual ventilation or decreased tidal volume.

II. COMPLICATIONS

A. Hemorrhage from or injury to vessels, diaphragm, or organ laceration.

B. Creation of a pneumothorax if one was not already present.

C. Laceration of the lung.

D. Infection.

E. Retained Foreign Body from Catheter

III. PROCEDURE

A. Maintain airway and administer oxygen

B. Fully expose the entire chest and clean the procedure area of the affected side.

C. Prepare for the procedure using appropriate commercial device or one of three techniques:

1. Attach a 3.25" 10-14G IV catheter and needle to a large syringe.
2. Use the 3.25" 10-14G IV catheter and needle with a one-way, multiposition valve (3-waystopcock), or commercial device.
3. Use the 3.25" 10-14G IV needle and catheter alone leaving it open to air.
4. For pediatrics use following devices:
   a. ≤12 years of age: standard 14g or 16g 1.5" needle into 4th ICS anterior axillary line
5. Morbidly obese patients may require longer needles when necessary.

D. Discontinue automatic ventilator, if using.

E. Insert the IV catheter and needle assembly in one of two locations:

1. The 5th intercostal space in the anterior axillary line (AAL)) or
2. Over the top of the rib in the 2nd intercostal space in the midclavicular line (MCL) (i.e., do not insert medial to the nipple line)

F. Ensure needle entry is not medial to the nipple line or directed toward the heart and is insertedall the way to the hub.

G. If a tension pneumothorax is present, then a rush of air may be heard, or the plunger of thesyringe will be easy to pull back.

H. After waiting 5-10 seconds to allow for decompression to occur, remove the needle from thecatheter and leave the plastic catheter in place.

I. Assess for signs of successful decompression:

1. Improved vital signs
2. Improved work of breathing
3. Improved ventilation compliance

J. Consider repeat needle decompression if signs and symptoms of tension pneumothorax persist.

NOTES:

A. Tension pneumothorax is rare; but when present, it must be treated promptly.

B. Pneumothorax without tension physiology (i.e., "simple pneumothorax") i is not immediately life threatening and should not be treated with needle decompression in the field.

C. Positive pressure ventilation may lead to rapid progression from simple pneumothorax to

tension pneumothorax.

D. Should symptoms develop while a chest seal is in place, providers should "burp" the seal or ensure vented system is not occluded before decompressing chest, but this should not delay needle decompression.

E. In patients with shock not responsive to fluid resuscitation, consider UNTREATED tension pneumothorax as possible cause of refractory shock.

F. **PEDIATRIC NEEDLE DECOMPRESSION SHOULD ONLY BE PERFORMED USING IV ANGIOCATH DEVICES UNLESS DIRECTED BY MEDICAL CONTROL.**

G. The following are signs of tension pneumothorax that may or may not be present:
   1. Absent or markedly decreased breath sounds on affected side (possible to be both sidessimultaneously)
   2. Asymmetric chest rise and fall.
   3. Jugular Vein Distention (JVD)
   4. Tracheal Shift away from affected side (late sign)
   5. Persistent tachypnea following thoracic trauma
   6. Subcutaneous emphysema

MEDIC

I. Indications

A. Patient of any age.

B. Patient has existing central venous access device (CVAD) present.

II. Devices

A. Indwelling Catheter – Examples are PICC Line and Midline venous access devices whose ports are Luer-locked or capped. The tip of the catheter is located in large vein or superior vena cava.

B. Central lines and dialysis catheters are large bore, short length double catheters (may have third tail or lumen). “Arterial” and “venous” labeled lumens are side-by-side in subclavian, internal jugular, or femoral vein. CAUTION: These devices contain high concentrations of heparin. This must be discarded prior to use.

C. Gortex Graft or AV Fistula — Natural or plastic connection between vein and artery usually located under skin on arm. The examiner may feel a “thrill” or auscultate a bruit. These sites have high backpressure due to arterialization of vessel.

D. Implanted Ports – Example includes Port-a-Cath. Requires specialized equipment to access. Single or double (oval) reservoir located under skin on chest wall or forearm. To access, one must insert a Huber needle through skin into the rubber septum. The catheter tip is located in large vein or superior vena cava.

III. Procedure

A. Identify if CVAD is accessible with standard prehospital equipment.

B. Identify shut-off clamps, caps, heparin/saline lock and clamp if disconnecting or opening an existing line.

C. Scrub the access port for 15 seconds with alcohol.

D. Access the device after cleansing.

E. Aspirate with 10 ml syringe until blood return, but site may be functional without return. Only use venous access devices that have a blood return unless the patient or family can verify that the device is functional despite the lack of blood return.

F. Discard aspirated fluid.

G. Flush lumen or port with 10-ml saline, avoiding excessive pressure.

H. Establish tubing connection avoiding air entry.

I. Secure connections

Notes:

A. Do not access immature grafts.

B. Arterial bleeding will result if the needle is dislodged from a dialysis graft or fistula.

C. Dialysis fistulas and grafts (located under skin or arm) may have high back pressure and require positive pressure to infuse.

D. When attempting to insert a needle into a dialysis fistula, avoid the scar line or any lumpy areas. Follow the track marks that are present from previous use of the site for dialysis.

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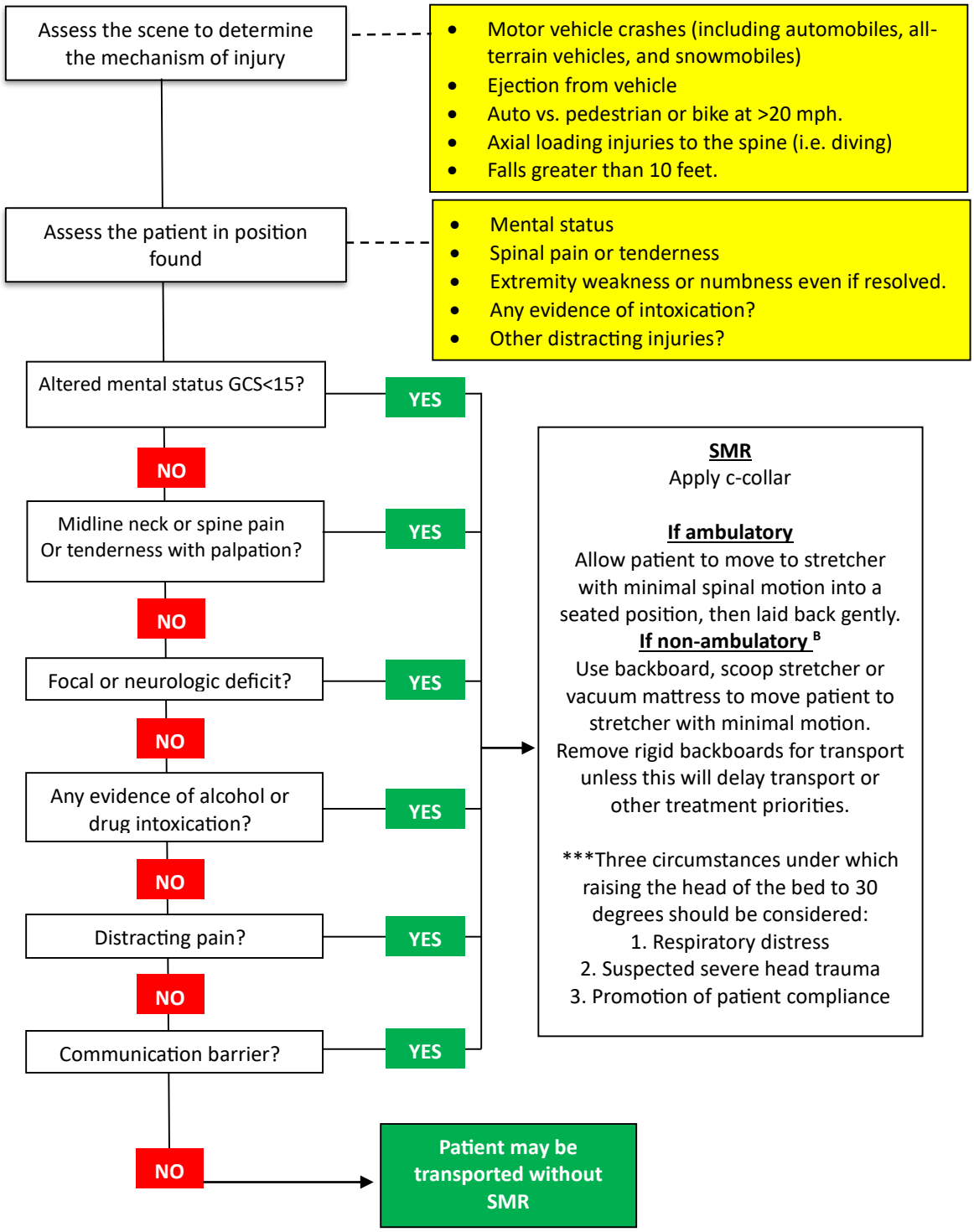
Assess the scene to determine the mechanism of injury
Motor vehicle crashes (including automobiles, all-terrain vehicles, and snowmobiles)
Ejection from vehicle
Auto vs. pedestrian or bike at >20 mph.
Axial loading injuries to the spine (i.e. diving)
Falls greater than 10 feet.
Assess the patient in position found
Mental status
Spinal pain or tenderness
Extremity weakness or numbness even if resolved.
Any evidence of intoxication?
Other distracting injuries?
Altered mental status GCS<15?
YES
NO
Midline neck or spine pain Or tenderness with palpation?
YES
NO
Focal or neurologic deficit?
YES
NO
Any evidence of alcohol or drug intoxication?
YES
NO
Distracting pain?
YES
NO
Communication barrier?
YES
NO
SMR
Apply c-collar
If ambulatory
Allow patient to move to stretcher with minimal spinal motion into a seated position, then laid back gently.
If non-ambulatory B
Use backboard, scoop stretcher or vacuum mattress to move patient to stretcher with minimal motion. Remove rigid backboards for transport unless this will delay transport or other treatment priorities.
***Three circumstances under which raising the head of the bed to 30 degrees should be considered:
1. Respiratory distress
2. Suspected severe head trauma
3. Promotion of patient compliance
Patient may be transported without SMR

I. Treatment

A. Patients with penetrating injury to the neck should **NOT** be placed in a cervical collar or other spinal precautions regardless of whether they are exhibiting neurologic symptoms or not. Doing so can lead to delayed identification of injury or airway compromise and has been associated with increased mortality.

B. If extrication is required:

1. From a vehicle: After placing a cervical collar, if indicated, children in a booster seat and adults should be allowed to self-extricate. For infants and toddlers already strapped in a car seat with a built-in harness, extricate the child while strapped in his/her car seat.
2. Other situations requiring extrication: A padded long board may be used for extrication, using the lift and slide (rather than a logroll) technique.

C. Football helmet removal

1. If a helmet needs to be removed, it is recommended to remove the face mask followed by manual removal (rather than the use of automated devices) of the helmet while keeping the neck manually immobilized - occipital and shoulder padding should be applied, as needed, with the patient in a supine position, in order to maintain neutral cervical spine positioning. (Facemasks can be removed without removing the helmet.)
2. Evidence is lacking to provide guidance about other types of helmet removal.

D. Do **NOT** transport patients on rigid long boards unless the clinical situation warrants long board use. An example of this may be facilitation of immobilization of multiple extremity injuries or an unstable patient where removal of a board will delay transport and/or other treatment priorities. **In these situations, long boards should ideally be padded or have a vacuum mattress applied to minimize secondary injury to the patient.**

E. Patients with severe kyphosis or ankylosing spondylitis may not tolerate a cervical collar. These patients should be immobilized in a position of comfort using towel rolls or sandbags.

F. Pediatrics with torticollis (twisted neck) after a traumatic injury should be treated as a having a cervical spine injury and immobilized with a cervical collar.

Notes:

A. Children are abdominal breathers, so immobilization straps should go across chest and pelvis and not across the abdomen, when possible

B. Children have disproportionately larger heads. When securing pediatric patients to a spine board, the board should have a recess for the head, or the body should be elevated approximately 1-2 cm to accommodate the larger head size and avoid neck flexion when immobilized.

C. In an uncooperative patient, avoid interventions that may promote increased spinal movement.

D. Evidence is lacking to support or refute the use of manual stabilization prior to spinal assessment in the setting of a possible traumatic injury when the patient is alert with spontaneous head/neck movement. Providers should not manually stabilize the alert and spontaneously moving patients, since patients with pain will self-limit movement, and forcing immobilization in this scenario may unnecessarily increase discomfort and anxiety.

E. Certain populations with musculoskeletal instability may be predisposed to cervical spine injury. However, evidence does not support or refute that these patients should be treated differently than those who do not have these conditions. These patients should be treated according to the Spinal Motion Restriction protocol like other patients without these conditions.

F. Age alone should not be a factor in decision-making for prehospital spine care, yet the patient's ability to reliably be assessed at the extremes of age should be considered. Communication barriers with infants/toddlers or elderly patients with dementia may prevent the provider from accurately assessing the patient.

G. Spinal precautions should be considered a treatment or preventive therapy.

H. Patients who are likely to benefit from immobilization should undergo this treatment.

I. Patients who are not likely to benefit from immobilization, who have a low likelihood of spinal injury, should not be immobilized.

J. Ambulatory patients may be safely immobilized on stretcher with cervical collar and straps and will not generally require a spine board.

K. Reserve long spine board use for the movement of patients whose injuries limit ambulation and who meet criteria for the use of spinal precautions. Remove from the long board as soon as is practical.

L. If your jurisdiction responds to organized school sporting events, it is suggested that you make contact with the athletic trainer / medical staff at the school to review their spinal immobilization procedure / E.A.P; and if possible, practice these procedures interdepartmentally and or with the Schools medical team prior to or at the beginning of the school year / sport season (football, hockey, lacrosse).

References:

A. NASEMSO. National Model EMS Clinical Guidelines V3. March 2022.

B. Peter E. Fischer, Debra G. Perina, Theodore R. Delbridge, Mary E. Fallat, Jeffrey P. Salomone, Jimm Dodd, Eileen M. Bulger & Mark L. Gestring (2022) Spinal Motion Restriction in the Trauma Patient – A Joint Position Statement, Prehospital Emergency Care, DOI: 10.1080/10903127.2022.1481476

ALL

I. Introduction

A. Patients of all ages.

B. Airway skills are essential to all providers. This protocol is developed to guide the provider through the progressive and complicated steps of appropriate airway management. The protocol is designed to provide progressively more aggressive airway techniques dependent upon the patient's condition. The paramedic should always be mindful that BASIC AIRWAY SKILLS ARE ESSENTIAL! Most airways can be managed with well performed basic airway maneuvers.

C. Indications:

1. In general, the need for airway management or ventilatory support should be identified using rapid "global assessment" techniques. Except for apnea, there is no isolated single indicator of the need for airway or ventilatory management. Therefore, the patient should be globally assessed for any of the following indicators of airway obstruction and/or ventilatory insufficiency/failure.
   a. Airway patency and respiratory effort (breathing) must be assessed in all patients.
   b. Indications of airway compromise MUST be recognized at the earliest opportunity.
   c. Indications of failure to maintain or protect the airway may include:
      i. Lack of air movement at the mouth/nose.
      ii. Stridorous or snoring respirations.
      iii. Gurgling sound with breathing.
      iv. Failure of a normal gag reflex.
      v. Adventitious breath sounds (wheezing, rhonchi, rales).
      vi. Absent breath sounds.
      vii. Loss of end-tidal carbon dioxide readings.
   d. Indications of respiratory insufficiency/failure may include:
      i. Decreased mental status.
      ii. Apprehension or agitation.
      iii. Increased respiratory rate.
      iv. Obvious respiratory fatigue.
      v. Accessory muscle use (suprasternal, intercostal, abdominal muscles).
      vi. Apnea.
      vii. Shortness of breath.
      viii. Pallor, Cyanosis, low pulse oximetry readings.
      ix. Nasal flaring.
      x. Abnormal breathing pattern: rapid, slow, or shallow (This may be age specific).
      xi. Asymmetric chest wall movement.
      xii. Increasing end-tidal carbon dioxide readings.

II. Protocol

A. This protocol presents an algorithmic approach to this important procedure in emergency medicine.[1]

B. Establish the need for airway intervention based on assessment (see indications above)

C. Apply basic airway techniques.

1. Head-tilt chin-lift
   a. Use Jaw thrust technique in trauma patients suspected of having a cervical spine injury.
      i. Utilize the Head-tilt chin-lift only as a last resort basic airway technique in the trauma patient. Immobilization of a patient with a compromised airway using a c-collar and backboard should only be considered / performed in the trauma patient. Utilizing the reverse Trendelenburg position by elevating the head of the cot / backboard 20 degrees has shown benefits to both patients with a compromised airway and during intubation by facilitating better laryngeal exposure during direct laryngoscopy and reducing atelectatic collapse of the posterior lungs.
   b. Jaw thrust.
   c. Use this technique for patients suspected of having a cervical spine injury.

2. Basic airway adjuncts should always be used during BVM ventilations.
   a. Nasopharyngeal airway should be used for obtunded or unconscious patients.
   b. Oropharyngeal airway should be used in patients that are unconscious only.
   c. Both airway techniques may stimulate the patients gag reflex and cause vomiting. Be prepared to suction.
3. Basic Airway attempt failure.
   a. If a patent airway is not obtainable after basic skills attempts (chest rise and/or audible bilateral breath sounds), default immediately to supraglottic/extraglottic airway device.

D. After successful basic airway techniques, a decision to provide a more definitive airway should be based on the following indications:
1. The patient's mental status will not maintain a sufficient airway.
2. Concern for potential vomiting and aspiration.
3. Excess oropharyngeal fluids not well managed by the patient (blood)
4. Excessive work of respiratory effort indicating impending respiratory failure.

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E. Tracheal Intubation
1. See T706 Orotracheal Intubation Protocol

F. Drug Assisted Intubation (DAI) and Rapid Sequence Intubation (RSI)
1. See A102 Pharmacologic-Assisted Intubation.

G. Tracheostomy Dislodgement
1. Most of the time, a dislodged tracheostomy tube does not require any extraordinary measures by EMS providers besides assessment and transport for evaluation.
2. Assessment:
   a. Determine if the patient is in respiratory distress.
      i. If yes, determine length of time the tracheostomy tube has been in place.
      ii. If no, transport in position of comfort.
   b. Was the tracheostomy performed in the last 7 days?
      i. If yes, control the airway with a supraglottic/extraglottic device or oral intubation (if the patient has not had a laryngectomy).
      ii. If no,
         A. If the patient is able to ventilate adequately through the stoma, may trial oxygenation through stoma with NRB mask,
         B. Make sure tracheostomy tube is clean and clear and attempt to re-insert it or a cuffed ETT of equal size (if unknown, size 6) through the stoma, advancing the cuff just past the opening.
         C. If this fails, attempt orotracheal intubation (if patient has not had a laryngectomy.
         D. Confirm tube placement with capnography, continually monitor during transport.

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H. **Rescue Airway (Alternative Airway Device)[2] Supraglottic/Extraglottic Airway Device**
1. In the case of a failed attempt at intubation, reversion to basic airway skills is essential. A rescue airway/alternate airway device should be employed as needed to maintain the airway. There are numerous types of rescue/alternate airway devices available. Each emergency medical service Medical Director will approve the device to be used by the service and provide the appropriate training in the use of that device.
2. Use of an alternative rescue airway device may proceed or substitute for endotracheal intubation when patient anatomy or the situation indicates.
3. Per scope of practice EMT's may use many alternate airway devices.

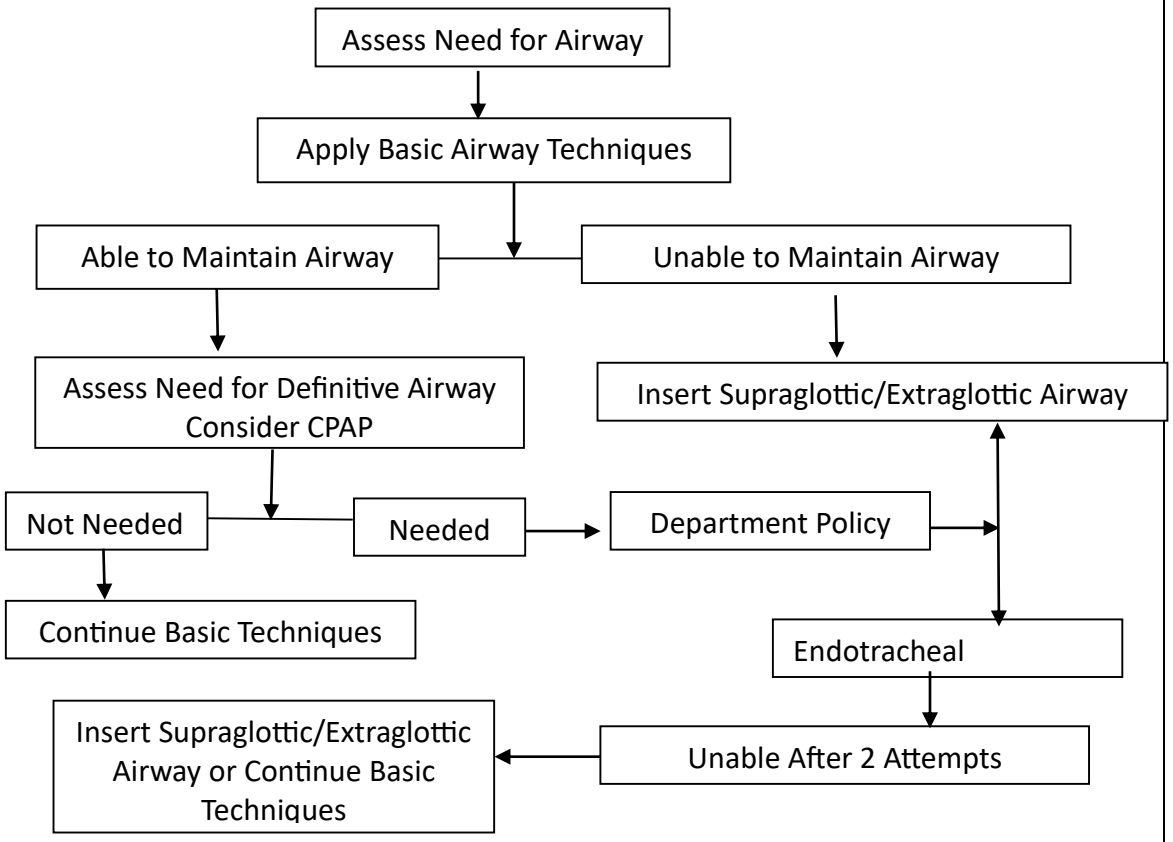
I. **End Tidal CO2 Detection**
1. Waveform capnography must be used to confirm and monitor endotracheal tube and rescue airway placement in the field, in the transport vehicle, on arrival at the hospital, and after any patient transfer to reduce the risk of unrecognized tube misplacement or displacement.

	2. Studies on waveform capnography have shown 100% sensitivity and 100% specificity in identifying correct endotracheal tube placement.
MEDIC	**III. SURGICAL AIRWAY** A. In rare cases when an airway cannot be managed by either basic, advanced or rescue airway techniques, a surgical airway may need to be performed. B. Indications 1. Acute upper airway obstruction, which cannot be relieved by basic airway obstruction skills or the utilization of Magill forceps for direct removal. 2. Respiratory arrest with facial or neck anatomy or injury that makes endotracheal intubation impossible. C. Each emergency medical service Medical Director will approve the surgical airway device to be used by the service and provide the appropriate training in the use of that device.
ALL	**IV. DOCUMENTATION** A. A complete record of each airway attempt should be placed in the patient care record. Each airway intervention (including basic skills) should include the following (if applicable): 1. Precautions taken (i.e., in-line stabilization). 2. Size of device. 3. The number of intubation attempts shall not exceed 2 attempts at oral tracheal intubation, if that attempt fails, secure the airway with a supraglottic/extraglottic airway rescue airway or use a simple airway with BVM ventilations. 4. Depth of insertion (i.e., "X" number of centimeters at the lips/teeth). **5.** Complications encountered. **6.** Method of confirmation of correct placement (e.g., esophageal intubation detector, clinical exam).
MEDIC	**V. PEDIATRIC VENTILATOR DEPENDENT & TRACHEOSTOMY DEPENDENT** A. These patients can develop an airway occlusion due to a mucus plug. In the event of an occlusion the following interventions should be followed: 1. Suction the trach. In the event this does not clear the airway, then 2. Change the trach. If you are not able to reinsert the trach, then 3. Insert the next smaller size. If not able to insert the next smaller size, then 4. An ET of the smaller size can be inserted. (Note ET can only be inserted the length of the trach and needs to be secured. **VI. PEDIATRIC VENTILATOR DEPENDENT & TRACHEOSTOMY DEPENDENT NOTES:** A. Some of these patients can NOT be orally intubated or may be difficult to intubate. B. Most of these patients respond better to being on a ventilator than being bagged. These patients have portable ventilator with their setting preset. C. The parents or care givers of these patients are going to be your best resource for history and care of these patients. D. Many parents will have trach's of various sizes.

ALL

NOTES:

A. Once airway is established assure high flow oxygen delivery.
B. In a suspected opioid overdose, utilization of successful basic airway skills will allow your patient to be treated with naloxone therefore avoiding the need for advanced airway placement.
C. It is recommended that inline end tidal CO2 (when available) be used in the following settings:
   1. Patients
   2. Intubated patient.
   E. After placing a supraglottic/extraglottic airway device with designated gastric suction access, placing a gastric suction tube into the stomach via the designated channel (either connected to suction or safely vented to the atmosphere) by an appropriately trained paramedic may enhance airway protection and reduce intrathoracic pressure.



REFERENCES:

A. An Algorithmic Approach to Prehospital Airway Management, Prehospital Emergency Care 2005;9:145–155.
B. Alternate Airways in the Out-of-Hospital Setting Position Statement of the National Association of EMS Physicians, Prehospital Emergency Care, 2007:11:1, 55.

MEDIC

I. INDICATIONS
- A. Patients of all ages.
- B. After basic airway management skills, advanced airway skills become essential for management of the critically ill patient and are a primary function of the paramedic.

II. CONTRAINDICATIONS
- A. Suspected epiglottitis characterized by a sore throat, fever, and drooling.

III. COMPLICATIONS
- A. Unrecognized esophageal intubation with subsequent hypoxic brain injury
- B. Orotracheal bleeding
- C. Injury to vocal cords, epiglottis, or other airway structures
- D. Vomiting and subsequent aspiration

IV. PROTOCOL
- A. Pre-oxygenate the patient if time allows, studies have shown that use of oxygen by nasal cannula at 15 lpm during intubation and insertion of an SGA aid in the pre oxygenation of the patient. Pre oxygenation using a nasal cannula with BVM ventilations also increases the oropharyngeal FiO2 (fraction of inspired oxygen).
- B. Chest compressions shall not be interrupted for any airway intervention including intubation or insertion of a supraglottic/extraglottic airway.
- C. Assemble and check equipment:
  1. Ventilation equipment, including oxygen by nasal cannula.
  2. Laryngoscope, if available may utilize video laryngoscope
  3. Choose an appropriate size endotracheal tube (ETT).
     - a. To size a pediatric ETT the Broselow tape should be used.
  4. Stylet
  5. Syringe
  6. Stethoscope
  7. Endotracheal tube placement verification device
     - a. Continuous capnography MUST be utilized.
     - b. Color change EtCO2 detector, EID, or EDD may be used in conjunction.
  8. Suction equipment
  9. Intubation facilitation equipment as available
     - a. May include (but not limited to):
       - i. Intubating Stylet (Bougie)
       - ii. Video laryngoscope
       - iii. Intubating LMA
- D. Position head in “sniffing” position and elevation of the head of the cot by 20 degrees
  1. Contraindicated in patients with a known/suspected cervical spine injury. These patients require continuous manual in-line cervical stabilization which is superior to c-collar) during any intubation attempt, if possible, place the patient in reverse Trendelenburg position by elevating the head of the backboard 20 degrees.
- E. Consider use of a second rescuer or bimanual technique (use of free hand to maneuver trachea) to aid intubation attempt.
  1. BURP (Backwards, upwards, rightwards, pressure) technique.
- F. Insert laryngoscope blade on the right side of the mouth, displacing the tongue to the left (when using a Mac blade).
- G. Lift tongue and mandible with laryngoscope
  1. Avoiding a “prying” action and laryngoscope contact with teeth.
- H. Visualize vocal cords and pass the ETT tip through cords to proper depth (approx. 1cm past proximal end of the cuff)
  1. Use of adjuncts or intubation facilitation equipment may not require direct visualization of cords. Proper technique and documentation of method used should be followed.
- I. Inflate cuff with 5-10mL of air.
- J. Ventilate patient via bag-valve device.

K. Confirm proper placement as per the "Intubation Verification" in the Airway protocol T705.
L. Secure endotracheal tube BEFORE any patient movement.

V. DOCUMENTATION IN THE PATIENT'S RECORD SHOULD INCLUDE AT LEAST THE FOLLOWING:

A. Precautions taken (i.e., in-line stabilization)
B. Size of tube
C. Number of attempts did not exceed 2 attempts and document use of SGA or BVM with airway adjunct.
D. Depth of insertion (i.e., "X" number of centimeters at the lips/teeth)
E. Complications
F. Method of confirmation of correct placement (e.g., esophageal intubation detector, clinical exam) and ETCO2
G. Adjuncts used.

NOTES:

A. If positive pressure ventilation with the bag-valve device produces sounds of air leakage around the cuff, check the cuff inflation and the tube placement.
B. Whenever possible, pulse oximetry should be used during the procedure to monitor the patient's oxygenation status.
C. If the patient can vocalize, then the endotracheal tube has not passed through the vocal cords.
D. If there is enough time to intubate the patient in the prehospital setting, then there is enough time to secure the tube. A frequently stated reason for accidental esophageal intubation is "the tube moved." After each patient movement (e.g., board to stretcher, stretcher to ambulance), the tube position should be rechecked. ETCO2 use provides continuous placement monitoring.
E. When in doubt, take it out; and assure oxygenation by another attempt or method.
F. Both cuffed and uncuffed endotracheal tubes are acceptable for intubating infants and children. Training in inflating cuffed tubes to minimal airway occlusion pressure is important. Over-inflation even for a short time can cause severe damage in certain circumstances (e.g., poor lung compliance, high airway resistance, or a large glottic air leak) a cuffed endotracheal tube may be preferable to an uncuffed tube, provided that attention is paid to endotracheal tube size, position, and cuff inflation pressure (Class IIa, LOE B).

MEDIC

I. **Indications**

A. **Patient's age is younger than 16 years**

B. Acute upper airway obstruction which cannot be relieved using basic airway maneuvers, visualized finger sweep, endotracheal visualization with Magill forceps removal, or endotracheal intubation.

C. Respiratory arrest with facial or neck anatomy or injury that makes endotracheal intubation impossible.

D. Causes of Upper Airway Obstruction

1. Airway burns with edema
2. Epiglottitis or other life-threatening local infections with swelling of upper airway structures
3. Foreign body aspiration
4. Laryngeal fractures
5. Laryngoedema or angioedema from allergic reactions
6. Massive facial trauma

II. **Complications**

A. Subcutaneous emphysema

B. Bleeding (minimized by puncturing in the lower third of the cricothyroid membrane to avoid vessels)

C. Pneumothorax (from allowing insufficient time for passive exhalation in between breaths)

III. **Protocol**

A. EQUIPMENT NEEDED:

<5 years old	**≥5 years old**
14g (if >5kg) or 18g (if <5kg) Angiocath type without safety/locking mechanism	14g Angiocath type without safety/locking mechanism
IV tubing attached to 2.5mm ET tube adapter	Jet ventilator device -OR- Oxygen tubing with 3 way stop-cock attached
BVM with pop-off valve safety deactivated	

1. Saline flush
2. Cleaning swab
3. Sterile gloves
4. Clean towel
5. Oxygen source

B. Following exposure of the neck, identify the trachea, cricoid cartilage, and cricothyroid membrane below it.

C. Prep the skin, if time permits.

D. Attach a 5 mL syringe with 2-3 mL of saline to a 14- or 18-gauge angiocatheter.

E. Hold the trachea in place and provide skin tension with the thumb and fingers of non-dominant hand.

F. Puncture the cricothyroid membrane with the angiocatheter attached to the syringe. This should be at a 30–45-degree angle from the skin and directed downward toward the patient's feet.

G. Advance the needle with continual aspiration. The appearance of bubbles confirms tracheal placement. Proceed to slide the cannula off the needle until the hub rests securely on the skin surface. Then reapply the saline syringe to the catheter and reconfirm the appearance of air bubbles.

H. If patient is <5 years of age:

1. Remove 2.5mm endotracheal tube adapter from endotracheal tube
2. Cut standard IV connection tubing so that the 2.5mm adapter can be connected to the open end and the Luer lock can be connected to the angiocatheter
3. Attach bag-valve-mask to the endotracheal tube adapter and oxygenate the patient at a rate of at least 20 breaths per minute (1 breath every 3 seconds)

I. <u>If patient is ≥5 years of age:</u>

1. Remove the needle with the syringe and connect the cannula to either:
   a. Manual jet ventilator device.
   b. If patient <12 yo, use 25 PSI

c. If patient ≥12 yo, use 50 PSI

2. Oxygen tubing attached to 3-way stopcock, with all stopcock channels open
   a. Set flow to 1LPM/year-of-life up to 15LPM max
   b. Occlude the open channel to oxygenate.

J. Oxygenate the patient at a rate of at least 20 breaths per minute (1 breath every 3 seconds).

Notes:

A. Because children vary greatly in size, many commonly used rescue airway devices for adults such as the adult Rusch QuickTrach are not approved for use in pediatric patients.

B. Prepackaged kits for tracheal access using a Seldinger-type technique are available. For example, Pertrach by Pertrach Inc. can be used for pediatric patients with airway obstruction. However, this type of product should be used only upon the direction of medical control.

C. If the cricothyroid membrane cannot be located, the catheter may be safely inserted in a lower intercartilaginous tracheal space.

D. Surgical cricothyroidotomy is typically preferred instead of needle cric in children over 10-12 years of age because of the larger diameter tube used and more effective ventilation.

E. A training video demonstrating the procedures noted in this protocol can be found at the following link: AOMC | EMS / PHCOC Emergency Services (academyofmedicine.org)

F. The swivel on the stopcock must be able to rotate 360 degrees.

ALL

I. Introduction

A. Positive Airway Pressure (PAP) which entails Continuous Positive Airway Pressure (CPAP) and Bilevel Positive Airway Pressure (BiPAP) work by "splinting" the airways with a constant pressure of air, which reduces the work of breathing. In CHF it forces the excess fluid out of the alveoli and interstitial space back into the vasculature which decreases venous return to the heart thereby lessening its workload. In COPD/asthma, it is thought to splint the constricted airways open allowing air exchange. CPAP/BiPAP can also be a palliative intervention for patients with DNR orders due to the non-invasion nature of pressure support versus ventilatory support.

1. CPAP vs. BiPAP
   a. The difference between inspiratory and expiratory pressure in a BiPAP setting helps the patient to ventilate off carbon dioxide. If available, BiPAP is preferential in COPD patients. BiPAP may also provide benefit with work of breathing in fatigued patients.

B. Indications

1. Age 16 years and older
   a. If indicated and size appropriate equipment is available for under 16 years old, consult medical control
3. Patient is awake and oriented.
4. Patient has the ability to maintain an open airway (GCS greater than 10).
5. Systolic blood pressure above 90 mmHg.

B. Contraindications

1. Respiratory arrest.
2. Suspected pneumothorax.
3. Patient has a tracheostomy.
4. Patient is at risk for aspiration i.e.: vomiting, foreign body airway occlusion.
5. The patient is intubated. (The PAP device is not configured for use with ETT).

C. Physical Findings

1. Acute Respiratory Distress due to Asthma-COPD per Protocol M403 or Congestive Heart Failure per Protocol M404
2. Respiratory Failure of any etiology if a valid DNR is present.
3. Other indications (ex: carbon monoxide poisoning) consult medical control

II. Protocol

A. The PAP device should be applied as soon as it is indicated.

1. Ensure that the patient is on continuous cardiac monitor and pulse oximetry.
2. Select the CPAP device or CPAP mode on a dual function device to be used

MEDIC

3. If available, BiPAP device or BiPAP mode on a dual function device may be used by a Medic.

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4. Explain the procedure to the patient.
5. Ensure adequate oxygen supply and assemble PAP mask, circuit, and device.
6. Assemble required equipment and personnel for intubation in the event the patient deteriorates or is unable to tolerate PAP.
7. Attach quick connect device to a portable or fixed oxygen source.
8. Place an end-tidal capnography monitor device that will not break mask seal, if available
9. Place the mask over the mouth and nose.
10. Secure the mask with straps.
11. Check for air leaks and adjust mask as needed.
12. CPAP settings – follow device and medical director recommendations. Some prehospital devices may provide limited pressure information due to design. This limitation should not prevent use when indicated.
13. Standard starting settings are a minimum of 5-10 cmH2O
    a. Continue to coach patient to keep mask in place

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14. If the patient is experiencing increasing anxiety versed 1-2 mg IV/IO/IM/IN every 5 minutes to a maximum of 10 mg may be administered
    a. The goal of versed is to decrease anxiety enough so that the patient tolerates PAP
15. BiPAP settings – follow device and medical director recommendations. Some prehospital

	devices may provide limited pressure information due to design. This limitation should not prevent use when indicated. a. Standard starting settings are 10 cmH20 for inspiratory positive airway pressure (IPAP) and 5 cmH2O for expiratory positive airway pressure (EPAP).
ALL	16. Reassess patient's vital signs and response to PAP every 5 minutes 17. Continue therapies as indicated by other protocols a. Do not break the mask seal to administer nitroglycerin (nitro lingual) SL. b. Inhaled medications (ex: bronchodilators) may be administered in conjunction with the PAP device if capable. 18. If the patient's status improves continue PAP until the patient is transferred to the care of the receiving hospital. 19. If patient's status deteriorates discontinue PAP and assess the patient for the need to intubate. 20. Notify destination hospital that PAP has been used. 21. PAP is only to be removed at the receiving hospital under the following circumstances. a. Personnel are present to transfer the patient to their equipment, or b. The receiving ED PHYSICIAN is present and requests that PAP be discontinued.

ALL

I. Tourniquets

A. Indications: Potentially life-threatening hemorrhage from a limb

B. Contraindications:

1. Non-life-threatening hemorrhage
2. Hemorrhage from a junctional (axillary or groin), torso, or head / neck wound

C. Definition: A compressive device used to stop all blood flow distal to the device. This includes improvised techniques as well as commercially available products. High quality, effective devices include the: Combat Application Tourniquet™, Special Operations Forces Tactical Tourniquet – Wide™, Emergency Military Tourniquet™, and the Mechanical Advantage Tourniquet™.

D. Protocol:

1. Tourniquet application may be performed by providers of all levels who have received specialized training in general tourniquet use and the specific device to be utilized.
2. The tourniquet should be placed 2-3 inches proximal to the site of hemorrhage. In some situations, it may be appropriate to place the tourniquet as proximal as possible on the limb for expediency. A tourniquet should never be placed on a joint.
3. Tourniquets may be placed over typical clothing. Pockets should be empty and overlying objects, such as holsters, should be removed.
4. The tourniquet should be tightened until hemorrhage is controlled. A second, preferably immediately proximal tourniquet may be required, particularly on the thigh.
5. Assure that the tourniquet is well secured and will not accidentally loosen.
6. Application time should be recorded.
7. Tourniquets may be loosened (do not remove, as reapplication may be required) if the situation necessitating their use has resolved, e.g., vehicle extrication completed, no longer in the care-under-fire setting. An alternative hemorrhage control technique should be in place first.
8. The receiving facility and providers MUST be made clearly aware of the use of a tourniquet and any tourniquets should be exposed and clearly marked with time of application/reapplication.

II. Wound packing

A. Indications: Potentially life-threatening hemorrhage from a wound to the groin, axilla, neck or limb.

B. Contraindications:

1. Non-life-threatening hemorrhage
2. Hemorrhage treatable by tourniquet

C. Definition: Using gauze to thoroughly fill a hemorrhaging penetrating wound cavity and produce hemostasis through moderate continuous pressure. This may be performed using standard sterile gauze, commercially available hemostasis products such as Combat Gauze™, Celox gauze™, Hemcon Chito Gauze™, or commercially available junctional tourniquet devices.

D. Protocol:

1. Wound packing may be performed by providers of all levels who have received specialized training in the technique.
2. Gauze should be placed as deeply in the wound as possible using a gloved digit and continuous pressure ensured. Excessive force is not necessary and may be harmful.
3. Manual direct pressure should be place over the packed wound for at least 3 minutes. Reassess and a pressure dressing should be applied.
4. Wound packing should never be removed in the prehospital setting.
5. The receiving facility and providers MUST be made clearly aware of the use of wound packing.

MEDIC

III. Tranexamic Acid

A. Refer to S506 Administration of Tranexamic Acid (txa).

Notes:

A. Well-aimed direct pressure will control most hemorrhage. However, some situations necessitate more aggressive techniques discussed here, potentially as first-line interventions. Examples of such situations may include Tactical EMS operations, CPR in progress, mass casualty incidents, and active vehicle extrications.

B. Permanent damage to the limb caused by an appropriate tourniquet is nearly non-existent for tourniquets left in place for less than two hours.

C. An inadequately tightened tourniquet can actually worsen blood loss.

D. Periodic loosening of a tourniquet to “allow limb perfusion” should never be performed.

E. Packing a wound can lead to provider injury due to sharp objects in the wound cavity such as bone or projectile fragments.

F. Wound packing to the head or neck should only be done with caution. Packing should not occur into the cranial vault or orbits. Packing should never impede the airway.

MEDIC

I. INTENTION

A. To allow a means of vascular access when intravenous access (IV) is unavailable.

B. This protocol does not specify the type of device to be used, which may include, but not limited to EZ-IO, FAST1, Cook IO needles, Jamshidi IO needles, Bone Injection Gun. Agencies that elect to carry IO equipment must provide instruction on the device per manufacturer's guideline. It is important to note, that the sites eligible for IO vary depending on the device used and Medical Director's approval.

II. INCLUSION CRITERIA

A. Patient requiring vascular access and unable to obtain IV access.

B. For patients deemed to be critical, entrapped, or for patients undergoing resuscitation it may be appropriate to place an IO without searching for an IV site at the discretion of the providers. Consider consult with medical control if unsure.

III. CONTRAINDICATIONS

A. Fracture or previous orthopedic procedure at site: consider alternatives.

B. Previous IO at the same site within 24 hours prior: consider alternatives.

C. Unable to distinguish site due to patient anatomy or significant edema: consider alternatives.

D. Infection at the insertion site: consider alternatives.

E. Patient is alert (relative contraindication pending device and provider discretion).

IV. PROTOCOL

A. Explain procedure and apply anesthetic, if available, in alert patients.

B. Ascertain the site per Medical Director approval to be used (device specific) and prepare the site using sterile technique.

C. Follow all device specific protocols for insertion of catheter.

D. Confirm device placement and proper positioning. Attach extension tubing or device specific connection tubing.

E. Consider 2% Lidocaine (preservative free) for conscious patients prior to flushing or administering fluids/drugs via IO. Slowly administer 20-40mg 2% Lidocaine (1-2 mL for adults) or 0.5mg/kg 2% Lidocaine (pediatrics). Follow device recommendations.

F. Flush with 10 mL (adults) or 5 mL (pediatrics) fluids or follow device recommendation for flushing.

1. It is important to flush the IO after attaching an extension, a common complication of poor flow is thought to be due to failure to immediately flush the catheter.

G. Attach IV tubing, secure catheter, and check surrounding area for extravasation.

H. Establish a TKO rate for fluids when not administering medication/fluids.

1. All medication administrations should be followed with a 10mL NaCl flush due to IO anatomy.
2. For continuous infusions, if flow rates are slower than desired with gravity only, utilize a pressure infusion device or BP cuff to increase rate.
3. If flow appears to have stopped, administer a 10mL NaCl flush to reopen catheter.

I. Continuously monitor patient for complications to the procedure.

NOTES:

A. It is difficult to establish a specific detailed protocol due to the number and type of IO devices available. Agencies are recommended to publish a department specific protocol for the IO device they use.

B. IO access has been proven to be as effective as IV access for a broad range of medication/fluid administration.

1. Dye injection studies in normal circulating studies have shown drugs reach the heart in 1 second from the proximal humerus or sternum and 4 seconds from the tibia. In cases of cardiac arrest, with proper CPR, it can take drugs 28 seconds from the sternum and 51 seconds from the tibia.

C. Patients do not need to be unconscious for insertion but be wary of the psychological effects of the procedure of establishing IO access.

1. Of the three major adult devices: EZ-IO, FAST1, and, Bone Injection Gun, none of the manufacturers list the patient's level of consciousness as a contraindication to insertion. However, the FAST1 and EZ-IO both recommend local anesthetic prior, and all three devices recommend Lidocaine flush post insertion.

D. Some devices have sites that are being used off-label (without FDA approval). Providers should only utilize sites that have received their Medical Director's approval.

E. When transferring patient to another medical provider highlight the use of and ensure that they are familiar with the specific IO device used.

F. It is common practice to look/attempt IV access without success in at least 2 locations before establishing IO access but is not required.

G. All uses of IO devices should be reviewed as part of a department's quality assurance process.

ALL

I. Inclusion Criteria

A. Any patient who has been subjected to a TASER or similar conducted energy weapon.

II. Physical Findings

A. Patient will likely be hand-cuffed and in Police custody.

B. May have TASER barb(s) embedded in skin or clothing.

1. Barbs are similar to barbed style fishhooks and are extremely sharp. Use caution when handling to avoid contaminated needle stick exposure.

C. Minor/inactive bleeding and redness may be present at/near site of TASER barb penetration.

D. May present with secondary injuries associated with an un-supported fall such as, but not limited to:

1. Lacerations, abrasions, bruising or possibly stress fractures associated with involuntary muscle contractions.

E. Altered level of consciousness.

1. If needed refer to SB201 Altered Level of Consciousness.

F. May be anxious, agitated or combative.

1. If needed refer to M407 Psychiatric Protocol or M408 Restraint Protocol.

G. Chest pain and/or respiratory distress are not commonly associated symptoms but may present.

1. If needed refer to SB203 Chest Pain or SB202 Respiratory Distress protocols.

III. Protocol

A. Assure that scene is safe and patient has been restrained by Police or EMS, if appropriate.

B. Maintain airway and administer oxygen to correct hypoxia <95%.

C. Assess for spinal injury.

1. Refer to T704 Spinal Motion Restriction Protocol.

D. Obtain vital signs.

1. Pulse, B/P and respiratory rate may be initially elevated but should return to age specific normal ranges within a reasonable time.

MEDIC

2. Apply cardiac monitor if warranted; refer to appropriate cardiac protocol if dysrhythmia exists.

ALL

E. Assess patient's neurological status; examine for signs/symptoms of a potential head injury.

F. Complete a secondary exam, looking for secondary injuries associated with an un-supported fall.

1. Bandage, dress, splint or otherwise treat all injuries/wounds as appropriate.

G. If patient again becomes agitated or combative; consider physical or chemical restraint as outlined in M408 Restraint Protocol.

1. Involve Police personnel when restraining.
2. Be aware that patient may be exhibiting behavior consistent with **Life-Threatening Agitation**, refer to notes below and M407 Psychiatric Protocol.

H. Removal of TASER probe barb:

1. Prior to TASER probe barb removal, patient must be cooperative and non-combative.
2. Cartridge must be removed from TASER gun body by Police prior to touching TASER probe barb(s) or removal from patient. TASER wires should not be cut or pulled from probe barb assembly unless absolutely necessary for patient care.
3. Patient with TASER barb embedded in eye, eye lid, female breast tissue, genitalia, face, neck, spine, hands, feet, joints, or other body areas of concern should be transported, accompanied by Police, for removal by hospital staff. Pregnant patients who are impacted by TASER barbs should be transported to the hospital, accompanied by Police, for evaluation.
4. If a TASER barb removal tool is available, this is the preferred method to assist in removing barbs.
5. Grasp the probe portion of the barb assembly firmly (with gloved hand, forceps, or manufacturer removal tool) holding skin taut between two fingers. At a 90° angle to the

skin, quickly remove the probe barb from the patient's skin and bandage wounds accordingly.

6. Probe barb(s) should be inspected to ensure assembly is complete. Police will be able to assist in confirming entire barb was removed from the patient as length may vary by model.
7. Once removed, TASER barb(s) should be considered a contaminated sharp and handled accordingly. The TASER cartridge usually contains a slot/hole to insert the deployed barb for safe storage.
8. Deployed barbs shall be given to Police. If not given to the Police, they should be disposed of in an appropriate sharps container.

Notes:

A. Refer to M407 – Psychiatric Protocol.

B. A key symptom to the potential onset of sudden death from life-threatening agitation is "instant tranquility." The patient who was initially very violent and combative suddenly becomes calm and docile. This is a serious and ominous sign; patient should be constantly monitored and transported by EMS for evaluation,.

ALL

I. Standards

A. This protocol is intended to apply to the emergency transport of patients requiring immediate medical care and evaluation. It is not intended to apply to the non-emergent transport of chronically ventilated patients.

B. There are different models of mechanical ventilators on the market. Medics must be trained on the specific model used by their department.

C. EMS providers should only be responsible for use of the ventilator that their agency provides and trains with. In other words, the EMS provider should not be responsible for a patient's own ventilator or a ventilator from a facility where a patient is being transported from.

D. There are situations where the best thing for patient care is for the patient to be maintained on their own ventilator. These situations should be rare and would typically be situations where a patient is on a ventilator at home.

E. If the reason for transport involves an issue related to the patient's ventilator, the patient should be removed from their ventilator and manually ventilated.

F. If the reason for transport is a non-respiratory issue, the patient may benefit from staying on their ventilator. If there is a family member or care provider that has been trained on the patient's ventilator, then the patient may be transported on their ventilator with that care provider responsible for the patient's ventilator.

EMT

G. Call for ALS backup for any patient on a ventilator.

H. If the patient's ventilator has malfunctioned or the patient is in respiratory distress remove them from the ventilator and manually ventilate.

I. If the patient is stable on the ventilator it is acceptable to start transport with the patient on their ventilator if there is a family member or care provider trained to monitor the ventilator who can be responsible for the ventilator during transport.

MEDIC

II. Indications

A. Age greater than or equal to 16 years.

B. Mechanical ventilation may be initiated after a patient has been intubated.

C. Mechanical ventilation may be continued if it was initiated prior to EMS contact. Refer to M415 for continuation of pre-existing medical devices.

III. Contraindications

A. Cardiac arrest is relative contraindication, if short of manpower and use of mechanical ventilation would facilitate patient care then refer to "Six Dial Setup" in the notes.

IV. Initial Ventilator Setup

A. If patient has been on ventilator prior to EMS assuming care, it is appropriate to continue ventilator settings that were previously established.

B. There are many ventilator strategies that exist. Consideration of all these strategies based on clinical scenario is felt to be unnecessary for the brief duration of mechanical ventilator support during EMS care. This initial setup is basic by design.

C. Mode – Assist Control

D. Rate – 12 breaths per minute

E. FiO2 – 100%

F. PEEP – 5 cm H2O

G. Tidal Volume – 450ml for female patient and 500ml for male patient

1. These volumes are meant to reflect volume of 7ml/kg for the "average size" adults
2. There are charts that would allow more specific tidal volumes based on height and ideal body weight for males and females. Asking medics to estimate height and to calculate ideal body weight seems unnecessary since these settings will be temporary and can be adjusted by provider at receiving facility.

H. All patients placed on mechanical ventilator must have continuous end tidal CO2 monitoring performed.

V. Ventilator Adjustments and EtCO2 Monitoring

A. Ventilator adjustments are usually made based on analysis of arterial blood gas.

B. Ideal EtCO2 is 35-45mmHG for patients who are not in cardiac arrest. If your intubated patient has EtCO2 outside this range for greater than 10 minutes after being placed on the ventilator you should consider contacting medical control for recommendations to adjust ventilator settings.
C. Goal EtCO2 is >10mmHG during CPR, an abrupt rise in EtCO2 is often an indication of ROSC
D. If the medic has questions or concerns about ventilator settings during transport, they should contact medical control for further instruction.

VI. WHAT TO DO IN VENTILATOR EMERGENCY

A. First thing to do if the patient has declining oxygen saturations or change in ventilatory status is to take them off the mechanical ventilator and ventilate manually.
B. Next consider potential causes of the ventilator emergency using the DOPE is acronym.
   1. D – Dislodged or disconnected tube
   2. O – Obstruction
   3. P – Pneumothorax
   4. E – Equipment failure
C. Once the patient stabilizes and problem has been addressed the patient may be placed back on the mechanical ventilator.

NOTES:

A. Six Dial Setup
   1. Mode – Volume Control Ventilation
   2. PEEP – 0 cm H_2O
   3. Tidal Volume – 8mL/lg
   4. FIO2 – 100%
   5. Respiratory Rate – 10 Breaths per Minute
   6. Maximum Peak Inspiratory Pressure (Pmax Alarm) – 60cm of H_2O
   7. Ventilation Trigger – Off
   8. Adequate Inspiratory Time – 1 second

REFERENCES:

A. Sahu AK, Timilsina G, Mathew R, Jamshed N, Aggarwal P. "Six-dial Strategy"-Mechanical Ventilation during Cardiopulmonary Resuscitation. Indian J Crit Care Med. 2020;24(6):487-489. doi:10.5005/jp-journals-10071-23464

ALL

I. Inclusion Criteria

A. Patient's age is 16 years or older. -AND-

B. Cardiac arrest -AND/OR- suspected severe hyperkalemia -AND-

MEDIC

C. EKG Findings indicate normal sinus rhythm, sinus tachycardia or atrial fibrillation with controlled ventricular response. If other rhythm is present, then proceed to the appropriate arrhythmia protocol.

EMT

II. Protocol

A. Consider ALS if required.

B. Consider advanced airway management if required.

C. IV calcium contraindications:

1. Hypercalcemia
2. Digoxin toxicity

MEDIC

D. Establish IV access in a large vein. IO access may be considered if IV access is not feasible.

E. Obtain a diagnostic EKG.

F. Administer calcium as per instructions below. It is very important to know which type(s) of calcium your agency may carry. Preference is for calcium chloride in cardiac arrest.

Notes:

A. Different salt forms of calcium exist. Pay close attention to salt form when administering IV calcium.

B. 1g calcium chloride = 3g calcium gluconate

C. Calcium chloride:

1. 3 times the ionized calcium content as calcium gluconate.
2. Preferred in emergent situations (i.e., arrest) but has a higher potential for infusion site reactions.
3. Avoid extravasation. May dilute in NS or D5W to prevent skin necrosis if extravasation occurs. If extravasation occurs, immediately discontinue the IV site. Notify the receiving facility at care handoff of the extravasation as skin monitoring is needed.
4. If given before or after sodium bicarbonate, flush line with 20 mL of NS between medications (as calcium and bicarbonate may precipitate)

D. Dosing and administration:

1. Cardiac arrest - PEA or asystole: administer IV calcium chloride 20mg/kg (max 1g) IVP. May repeat if necessary. See protocol C301.
2. Severe hyperkalemia: administer IV calcium chloride 500-1000 mg diluted in 50-100 mL of NS over 2-5 minutes. May repeat after 5 minutes if EKG changes persist or recur. See protocol M418.
3. Crush injuries: administer IV calcium chloride 500-1000 mg diluted in 50-100 mL of NS over 2-5 minutes. See protocol S501.

E. Calcium gluconate:

1. 1/3 the ionized calcium content as calcium chloride. Lower potential for infusion site reactions.
2. Dosing and administration:
   a. Cardiac arrest - PEA or asystole: administer IV calcium gluconate 3 g (30mL of calcium gluconate 100mg/mL) IVP. See protocol C301. Consider IV calcium chloride first line if available.
   b. Hyperkalemia-associated ECG changes: administer IV calcium gluconate 2g IVP. May repeat after 5 min if ECG changes persist or recur.
   c. Crush injuries: administer IV calcium gluconate 2g IVP.

MEDIC

Dosing:

Indication	Calcium chloride	Calcium gluconate
Cardiac arrest	20 mg/kg IVP (max 1g)	3g IVP
Severe hyperkalemia	500-1000 mg in 50-100 mL NS	2g IVP or diluted in 50-100 mL NS
Crush injuries	500-1000 mg in 50-100 mL NS	2g IVP or diluted in 50-100 mL NS

ALL

I. GOAL OF PROTOCOL

A. There is a clear need for EMS providers to have the capability to sedate patients after intubation. This is an appropriate intervention for the benefit of the patient to treat the discomfort and anxiety that accompanies intubation.

B. Sedation makes it easier to ventilate the patient, can potentially decrease oxygen demand and makes it less likely that the patient will dislodge the endotracheal tube

II. CONSIDERATIONS

G. Inadequate post intubation management leads to increased pain, anxiety and possibly increased oxygen demand.

H. Post intubation medication management should include a pain medication and a sedative.

I. Pain should be assessed early and often.

J. Medications for pain and sedation are often not immediately available on arrival to the emergency department so medics should continue appropriate dosing up to the transition of care.

III. INCLUSION CRITERIA

A. Intubated patient is requiring pain medication and sedation

B. Patient Intubated with Endotracheal Tube and tube appropriately secured

C. ET tube position has been confirmed

D. Patient monitoring has been established and must include – Cardiac Monitor, Continuous Pulse Ox and Continuous ETCO2

IV. EXCLUSION CRITERIA

A. Age – no age exclusions

B. Allergies – to medications in protocol

C. Patients that are completely unresponsive do not require sedation but patients that have previously been given a paralytic agent should be given appropriate sedation.

EMT

V. ANY INTUBATED PATIENT MUST BE UNDER THE CARE OF AN ALS PROVIDER

A. While sedation can only be administered by paramedics, after an advanced airway is placed and confirmed, basic EMTs may initiate transport and request ALS intercept if an ALS provider is not immediately available on scene.

B. EMTs must ensure appropriate monitoring and documentation are continued during transport until care is transferred to ALS or the receiving facility.

--NEXT PAGE--

MEDIC

VI. PROTOCOL

A. Confirm successful placement of ET tube
B. Initiate and continue required monitoring
C. Establish and maintain vascular access (IV or IO)
D. Assess patient's level of alertness and pain before and after medication administration, document any change in patient's condition and/or every 10 minutes
E. Administer Medication(s) per the following table, administer follow up doses as necessary
F. Notify ED of incoming intubated patient and notify ED staff of sedation that was administered at the time of patient transfer of care
G. All doses below are for administration in the time frame outlined, as needed to maintain sedation.

SBP > 150 or at risk for hypertension: Examples: stroke, stimulant overdose		**SBP < 100 or at risk of hypotension:** Examples: trauma, sepsis, shock, asthma
Fentanyl: 1 mcg/kg (max single dose 200mcg) IV or IO every 5 minutes OR **Morphine: 0.1mg/kg** (max single dose 10mg) IV or IO every 10 minutes **PLUS** **Midazolam: 0.05 mg/kg** (max single dose 5mg) IV or IO every 5 minutes	Patients that are normotensive who are not determined to be at risk of complications of hypertension or hypotension may be treated with either medication regiment.	Ketamine: 2mg/kg IV or IO push, then 1mg/kg every 5 minutes **Appropriate resuscitation should be initiated based on patient condition. It is acceptable to use push dose epi to offset the hemodynamic effects of sedation.**

[3] This table was adapted from the Jackson County EMS 2024 Standing Orders for Post Intubation Management

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ALL

I. Inclusion Criteria

A. Pregnant woman who is in active labor as defined by regular, frequent, painful uterine contractions and who feels the urge to push.

B. Presence of fetal part at vaginal opening.

II. Protocol

A. If patient is in labor but not showing signs of imminent delivery transport rapidly to hospital with maternity services, preferably the hospital associated with the patient's obstetrician. If you arrive on scene and delivery is imminent, deliver on scene prior to transport.

B. Call for additional manpower if needed.

C. Obtain brief obstetrical history.

1. Estimated Due Date (EDD)
2. Gestational Age
   a. **Less than 22 weeks is a non-viable baby.**
      i. Babies delivering earlier than 22 weeks do not benefit from transport to a Level 3 NICU.
   b. **22 0/7 weeks to 24 6/7 weeks is a peri-viable baby**
      i. Periviability, in the context of pregnancy, refers to the period of fetal development where there is a chance of survival outside the uterus, though not necessarily a high one. It's a critical time because infants born during this period are at significant risk of death or long-term health complications.
      ii. Management of peri-viable births involves careful consideration of both medical and ethical factors, including the wishes of the parents and the infant's prognosis.
      iii. These patients benefit from transport to a hospital with a Level 3 NICU.
   c. **25 weeks and greater is a viable baby.**
   d. **25 - 31 6/7 weeks is a severely premature baby.**
      i. These babies do best if they are delivered at a hospital that has a Level 3 NICU.
   e. **32 – 36 6/7 weeks is a premature baby (can deliver at any hospital with obstetric services).**
   f. **37 weeks and greater is a term baby** (can deliver at any hospital with obstetric services).
4. Gravidity – number of pregnancies.
5. Parity – number of deliveries after the 20th week of pregnancy.
6. Complications during this or previous pregnancies or anticipated problems with delivery such as pre-eclampsia, gestational diabetes, drug use, twins or higher order multiples, etc.

D. Prepare providers for delivery, neonatal care, and maternal care.

E. Call for additional support as needed (maternal care team, fetal care team)

F. Wear personal protective equipment (PPE).

G. Maintain patient privacy, when feasible.

H. If time permits, establish IV access.

I. Assist with **Normal Spontaneous Vaginal Delivery – Head is the presenting part:**

1. As the baby crowns, support the head and the perineum with gentle pressure to control the emergence of the head and minimize perineal trauma.
2. If amniotic membrane is still intact as the head is crowning, rupture with your fingers, forceps, or clamp to allow amniotic fluid to leak out, note the color and viscosity of the fluid. If, after rupturing the fetal membranes, the fetal membranes are covering the head and face at the time of delivery wipe them away with a clean towel.
3. After delivery of the head, check for the presence of the umbilical cord around the baby's neck. If cord is around the neck, attempt to slip it over the head. Alternatively, it may be possible to slip it back over the shoulders and deliver the body through the loop. The cord should only be clamped and cut to relieve a nuchal cord as a last resort.
4. If the cord is too tight to slip over the head or around the shoulders during delivery, apply 2 umbilical cord clamps 1 inch (2.5cm) apart and cut between them.
5. Instruct the mother to push and support the baby's head as it rotates.
6. After the head rotates to face the mother's thigh, guide the head and neck downward to

encourage the top (anterior) shoulder to deliver.

7. When you can see the baby's top shoulder deliver, guide the head and neck upward to deliver the bottom (posterior) shoulder. The rest of the baby should follow quickly.
8. If the infant is vigorous, delay clamping of the umbilical cord for 30-60 seconds. This helps to prevent neonatal anemia, but resuscitation takes priority if the infant has respiratory or circulatory depression.
9. Clamp the umbilical cord by placing the first clamp approximately 4 inches (10 cm) from the baby. Place the second clamp approximately 2 inches (5 cm) further from the baby (closer to the mother) than the first clamp, cut the umbilical cord between the clamps.
10. Hand the infant to a second provider to establish neonatal care if needed. If the infant is stable, breathing and has good tone, place the infant on the mother's chest, skin to skin for transport.
11. **KEEP INFANT WARM**
12. If a neonatal restraint is available, transport newborn in the restraint device according to manufacturer's recommendations.
    - SAPLACOR AEGIS 4–14 lb. (1.18–6.35 kg) No Cot, on adult, Single Use
    - Ferno KangooFix Neonatal Restraint System 3.5–11 lb. (1.6–4.98 kg) No Cot, on adult, Machine Washable
13. **ALWAYS NOTIFY RECEIVING HOSPITAL.**

L. Assist with delivery of the placenta.

1. Recognize signs of placental separation
   a. The uterus may become more firm and rise in the abdomen. A gush of blood and lengthening of the umbilical cord can also indicate separation.
2. DO NOT pull on the umbilical cord to facilitate delivery of the placenta.
3. DO NOT delay transport waiting for the placenta to deliver.
4. If the placenta delivers spontaneously, place in a plastic bag and transport to the hospital with the mother and the infant.

ALL

I. **Mal-Presentation:**
   A. Malpresentation refers to a situation during pregnancy where the baby is not positioned head-down (vertex) in the uterus, which is the optimal position for vaginal delivery. Instead, other parts of the baby, like the buttocks, feet, shoulder, or even face, may be positioned to enter the birth canal first. This can lead to complications during labor and delivery.
   B. Elevate the hips of the mother and transport immediately.

II. **Breech Presentation:** - Buttocks or feet are presenting and **delivery is imminent**
   A. **Buttocks is presenting**
      1. Support the baby as it delivers.
      2. "Breakdown" the legs (insert finger into the patellar fossa/behind knees and flex knees and hips one at a time.)
   B. **Feet are presenting**
   C. Support the baby as it delivers.
   D. After the legs and buttocks have delivered, support the baby wrapped in a towel as a sling until the arms and shoulders are visible.
   E. "Breakdown" the arms (insert finger into the cubital fossa (in front of the elbow) and flex arms one at a time).
   F. After the shoulders have delivered, gently elevate trunk and legs to aid in delivery of head (if face down).
   G. Head should deliver in 30 seconds. If not, reach 2 fingers into the vagina to locate infant's mouth. Press vaginal wall away from baby's mouth to access an airway.
   H. Apply gentle pressure to mother's fundus.
      1. **Mauriceau–Smellie–Veit** maneuver is an emergent medical maneuver utilized in cases of breech delivery. This procedure entails suprapubic pressure by one provider on the mother/uterus, while another provider inserts left hand in vagina, palpating the fetal maxilla using the index and middle finger and gently pressing on the maxilla, bringing the neck to a moderate flexion. The left hand's palm should rest against the fetus' chest, while the right hand can grab either shoulder of the fetus and pull in the direction of the fetus' pelvis. The combined neck flexion, traction on the fetus toward the hip/pelvis, and the suprapubic pressure on the mother/uterus allows for delivery of the head of a breech infant, granted prior breech delivery steps are followed and the infant's occiput is rotated/facing anteriorly relative to the mother (i.e., baby is facing downward).
   I. After complete delivery, provide routine newborn care with special attention to maintenance of infant body temperature. Place infant on oxygen and suction if needed. Refer to P600 Pediatric Newborn Resuscitation if needed.

III. Prolapsed Cord:
   a. Relieve pressure on the cord. This can be accomplished by placing a gloved hand in the vagina and lifting the presenting fetal part off of the cord and cervix.
   b. Elevate hips of mother.
   c. Keep cord moist.
   d. Apply high flow oxygen to mother and transport.

IV. Shoulder Dystocia - when the head delivers, and shoulders fail to deliver.
   A. Hyperflex mother's hips to knee to chest position while lying supine (McRoberts Maneuver).
   B. Apply firm suprapubic (NOT FUNDAL) pressure to attempt to dislodge the anterior shoulder.
   C. If the anterior shoulder is not deliverable attempt to deliver the posterior shoulder using the shoulder shrug maneuver
      1. A pincer grip is used to grasp the posterior shoulder in the axilla (armpit).
      2. The shoulder is gently pulled upward and toward the vaginal opening, essentially shrugging it.

3. The head and the retracted shoulder are then rotated 180 degrees, turning the anterior shoulder (the one initially stuck) into a posterior position, allowing it to be delivered more easily.

D. Apply high flow oxygen and transport to closest available receiving facility if these maneuvers do not work. **NEVER** pull on the head in an attempt to extract the baby.

V. After complete delivery, provide routine newborn care with special attention to maintenance of infant body temperature. Place infant on oxygen and suction if needed. Refer to P600 Pediatric Newborn Resuscitation if needed.

VI. **Post-Partum Hemorrhage:** Post-Partum Hemorrhage is blood loss >500 ml following a vaginal delivery. If present:

A. Obtain assistance.
B. Continue to monitor vital signs and blood loss.
C. Examine and apply pressure to any active bleeding sites.
D. Rapidly assess uterine tone.
E. Aggressively massage uterine fundus.

MEDIC

F. Establish adequate IV access (adequate intravenous access would ideally be provided with two lines, at least one of which is a larger bore catheter).
G. Resuscitate with crystalloid.
H. Administer **tranexamic acid (TXA)** per protocol S506.

ALL

I. Massage should be maintained while other interventions are being initiated and continued until the uterus remains firm and bleeding has abated. If the fundus is well contracted but bleeding continues unabated, then further massage is not likely to be effective and progression to other methods of hemorrhage control should occur promptly.
J. Rapidly transport the patient to the hospital.

VII. **Transportation Considerations:**

A. If the mother or infant have any evidence of hemodynamic instability and/or if the delivery is difficult, call for immediate ALS backup.
B. Resume transport of mother and baby to hospital with 24/7 labor and delivery service.
C. If a complication such as massive bleeding or neonatal distress occurs, proceed to nearest appropriate hospital.
D. ALWAYS NOTIFY RECEIVING HOSPITAL

VIII. **Destination Considerations:**

A. Every effort should be made to transport the mother and the baby to the same hospital.
B. Every effort should be made to keep the mother and the baby together (same transport unit).
C. Kangaroo Care, or skin to skin contact (SSC) between mother and newborn immediately following birth has been shown to be beneficial in assisting newborn transition to extrauterine life and promoting maternal-infant attachment.
D. There are no federal or industry consensus standards in the US for devices used to secure children in ambulances. Each manufacturer determines if/how it will test a device.
E. Each department should develop a Standard Operating Procedure (SOP) to define best practices for transport of the newborn following delivery outside the hospital. The SOP should consider each department's available resources.
F. On scene time – consider waiting up to 20 minutes before initiating transport if mother and newborn are stable.
G. Consider use of a neonatal transport system:
   - SAPLACOR AEGIS 4–14 lb. (1.18–6.35 kg) No Cot, on adult, Single Use
   - Ferno KangooFix Neonatal Restraint System 3.5–11 lb. (1.6–4.98 kg) No Cot, on adult, Machine Washable

IX. **NOTES:**

A. Under most circumstances it is preferable that the patient be transported to the hospital where she was planning to deliver.
B. Women that are believed to be 22- 31 6/7 weeks pregnant (peri-viable and severely premature) should preferentially be transported to a hospital with a Level 3 NICU.
C. Hospitals with Labor and Delivery and a Level 3 NICU in Hamilton County:

1. University of Cincinnati Medical Center
2. Good Samaritan Hospital

D. Pregnant teenagers being transported to the hospital for any issues related to the pregnancy (i.e., vaginal bleeding, imminent delivery, abdominal pain, elevated blood pressure, seizure, etc.) should be taken to a hospital with 24/7 labor and delivery service.
    1. FYI - Bethesda North Hospital does not admit/keep patients less than 16 years old after they have been evaluated and stabilized.

E. If uncertain where patient should be taken - contact medical control.

F. The *Committee on Obstetric Practice* agrees with the recommendation of the *American Academy of Pediatrics* and the *American Heart Association* that all infants with meconium-stained amniotic fluid should no longer routinely receive intrapartum suctioning:
    1. If the newborn is vigorous, defined as having strong respiratory efforts, good muscle tone, and a heart rate greater than 100 beats per minute, there is no evidence that tracheal suctioning is necessary. Injury to the vocal cords is more likely to occur when attempting to intubate a vigorous newborn.
    2. If meconium is present and the newborn is depressed, refer to P600 Pediatric Newborn Resuscitation.

G. Given the benefits to most newborns and concordant with other professional organizations, the *American College of Obstetricians and Gynecologists* now recommends a delay in umbilical cord clamping in vigorous term and preterm infants for at least 30-60 seconds after birth.

ALL

I. **INCLUSION CRITERIA**
   A. **Seizure** in pregnant females of any gestational age **OR**
   B. **Vaginal bleeding** in pregnancy and postpartum hemorrhage **OR**
   C. **Hypertensive Crisis** in pregnancy **OR**

****Note: for all pregnant patients -** Postpartum is defined as *delivery to one year* post-delivery.

II. **PROTOCOL**
   A. **Seizure – Eclampsia:**
      1. Eclampsia is a clinical diagnosis based on the occurrence of new-onset tonic-clonic, focal, or multifocal seizures in a pregnant or recent postpartum patient, in the absence of other causative conditions (e.g., epilepsy, cerebral arterial ischemia and infarction, intracranial hemorrhage, drug use).
      2. Most women have signs/symptoms in the hours before their initial seizure, such as hypertension, headache, visual disturbances, and/or right upper quadrant or epigastric pain. Patients with these symptoms should be transported to a hospital with 24/7 obstetric services.
      3. Eclampsia can occur at any time during the pregnancy. Approximately 90 % of postpartum seizures occur within one week of delivery.
      4. Eclampsia can also occur up to 6 weeks after delivery. If seizing, these patients should be treated as eclampsia.
      5. Key management issues are:
         a. Prevention of maternal hypoxia and trauma
         b. Treatment of severe hypertension (if present)
         c. Prevention of recurrent seizures with magnesium sulfate
         d. Rapid transport to an appropriate hospital with maternity services.
      6. If the patient is actively seizing, treat and or prevent hypoxia, trauma, and recurrent seizures as per the general seizure protocol - M410.

MEDIC

      7. IV access should be obtained as soon as possible.

ALL

      8. If the patent is pregnant place in or maintain a left lateral tilt.

MEDIC

      9. If actively seizing, give Versed (midazolam) first line as per the general seizure protocol - M410.
      10. For women with eclampsia, administer magnesium sulfate even if the patient is no longer seizing.
         a. We suggest using an intravascular magnesium sulfate regimen rather than an intramuscular regimen or IO regimen when IV access is available.
            - Administer a 4-6-gram loading dose over 20 to 25 minutes.
         b. One method of diluting Magnesium Sulfate is to mix 4-6 grams in 100 ml of normal saline and run in over 20-25 minutes.
         c. Alternatively give 10g deep IM "Z track" in 2 divided 5g injections with a 3" needle in each buttock. Gently massage the site after administration.
         d. Be cautious of hypotension caused by Magnesium Sulfate.
      11. Magnesium Sulfate is contraindicated in a patient with a known history of myasthenia gravis.
      12. Beware the combination of Versed and Magnesium Sulfate can lead to severe respiratory depression.
      13. The threshold for initiating anti-hypertensive therapy is sustained systolic BP ≥160 and/or diastolic BP ≥110 on two occasions at least 15 minutes apart.

ALL

   B. **Vaginal bleeding in pregnancy and postpartum hemorrhage:**
      1. Vaginal bleeding can signal serious complications at any point in pregnancy, including in women that do not yet know that they are pregnant.
      2. A pregnancy related complication should be considered in any patient complaining of vaginal bleeding (or pelvic/abdominal pain) from early teens until mid-to-late 50s.
      3. The causes of bleeding in pregnancy vary depending on gestational age:

a. **First trimester** (conception to 12 weeks gestation):
   i. Vaginal bleeding occurs in up to 40% of pregnant women in the first trimester, many go on to have normal pregnancies.
   ii. Causes of vaginal bleeding in early pregnancy include miscarriage and ectopic pregnancy. These can occur before a woman knows that she is pregnant.

b. **Second and third trimester** causes of bleeding include:
   i. **Placenta previa** - this is where the placenta is positioned partially or totally over the cervix. This condition can lead to significant blood loss **and can become life threatening**. This is often described as "painless bleeding."
   ii. **Placental abruption** - this is where the placenta prematurely detaches from the uterine wall**; this can be life threatening for the mother and the fetus**.
   iii. Anything that elevates blood pressure, including chronic hypertension, gestational hypertension (pre-eclampsia/eclampsia) and use of drugs such as cocaine, increases the risk of developing this condition. This is often described as "painful bleeding."
   iv. **Trauma is a leading cause of placental abruption.** Placental abruption can occur without evidence visible bleeding (occult abruption).

c. **Post-partum hemorrhage** can occur up to 12 weeks following delivery, but the vast majority occurs in the minutes following delivery and management is covered in detail in the imminent delivery protocol.

4. Assessment
   a. History
   b. Physical exam
5. Treatment
   a. The hallmark of treating bleeding during pregnancy is support, resuscitation, and transport.
   b. If the patient has passed products of conception, place this into a plastic bag and transport with the patient. Laboratory testing will often be performed on this tissue.
   c. If the patient elects to transport themselves, encourage them to place the tissue in a plastic bag and contact their OB/GYN or primary care provider.

MEDIC

C. Hypertensive Crisis in Pregnancy:

1. The threshold for initiating antihypertensive therapy is sustained systolic BP ≥160 and/or diastolic BP ≥110 on two occasions at least 15 minutes apart.
2. Place the patient on continuous cardiac monitoring and pulse oximetry.
3. Attempt to establish IV access, but do not delay medication administration because of lack of IV access.
4. Administer nifedipine 10mg by mouth. Repeat blood pressure in 15 minutes. If there is persistent severe range blood pressures repeat nifedipine 10 mg by mouth to a maximum of three doses.
5. Notify the receiving hospital that the patient met the criteria for *Hypertensive Crisis in Pregnancy* and that treatment has been initiated with nifedipine.

ALL

I. INCLUSION CRITERIA

A. Trauma in pregnant females of any gestational age **OR**

II. PROTOCOL

A. **Trauma -** This section serves to supplement the current trauma guidelines with some caveats and specific recommendations for pregnant patients.

1. The best initial treatment of the fetus is the provision of optimal resuscitation of the mother.
2. Because of their increased intravascular volume, pregnant patients can lose a significant amount of blood before tachycardia, hypotension, or other signs of shock or hypovolemia appear.
3. The highest incidence of fetal death occurs secondary to severe maternal shock, which is associated with a fetal mortality rate of 80%.
4. The fetus may be in distress and the placenta deprived of vital perfusion while the mother's condition and vital signs appear stable.
5. Oxygen supplementation should be given via non-rebreather mask to maintain maternal oxygen saturation >95% to ensure adequate fetal oxygenation.
6. Because of their adverse effect on utero-placental perfusion, vasopressors in pregnant women should be used only for intractable hypotension that is unresponsive to fluid resuscitation.
7. After mid-pregnancy, the gravid uterus should be moved off the inferior vena cava to increase venous return and cardiac output in the acutely injured pregnant woman. This may be achieved by manual displacement of the uterus or left lateral tilt (30 degrees). Care should be taken to secure the spinal cord when using left lateral tilt if spinal motion restriction is indicated. In the case of maternal cardiac arrest, CPR must be performed in this position. Laying the patient flat significantly inhibits venous return.
8. Fetal loss can occur even when the mother has incurred no abdominal injuries.
9. Severe injuries are much more likely to result in fetal loss. However, there is a much higher frequency of minor trauma during pregnancy and thus most fetal losses due to trauma are due to minor maternal mechanism of injury.

MEDIC

10. Intubation is more difficult with failed intubations 8x more likely. A smaller size ET tube is recommended.
11. Insertion of 2 large bore IV's is recommended for all seriously injured pregnant trauma patients to facilitate initial rapid crystalloid infusion, intravascular volume expansion, and possible blood transfusion as required.

ALL

12. Avoid the urge to focus on the fetus; babies do not do well if mothers do not do well.
13. Every pregnant woman who sustains trauma should be asked questions specifically about domestic or intimate partner violence.
14. Call medical control for questions. Notify receiving hospital in all cases of pregnant trauma patient. Patient should be transported to a trauma center with labor and delivery services available.
15. All pregnant trauma patients past the age of viability (>/= 23 weeks) should be monitored on an obstetrical unit for signs of increased uterine activity which could indicate placental injury (placental abruption). If the patient refuses transport by EMS, they should be encouraged to contact their obstetric provider as soon as possible.

ALL

I. INCLUSION CRITERIA

A. Cardiac arrest in a pregnant female

B. **Notes for all pregnant patients**

1. Post-Partum is defined as delivery to one year post-delivery.

II. PROTOCOL

A. **General Approach -** This section serves to supplement the current cardiac arrest guidelines with some caveats and specific recommendations for pregnant patients.

1. The best initial treatment of the fetus is the provision of optimal resuscitation of the mother.

MEDIC

2. Intubation is more difficult with failed intubations 8x more likely. A smaller size ET tube is recommended.

ALL

3. Avoid the urge to focus on the fetus; babies do not do well if mothers do not do well.
4. Call medical control for questions. Notify receiving hospital in all cases of pregnant cardiac arrest.

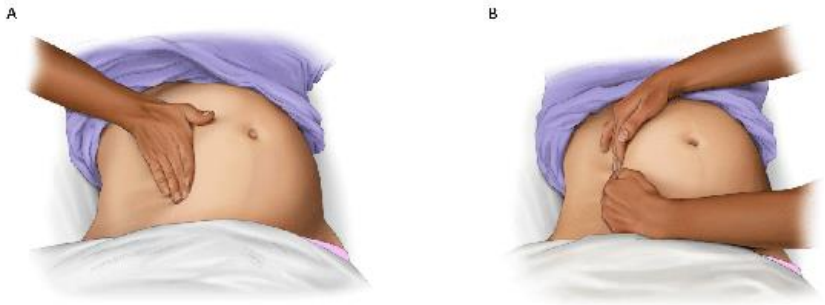
MEDIC

5. IV/IO access should be obtained as soon as possible.

ALL

B. **Cardiac Arrest**

1. All pregnant patients greater than 24 weeks (or a fundal height palpated at or above the level of the umbilicus) in cardiac arrest should be transported as soon as possible to the nearest emergency department for a resuscitative hysterotomy (also known as a peri-mortem cesarean section). [Also See Protocol S509 Traumatic Cardiac Arrest (Adults & Pediatrics) III. A. 2.]
2. Management of the pregnant cardiac arrest patient is similar to the non-pregnant patient; this includes high-quality chest compressions with minimally interrupted CPR, administration of ACLS medications, and defibrillation. Please refer to Protocol SB204 – Cardiac Arrest.
3. If not limited due to body habitus and/or a gravid uterus, chest compressions can be performed with a mechanical device (ie LUCAS®).
4. When performing chest compressions, apply manual left uterine displacement to relieve pressure off the inferior vena cava to allow blood flow back to the heart. This can be performed via a one-handed or two-handed technique:
   a. One-handed technique (A): With patient flat on her back and the provider standing on the woman's right side, the provider pushes the women's uterus away (toward the patient's left side)
   b. Two-handed technique (B): With the patient on her back, the provider standing on the woman's left side, the provider uses two hands to pull the women's uterus towards (toward the patient's left side)



5. Airway management in the pregnant patient can be difficult, and strong consideration should be for the placement for supraglottic device to reduce the risk of hypoxia to mother and fetus.

ALL

Protocol for the use of Duodote or Mark III Kits

I. **Historical Findings**
   A. Patients exhibiting signs and symptoms of nerve agent or organophosphate poisoning.
   B. Known terrorist incident involving chemical agents.
   C. Multiple patients presenting from a single location, especially a previously designated vulnerable target (federal building, mass gathering, abortion center, etc.) or intelligence indicates high probability of terrorist incident involving chemical agents.

II. **Precautions**
   A. SELF PROTECTION OF THE RESCUER/PROVIDER IS THE FIRST PRIORITY. Withdraw all EMS assets to a safe distance and notify the appropriate Hazardous Materials response team. Continually assess the situation from a safe distance. Be aware of additional disseminating devices. Proceed with appropriate hazardous material guidelines and procedures. Assure proper decontamination has been performed.

III. **Physical Findings**
   A. Over-stimulation of muscarinic sites increases secretion. An acronym which helps identify the presence of an organophosphate nerve agent or insecticide exposure is: DUMBELS (see Appendix B).
   B. Over-stimulation of nicotinic sites causes severe muscle twitching, cramping, and weakness.
   C. Release of or exposure to possible chemical agent.

IV. **Chemical Agent Considerations**
   A. The effects caused by a mild vapor exposure, namely rhinorrhea and tightness in the chest, may easily be confused with an upper respiratory malady or an allergy.
   B. Miosis (constricted pupils), if present, will help to distinguish this as a nerve agent incident, but the eyes must be examined in a very dim light to detect this.
   C. GI symptoms from another illness may be confused with those from nerve agent effects.
   D. Exposure to organophosphates will produce the same signs and symptoms as exposure to nerve agents.
   E. History is the best indicator of nerve agent exposure:
      1. Large number of patients exhibiting signs and symptoms of nerve agent poisoning.
      2. Known terrorist incident.

V. **Indications**
   A. Poisoning by organophosphorus nerve agents or insecticides with accompanying symptoms.

VI. **Contraindications**
   A. The DuoDote AND Mark 1 Kit are intended for adult use. It is not recommended that they be used for patients less than 90 pounds. Consult medical control for further direction related to use with children.
   B. For adults, in the presence of life-threatening poisoning by organophosphorus nerve agents or insecticides, there are no absolute contraindications to the use of the DuoDote or Mark 1 Kit Auto-Injectors. When symptoms of poisoning are not severe, DuoDote or Mark 1 Kit Auto-Injectors should be used with extreme caution in people with heart disease, arrhythmias, recent myocardial infarction, severe narrow angle glaucoma, pyloric stenosis, prostatic hypertrophy, significant renal insufficiency, chronic pulmonary disease, or hypersensitivity to any component of the product.

VII. **Relative Contraindications**
   A. Patients with poor muscle mass at injection site.
   B. Asymptomatic nerve agent exposure.

VIII. **Guidelines**
   A. Medication administration using the DuoDote Nerve Agent Antidote Kit involves the administration of Atropine (2.1 mg / 0.7 mL) and 2-PAM (Pralidoxime Chloride-600 mg / 2 mL) via a single auto-injector to a victim of Nerve Agent Exposure.
   B. Medication administration using the Mark 1 Nerve Agent Antidote Kit involves the administration of Atropine (2.0 mg / 0.7 mL) and 2-PAM (Pralidoxime Chloride-600 mg / 2 mL) contained in two separate auto-injectors to a victim of Nerve Agent Exposure.

IX. Physical Procedures:

A. In the situation of known or suspected organophosphosphate poisoning:

B. **FOR PATIENTS EXHIBITING MILD SYMPTOMS**

1. MILD SYMPTOMS
   a. Blurred vision, miosis (excessive constriction of the pupils)
   b. Excessive, unexplained teary eyes
   c. Excessive, unexplained runny nose
   d. Increased salivation, such as sudden drooling
   e. Chest tightness or difficulty breathing
   f. Tremors throughout the body or muscular twitching
   g. Nausea and/or vomiting
   h. Unexplained wheezing, coughing, or increased airway secretions
   i. Acute onset of stomach cramps
   j. Tachycardia or bradycardia
2. FIRST DOSE: Administer **one (1) DuoDote or Mark 1 Kit** injection if the patient experiencing **2 or more MILD** symptoms.

a. ***Emergency medical services personnel with mild symptoms may self-administer a single dose of DuoDote or Mark 1 Kit***.

3. Wait 10 to 15 minutes for DuoDote or Mark 1 Kit to take effect. If, after 10 to 15 minutes, the patient does not develop any SEVERE symptoms, no additional DuoDote or Mark 1 Kit injections are recommended.
   a. *For emergency medical services personnel who have self-administered using a DuoDote or Mark 1 Kit, an individual decision will need to be made to determine their capacity to continue to provide emergency care.*
4. ADDITIONAL DOSES: If, at any time after the first dose, the patient develops any **SEVERE** symptoms, administer 2 additional DuoDote or Mark 1 Kit injections in rapid succession, and immediately seek definitive medical care.

C. **PATIENTS EXHIBITING SEVERE SYMPTOMS**

1. SEVERE SYMPTOMS:
   a. Strange or confused behavior
   b. Severe difficulty breathing or copious secretions from lungs/airway.
   c. Severe muscular twitching and general weakness
   d. Involuntary urination and defecation
   e. Convulsions
   f. Loss of consciousness
   g. Respiratory arrest
2. FIRST DOSE: Immediately administer **three (3) DuoDote or Mark 1 Kit** injections in rapid succession if a patient has any **SEVERE** symptoms.
3. ADDITIONAL DOSES: No more than 3 doses of DuoDote or Mark 1 Kits should be administered unless definitive medical care (e.g., hospitalization, respiratory support) is available.
   a. *The limit of 3 doses is specific to the pralidoxime component of the DuoDote and Mark 1 Kit. If necessary, additional doses of atropine can be administered if the 3 doses of the DuoDote or Mark 1 Kit do not produce an adequate response.*

D. Emergency care of the severely poisoned individual should include removal of oral and bronchial secretions, maintenance of a patent airway (including advanced airway devices/intubation), IV/IO access, supplemental oxygen, and, if necessary, assist ventilation.

E. An anticonvulsant such as midazolam (Versed) may be administered to treat convulsions if suspected in the unconscious individual. The effects of nerve agents and some insecticides can mask the motor signs of a seizure.

F. Close supervision of all severely poisoned patients is indicated for at least 48 to 72 hours.

ALL

I. HISTORICAL FINDINGS

A. Patient had direct contact or exposure to a known hazardous material, toxin, or an unknown potentially hazardous substance.

II. PHYSICAL FINDINGS

A. Patient has signs and symptoms consistent with some form of chemical exposure.

III. PROTOCOL

A. Attempt to ascertain the:
   1. Type and name of material involved.
   2. Form of the material – liquid, gas or solid
   3. Amount of material the patient contacted or inhaled.

B. Attempt to obtain an SDS and other pertinent information sheets on material(s). Contact the Drug and Poison Information Center (DPIC) 513-636-5111 for assistance.

C. Determine whether the patient was exposed versus contaminated.
   1. *Exposure* indicates the patient has inhaled a gas or had minimal contact with a potentially hazardous or toxic substance.
   2. *Contamination* indicates the patient has come in direct contact with or inhaled a significant quantity of the substance involved.
   3. Exposed patients seldom need decontamination. In some cases, such as those involving inhalation of a known or unknown gaseous material, decontamination may not be possible.

D. Be aware that prior to decontamination, secondary contamination of rescuers may occur due to hazardous materials still being present on the patient's clothing and skin.
   1. Substances with a high risk for secondary contamination include:
      a. acids, alkalis, corrosives
      b. asbestos (large amounts, crumbling)
      c. cyanide salts and related compounds (e.g., nitriles) and hydrogen cyanide
      d. hydrofluoric acid or anhydrous hydrogen flouride
      e. nitrogen containing and other oxidizers which may produce methemoglobinemia (aniline, aryl amines, aromatic nitro-compounds, chlorates, etc.)
      f. pesticides
      g. PCBs (polychlorinated biphenyls)
      h. phenol and phenolic compounds, ammonia, chlorine, mustard agents. phosgene
      i. radioactive materials/waste
      j. many other oily or adherent toxic dusts and liquids
   2. Although rare, in some cases, the patient's exhalation may contain hazardous gases.

E. If field decontamination is indicated, consult a hazardous materials team and/or poison control, DPIC 513-636-5111,or guidance. Eye exposures should be decontaminated immediately and while transporting per S504 Eye Injuries.

F. Notify the receiving hospital as soon as possible of the situation and consider activation/dispatch of Regional Decontamination Units. Information relayed should include, but is not limited to:
   1. Number of patients
   2. Name of the material involved if known.
   3. Form of the material the amount of material the patient contacted or inhaled.
   4. Length of the exposure (time)
   5. Whether field units consider this an *exposure* or *contamination*
   6. Whether field decontamination is indicated, and if so, what level of decontamination is being performed and/or if mass-decontamination will be needed.
   7. Patient condition including specific signs and symptoms.
   8. Whether field units feel further decontamination will be needed at the hospital
   9. ETA to the receiving hospital

NOTES:

- This protocol is not intended as a field decontamination protocol. However, since decontamination may need to be accomplished prior to the arrival of a Hazardous Materials Team, the following should be considered:
  - The personal safety of EMS crewmembers and other emergency response personnel is paramount.

- Consider whether there is time to wait for a Hazardous Materials Team or engine company.
- What resources to perform decontamination are readily available on the scene (i.e., garden hose or other water source) or on the ambulance (i.e., pour solutions or IV fluids)
- To adequately decontaminate a patient, clothing should be removed and sealed in bags.
- In most cases, bleach should not be used on skin; Plain water is adequate. If available a soap (such as Simple Green®, Dawn®, or Tide®) may be used.
- Powdered chemicals should first be brushed off the skin, then the skin should be flushed with copious amounts of water.
- If adequate quantities of water are not available, applying a minimal quantity of water to a hazardous material may cause more damage than if the skin was not flushed.
- Consult field references if available for guidance.

- The practice of placing contaminated or decontaminated patients in body bags to contain any contaminants is discouraged. This practice can cause heat stress for the patient and can also increase absorption of hazardous materials. Covering the patient with a sheet is adequate.
- Remember that contact with some common materials may result in the need for field decontamination. Prime examples include patients who have been significantly contaminated with gasoline or diesel fuel.

Contamination by organophosphates (i.e. pesticides) often presents with gastrointestinal signs and symptoms. Chemical warfare agents also produce a similar clinical picture. The following acronyms may be helpful in recognizing organophosphate poisoning.

- D- defecation
- U-urination
- M-miosis
- B-bradycardia, bronchorrhea
- E-emesis
- L-lacrimation
- S-salivation

If these signs and symptoms are present or a chemical warfare agent is suspected, see Appendix A: Mark 1 Kit Protocol

ALL

I. Introduction

A. A Mass Casualty Incident (MCI) poses considerable challenges for first responding EMS units. For purposes of this protocol, an MCI is defined as an incident that generates a large number of patients and overwhelms first responding EMS units. In addition, the underlying cause of the incident (natural disaster, terrorist attack, active threat/shooter, etc.) may further decrease the initial effectiveness of traditional EMS response. It is recognized that these special circumstances will be varied and that the EMS agency itself will be responsible for defining exactly what meets the criteria of an MCI.

B. Successful scene management of an MCI occurs in a standardized, predictable fashion. The procedures, tactical objectives and operational approach must be consistent across various EMS agencies to ensure maximum effectiveness and optimum patient outcome when operating at major medical incidents. The following is intended to provide first responders with general direction in the management of an MCI, including basic tactical objectives for EMS command and guidelines for the triage of patients. **It is not intended to limit or supersede the local incident command system or local medical control but rather to provide broad guidelines that are common from community to community.**

II. MCI Management Considerations:

A. Generally, an incident with 10 or more patients constitutes an MCI. Depending upon the size of the incident, command personnel and first responders should consider performing the following upon confirmation of an MCI:

1. Establish Incident Command
2. Assign a Triage Unit/Group Supervisor
   a. Can be first-in units; depends on hazard mitigation concerns.
3. Notify area hospitals that an MCI has occurred and open Hospital Net/Net Control
   a. Utilize the Hospital Net radio system through local communications center.
4. Request additional transport units as necessary.
   a. Consider establishing a Staging Area for incoming units and resources.
5. If appropriate, move patients to a Treatment Area.
   a. The Treatment Area is under the direction of a Treatment Group Supervisor.
   b. Consider personnel and equipment required to move victims.
6. Establish a Transportation Unit/Group Supervisor
   a. The Transportation Unit/Group Supervisor will handle hospital coordination and communication.
7. Report completion of EMS Tactical Benchmarks
   a. All patients triaged.
   b. All patients tagged as "IMMEDIATE/Red" transported.
   c. Other benchmarks as determined by local authority.
8. For a larger or prolonged MCI, Command personnel should also consider the following:
   a. Request additional resources such as other MCI equipped units (e.g., supply trailers / vehicles)
   b. Establish a medical supply sector.
   c. Establish multiple Treatment Areas as necessary.
   d. Request ancillary support services.
   e. Request buses for transport of patients or for use as holding areas or rehab areas at the scene.

III. Guidelines for Triage

A. Simple Triage and Rapid Treatment (START) provides an easy-to-use procedure allowing for the rapid sorting of patients into specific categories. START does not require a specific diagnosis; rather it focuses on specific signs or symptoms. **The following guideline represents only a brief outline of the START triage system and in no way replaces the need for a course to fully describe the system.**

B. The first step is to order all ambulatory patients to walk to an assigned area. These patients are initially tagged MINOR (green).

C. Begin the second step by moving from where you stand in an orderly and systematic manner through the remaining victims, stopping at each person for assessment and tagging. Each patient should NEVER take more than one minute.
D. Evaluate each patient using RPM:
   1. R = Respiration
      a. If the victim is NOT breathing quickly clear the mouth and open the airway
      b. If the victim resumes breathing tag the patient as IMMEDIATE (red)
      c. If the victim needs help maintaining an airway tag as IMMEDIATE (red)
      d. If medically appropriate, insert an oropharyngeal airway.
      e. If you doubt the patient's ability to breathe tag as IMMEDIATE (red)
      f. If apnea persists despite simple maneuvers tag as DEAD (black)
      g. If the victim is breathing greater than 30 bpm tag as IMMEDIATE (red)
      h. If the victim is breathing less than 30 bpm move on to "P=Perfusion (Pulse/Circulation)"
   2. P = Perfusion (Pulse/Circulation)
      a. Control severe bleeding.
      b. Check a radial pulse for five to ten seconds.
      c. If irregular or absent tag the victim as IMMEDIATE (red)
      d. If the radial pulse is present move on to "M=Mental Status"
   3. M = Mental Status
      a. Performed on patients who have adequate breathing and adequate circulation.
      b. Test by having the patient follow a simple command:
      c. Open your eyes, close your eyes, and squeeze my hand.
      d. Patients who can follow these commands are tagged DELAYED (yellow)
      e. Patients who are unresponsive or cannot follow simple commands are tagged IMMEDIATE (red)

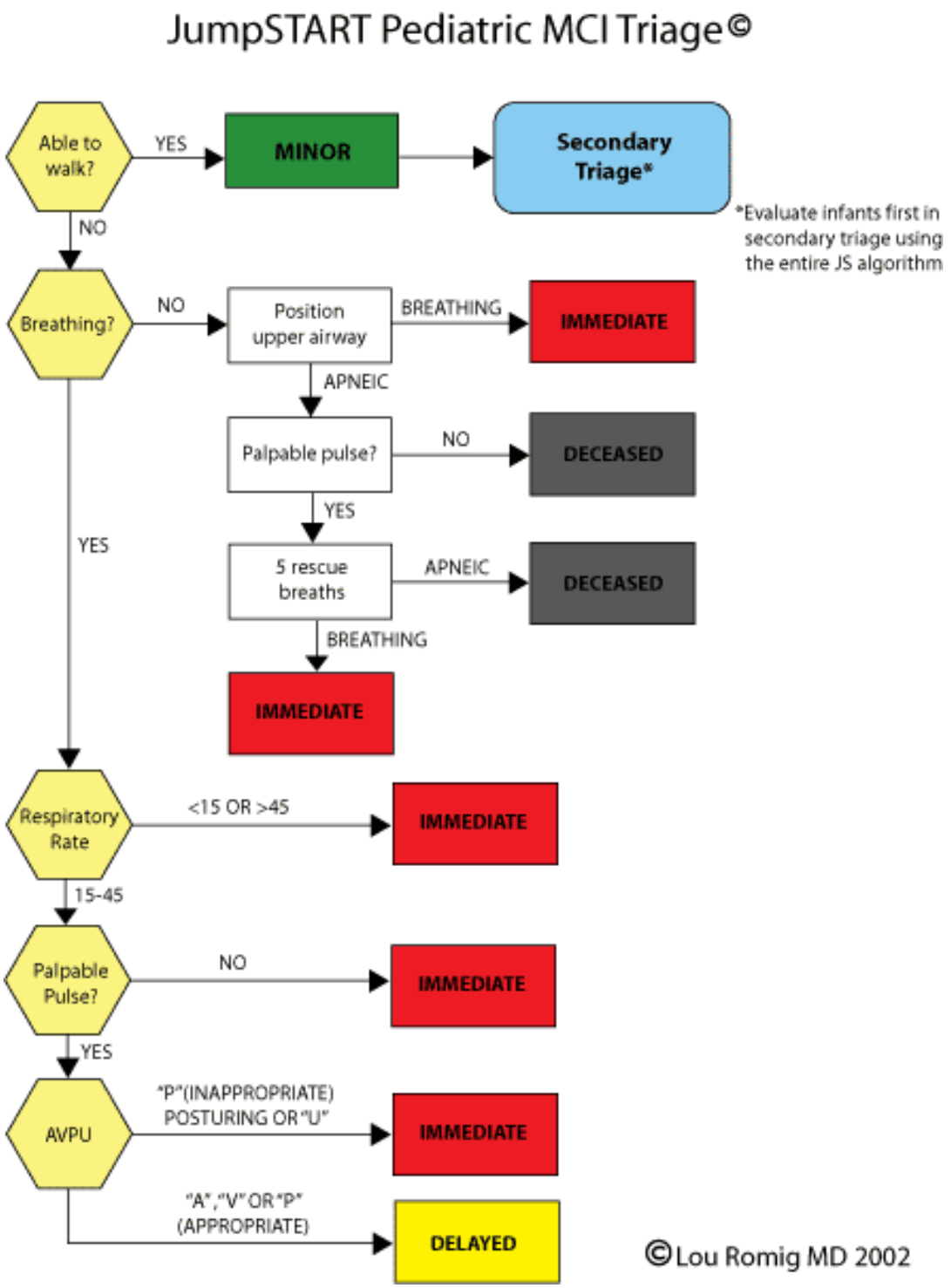
Notes:

A. To the extent possible, EMS agencies should utilize a tagging system endorsed by their respective county Fire and EMS organizations (e.g., fire chiefs' association, academy of medicine, EMA, etc.) to aid in familiarity of the tags, consistent delivery of care and accountability of all victims.
B. Colored ribbons have been successfully used in the past and are an acceptable alternative for the initial response of crew that is overwhelmed in the early stages of an event. However, proper tagging of patients with triage tags should occur as soon as possible afterwards (normally when the patient is re-triaged upon entering the Treatment Area) for purposes of accountability and maintenance of a patient care record.
C. When performing triage at an MCI, EMS providers are encouraged to use discretion when directing MINOR (green) patients to walk from the scene. For example, a minor collision involving a bus may dictate c-spine evaluation and immobilization be accomplished prior to moving patients so long as no other threats to patient health and welfare exist. In such a case, initial Triage Group personnel would NOT order all victims who can get up and walk to move to a specific area.
D. All patients initially categorized under the START triage system must be regularly reevaluated. This is especially true of the MINOR (green) patients. Although initially ambulatory, these victims may have more significant underlying injuries that are not immediately discernible. When re- triaging, some patients may be upgraded to a higher priority while others may be downgraded to a lower priority as medically appropriate.
E. The primary goal in the management of multi-patient or mass casualty incidents is to do the best for the greatest number of victims. In general, early triage and transport improves survivability. However, in some cases mitigation of a hazard may take precedence over the triage and/or removal of victims. Nothing in this protocol should be interpreted as limiting the ability of the Incident Commander to manage the situation.

ALL

I. **Introduction**
   A. If a patient looks like a young adult, use START; if he/she looks like a child, use JumpSTART.

II. **Procedure**
   A. STEP 1
      1. All children who are able to walk are directed to the area designated for minor injuries, where they will undergo secondary triage. Infants who are developmentally unable to walk should be screened at the initial site, using the JumpSTART. If they satisfy all of the physiologic "delayed" criteria and appear to have no significant external injury, infants may be triaged to the minor category.
      2. Note: Children with special health care needs are often chronically unable to ambulate. These children can be triaged similarly to infants who are developmentally unable to walk. A caregiver with knowledge of the children involved would be of invaluable assistance in assessing neurologic status.
   B. STEP 2
      1. Non-ambulatory pediatric patients are initially assessed for presence/absence of spontaneous breathing. Any patient with spontaneous respirations is then assessed for respiratory rate (see STEP 3). Any patient with absolute apnea or intermittent apnea must have their airway opened by conventional positional technique, including BLS airway foreign body clearance if indicated. If the patient resumes spontaneous respirations, a red ribbon (immediate) is applied, and the triage officer moves on.
      2. If upper airway opening does not trigger spontaneous respirations, the rescuer palpates for a peripheral pulse (radial, brachial). If there is no peripheral pulse, the patient is tagged as deceased (black ribbon) and the triage officer moves on.
      3. If there is a palpable pulse, the rescuer gives 5 breaths (about 15 sec) using mouth to mask/barrier technique. *This is the pediatric "jumpstart*." If the ventilatory trial fails to trigger spontaneous respirations, the child is classified as deceased (black). If spontaneous respirations resume, the patient is tagged as immediate (red) and the triage officer moves on without providing further ventilations. The child may or may not still be breathing on arrival of other non-triage personnel. Appropriate intervention can then be determined based upon the resources available at the designated treatment site.
   C. STEP 3
      1. All patients at this point have spontaneous respirations. If the respiratory rate is roughly 15-45 breaths/min proceed to Step 4 (assess perfusion). If the respiratory rate is less than 15 or faster than 45 or very irregular, the patient is classified as immediate (red) and the triage officer moves on.
   D. STEP 4
      1. All patients at this point have been judged to have "adequate" respirations. Assess perfusion by palpating peripheral pulses on an uninjured limb. This has been substituted for capillary refill (CR) because of variation in CR with body and environmental temperature and because it is a tactile technique more adaptable to poor environmental conditions.
      2. If there are palpable peripheral pulses, the rescuer assesses mental status (Step 5). If there are no peripheral pulses, the patient is categorized as an immediate (RED) patient and the triage officer moves on.
   E. STEP 5
      1. All patients at this point have "adequate" ABCs. The rescuer now performs a rapid "AVPU" assessment, keeping in mind the apparent developmental stage of the child. If the patient is alert, responds to voice or responds appropriately to pain, the patient is triaged in the delayed category (yellow ribbon). If the child does not respond to voice and responds inappropriately to pain, has decorticate or decerebrate posturing, or is truly unresponsive, a red ribbon (immediate) is applied and the triage officer moves on.


JumpSTART Pediatric MCI Triage©
Able to walk?
YES
MINOR
Secondary Triage*
*Evaluate infants first in secondary triage using the entire JS algorithm
NO
Breathing?
NO
Position upper airway
BREATHING
IMMEDIATE
APNEIC
Palpable pulse?
NO
DECEASED
YES
5 rescue breaths
APNEIC
DECEASED
BREATHING
IMMEDIATE
YES
Respiratory Rate
<15 OR >45
IMMEDIATE
15-45
Palpable Pulse?
NO
IMMEDIATE
YES
AVPU
"P"(INAPPROPRIATE) POSTURING OR "U"
IMMEDIATE
"A","V" OR "P" (APPROPRIATE)
DELAYED
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OH/KY-MEDIC

I. In normal practice within Ohio and Kentucky, Paramedics are permitted to administer influenza vaccinations. This protocol serves as the authorization to administer influenza vaccinations to other firefighters, EMR, EMT, AEMT and Paramedics as below.

II. Each state requires reporting for each immunization administered under this section. The EMS professional administering the immunization shall, not later than thirty days after the immunization is administered, do either of the following:
   A. Provide notice of the immunization administration to the board of health of the city or general health district in which the individual receiving the immunization resides.
   B. Submit the immunization administration information to the state immunization registry maintained by the department of health.

III. **PROCEDURE**
   A. Identify adults with no history of this vaccination, or an influenza vaccination for the current influenza season, or as otherwise indicated by the medical director or public health recommendations.
      1. For children, please reference the CDC Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2025. https://www.cdc.gov/vaccines/hcp/imz-schedules/child-adolescent-age.html?CDC_AAref_Val=https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html
      2. For adults, please reference the CDC Recommended Adult Immunization Schedule for ages 19 years or older, United States, 2025. https://www.cdc.gov/vaccines/hcp/imz-schedules/adult-age.html?CDC_AAref_Val=https://www.cdc.gov/vaccines/schedules/hcp/imz/adult.html
   B. Screen all patients for contraindications and precautions to vaccinations:
      1. Contraindications:
         a. Serious systemic or anaphylactic reaction to a prior dose of the vaccine or to any of its components.
         b. For a list of vaccine components, go to https://www.cdc.gov/pinkbook/hcp/table-of-contents/index.html
         c. Do not give live attenuated influenza vaccine (LAIV; nasal spray) to a person who has a history of either an anaphylactic or non-anaphylactic hypersensitivity to eggs; who is pregnant, is age 50 years or older, or who has chronic pulmonary (including asthma), children receiving salicylate therapy, children ages 2-4 who have asthma or who have had a history of wheezing in the past 12 months, cardiovascular (excluding hypertension), renal, hepatic, neurologic/ neuromuscular, hematologic, or metabolic (including diabetes) disorders; immunosuppression, including that caused by medications or HIV, people caring for severely immunocompromised individuals, persons without a spleen or a non-functional spleen, people with cochlear implants, people with active cerebrospinal fluid (CSF) leaks.
      2. Precautions:
         a. Moderate or severe acute illness with or without fever
         b. History of Guillain Barré syndrome within 6 weeks of a previous vaccination
         c. For live attenuated vaccines only, close contact with an immunosuppressed person when the person requires protective isolation.
         d. Receipt of antivirals (e.g., amantadine, rimantadine, zanamivir, or oseltamivir) within the previous 48 hours or possibility of use within 14 days after vaccination.
      3. Other considerations:
         a. Onset of hives only after ingesting eggs: healthcare providers familiar with the potential manifestations of egg allergy should administer inactivated vaccine and observe patient for 30 minutes after receipt of the vaccine for signs of a reaction.
         b. Refer to the CDC or manufacturers website regarding the types of vaccines available, and specifically whether it is egg derived.

C. Provide all patients with a copy of the most current federal Vaccine Information Statement (VIS). Documentation must include the publication date of the VIS and the date it was given to the patient. Non-English speaking patients must be provided with a copy of the VIS in their native language, if available and preferred; these can be found at www.immunize.org/vis .

D. Administer the vaccine using the appropriate procedure per the manufacturer based on the vaccine supplied: (below are 2 examples)

1. Injectable quadrivalent influenza vaccine:
   a. For adults of all ages, give 0.5 mL of intramuscularly (22–25g, 1–1½" needle) in the deltoid muscle. (Note: A 5/8" needle may be used for adults weighing less than 130 lbs. [<60 kg] for injection in the deltoid muscle only if the subcutaneous tissue is not bunched and the injection is made at a 90 degree angle.
2. Intranasal live-attenuated influenza vaccine:
   a. For healthy adults younger than age 50 years, 0.1 mL is sprayed into each nostril while the patient is in an upright position. (Total dose of 0.2 ml)

E. Document each patient's vaccine administration information and follow up in the following places:

1. Record the date the vaccine was administered, the manufacturer and lot number, the vaccination site and route, and the name and title of the person administering the vaccine. If vaccine was not given, record the reasons(s) for non-receipt of the vaccine (e.g., medical contraindication, patient refusal).
2. Personal immunization record card: Record the date of vaccination and the name/location of the administering facility.

F. Patients should be observed for ten minutes after immunization for any allergic reaction.

1. Report all adverse reactions to a vaccine to the federal Vaccine Adverse Event Reporting System (VAERS) at www.vaers.hhs.gov or (800) 822-7967. VAERS report forms are available at www.vaers.hhs.gov.

NOTES:

G. Refer to the manufacturer's guidance regarding appropriate storage, transportation, and administration of the vaccine.

H. The Ohio Department of Health Vaccines for Children (VFC) website has multiple resources for temperature logging forms, how to vaccinate, Vaccine Information Statements and other materials. https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/Immunization/Vaccines-for-Children-VFC/

OH-ALL

IV. OHIO CLARIFICATION:

A. The medical director may authorize EMS providers to administer any vaccine if the route of administration is otherwise within the scope of practice of the provider.

B. The remainder of the protocol, as above, still applies.

KY-MEDIC EMERG

V. ONLY IN AN EMERGENCY DECLARED BY THE GOVERNOR OR PRESIDENT:

A. Prepare and administer immunizations in the event of an outbreak or epidemic as part of an emergency immunization program, under the agency's supervising physician's standing order.

IN-MEDIC

VI. In Indiana, advanced EMT's and Paramedics are permitted to administer vaccines either via a public health department, or their agency may register with the Indiana Department of Health as a vaccination provider. These agencies will operate under their supervising physician's orders (which may include the above sections I-IV).

ALL

I. **Inclusion Criteria**
   A. Dogs and cats ONLY
   B. Dogs and cats encountered in the course of other emergency medical response

II. **Protocol**

EMT

   A. Ensure provider safety. Utilize animal handler as necessary.
   B. Airway management
      1. Open and manually maintain airway if respiratory compromise suspected.
      2. Administer supplemental oxygen as needed for suspected hypoxia.
      3. Provide manual ventilation as needed by mouth-snout, mouth-barrier, or BVM.
   C. Hemorrhage management
      1. Apply direct pressure as needed.
      2. Bandaging as needed
   D. Fracture immobilization by standard methods, as needed.
   E. Naloxone – for suspected symptomatic opiate exposure
      1. 0.04 mg/kg IN (dogs and cats)

MEDIC

      2. 0.04 mg/kg IM / SC (dogs and cats)

ALL

Notes:

A. Nothing in this protocol expands a provider's scope of practice beyond that which is allowed in the care of human patients.
B. Providers utilizing this protocol should receive appropriate training in animal care techniques.

ACS/CHEST PAIN M400

- diagnostic EKG ASAP
- ASA 324 mg (chewed)
- ***Determine erectile dysfunction drug use***
  - Nitroglycerin 0.4 mg SL q 5 min X 3 **OR** 1" Topical Nitroglycerin (Nitro Paste) – Do **NOT** administer in an Inferior MI
  - Fentanyl 25-100mcg IV/IO (200mcg total) or Morphine Sulfate **1-5** mg IV (10mg total)

ADRENAL INSUFFICIENCY M417

- Allow pt./family to self-administer steroid therapy if available.
- If self-administration not possible,
  - Adult- immediately give Methylprednisolone 125 mg IM/IV/IO
  - Pedi- immediately give Methylprednisolone 2 mg/kg IM/IV/IO
- Assess BGL
- diagnostic
- IV Bolus of Normal Saline (NS)
  - Adult- 500-1000ml IV/IO
  - Pedi- 20ml/kg IV/IO

ALLERGIC REACTION - ANAPHYLAXIS M409

- Epinephrine 0.3 mg, (1 mg/ml) IM – may repeat every 5-15 min.
- Albuterol (Proventil) 2.5 mg HHN
- Hypotensive - infuse 1 liter NS IV/IO WO rate.
  - If hypotension persist, refer SB205
- Benadryl 25-50 mg IV/IM/PO

ALTERED LEVEL OF CONSCIOUS SB201

- Perform diagnostic EKG as soon as possible
- Consider differential diagnosis
- Hypoglycemia (M406 or P608)
  - BGL < 60
- Suspected Opioid Overdose (M411)
  - Naloxone 0.4 to 4 mg IV/IO/IM/IN

ASTHMA/COPD M403

- Albuterol (Proventil) 2.5 mg Nebulized **OR COMBINE WITH** Ipratropium bromide, may substitute DuoNeb. Repeat x2.
- If multiple treatments anticipated, administer 60 mg Prednisone PO or Solumedrol 125mg IV or PO
- **Impending Respiratory Failure**, Consider Positive Airway Pressure Protocol (see T709)
- **ASTHMA ONLY**
  - Epinephrine 0.3mg (1 mg/ml) IM followed by Mag Sulfate 2 g IV/IO in 100 ml of saline

CARDIOGENIC SHOCK M401

- 500 ml bolus of 0.9 NS fluid challenge if lungs are clear, otherwise TKO
- Consider push dose Epi

CONGESTIVE HEART FAILURE M404

- Consider Positive Airway Pressure Prot., refer T709
- ***Determine erectile dysfunction drug or pulmonary hypertension drug use***
- Nitroglycerin 0.4 mg sL q 5 min x3 for mild symptoms **OR** 0.8 mg sL q 5 min X 3 for moderate to severe symptoms **OR**
  - Topical Nitroglycerin (Nitro-Paste)
    - 1" for SBP 100-150
    - 1.5" for SBP 150-200
    - 2" for SBP > 200

FEVER M421

- 6 months or older
- Temp of > 100.4
- See chart in M421 for acetaminophen dosing

HYPERGLYCEMIA M406

- BGL > 400 or HIGH on meter
- Fluid bolus of 500-1000 ml IV/IO
- Cardiac monitor

HYPERKALEMIA M418

- diagnostic EKG
- Calcium gluconate 3 g IV/IO; calcium chloride 1g IV/IO
- Sodium bicarbonate 1mEq/kg IV/IO, separate line!
- Albuterol/DuoNeb nebulized continuously (may stop with EKG improvement)

HYPOGLYCEMIA M406

- BGL < 60
- 6.25-25g of D-10 IV
- 6.25-25g of D-50 IV
- if no, IV then Glucagon 1 mg IM
- **BGL must be ≥ 100mg/dL for Treat/Release**

HYPOTHERMIA M412

- Remove wet clothing, wrap in blankets, prevent heat loss
- 1 liter of NS IV/IO
  - Pedi 20 ml/kg

IMMINENT DELIVERY O800

- > 23 weeks = viable baby
- O2 & IV (if time permits)
- Assist with delivery if head is presenting
- Elevate hips and transport if delivering is mal- presentation
  - Breech - support and deliver baby if delivery is imminent
  - Prolapsed cord – relieve pressure on cord, elevate hips, keep cord moist
- Notify receiving hospital
- Hemorrhage administer TXA, refer to S506

PREGNANCY COMPLICATIONS O801

- Actively Seizing
  - Versed per M410
  - 4-6g Magnesium Sulfate IV over 15-20 min
  - 10g Magnesium Sulfate IM "Z track" divided in 5g injections, administer one in each buttock

NAUSEA & VOMITING M405

- Zofran 4 mg IM/PO single dose **OR**
- Zofran 4 mg slow IV/IO (peds 0-.15mg/kg max 4mg), may be repeated **OR**
- Promethazine 12.5-25mg deep IM (adult only)

HYPERTHERMIA M413

- Remove clothing and from external heat source
- Immersion cooling first
- IV for dehydration

STROKE M414

- Assess using Cincy Stroke Scale
- BGL <60, refer to M406
- Perform C-STAT if Cincy Stroke Scale is +
- Rapid transport & **"STROKE ALERT"** notification to appropriate facility for positive C-Stat

RESTRAINT M408

- Age >16
- Use least restrictive means
  - Verbal → Physical → Chemical
- Do NOT transport face down.
- Versed 5-10 mg IM/IN (Chemical)
- SEVERE Agitation: Ketamine 4mg/kg IM

SEIZURE M410

- If actively seizing, give Versed 10 mg IM.
- Alternately Versed 2-4 mg/min IV/IM/IO, until seizure resolves or a total of 10 mg is given
- Check Glucose per M406.
- Overdose – refer to M411.

SEPSIS M419

- All Ages
- Suspected Infection
- Notification of **"SEPSIS ALERT"**
- Consider IV/IO fluid bolus

ASYSTOLE or PEA C301

- Search and treat possible causes
- Epinephrine 1mg (0.1mg/mL) IV/IO q 3-5 min
- Consider
  - Sodium bicarbonate 1 mEq/kg IV/IO (metabolic acidosis or tricyclic OD)
  - Calcium gluconate 1 gram IV/IO (renal failure/ESRD)
  - 1 liter normal saline bolus (hypovolemic)
- Consider termination after 30 min.

BRADYCARDIA C302

- Atropine 1 mg IV/IO q 3-5 min (3 mg max)
- Consider pacing - Consider sedation - Versed 2-5 mg/min IV/IM until patient's speechslurs or a total of 8 mg.
- Consider push dose Epi for Hypotension

NARROW COMPLEX TACH (STABLE) C305

- Valsalva.
- diagnostic EKG
- <90kg: Adenosine 6 mg RAPID IVP, repeat at 12mg if needed
- >90kg Adenosine 12 mg RAPID IVP, repeat once if needed

NARROW COMPLEX TACH (UNSTABLE) C306

- Consider sedation - Versed 2-5 mg IV/IO/IM/IN.
- Synchronized cardioversion at 50-100 joules.
  - If no change, repeat synchronized cardioversion at 100/200/300/360 joules

V-FIB/ PULSELESS V-TACH C300

- Defibrillate at 360J or manufactures recommend.
- Epinephrine 1mg (0.1mg/mL) IV/IO every 3 to 5 minutes
- Defibrillate at 360 joules if still VF or VT.
- Amiodarone 300 mg IV/IO. May Repeat 150 mg IV/IO in 3-5 min **OR**
  - Lidocaine 1.5 mg/kg IV/IO. May Repeat lidocaine in 3 to 5 min 0.5 – 0.75 mg/kg
- Recheck rhythm after each 2 min cycle of CPR and defibrillate if needed.

WIDE COMPLEX TACH W/ PULSE (STABLE) C304

- Consider Magnesium 2 g IV/IO for Torsade's
- Amiodarone 150 mg IV/IO over 10 min
- If VT persists, may repeat Amiodarone 150mg IV/IO over 10 min

WIDE COMPLEX TACH W/ PULSE (UNSTABLE) C303

- Consider Magnesium 2 g IV/IO for Torsade's
- Consider sedation- Versed 2-4 mg IV/IO/IM until patient's speech slurs or a total of 8 mg.
- Synchronized cardioversion at 100 joules.
- If no change, repeat synchronized cardioversion at 200/300/360 joules.

REGIONAL TRAUMA GUIDELINES SB206

- Pulse >120 or < 50 or SBP <90
- RR <10 or >29
- Intubated
- Evidence of Head Injury
- GCS < or equal to 13
- Alteration in LOC or LOC > 5 min
- Failure to localize pain
- Suspected Spinal Cord injury
- Penetrating Trauma to Head, chest, abd, neck, proximal to knee or elbow
- Amputation proximal to wrist or ankle
- Fractures of 2 or more proximal long bones
- Evidence of neurovascular compromise
- Tension pneumothorax that is relieved
- Head, neck or torso visible crush injury
- Abd tenderness, distention or seat belt sign
- Pelvic fracture
- Flail Chest
- Burn injury > 10% TBSA and other traumatic injuries
- Significant mechanism of injury = high index of suspicion
- Ground < 30 min transport time to level 1 trauma

SPINAL MOTION RESTRICTION T704

- Altered mental status GCS<15?
- Mid-line spine pain/tenderness on palpation of spinous processes?
- Focal or neurological deficit?
- Any evidence of alcohol or drug of intoxication?
- Distracting injuries?
  1. Obvious fracture/dislocation
  2. Suspected fracture requiring splint
  3. Injury needing IV/IO pain medication
- Communication barrier?
- If **YES** to any of the above – apply c-collar

GERIATRIC TRAUMA IS 65 YEARS OR OLDER SB209

- GCS < 14
- SBP < 110 or pulse >90
- Fall with evidence of Traumatic Brain injury, even from standing
- Pedestrian struck by motor vehicle
- Suspected long bone fx from MVC
- Multiple body regions injured

HEAD OR SPINAL TRAUMA S501

- Airway
  1. Administer O2 to maintain SpO2 > 95%
  2. Maintain normal breathing rates (10-12)
  3. Monitor ETCO2 and note value after effective ventilation has been initiated.
- ONLY with asymmetric pupils (>1mm dif) and comatose
  1. Hyperventilate to 3-5 mmHg lower than above established value.
  2. STOP if pupils normalize
- Signs of herniation (comatose, unilateral or bilateral blown pupil, posturing, decline in GCS >2 points)
  1. Consider 500 ml of 3% saline

BURNS S502

- Monitor airway; intubate if unconscious or respiratory distress
- Provide IV fluids: 5yo 125mL/hr, 6-13yo 250mL/hr, 14+ 500mL/hr
- Provide pain medication per S505
- Consider carbon monoxide and cyanide poisoning; treat per M411
- Preferentially transport to burn/trauma center

EPISTAXIS S508

- Age 16+; no suspected skull fx or nasal foreign body.
- Blow hard to remove clot.
- Spray 4 puffs of oxymetazoline or neosynephrine into bleeding nostril and clamp.
- If still bleeding, may switch to TXA 0.5mL undiluted atomized into nostril and clamp.

TRAUMATIC ARREST S509

- No resuscitation if pt has injuries not compatible with life. See S509.
- Rapid transport if:
  - Penetrating trauma with arrest witnessed by EMS
  - Traumatic arrest in pregnancy >24wks -> Go to nearest ED.
- Control bleeding; decompress chest per T701; provide 1L NS bolus (20mL/kg peds)

HEMORRHAGE CONTROL T710

1. Tourniquets
   - 2-3" proximal to hemorrhage
   - Tightened until controlled
   - Record application time
   - Notify facility
2. Wound Packing
   - Wound to groin, axilla, or neck
   - Place gauze as deeply as possible

   A. Apply pressure dressing
   B. Apply manual direct pressure for at least 3 min.
3. Tranexamic Acid (TXA)
   - Refer to S506

HEMORRHAGIC SHOCK W/W/O SUSPECTED HEAD INJURY S500

- Trauma **WITH** a head injury
- Fluid resuscitation to maintain a SBP ≥ 90 and
- O2 sat >90%

1. 2 large bore IV's of NS
2. Fluid bolus of 500 mL
3. Reassess mental status
4. Repeat fluid bolus
5. Consider pelvic binder with blunt trauma and pelvic pain or altered mental status and mechanism consistent with possible open book pelvic fracture

PREHOSPITAL PAIN MANAGEMENT S505

1. Acetaminophen (Tylenol) 650-1000mg PO if able to sallow
2. Fentanyl 25-100 mcgIV/IO/IN/IM repeat every 5 min if needed **OR**
3. Morphine Sulfate 5 mg IV/IM/IO repeat every 5 min if needed **OR**
4. Ketamine 0.2 mg/kg IV/IO, 0.5-1mg/kg IM (See Chart in Protocol)
   - **Use first with suspected Opioid addiction or prior high doses of opioids**
5. Naloxone 0.4 to 4 mg IV/IO/IM/IN for Fentanyl or Morphine if patient experiences respiratory depression

TRANEXAMIC ACID (TXA) S506

1. Evidence of significant blunt or penetrating trauma AND
2. All Ages with:
   - Presence of hemodynamic instability
   - Sustained SBP <90 or <100 if age >55
   - Sustained heart rate > 110
   - Time since injury is KNOWN to be <3 hours
3. Adult
   - Mix 1 g of TXA in 100 ml of 0.9% NS or LR and infuseover approximately 10 min. IV or IO
4. **Pedi**
   - < 12 years: 15mg/kg IV over 10 mins (max 1 g)
   - ≥ 12 years: 1 g IV over 10 mins
5. Use dedicated IV/IO line
6. Notify receiving trauma center

BLOOD AND BLOOD PRODUCT ADMINISTRATION T700

- Trauma with inadequate perfusion or massive GI bleed or ruptured AAA or post-partum hemorrhage or ruptured ectopic pregnancy –AND—
- 2 or more of: ETCO2 <25; Shock index >1.0; Sustained systolic BP <90; Sustained HR >120; polytrauma + TBI + systolic BP <100; age inappropriate vitals; cool pale skin with cap refill >2 sec; witnessed traumatic or medical arrest with suspected hemorrhage.
- Control bleeding first; decompress chest if indicated.
- Using blood tubing transfuse: adults 1U; peds 10mL/kg
- Repeat transfusion if inadequate improvement
- Prevent hypothermia

ANAPHYLAXIS / ALLERGIC REACTION P609

1. Remove exposure to allergen, if possible (bee stinger, for example).
2. For respiratory symptoms **or** low blood pressure, give:
   - Epinephrine (1 mg/mL) 0.01 mg/kg IM (0.01 mL/kg, max 0.3 mL)
   - AND Normal Saline 20 mL/kg IV/IO pushed (max 1 L)
3. If wheezing, give Albuterol nebulizer treatment-2.5 mg in 3 mL of normal saline.
4. Diphenhydramine 1 mg/kg IV/IM (max 50 mg) may be given.

FEVER M421

1. 6 months or older
2. Temp of > 100.4
3. See chart in M421 for acetaminophen dosing

HYPOGLYCEMIA AND HYPERGLYCEMIA P608

1. If Glucose is less than 60, administer
   1. 5mL/kg of D10 IV/IO
   2. If <3 years of age **OR** <15 kg: 2 mL/kg of D25W IV push. (D25W is made by mixing D50 1:1 with normal saline.)
   3. If no IV, then give Glucagon.
      4. < 6 years of age: 0.5 mg IM
      5. ≥ 6 years of age: 1 mg IM for
2. If Glucose level is greater 400 mg/dL or glucometer reads "HIGH"
   - Administer a fluid bolus of 20 mL/kg (max 1 L) IV/IO during transport if no evidence of pulmonary edema

NAUSEA & VOMITING M405

1. For children 12 months or older.
2. Give:
   - Zofran 0.15 mg/kg (max 4 mg) IV/IO/IM **OR**
     Zofran 4 mg PO for pts above 15 kg
3. Do NOT repeat.

NEWBORN RESUSCITATION P600

1. Suction mouth, then nose.
2. Dry infant, keep warm.
3. BVM for HR < 100 at rate of 60 breaths per minute.
4. Apply pulse ox to determine oxygen requirement.
5. Chest compressions for HR < 60, 3:1 ratio with breaths. 120 compressions/minute.
6. After 30 seconds of BVM ventilation and HR <100, consider intubation.

FULL TERM: 3.0 - 3.5 ET tube
PREMATURE: 2.5 - 3.0 ET tube

7. Contact medical control.
8. After 30 seconds of chest compressions, consider Epinephrine
   G. IV (0.1 mg/mL): 0.04 mg (0.4 mL) (0.2 mL for preterm newborn)
   H. ETT (1 mg/mL): 0.08 mg (0.8 mL) (0.4 mL for preterm newborn)

Repeat epinephrine every 3 to 5 minutes until HR > 60.

9. If significant blood loss at delivery, give Normal Saline 40 mL IV/IO (20 mL for preterm newborn).

OBSTRUCTION OR FOREIGN BODY ASPIRATION P606

1. Alert & not choking
   1. Transport with pt. as comfortable as possible.
   2. If wheezing, albuterol nebulized treatment.
2. Alert & choking
   III. < 1 year: 5 back slaps and 5 chest thrusts. Repeat.
   IV. 1 year to puberty, abdominal thrusts
3. Unconscious
   I. Begin BVM/CPR.
   J. With laryngoscope, look for foreign body & remove with Magill Forceps.
   K. If no foreign body, intubate.
   L. If still no chest rise, consider pushing tube in right mainstem or needle cric
   M. Contact medical control and transport to the **closest** appropriate facility.

PAIN MANAGEMENT P611

1. For children 5-16 years of age
2. Give:
   - Acetaminophen 15 mg/kg (max 975 mg) PO
   - Moderate – Severe Pain:
     - Morphine 0.1 mg/kg IV/IO/IM/SC (max 5 mg) **OR**
     - Fentanyl 1 mcg/kg IV/IO/IM/SC (max 50 mcg) **OR**
     - Fentanyl 2 mcg/kg IN (max 100 mcg) **OR**
     - Ketamine 0.6mg/kg IN (50mg/mL preferred) **OR**
     - Ketamine 0.2mg/kg IV/IO – over 1 minutes slow.
3. If patient experiences a drop in systolic blood pressure to < (2 x age in years) + 70, give:
   - Normal Saline 20 mL/kg IV push (max 1 L)
4. For pain not relieved or for subsequent doses, contact medical control.

RESPIRATORY DISTRESS P607

1. Assess need for assisted ventilation.
2. Administer O2 and allow patient to sit up in a position of comfort. Determine PRAM score.
3. If wheezing, albuterol 2.5mg in 3 mL normal saline nebulized.
4. Begin transport.
5. May give 3 albuterol nebulized treatments. Contact medical control if additional treatments are needed.
6. For severe respiratory distress, contact medical control while BVM ventilating.
7. Epinephrine (1 mg/mL) 0.01 mg/kg IM (0.01 mL/kg, max 0.3 mL)
8. Administer one of the following corticosteroids:
   Prednisolone 3 mg/mL oral liquid
   a. Age 3-7 years: 30 mg (10 mL)
   b. Age 8-16 years: 60 mg (20 mL)
   Prednisone 20 mg tablets
   a. Age 3-7 years: 30 mg (1.5 tabs)
   b. Age 8-16 years: 60 mg (3 tabs)
   Solu-Medrol (methylprednisolone) IV solution to be administered PO (125 mg/2 mL)
   a. Can be given IV/IM/IO 1mg/kg (60 mg/dose)
   b. Age 3-7 years: 30 mg (0.5 mL)
   c. Age 8-16 years: 60 mg (1 mL)

RESTRAINT P616

1. Patient restraints are to be used only when necessary in situations where the patient is violent or potentially violent and may be a danger to themselves or others.
2. Administer Midazolam (Versed)
   A. IV/IO: 0.1 mg/kg (max 5 mg) **OR**
   B. IN/IM: 0.2 mg/kg (max 10 mg)
3. When able and safe, place patient on cardiac monitor and continuous pulse oximetry and end-tidal capnography.
4. Administer oxygen.

SEIZURES P610

1. 100% O_2 with BVM; monitor ventilation-with capnography
2. Consider nasopharyngeal airway.
3. Seizing > 5 minutes, give Midazolam.
   - IV/IO: 0.1 mg/kg (max 5 mg)
   - IM/IN <12 kg: 0.2 mg/kg
   - IM/IN 13 – 40 kg: 5 mg
   - IM/IN ≥ 40 kg: 10 mg
4. Contact medical control for seizing > 15 minutes.

SEPSIS M419

1. Suspect infection
2. At least one of the following: hypotension, sustained tachycardia for age, tachypnea, cool/pale/mottled skin, delay cap refill, altered mental status, weak peripheral pulses.
3. Place on ETCO2 and record temp.
4. **Sepsis Alert** if ETCO2<25 and two of the following: temp, hypotensive, tachycardia for age, tachypnea for age, altered mental status.

STRIDOR P605

1. Keep the patient calm.
2. Contact medical control.
3. Epinephrine (1 mg/mL) 0.5 mg (0.5 mL) mixed in 2.5 mL of normal saline, nebulized.
4. Continuing nebulized normal saline afterwards may be beneficial.

SUBMERSION INJURY P614

1. Perform warming.
2. C-spine precautions for diving accidents or unknown
3. Administer oxygen.
4. Proceed with cardiac arrest protocols.
5. Remember, submersion is a trauma and needs to be transported to a trauma center.

ASYSTOLE OR PEA P602

1. After 2 minutes of chest compressions and BVM, check cardiac rhythm and pulse, then consider intubation.
2. Epinephrine every 3-5 minutes
   a. IV/IO (0.1 mg/mL): 0.01 mg/kg (0.1 mL/kg) max 1 mg/dose
   b. ETT (1 mg/mL): 0.1 mg/kg (0.1 mL/kg); max 2.5 mg/dose
3. Contact medical control.
4. Normal saline 20 mL/kg IV/I0 pushed (max 1 L)

BRADYCARDIA P603

1. The most common cause of bradycardia in pediatrics is hypoxia.
2. General Guide for Pediatric Bradycardia:
   a. 0-3 years old: HR < 100 bpm
   b. 3-9 years old: HR < 60 bpm
   c. 9-16 years old: HR < 50 bpm
3. Epinephrine every 3 to 5 minutes
   A. IV/IO (0.1 mg/mL): 0.01 mg/kg (0.1 mL/kg); max 1 mg/dose
   B. ETT (1 mg/mL): 0.1 mg/kg (0.1 mL/kg); max 2.5 mg/dose (maximum dose 2 mL)
4. Contact medical control.
5. After epinephrine, consider 1 dose of Atropine
   a. IV/IO: 0.02 mg/kg (max 0.5 mg/dose) rapid push
   b. ETT: 0.04 mg/kg (max 2 mg/dose)
6. If hypotensive, Normal Saline 20 mL/kg IV push.

PSVT P604

1. Obtain diagnostic EKG

Stable Patient

2. Vagal maneuvers.
3. Contact medical control.
4. Adenosine
   a. 1st dose: 0.1mg/kg rapid IV push (max 6 mg)
   b. 2nd dose: 0.2 mg/kg rapid IV push (max 12 mg) Follow each dose with 10 mL NS flush.

Unstable Patient

2. Contact medical control.
3. Midazolam 0.1 mg/kg IV/IO (max 5 mg)
4. Synchronized cardioversion at 0.5 J/kg. May repeat with 1 J/kg, then 2 J/kg. Round the Joules up.

PULSELESS ARREST (V FIB & V TACH) P601

1. Defibrillate at 2 J/kg (max 200 J) and resume CPR.
2. Defibrillate at 4 J/kg (max 360 J) and resume CPR
3. Consider intubation.
4. Epinephrine every 3 to 5 minutes followed by 2 minutes of CPR.
   1. IV/IO (0.1 mg/mL): 0.01 mg/kg (0.1 mL/kg); max 1 mg/dose
   2. ETT (1 mg/mL): 0.1 mg/kg (0.1 mL/kg); max 2.5 mg/dose
5. If still in pulseless V Fib or V Tach, defibrillate at 4 J/kg then resume CPR.
6. Amiodarone 5 mg/kg (max 300 mg) IV/IO then resume CPR.
7. Lidocaine 1 mg/kg IV/IO then resume CPR.
8. Contact medical control and transport to **closest** appropriate facility.

ESTIMATED AGE		0-3 m	6 m	9-24 m	3 y	6 y	8 y	10 y	12 y	14 y
WEIGHT	lbs	6-7	11	20	30	40	50	60	80	100
	kg	3	5	10	15	20	25	30	40	50
VITAL SIGNS	Low Limit Systolic BP	60-70	70	70-75	75-80	80	80	85	85	90
	Pulse	100-180	100-180	90-160	80-140	70-130	70-130	60-120	60-120	60-120
AIRWAY		3.0-3.5	3.5	4.0-4.5	5.0	5.5	6.0	6.5	7.0	7.0
DEFIBRILLATION		6 J	10 J	20 J	30 J	40 J	50 J	60 J	80 J	100 J
DRUGS/IV FLUIDS										
Acetaminophen 160 mg/5 mL – PO (*PAIN Management Only – 15 mg/kg)*		45 mg (1.4 mL)	75 mg (2.3 mL)	150 mg (4.7 mL)	225 mg (7 mL)	300 mg (9.4 mL)	375 mg (12 mL)	450 mg (14 mL)	600 mg (19 mL)	750 mg (23 mL)
Acetaminophen – PO (*FEVER Management Only*)		See protocol M421 for dosing								
Adenosine 3 mg/mL IV (0.1 mg/kg)		0.3 mg (0.1 mL)	0.5 mg (0.17 mL)	1 mg (0.33 mL)	1.5 mg (0.5 mL)	2 mg (0.67 mL)	2.5 mg (0.83 mL)	3 mg (1 mL)	4 mg (1.3 mL)	5 mg (1.7 mL)
Amiodarone 50 mg/mL IV/IO (5 mg/kg)		15 mg (0.3 mL)	25 mg (0.5 mL)	50 mg (1 mL)	75 mg (1.55 mL)	100 mg (2 mL)	125 mg (2.5 mL)	150 mg (3 mL)	200 mg (4 mL)	250 mg (5 mL)
Atropine 0.1 mg/mL IV/IO (0.02 mg/kg)		0.06 mg (0.6 mL)	0.1 mg (1 mL)	0.2 mg (2 mL)	0.3 mg (3 mL)	0.4 mg (4 mL)	0.5 mg (5 mL)	0.5 mg (5 mL)	0.5 mg (5 mL)	0.5 mg (5 mL)
Bicarbonate (Sodium) 8.4% (1 mEq/mL) IV/IO (1 mEq/kg)		3 mEq (3 mL)	5 mEq (5 mL)	10 mEq (10 mL)	15 mEq (15 mL)	20 mEq (20 mL)	25 mEq (25mL)	30 mEq (30 mL)	40 mEq (40 mL)	50 mEq (50 mL)
Dextrose 10% - IV/IO (5 mL/kg) (0.5 gm/kg)		1.5 gm (15 mL)	2.5 gm (25 mL)	5 gm (50 mL)	7.5 gm (75 mL)	10 gm (100 mL)	12.5 gm (125 mL)	15 gm (150 mL)	20 gm (200 mL)	25 gm (250 mL)
Dextrose 25% IV/IO (2 mL/kg) (0.5 gm/kg) *Mix ½ amp of D50 (25 mL) with 25 mL of normal saline = D25%*		1.5 gm (6 mL)	2.5 mg (10 mL)	5 gm (20 mL)	N/A	N/A	N/A	N/A	N/A	N/A
Dextrose 50% IV/IO (1 mL/kg) (0.5 gm/kg)		N/A	N/A	N/A	7.5 gm (15 mL)	10 gm (20 mL)	12.5 gm (25 mL)	15 gm (30 mL)	20 gm (40 mL)	25 gm (50 mL)
Diphenhydramine 50 mg/mL IM/IV (1 mg/kg)		N/A	N/A	10 mg (0.2 mL)	15 mg (0.3 mL)	20 mg (0.4 mL)	25 mg (0.5 mL)	30 mg (0.6 mL)	40 mg (0.8 mL)	50 mg (1 mL)
Epinephrine 0.1 mg/mL IV/IO (0.01 mg/kg) (for cardiac arrest)		0.03 mg (0.3 mL)	0.05 mg (0.5 mL)	0.1 mg (1 mL)	0.15 mg (1.5 mL)	0.2 mg (2 mL)	0.25 mg (2.5 mL)	0.3 mg (3 mL)	0.4 mg (4 mL)	0.5 mg (5 mL)
Epinephrine 1 mg/mL IM (0.01 mg/kg) (for anaphylaxis)		N/A	0.05 mg (0.05 mL)	0.1 mg (0.1 mL)	0.15 mg (0.15 mL)	0.2 mg (0.2 mL)	0.25 mg (0.25 mL)	0.3 mg (0.3 mL)	0.3 mg (0.3 mL)	0.3 mg (0.3 mL)
Epinephrine 10 mcg/mL IV – **Push Dose** (1 mcg/kg)		3 mcg (0.3 mL)	5 mcg (0.5 mL)	10 mcg (1 mL)	15 mcg (1.5 mL)	20 mcg (2 mL)	20 mcg (2 mL)	20 mcg (2 mL)	20 mcg (2 mL)	20 mcg (2 mL)
Fentanyl 50 mcg/mL IV/IO/IM/SC (1 mcg/kg)		N/A	5 mcg (0.1 mL)	10 mcg (0.2 mL)	15 mcg (0.3 mL)	20 mcg (0.4 mL)	25 mcg (0.5 mL)	30 mcg (0.6 mL)	40 mcg (0.8 mL)	50 mcg (1 mL)
Fentanyl 50 mcg/mL IN (2 mcg/kg)		N/A	10 mcg (0.2 mL)	20 mcg (0.4 mL)	30 mcg (0.6 mL)	40 mcg (0.8 mL)	50 mcg (1 mL)	60 mcg (1.2 mL)	80 mcg (1.6 mL)	100mcg (2 mL)
Glucagon 1 unit/mL IM		0.5 mg (0.5 mL)	0.5 mg (0.5 mL)	0.5 mg (0.5 mL)	0.5 mg (0.5 mL)	1 mg (1 mL)	1 mg (1 mL)	1 mg (1 mL)	1 mg (1 mL)	1 mg (1 mL)
Hypertonic 3% saline ONCE; max 500mL (For Increased Intracranial Pressure)		12 mL	20 mL	40 mL	60 mL	80 mL	100 mL	120 mL	160 mL	200 mL
Ketamine 10mg/ml IV/IO (0.2mg/kg) (for pain)		N/A	N/A	N/A	N/A	4mg (0.4ml)	5mg (0.5ml)	6mg (0.6ml)	8mg (0.8ml)	10mg (1ml)
Ketamine 50mg/ml IV/IO (0.2mg/kg) (for pain)		N/A	N/A	N/A	N/A	4mg (0.08ml)	5mg (0.1ml)	6mg (0.12ml)	8mg (0.16ml)	10mg (0.2ml)
Ketamine 100mg/ml IV/IO (0.2mg/kg)		This concentration not recommended for IV/IO administration in pediatric patients								
AGE		0-3 m	6 m	9-24 m	3 y	6 y	8 y	10 y	12 y	14 y
WEIGHT	lbs	6-7	11	20	30	40	50	60	80	100
	kg	3	5	10	15	20	25	30	40	50
VITAL SIGNS	Low Limit Systolic BP	60-70	70	70-75	75-80	80	80	85	85	90
	Pulse	100-180	100-180	90-160	80-140	70-130	70-130	60-120	60-120	60-120

AIRWAY	3.0-3.5	3.5	4.0-4.5	5.0	5.5	6.0	6.5	7.0	7.0
DEFIBRILLATION	6 J	10 J	20 J	30 J	40 J	50 J	60 J	80 J	100 J
DRUGS/IV FLUIDS									
Ketamine 10mg/ml IN (0.6 mg/kg)	This concentration not recommended for IN administration in pediatric patients								
Ketamine 50mg/ml IN (0.6 mg/kg) (for pain)	N/A	N/A	N/A	N/A	12mg (0.24ml)	15mg (0.3ml)	18mg (0.36ml)	24mg (0.48ml)	30mg (0.6ml)
Ketamine 100mg/ml IN (0.6 mg/kg) (for pain)	N/A	N/A	N/A	N/A	12mg (0.12ml)	15mg (0.15ml)	18mg (0.18ml)	24mg (0.24ml)	30mg (0.3ml)
Lidocaine 2% (20 mg/mL) IV/IO (1 mg/kg)(for cardiac arrest)	3 mg (0.15 mL)	5 mg (0.25 mL)	10 mg (0.5 mL)	15 mg (0.75 mL)	20 mg (1 mL)	25 mg (1.25 mL)	30 mg (1.5 mL)	40 mg (2 mL)	50 mg (2.5 mL)
Lidocaine 2% (20 mg/mL) (for numbing before IO infusions)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1 mL	1 mL
Methylprednisolone 62.5 mg/mL – IV/IO/IM/PO	N/A	N/A	N/A	30 mg (0.5 mL)	30 mg (0.5 mL)	60 mg (1 mL)	60 mg (1 mL)	60 mg (1 mL)	60 mg (1 mL)
Midazolam 5 mg/mL (Seizures – IM/IN/Buccal) (0.2 mg/kg)	0.6 mg (0.12 mL)	1 mg (0.2 mL)	2 mg (0.4 mL)	5 mg (1 mL)	5 mg (1 mL)	5 mg (1 mL)	5 mg (1 mL)	10 mg (2 mL)	10 mg (2 mL)
Midazolam 5 mg/mL (Seizures – IV) (0.1 mg/kg)	0.3 mg (0.06 mL)	0.5 mg (0.1 mL)	1 mg (0.2 mL)	1.5 mg (0.3 mL)	2 mg (0.4 mL)	2.5 mg (0.5 mL)	3 mg (0.6 mL)	4 mg (0.8 mL)	5 mg (1 mL)
Midazolam 5 mg/mL (Sedation – IV/IO) (0.1 mg/kg)	0.3 mg (0.06 mL)	0.5 mg (0.1 mL)	1 mg (0.2 mL)	1.5 mg (0.3 mL)	2 mg (0.4 mL)	2.5 mg (0.5 mL)	3 mg (0.6 mL)	4 mg (0.8 mL)	5 mg (1 mL)
Midazolam 5 mg/mL (Sedation – IM/IN) (0.2 mg/kg)	0.6 mg (0.12 mL)	1 mg (0.2 mL)	2 mg (0.4 mL)	3 mg (0.6 mL)	4 mg (0.8 mL)	5 mg (1 mL)	6 mg (1.2 mL)	8 mg (1.6 mL)	10 mg (2 mL)
Morphine sulfate 10 mg/mL IV/IM (0.1 mg/kg)	N/A	N/A	N/A	1.5 mg (0.15 mL)	2 mg (0.2 mL)	2.5 mg (0.25 mL)	3 mg (0.3 mL)	4 mg (0.4 mL)	5 mg (0.5 mL)
Naloxone 1 mg/mL All Routes (0.1 mg/kg)	0.3 mg (0.3 mL)	0.5 mg (0.5 mL)	1 mg (1 mL)	1.5 mg (1.5 mL)	2 mg (2 mL)	2 mg (2 mL)	2 mg (2 mL)	2 mg (2 mL)	2 mg (2 mL)
Normal Saline Bolus (20 mL/kg)	60 mL	100 mL	200 mL	300 mL	400 mL	500 mL	600 mL	800 mL	1000 mL
Ondansetron 2 mg/mL IV	N/A	N/A	1.5 mg (0.75 mL)	2 mg (1 mL)	3 mg (1.5 mL)	4 mg (2 mL)	4 mg (2 mL)	4 mg (2 mL)	4 mg (2 mL)
Ondansetron 4 mg tablet	N/A	N/A	N/A	4 mg	4 mg	4 mg	4 mg	4 mg	4 mg
Prednisolone 3 mg/mL liquid	N/A	N/A	N/A	30 mg (10 mL)	30 mg (10 mL)	60 mg (20 mL)	60 mg (20 mL)	60 mg (20 mL)	60 mg (20 mL)
Prednisone 20 mg tablets	N/A	N/A	N/A	30 mg (1.5 tabs)	30 mg (1.5 tabs)	60 mg (3 tabs)	60 mg (3 tabs)	60 mg (3 tabs)	60 mg (3 tabs)
Tranexamic Acid 10 mg/mL *Mix 1 gram Tranexamic Acid in 100 mL of normal saline = 10 mg/mL*	45 mg (4.5 mL)	75 mg (7.5 mL)	150 mg (15 mL)	225 mg (22.5 mL)	300 mg (30 mL)	375 mg (37.5 mL)	450 mg (45 mL)	1000 mg (100 mL)	1000 mg (100 mL)

Updated 2025. Use of a commercial product is also acceptable for dosages.

N/A = Do not use in this age category; call Medical Control

KY - ALL

I. INTRODUCTION:

A. Landing zone and Safety. Without exception, safety is air medical service's top priority.

II. Requesting a helicopter

A. Private Citizens - call 9-1-1.

B. Police, fire and EMS - Request a helicopter through the appropriate agency, such as your dispatch center, with the following information:

1. Location cross street
2. Location LAT/LONG coordinates
3. Any prominent features at the scene
4. Your call-back number
5. Scene radio frequency and CTCSS tone.
6. Call sign of LZ (landing zone) Command. One person should be designated to coordinate LZ setup and communicate with responding aircraft. This person should not be involved with patient care.
7. Weather, including low ceilings, poor visibility, icing, and high winds.
8. Patient status such as number, condition, age, approximate patient weight, mechanism of injury, and hazards.
9. ALWAYS RELAY ANY INFORMATION PERTAINING TO HAZMAT TO THE COMMUNICATIONS CENTER WHEN REQUESTING AIR MEDICAL SERVICE.

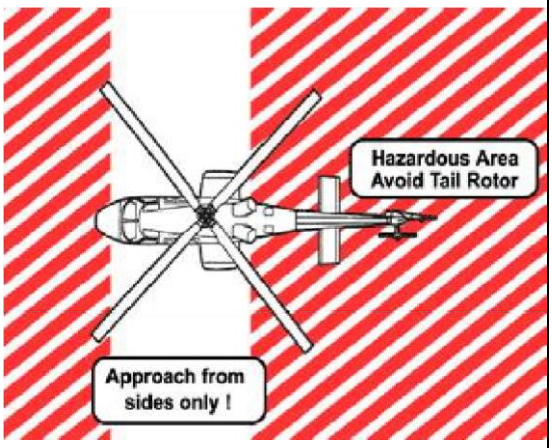
C. Notify all involved communications centers if any other air medical service has been contacted and the status of that agency. Always inform all communications centers if other aircraft are anticipated to be in the area.

III. LZ details

A. The preferred landing zone is 100 x 100 feet.

B. Important Tips

1. Never approach the aircraft until instructed to do so and only as instructed by the pilot or flight crew aboard.
2. Approach angles over obstacles should be less than 20 degrees
3. Always keep LZ clear of people and other potential hazards
4. Under no circumstances should you ever approach the aircraft from the rear



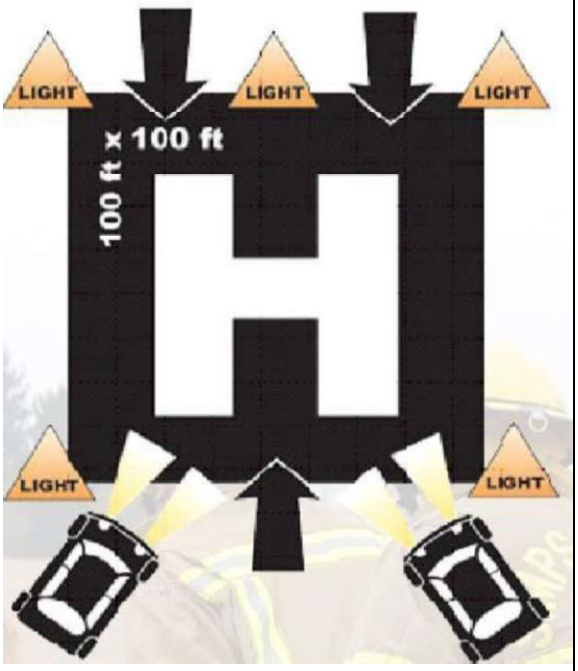
IV. Landing Zone Setup

A. Set up the LZ as follows:

1. SIZE should be 100 feet by 100 feet
2. LEVEL: Select a LZ as level as possible (minimal slope)
3. LANDING SURFACE: Select a hard surface, grassy surface, or hard- packed snow. Avoid loose dirt, dust, or powder snow.
4. CLEAR OVERHEAD free of obstructions such as wires, antennas, or poles
5. CLEAR AREA free of debris, large rocks, posts, stumps, vehicles, people, animals, and other hazards
6. MARK THE AREA clearly using five weighted cones or beacons, one at each corner of the LZ and one on the side that wind is coming from
7. SELECT AN ALTERNATE LZ. Plan for an alternate LZ because the pilot may determine your LZ to be unsafe.
8. HAZMAT: Always relay any information pertaining to HAZMAT to the communications center when requesting air medical service. Always inform the pilot and medical crew of HAZMAT. When selecting a LZ find a site at least 1/4 to 1 mile UPWIND from the incident depending on the type and materials involved. Avoid low areas where vapors may collect. The patient must be removed from the hot zone. All patients must be decontaminated PRIOR to flight.

B. When the helicopter is overhead
   1. Air medical service will establish radio contact on the assigned frequency with LZ Command three to five minutes out. Describe the following:
      a. LZ location
      b. Lighting
      c. Hazards
      d. Overhead wires, including wires along the approach path to the LZ
      e. Obstructions
      f. Slope
      g. Surface conditions
      h. Wind direction and speed if known
   2. Maintain radio contact at all times until the helicopter has landed, loaded, and departed the area.

C. Night Landing Zone
   1. **DO NOT SHINE LIGHTS DIRECTLY AT THE HELICOPTER**
   2. Set up night landing zones with five strobes or other secured lights. Do not use cones, flares, or tape to mark the site.
   3. Emergency vehicles may be parked so their headlights intersect the middle of the landing site and/or parked underneath wires to mark them. Turn strobes of emergency vehicles off as the aircraft approaches.
   4. Lights may be shown onto poles indicating wires between the poles
   5. Night landing zones always require good communications, lighting, and alertness
   6. Turn off all emergency lights after aircraft has started approach
   7. One strobe should be on the side that the wind is coming from
   8. If no strobes are available mark with other lighting systems
   9. If no other portable lights are available, cross headlight beams into the wind at the center of the landing zone



V. Helicopter Utilization Criteria for Scene Response

A. Purpose:
   1. Air Medical Services (AMS) are a valuable, yet limited resource in the Commonwealth. It is important that Emergency Medical Service personnel utilize consistent and appropriate criteria when requesting an air medical service for assistance with patient care and transport.
   2. The following represents a combination of the current criteria in use throughout the state. These criteria are consistent with national AMS utilization criteria. It is important that review of appropriate helicopter utilization be a part of EMS training, as well as a component of the agency and regional level retrospective quality assurance process.

B. Criteria:
   1. The helicopter is an air ambulance and an essential part of the EMS system. It may be considered in situations wherein:
      a. The use of the helicopter would speed a patient's arrival to the hospital capable of providing definitive care and this is felt to be significant to the patient's condition,

or;

b. If specialized services offered by the air medical service would benefit the patient prior to arrival at the hospital.

2. The following criteria should be used when considering use of an air medical service:
   a. The patient's condition is a "life or limb" threatening situation demanding intensive multidisciplinary treatment and care. This may include but not be limited to:
      i. Patients with physical findings defined in the adult and pediatric major trauma protocols (see attached)
      ii. Critical burn patients (see attached)
      iii. Critically ill medical patients requiring care at a specialized center to include, but not be limited to acute stroke or ST elevation MI.
      iv. Patients in cardiac arrest who are not hypothermic should be excluded from these criteria
3. Dispatch, Police, Fire or EMS will evaluate the situation/condition and if necessary, may place the helicopter on standby.
4. The helicopter may be requested to respond to the scene when:
   a. ALS personnel request the helicopter.
   b. BLS personnel request the helicopter, when ALS is delayed or unavailable.
   c. In the absence of an EMS agency, any emergency service may request the helicopter, if it is felt to be medically necessary.
5. When EMS arrive, they should assess the situation. If the MOST HIGHLY TRAINED EMS PERSONNEL ON THE SCENE determine, that the helicopter is not needed, it should be cancelled as soon as possible.
6. When use of air medical services is not specifically defined by the protocol, the on scene EMS provider should establish communication with medical control to discuss the situation with the on line physician.
7. Air medical services may be considered in situations where the patient is inaccessible by other means or, if utilization of existing ground transport services threatens to overwhelm the local EMS system.
8. The destination facility will be determined by the AMS crew based upon medical appropriateness with consideration for patient preference and on line medical direction, in compliance with regional protocols.
9. An EMS service should not wait on the scene or delay transport waiting for the helicopter to arrive. If the patient is packaged and ready for transport, the EMS service should initiate transport to the hospital and reassign the landing zone. The helicopter may intercept with an ambulance during transport at an alternate- landing site.

THIS IS A GUIDELINE AND IS NOT INTENDED TO SPECIFICALLY DEFINE EVERY CONDITION IN WHICH AIR MEDICAL SERVICES SHOULD BE REQUESTED. GOOD CLINICAL JUDGEMENT SHOULD BE USED AT ALL TIMES.

C. Transfer of Patient Care, Documentation and Quality Assurance:
   1. As with other instances where care of a patient is transferred, it is expected that all patient related information, assessment findings and treatment will be communicated to the flight crew.
   2. At the completion of the EMS call, all of the details of the response, including, but not limited to all patient related information, assessment findings and treatment must be documented.
   3. As with all EMS responses, helicopter utilization, the treatment and transportation of patients will be reviewed as a part of a Quality Assurance process.

VI. Guidelines for Helicopter Utilization Criteria for Scene Response

A. ADULT MAJOR TRAUMA
   1. GCS less than or equal to 13
   2. Respiratory Rate less than 10 or more than 29 breaths per minute
   3. Pulse rate is less than 50 or more than 120 beats per minute
   4. Systolic blood pressure is less than 90mmHg
   5. Penetrating injuries to head, neck, torso or proximal extremities

6. Two or more suspected proximal long bone fractures
7. Suspected flail chest
8. Suspected spinal cord injury or limb paralysis
9. Amputation (except digits)
10. Suspected pelvic fracture
11. Open or depressed skull fracture

B. PEDIATRIC MAJOR TRAUMA
1. Pulse greater than normal range for patient's age
2. Systolic blood pressure below normal range
3. Respiratory status inadequate (central cyanosis, respiratory rate low for the child's age, capillary refill time greater than two seconds)
4. Glasgow coma scale less than 14
5. Penetrating injuries of the trunk, head, neck, chest, abdomen or groin
6. Two or more proximal long bone fractures
7. Flail chest
8. Combined system trauma that involves two or more body systems, injuries or major blunt trauma to the chest or abdomen
9. Spinal cord injury or limb paralysis
10. Amputation (except digits)

C. CRITICAL BURNS
1. Greater than 20% Body Surface Area (BSA) second or third degree burns
2. Evidence of airway/facial burns
3. Circumferential extremity burns

**Note that for patients with burns and coexisting trauma, the traumatic injury should be considered the first priority and the patient should be triaged to the closest appropriate trauma center for initial stabilization.

D. CRITICAL MEDICAL CONDITIONS
1. Suspected Acute Stroke
   a. Positive Cincinnati Pre-hospital Stroke Scale
   b. Total prehospital time (time from when the patient's symptoms and/or signs first began to when the patient is expected to arrive at the Stroke Center) is less than two (2) hours.
2. Suspected Acute Myocardial Infarction
   a. Chest pain, Shortness of breath or other symptoms typical of a cardiac event
   b. EKG findings of o ST elevation 1mm or more in 2 or more contiguous leads OR LBBB (QRS duration >.12msec and Q wave in V1 or V2

Additional Appendices to Download:

Appendix L: Protocol Medication List
https://www.academyofmedicine.org/aws/AOMC/asset_manager/get_file/935175
Appendix M: Medication Substitution
https://www.academyofmedicine.org/aws/AOMC/asset_manager/get_file/934340
Appendix N: EMS Scope of Practice
https://www.academyofmedicine.org/aws/AOMC/asset_manager/get_file/934339
Appendix O: Dispensing of Prophylactic Antibiotics
https://www.academyofmedicine.org/aws/AOMC/asset_manager/get_file/934338
Appendix P: Department Site Visit Report
https://www.academyofmedicine.org/aws/AOMC/asset_manager/get_file/934348
Appendix Q: Blood Collection by EMS Providers
https://www.academyofmedicine.org/aws/AOMC/asset_manager/get_file/934347
Appendix R: DNR Forms
https://www.academyofmedicine.org/aws/AOMC/asset_manager/get_file/934345
Appendix S: Communication Variance Form
https://www.academyofmedicine.org/aws/AOMC/asset_manager/get_file/935176
Appendix T: ED Notification Numbers
https://academyofmedicine.org/aws/AOMC/asset_manager/get_file/935177
Appendix U: Medication Monographs
https://academyofmedicine.org/aws/AOMC/asset_manager/get_file/935178
Appendix V: Site Capabilities Survey Pending