ACADEMY OF MEDICINE OF CINCINNATI

PROTOCOLS and STANDING ORDERS for PARAMEDIC SERVICES in SW OHIO

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ADMINISTRATIVE PROTOCOLS (A)

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MEDICAL PROBLEMS (M)

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Administrative Protocols

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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 that 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 ready available to the paramedics at their base station(s) and in their life squads.

C. It is recognized by the parties hereto 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 law. 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 may also include three representatives appointed by the Hamilton County Fire Chiefs Association; one representative from the Tri State Trauma Coalition, one representative from the Metropolitan Medical Response System and one representative from the Health Council. Other members will be considered on a case-by-case basis. The chairman 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. One member of this committee will be designated to coordinate disaster planning.
3. Southwest Ohio Pre-Hospital Care Operations Committee (SWOPHCOC):
   a. The SWOPHCOC will be an 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 SWOPHCOC 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 physician member of the Academy of Medicine appointed by the president of the Academy. 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. 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.
6. Other County Fire Chiefs Associations: Other County Fire Chiefs Associations may adopt the Southwest Academy of Medicine Administrative Protocols and Procedures for Paramedic Services and Southwest Ohio Academy of Medicine Protocols and Standing Orders for Paramedic Service 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.

II. ADMINISTRATIVE PROTOCOLS

A. Two Paramedics Per Run.

1. Except as otherwise provided in these Protocols or, by the Academy of Medicine, two (2) certified paramedics shall be on the scene for any situation where the Protocols and Standing Orders for Paramedic Services are utilized as the authority to act. One paramedic may transport a patient to the hospital (with a non-paramedic driver) except in the following circumstances, where two paramedics shall be present (although one of the paramedics may be the driver), it is recommended that both paramedics be in back if possible:
   a. Patient under CPR;
   b. Patient with major trauma or burns;
   c. Patient unconscious;
   d. Patient actively seizing;
   e. Patient suffering airway compromise or significant respiratory distress;
   f. Patient with chest pain clinically compatible with myocardial infarction
   g. Patient with deteriorating condition or vital signs;
   h. Any situation where one medic feels that he/she needs the assistance of a second medic

2. These requirements apply to both primary responder units and back-up units. Scheduling for back-up units shall provide for the availability of two paramedics to respond just as with the primary unit.
3. If unplanned circumstances arise where only one paramedic is available to respond, the paramedic shall call for mutual aid or back-up response, if needed (see a-h above). When one paramedic is unexpectedly alone, the paramedic shall perform life-saving paramedic skills as quickly as possible and transport the patient to the nearest appropriate medical facility as soon as possible.
4. In those situations or services where the two (2) required paramedics will arrive on the scene separately, the following provisions apply:
   a. The required two (2) paramedics shall be dispatched simultaneously;
   b. The second paramedic shall arrive on the scene within a reasonable amount of time under all of the circumstances;
   c. The second paramedic may be called off if the first paramedic determines that reliance upon the Protocols and Standing Orders for Paramedic Services will not be necessary;
   d. It is the responsibility of the Emergency Medical Service to document dispatch and response times for all paramedics in all situations where the two (2) required paramedics do not arrive at the scene in the same unit or simultaneously;
   e. If ten percent (10%) of the runs in any month result in only one (1) paramedic on the scene where care must be provided under the Protocols and Standing Orders for Paramedic Services by the one paramedic, then scheduling and any other changes necessary to correct such problem shall be made. Documentation of the problem and any corrective action shall be provided to the medical director and shall be included in the annual report to the EDS Committee;
   f. An Emergency Medical Service may obtain an advisory opinion from the EDS as to the reasonable amount of response time for the second required paramedic under the particular circumstances confronting the Emergency Medical Service requesting the opinion.
5. In any situation where there is a single paramedic on the scene intending to act under the Protocols and Standing Orders for paramedic services, communication with a base hospital physician shall be established, if at all possible.

B. <u>24-Hour Paramedic Service</u>
   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 EMT-Ps to provide 24-hour paramedic service.

C. <u>Voice Communication Capability</u>
   1. Each unit used to transport patients shall be equipped with appropriate voice communication capability.

D. <u>Continuing Education</u>
   1. Each paramedic employed by an emergency medical service to provide paramedic services under the auspices of the Academy of Medicine shall be certified by the State of Ohio, and shall meet all continuing education requirements.
   2. The Academy of Medicine may request additional training that it may deem necessary.

3. 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.

E. Required Drugs, IV Solutions, and Equipment for All Paramedic Services
1. Communication equipment capable of voice transmission and compatible with Academy of Medicine approved medical control base stations.
2. Cardiac monitor and defibrillator
3. Airway maintenance equipment, including but not limited to:
   a. oral airways;
   b. bag valve mask;
   c. suction apparatus;
   d. oxygen delivery equipment;
   e. laryngoscope and blades;
   f. ET tubes - various sizes;
   g. nasopharyngeal airways.
4. Pneumatic anti-shock garment (PASG) or MAST.
5. IV solutions including:
   a. normal saline;
   b. macro drip IV sets and micro drip piggy back IV sets
6. Rapid glucose monitoring capability with appropriate CLIA License;
7. Medications sufficient to follow Southwest Ohio Academy of Medicine Protocols
8. Other medications Approved by Medical Director
9. Documentation Regarding Compliance with Board of Pharmacy, State of Ohio and other Licensing bodies

F. All standard EMS equipment.
1. Pulse Oximeter
2. External Pacer
3. End Tidal CO_2 monitoring equipment (either colorimetric or electronic)
4. Esophageal Detector Device (EDD)
5. 12 Lead EKG Capabilities

G. Optional Equipment:
1. Manual Jet Ventilator Device
2. Needle Cricothyrotomy
3. IV Pump, Syringe Pump
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. (i.e. CPAP equipment)
5. Any devices needing manufacturers recommended calibration and service shall have records of such available for review.

H. Medical Director
1. Each emergency medical service shall have a medical director who shall be a licensed physician.
2. Duties of Medical Director:
   a. Assures the adequate training and continuing education of paramedics.

b. Assures the Southwest Ohio Academy of Medicine Protocols and Standing Orders for Paramedic Services are followed in the management of all patients cared for by the EMT-P's.
c. Assists in the development of medically related dispatch procedures and transportation policies.
d. Assists the administrative head in establishing criteria for patient disposition.
e. 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:
f. runs involving deaths;
g. cardiac arrests;
h. questioned runs or misadventures;
i. return runs within 24 hours same patient;
j. runs involving complaints;
k. runs involving DNRs;
l. a random sampling of 10% of the runs each month;
m. runs in which second paramedic did not arrive on the scene within reasonable amount of time.
    i. 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.

I. Variances
1. Application
    a. Any emergency medical service may apply to the EDS Committee for a variance from any of the provisions of the administrative protocols.
    b. 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.
2. Decision by EDS
    a. The EDS Committee shall, within 45 days of receipt of a request for a variance, conduct a hearing on the request.
    b. Prior notice shall be given to the EMS requesting a variance with an opportunity to be heard.
    c. 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.
    d. The EDS Committee may grant a variance with conditions including limits on the duration or terms and may impose alternative requirements.
3. Communication Variance Forms shall be submitted to the Medical Director and the EDS Committee for review.

III. COMPLIANCE PROCEDURES

A. Site Visits

1. A site visit is an inspection of an emergency medical service by members of the Compliance Committee (including at least one physician and one paramedic) to ensure compliance with the requirements of the Administrative Protocols and the Protocols and Standing Orders for Paramedic Services. The on-site physician member of the inspection team will lead the site visit process and be responsible for a site visit report. No member of the inspection team shall have any potential conflict of interest with the Emergency Medical Service being inspected.
2. 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 every three years thereafter.
3. The emergency medical service will be notified sixty (60) days in advance of a site visit and will receive a packet of material outlining the items to be inspected. The packet of material shall include any requests for information that can be completed in advance of the site visit.
4. In the course of the site visit, the Compliance Committee team shall inspect the following:
   a. Inspect the equipment required for all paramedic services under these administrative protocols.
   b. Document compliance of:
      i. Scheduling and response system (including times)
      ii. Certifications to include list of names of paramedics and EMT- B
      iii. EMT B's with certificate expiration dates with the intent to verify current certification of all paramedics and EMT-B's.
      iv. Organizational structure (including existence of appropriate Medical Director)
      v. Drug license and drug record
      vi. Review of continuing education, annual reports, squad run sheets, and all quality assurance programs. Squad run sheet review will include the form used and how it is completed. Patient identity should not be revealed.

B. Compliance Committee Report

1. Within 90 days of a site visit, the Compliance Committee shall issue its report, specifying any deficiencies discovered or setting forth its finding that the emergency medical service has successfully satisfied all of the requirements of the site visit. If no report is issued within 90 days of the site visit, a new site visit must be conducted before any deficiencies may be reported.
2. The Compliance Committee report shall be delivered to the Fire Chief and the administrative head of the emergency medical service, unless otherwise designated, in writing, at the time of the site visit; to the medical director of the emergency medical service; and to the chairman of the EDS Committee
3. The emergency medical service may respond in writing to the Compliance Committee report within 30 days of receipt of that report. The EMS response shall be delivered to the chair of the Compliance Committee and 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.

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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. Follow-up site visit
   b. Corrective action
   c. Probation
   d. Suspension
   e. 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); to the medical director of the EMS Department; to the members of the EDS Committee
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 Chairman of the EDS Committee or the President of the Academy of Medicine may grant a stay pending appeal.

IV. 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 Chairman
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:
   a. litigation is threatened or pending, until such litigation, including all appeals, is completed; or
   b. 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 chairman 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 Chairman

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

I. Calls may only be initiated from an Academy of Medicine paramedic department to an Academy of Medicine recognized medical control base station.

II. A call MUST be initiated:
   A. When required to do so in the applicable management protocol,
   B. When there is doubt about diagnosis, treatment, or disposition of the patient,
   C. For multiple casualty incidents greater than five (5) victims, or
   D. For radiation or other hazardous materials incidents are encountered.

III. A call MAY be initiated:
   A. When notification will speed or improve patient care or
   B. Whenever it is thought necessary by the paramedic.

IV. When a call is not possible, these protocols shall act as standing orders for procedures which may be performed by certified paramedics and paramedic trainees under the direct supervision of a certified paramedic. These protocols do not limit the activity of a paramedic who is in direct contact with the medical control physician. Certain procedures and medications require physician consultation prior to performance of the procedure or administration of the medication. These procedures are noted in the individual protocols. Under certain circumstances, an exception is permitted when communication problems are encountered. In these cases, a communication variance form is to be completed.

V. All protocols requiring or encouraging contact with medical control include:
   A. Non-transport of Insulin Dependent Diabetic Patients M406
   B. Toxicologic Emergencies M411
   C. Trauma Patient Assessment and Transport Guidelines S506
   D. Newborn Resuscitation P600
   E. Pediatric Pulseless Arrest P601
   F. Pediatric Bradycardia P602
   G. Pediatric Supraventricular Tachycardia P603
   H. Pediatric Ventricular Fibrillation and Ventricular Tachycardia P604
   I. Mark-1 Kit Protocol Appendix C
   J. Management of Mass Casualty Incident Appendix E

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COMMUNICATIONS VARIANCE FORM– A202
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This form must be completed whenever a medication is administered or a procedure is performed which falls out of the scope of the Academy of Medicine Protocols and Standing Orders or falls out of the scope of a previously approved protocol by the specific emergency medical service's medical director.

Service: _____ Date: _____ Time: _____

Lead Paramedic: _____

Type of Procedure performed or Medication Administered: _____

Medical Control Facility that was attempted to be contacted: _____

Time of first attempt: _____ Number of attempts: _____

Method of attempts: ❑ Radio ❑ Cellular Telephone ❑ Land Telephone ❑ Other

Narrative description of event: _____

Copy 1: EMS Service Copy 2: Hospital EMS Coordinator Copy 3: Compliance Committee

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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 advisor or on-line medical control physician are generally responsible for patient care.

Physician With out Previous Doctor-Patient Relationship

I. 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:
   A. Proof of the physician's identity and current Ohio licensure must be provided to the senior EMT-P.
   B. The physician must agree to accompany the patient to the hospital.
   C. 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.
   D. The physician at the scene must agree to sign his or her orders.

II. 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 EMT-P.

III. Any orders or procedures outside of the EMT-P's scope of practice will have to be carried out personally by the on-scene physician.

IV. <u>Physician with Previous Doctor-Patient Relationship</u>
   A. As a general rule, it is desirable that the EMT-P's 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 physicians' Ohio license number will be recorded on the run report.
      2. Orders within the scope of training and practice of the EMT-P will be carried out.
      3. Orders outside the scope of training and practice of the EMT-P 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.

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.

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In Pre-Hospital Trauma situations the follow considerations should be reviewed:

I. In cases of significant trauma, transport to a trauma center should be considered. Individual circumstances may demand flexibility and judgment on the part of the responsible paramedic or physician. These guidelines are not to be construed as mandatory or all-inclusive.

II. Time, distance, and patient condition are extremely important variables to consider when triaging injured patients to hospitals. In the rural environment, an injured patient may be at a substantial distance from a trauma center. Such patients may be treated initially at the nearest JCAHO approved (24 hour physician coverage) emergency facility.

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Protocol

1. Advanced cardiac life support must be started on all patients who are found apneic and pulseless, UNLESS:
   A. The emergency care providers are presented with a valid Do Not Resuscitate order as defined in the Do Not Resuscitate protocol, OR
   B. There is an injury that is obviously incompatible with life. Examples are decapitation or burned beyond recognition, OR
   C. The victim shows signs of rigor mortis (in a warm environment), dependent lividity, or decomposition, OR
   D. The mechanism of injury is blunt trauma; and the victim has no vital signs, no signs of life such as breathing activity or movement, and asystole on the cardiac monitor, OR
   E. The mechanism of injury is penetrating trauma; and the victim has no vital signs, no signs of life such as breathing activity or movement, asystole on the cardiac monitor, and the cardiac arrest occurred before the arrival of EMS personnel. If the cardiac arrest occurs after the arrival of EMS personnel, the patient MUST be transported immediately to the nearest appropriate hospital.
2. Once started, resuscitation efforts must be continued until the resuscitation is terminated by a physician. When ***all*** of the following circumstances exist, advanced cardiac life support may be stopped prior to hospital arrival:
   A. There must be good contact between the paramedic unit and the medical control physician.
   B. There must be at least two paramedics on the scene during the resuscitation effort.
   C. There must have been early, successful endotracheal intubation and medication administration.
   D. Resuscitative efforts have been tried for at least 25 minutes.
   E. There has NOT been any restoration of spontaneous circulation with a spontaneous palpable pulse for at least one five-minute period at any time during the resuscitation.
   F. The patient does NOT have spontaneous respiration; eye opening, motor response, or other continued neurologic activity at the time stopping resuscitation is contemplated.
   G. The cardiac rhythm is NOT persistent or recurrent ventricular fibrillation or ventricular tachycardia. If persistent or recurrent ventricular fibrillation or ventricular tachycardia is present, then resuscitative efforts should be continued until hospital arrival.
   H. All paramedics and the medical control physician must be in agreement concerning termination of ACLS.
   I. The cause of the cardiac arrest must be something other than drowning, hypothermia, acute airway obstruction, overdose, electrocution, lightning strike, or trauma.

Notes

A. The purpose behind the termination of ACLS in the field is to keep paramedic units in-service for emergencies instead of transporting non-salvageable patients under ACLS. This protocol provides a method for terminating ACLS in hopeless cases.
B. 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.

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Protocol

1. All home care Do Not Resuscitate (DNR) orders must be dated and signed by the patient and at least two witnesses or present a valid Ohio DNR Comfort Care or DNR Comfort Care Arrest documents.
   A. Home care DNR's shall not expire unless the document specifies a time for expiration. If the patient lacks capacity to make informed health care decisions on the date the DNR would expire, then the DNR shall continue in effect until the patient regains the capacity to make informed health care decisions for himself.
2. DNR's set forth in long-term care facility medical records shall be signed by the attending physician and dated.
   A. DNR's set forth in long-term care facility medical records shall not expire unless the document specifies a time for expiration. If the patient lacks capacity to make informed health care decisions on the date the DNR would expire, then the DNR shall continue in effect until the patient regains the capacity to make informed health care decisions for himself.
3. In the event a DNR is presented to an EMT, communication with a base hospital physician, EMS medical advisor, family physician or physician on the scene shall be established.
   A. A DNR may be honored in accordance with the provisions of this protocol where it is determined that the patient is in a terminal condition and the patient is no longer capable of making informed decisions.
   B. A DNR may not be honored where the patient is pregnant, where withholding CPR would terminate the pregnancy, and where it is probable that the fetus will develop to the point of live birth if treatment is provided.
   C. If the EMT believes a DNR is valid, there is no need to commence CPR while waiting for physician orders. If the EMT has any doubt, the EMT need not comply with the DNR (and may commence CPR) unless and until a physician has verbally authorized compliance. Such authorization shall be documented by the EMT's in the run report.
4. 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, family physician or physician on the scene to withhold CPR, the EMT shall provide CPR to the patient and shall document the reasons for not complying with the DNR.
5. 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 upon specific verbal authorization from a base hospital physician, EMS medical advisor, family physician, or physician on the scene. Documentation shall be made on the run sheet indicating the events that happened set forth in chronological order, including the authorization to stop CPR in the field. 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.
6. A DNR signed by both parents of a minor child or by the spouse of a patient in a terminal condition who is no longer able to make informed decisions, and signed by two witnesses, may be honored.
7. If possible a copy of the DNR shall be attached to the medical record.

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MEDICAL REPORT FORMAT: EMS agencies and personnel should use the following 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. EMS personnel identification i.e. (Medic Smith, EMT Jones)
C. Estimated time of arrival to hospital, including destination, if applicable.
D. Patient's age and sex.
E. Mechanism of injury (if applicable)
F. Chief complaint.
G. Pertinent medical history and physical exam
H. Treatment given
I. Orders requested, if necessary.

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 considered to be standing orders except if a question arises concerning the planned treatment.
C. EMS providers. 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 pre-hospital 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.

Emergency Department	Hospital Base Station*	Notification / ED Number
Bethesda North	**984-8375**	745-1112
Children's (Stat line)	**636-8008**	
Christ	**NONE**	585-0783
Deaconess	**NONE**	559-2236
Good Samaritan	**221-5818**	872-2536
Jewish Kenwood	**686-3184**	686-3204
Mercy Anderson	**624-4634**	624-4634
Mercy Fairfield	**NONE**	870-7007
Mercy Franciscan Mt Airy	**681-8353**	541-5550
Mercy Franciscan Western Hills	**681-8353 (Mt. Airy)**	389-5222
Middletown Regional Hospital	**424-3924**	420-5017
University Air Care	**NONE**	584-7522
University	**584-7760 / 861-5128**	
Veterans	**NONE**	475-6509

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E. 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 three (3) years. Some hospitals may elect not to assume EMS Medical Control and just want to be notified; therefore EMS Command will default to University Hospital.

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Cardiac Treatment Protocols (C)

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Historical Findings
1. Patients greater than 14 years old
2. Patient is unconscious

Physical Findings
1. Patient is unresponsive.
2. Patient is without a pulse

EKG Findings
1. Ventricular fibrillation or
2. Ventricular tachycardia

Protocol
1. If arrest is witnessed by EMS or good bystander CPR is in progress for at least 2 minutes go to step 3.
2. Begin the performance of 5 cycles (approximately 2 minutes) of CPR (30 compressions to 2 respirations) at a rate of 100 beats per minute before defibrillation. Assure that good CPR is being performed with adequate uninterrupted compressions and rise and fall of chest with ventilation.
3. 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.
4. If rhythm is ventricular fibrillation or ventricular tachycardia, **DEFIBRILLATE IMMEDIATELY AT 360 JOULES** (or biphasic equivalent).
5. Resume CPR no pulse or rhythm check indicated. Chest compressions should be interrupted for as short of a time period as possible. Perform CPR for 5 cycles approximately 2 minutes.
6. Establish an airway on the patient. Ventilate **SLOWLY** at about 8 to 10 breaths per minute.
7. Initiate IV/IO with normal saline at keep open rate.
8. Recheck rhythm after 5 cycles of CPR are complete. Interruption in CPR to conduct a rhythm analysis ideally should not exceed 10 seconds.
9. If rhythm has converted to a perfusion rhythm consider giving Amiodarone 150 mg IV/IO over 10 minutes. If rhythm is still VF or VT, **defibrillate again at 360 joules** (or biphasic equivalent) and continue with protocol.
10. Resume CPR.
11. Administer either epinephrine or vasopressin
    A. Epinephrine 1 mg (10 ml of 1:10,000) IV/IO push. Repeat every 3 to 5 minutes as long as cardiac arrest continues.
    B. A single dose of Vasopressin 40 U IV/IO can be administered to replace the first dose of Epinephrine
12. Recheck rhythm after 5 cycles of CPR are complete.
13. If rhythm is still VF or VT, **defibrillate again at 360 joules** (or biphasic equivalent).
14. Resume CPR

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15. Administer antiarrhythmic (choose one, if ineffective use the other)
    A. Amiodarone 300 mg IV/IO push. Repeat amiodarone 150 mg IV push in 3 - 5 minutes if still in VF/VTach
    B. If Amiodarone is not available then Lidocaine 1.5 mg/kg IV/IO push. Repeat lidocaine 0.5 to 0.75 mg/kg IV in 3-5 minutes if still in VF/VTach.
16. Recheck rhythm after 5 cycles of CPR are complete.
17. **Defibrillate at 360 joules** after each drug administration.
18. Consider bicarbonate 1 mEq/kg IV push for preexisting metabolic acidosis, hyperkalemia, or tricyclic antidepressant overdose.
19. Continue CPR, monitor, transport, and contact receiving hospital as soon as possible.

Notes

A. Good uninterrupted CPR is considered the mainstay of therapy for Cardiac Arrest victims.
B. If a patient develops a perfusing rhythm, AHA recommends that CPR be continued for 5 more cycles to support cardiac output.
C. Consider H's and T's (see C301)
D. ET administration of drugs is acceptable but not preferable. Amiodarone and Vasopressin cannot be given ET. ET administration is double the normal dose with 10 cc NS flush afterwards.
E. IV medications given through a peripheral vein should be followed by a 20-ml bolus of IV fluid.
F. The value of sodium bicarbonate is questionable during cardiac arrest and it is not recommended for the routine cardiac arrest sequence. Consideration of its use at the point listed in the protocol is appropriate

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Historical Findings
1. Patients greater than 14 years old
2. Patient is unconscious.

Physical Findings
1. Patient is unresponsive.
2. Patient has no pulses.

EKG Findings
1. There is some type of electrical activity other than ventricular fibrillation or ventricular tachycardia.

Differential Diagnosis
1. Hypovolemia
2. Hypoxia
3. Hydrogen Ion (acidosis)
4. Hypo/Hyperkalemia
5. Hypoglycemia
6. Hypothermia
7. Toxins-Drug overdose
8. Tamponade, cardiac
9. Tension Pneumothorax
10. Thrombosis (cardiac or pulmonary)
11. Trauma

Protocol
1. Begin CPR and maintain adequate airway. Chest compressions should be interrupted for as short of a time period as possible. Begin the performance of 5 cycles (approximately 2 mintues) of CPR (30 compressions to 2 respirations) at a rate of 100 beats per minute.
2. Apply quick look paddles or pads if not already monitored.
3. Attach monitor leads.
4. Establish Airway. Ventilate **SLOWLY** at about 8 to 10 breaths per minute.
5. Initiate large bore IV/IO of normal saline and begin to administer 1-liter wide open if hypovolemic arrest is suspected.
6. Administer either epinephrine or vasopressin
   a. Epinephrine 1 mg (10 ml of 1:10,000) IV/IO push. Repeat every 3 to 5 minutes as long as cardiac arrest continues.
   b. A single dose of Vasopressin 40 U IV/IO may be administered to replace the first dose of Epinephrine
7. If EKG rate < 60, then administer atropine 1 mg IV/IO every 3-5 minutes up to 3 mg max dose.
8. Search for possible causes of Asystole/PEA as listed above.
9. Recheck rhythm after every 5 cycles of CPR are complete. Interruption in CPR to conduct a rhythm analysis ideally should not exceed 10 seconds.

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10. Consider termination of resuscitative efforts as detailed in the Determination of Death / Termination of ACLS protocol.
11. If transporting notify receiving hospital

Consider the following:

1. Sodium bicarbonate 1 mEq/kg IV push for preexisting metabolic acidosis, hyperkalemia, or tricyclic antidepressant overdose.
2. Needle thorocostomy.
3. Transcutaneous pacing.

Notes

A. A main cause of PEA is hypoxia, and the effectiveness of ventilation should be evaluated constantly.
B. ET administration of drugs is acceptable but not preferable. ET administration is double the normal dose with 10 cc NS flush afterwards. Vasopressin cannot be given by ET.

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Historical Findings
1. Patients greater than 14 years old
2. 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.

Physical Findings
1. Pulse rate < 60.
2. Systolic blood pressure < 80 mmHg, cardiogenic shock, or pulmonary edema.
3. Signs of inadequate perfusion such as acute heart failure, delayed capillary refill, diaphoresis, or altered mental status.

EKG Findings
1. Ventricular rate < 60.

Protocol
1. Apply quick look paddles if not already monitored.
2. Assure airway patency and administer 0_2 at high flow and high concentration, preferably by non-rebreather facemask at 12-15/min.
3. Place on monitor, obtain 12 lead EKG. If patient demonstrates Acute MI on EKG, call medical control before administering medications or pacing.
4. Check vital signs frequently.
5. Initiate IV of normal saline at keep open rate.
6. Administer atropine 0.5 mg IV push.
7. Notify receiving hospital.
8. Consider external pacing (see External Pacemaker Protocol).
9. If no response to initial measures, repeat atropine 0.5 mg IV push every 3-5 minutes up to a total of 3.0 mg.
10. Consider a dopamine drip to run at 2-10 mcg/kg/min IV, titrate to adequate perfusion.
11. For patient comfort during pacing consider Versed 2-4 mg IV/IM until patient's speech slurs or a total of 8 mg is given.

Notes
A. 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.
B. 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.

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VENTRICULAR TACHYCARDIA WITH PULSE – C303
UNSTABLE

Historical Findings
1. Patients greater than 14 years old
2. Patient complains of chest pain, or shortness of breath.

Physical Findings
1. Palpable pulse with a rate > 150.
2. Systolic blood pressure less than 90 mm Hg, or
3. Signs of inadequate perfusion such as acute heart failure, delayed capillary refill, diaphoresis, or altered mental status.

EKG Findings
1. Rate above 150.
2. Wide QRS (> 0.12 sec or 3 little blocks).
3. Absent P waves.

Protocol
1. Assure airway patency and administer 0_2 at high flow and high concentration, preferably by non-rebreather facemask at 12-15/min.
2. Maintain cardiac monitoring at all times.
3. Initiate large bore IV with normal saline to run at keep open rate.
4. If the patient is to be cardioverted and does not have an altered level of consciousness, administer Versed 2-4 mg IV/IM until patient's speech slurs or a total of 8 mg is given.
5. If VT persists, cardioversion at 100 joules (or biphasic equivalent). Cardioversion should be synchronized unless it is impossible to synchronize a shock (ie. the patient's rhythm is irregular).
6. If VT persists, repeat cardioversion at 200 joules (or biphasic equivalent).
7. If VT persists, repeat cardioversion at 300 joules (or biphasic equivalent).
8. If VT persists, repeat cardioversion at 360 joules (or biphasic equivalent).
9. 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.
10. Notify the receiving hospital and transport the patient.

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Historical Findings
1. Patients greater than 14 years old
2. No associated symptoms such as chest pain, shortness of breath, depressed or altered level of consciousness

Physical Findings
1. Patient is conscious
2. Blood pressure greater than 90 mmHg systolic
3. Patient is without signs of inadequate perfusion (heart failure, delayed capillary refill, and diaphoresis)

EKG Findings
1. Rate above 150
2. Wide QRS (C 0.12 sec or 3 little blocks)
3. Absent P waves

Protocol
1. Assure airway patency and administer 0_2 at high flow and high concentration, preferably by non-rebreather facemask at 12-15/min.
2. Maintain cardiac monitoring at all times.
3. Initiate IV with normal saline to run at keep open rate.
4. Administer Amiodarone 150 mg IV/IO over 10 minutes.
5. If the ventricular tachycardia persists, Amiodarone may be repeated after 3-5 minutes at 150 mg over 10 minutes.
6. Notify the receiving hospital and transport the patient.

Notes
A. If the patient becomes unstable, then proceed to the Ventricular Tachycardia with Pulse (Unstable) protocol (C303).

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NARROW COMPLEX TACHYCARDIA WITH PULSE – C305 (STABLE)

Historical Findings
1. Patients greater than 14 years old

EKG Characteristics
1. Rapid (140-250), regular atrial rate.
2. Normal QRS duration of less than 0.12 seconds.
3. P waves are usually absent.

STABLE

Historical Findings
1. Patient does NOT have chest pain or shortness of breath.

Physical Findings
1. Patient is alert.
2. Systolic blood pressure is above 90 mm Hg.
3. Patient is without signs of inadequate perfusion (heart failure, delayed capillary refill, and diaphoresis)

Protocol
1. Oxygen by facemask or nasal cannula.
2. Place patient on monitor.
3. Establish proximal, large bore IV with normal saline at keep open rate.
4. Perform a 12 lead ECG
5. Have patient perform Valsalva.
6. Administer adenosine 6 mg followed by 10 ml of normal saline. If rhythm persists, then 12 mg of adenosine and a second syringe of 10 ml of normal saline should be administered. The adenosine is given rapid IV push followed *immediately* by the flush of normal saline.
7. If tachycardia persists and the rhythm is still thought to be PSVT consider adenosine 12 mg, rapid IV push by the method outlined above.
8. Notify the receiving hospital if patient fails to convert.
9. Begin transport.
10. Monitor patient frequently. If patient deteriorates, move to unstable arm of the PSVT protocol.

Notes
1. 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.
2. 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.

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UNSTABLE
The presence of **ANY** of the following criteria means this rhythm is unstable:

Historical Findings
1. Chest pain, or ***any of the physical following***:

Physical Findings
1. Systolic blood pressure below 90 mm Hg, or
2. Signs of inadequate perfusion such as acute heart failure, delayed capillary refill, diaphoresis, or altered mental status.

Protocol
1. Assure airway patency and administer 0_2 at high flow and high concentration, preferably by non-rebreather facemask at 12-15/min.
2. Place patient on monitor.
3. Establish IV with normal saline at keep open rate using regular drip tubing.
4. If the patient is to be cardioverted and does not have an altered level of consciousness, consider the administration of Versed 2-4 mg IV/IM until patient's speech slurs or a total of 8 mg is given.
5. Cardiovert using synchronization at 50 joules (or biphasic equivalent).
6. If no change, repeat with synchronization at 100 joules (or biphasic equivalent).
7. If no change, repeat with synchronization at 200 joules (or biphasic equivalent).
8. If no change, repeat with synchronization at 300 joules (or biphasic equivalent).
9. If no change, repeat with synchronization at 360 joules (or biphasic equivalent).
10. If patient converts out of Narrow Complex Tachycardia, perform 12 Lead EKG
11. Notify the receiving hospital and transport the patient.

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Medical Treatment Protocols (M)

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Historical Findings
1. Age over 25 years
2. Chest pain description suggests cardiac origin (heaviness, pressure, and tightness, dull) and *may* be accompanied by shortness of breath, diaphoresis, nausea, vomiting or weakness.
3. Pain is not clearly pleuritic or musculoskeletal. If any doubt exists, treat as cardiac.

Physical Findings:
1. Pulse between 60 and 140 beats per minute.

Differential Diagnosis
1. Non-cardiac chest pain
2. COPD
3. Cardiogenic shock
4. Arrhythmia

Protocol
1. Initial contact - reassure, explain procedures.
2. Assure airway patency and administer 0_2 at high flow and high concentration, preferably by non-rebreather facemask at 12-15/min.
3. Place patient on cardiac monitor and run rhythm strip. If not sinus rhythm between 60-140, go to arrhythmia protocols. Once arrhythmia is resolved then proceed.
4. Monitor vital signs frequently.
5. Perform 12- Lead ECG and if the ECG indicates an MI transmit the ECG (if capable) to the receiving hospital. If unable to transmit the ECG then notify the receiving hospital of the ECG findings.
6. Determine whether the patient has taken any Erectile Dysfunction medications i.e. sildenafil (Viagra); vardenafil (Levitra); or tadalafil (Cialis) in the previous 24 - 72 hours.
7. If the patient has not taken any of the above medications in the previous 24 – 72 hours depending on the medication taken, then administer nitroglycerin 0.4 mg sublingual as long as the BP > 100 systolic. If no relief of chest pain after 5 minutes and systolic BP > 100, administer a second nitroglycerin. If no relief after another 5 minutes and systolic BP > 100, administer a third nitroglycerin.
8. If the patient is not allergic to aspirin or non-steroidal anti-inflammatory drugs, then administer chewable aspirin 325 mg (4 baby ASA) orally. Aspirin should be withheld if the patient has had gastrointestinal bleeding, active ulcer disease, hemorrhagic stroke, or major trauma within the past two weeks or has already taken a dose of aspirin within the previous 24 hours.
9. Establish IV access with a saline lock or normal saline at a keep open rate. NOTE: If IV unsuccessful after three attempts, transport as below.
10. Begin transport
11. If chest pain persists after three nitroglycerin (0.4mg) doses notify the receiving hospital.
12. Morphine sulfate 2-4 mg IV over 2 minutes as long as systolic BP > 100 and pain persists. May repeat to a total of 10 mg.

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Notes

A. ECG acquisition should not delay initiation of transport by more than five to ten minutes.
B. Since early reperfusion treatment decreases morbidity and mortality, early notification of the receiving hospital about the patient with an ongoing acute chest pain syndrome is helpful in decreasing the time to treatment.
C. If the EKG indicates an inferior wall MI, be aware hypotension is common with nitroglycerine administration. Be prepared to administer a fluid bolus.
D. For sildenafil (Viagra) nitroglycerine may be given after 24 hours. If the patient has taken vardenafil (Levitra) nitroglycerin may be given after 48 hours. If the patient has taken tadalafil (Cialis) nitroglycerine may be given after 72 hours.

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Historical Findings
1. Age > 14.
2. History of chest pain suggestive of cardiac origin and/or dyspnea.
3. No evidence or history of trauma or bleeding.

Physical Findings
1. Systolic blood pressure $\leq$ 80 mm Hg supine, OR
2. Systolic blood pressure 80-100 mm Hg and one of the following:
   A. Pulse greater than 120,
   B. Skin changes suggestive of shock, OR
   C. Altered level of consciousness, agitation, or restlessness.

Protocol
1. Maintain airway and administer oxygen at high flow and high concentration preferably by non-rebreather facemask at 12-15/min.
2. Place patient on monitor and obtain rhythm strip. If dysrhythmia is present, proceed to the appropriate protocol.
3. Monitor vital signs frequently.
4. Transport as soon as possible and notify the receiving hospital.
5. Initiate large bore IV and administer 500-m1 normal saline fluid challenge if lungs are clear. If lungs are not clear, run IV at keep open rate.
6. Consider dopamine 800 mg in 500 ml IV fluid (1600 mcg/ml). The usual starting dose is 2-10 mcg/kg/min.

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Historical Findings
1. Patients older than 14 years of age.
2. Patient complains of shortness of breath or cannot speak because of airway obstruction.
3. MAY have history suggestive of foreign body aspiration such as sudden onset of shortness of breath while eating.

Physical Findings
1. Airway exam has little or no air movement, stridor, or decreased breath sounds.
2. MAY have use of accessory muscles of respiration.
3. MAY have fever or drooling.
4. MAY have retractions or rapid respiratory rate.

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

Differential Diagnosis
1. Congestive heart failure
2. Foreign body aspiration
3. Epiglottitis
4. Croup (in a child)
5. Asthma

Protocol
1. If the patient is alert, awake, and still breathing on his or her own:
   A. Maintain airway and administer oxygen at high flow and high concentration preferably by non-rebreather facemask at 12-15/min. If patient is a young child, have the parent help administer the oxygen.
   B. Allow patient to sit up in a position of comfort.
   C. Go to #4. below
2. If the patient is alert but obviously choking from a presumed foreign body:
   A. Have the patient cough forcefully, if possible.
   B. Perform the Heimlich maneuver until successful
   C. If successful, go to D. below
3. If the patient is found unconscious or becomes unconscious:
   A. Begin CPR and attempt to bag-valve-mask ventilate while preparations are made to intubate.
   B. Using the laryngoscope, visualize the posterior pharynx and vocal cords for evidence of a foreign body.
   C. Remove any foreign bodies very carefully with a suction device or Magill forceps.
   D. 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.
   E. If above methods fail, perform a surgical airway as described in the Airway Protocol.
4. Obtain vital signs and apply cardiac monitor.

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5. Perform patient assessment.
6. Begin transport.
7. Notify the receiving facility.
8. Start an IV.
9. If wheezing and no stridor consider an albuterol nebulizer treatment.

Historical Findings
1. Patients older than 14 years of age
2. Patient complains of worsening shortness of breath, AND
3. Patient has a past medical history of asthma, emphysema, or COPD.

Physical Findings
1. Lung exam has wheezing, decreased breath sounds, or poor air exchange.
2. Use of accessory muscles of respiration.
3. MAY have retractions, rapid respiratory rate, or pursed lip breathing.

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

Differential Diagnosis
1. Congestive heart failure
2. Foreign body aspiration

Protocol
1. Maintain airway and administer oxygen at high flow and high concentration preferably by non-rebreather facemask at 12-15/min. If respiratory effort and respiratory rate are normal for age and a pulse oximeter is available with saturation reading greater than 95%, then oxygen administration is optional. Oxygen should be administered as needed to raise oxygen saturation to at least 95%.
2. If the patient is in impending respiratory failure, consider intubation.
3. Allow patient to sit up in a position of comfort.
4. Obtain vital signs and apply cardiac monitor.
5. Perform patient assessment.
6. Administer albuterol (Proventil) aerosol 0.5 ml in 2.5 ml normal saline via hand held nebulizer. The same dose should be given to all patients including children.
7. Begin transport.
8. If the patient is in impending respiratory failure, establish an IV with normal saline at keep open rate.
9. Consider epinephrine 1:1000 solution subcutaneously (0.3ml SQ) in patients < 40 years of age and no known coronary artery disease.
10. Consider repetitive bronchodilator treatments if needed, up to a total of three treatments.

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 PCO_2, which may occur is frequently more than offset by the beneficial effects of increased oxygen delivery to the tissue.

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Historical Findings
1. Patients older than 14 years of age.
2. Patient complains of severe shortness of breath.
3. Patient has a past medical history of heart disease.

Physical Findings
1. Respiratory rate > 20.
2. Systolic blood pressure > 100 mm Hg.
3. Rales on lung exam.
4. Patient has evidence of respiratory insufficiency such as air hunger, accessory muscle use, or altered mental status.
5. Patient MAY have jugular venous distention or peripheral edema.

EKG Findings
1. Normal sinus rhythm or sinus tachycardia. If an arrhythmia is present, proceed to appropriate arrhythmia protocol.

Protocol
1. Maintain airway and administer oxygen at high flow and high concentration preferably by non-rebreather facemask at 12-15/min.
2. Intubate if necessary.
3. Allow patient to sit up in position of comfort.
4. Obtain vital signs and apply cardiac monitor.
5. Determine whether the patient has taken any Erectile Dysfunction medications i.e. sildenafil (Viagra); vardenafil (Levitra); or tadalafil (Cialis) in the previous 24 - 72 hours[4].
6. If the patient has not taken any of the above medications in the previous 24 - 72 hours, then administer nitroglycerin 0.4 mg sublingual as long as the BP > 100 systolic.
7. Initiate IV of normal saline at keep open rate or saline lock.
8. Lasix IV push. If patient is already taking Lasix or a similar drug, then the patient's normal oral dose is recommended. Otherwise a starting dose of approximately 40 mg is frequently appropriate.
9. Morphine sulfate 2-4 mg IV every 5 minutes up to a total of 10 mg if systolic blood pressure > 100 mm Hg.

Notes
A. Transport to the hospital should be initiated immediately if the patient's airway is compromised or the patient needed endotracheal intubation. Otherwise transport should be initiated as soon as possible taking into account the time required to begin pharmacologic therapy.
B. For sildenafil (Viagra) nitroglycerine may be given after 24 hours. If the patient has taken vardenafil (Levitra) nitroglycerin may be given after 48 hours. If the patient has taken tadalafil (Cialis) nitroglycerine may be given after 72 hours.

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Historical Findings
1. Patients older than 14 years of age.
2. Patient has decreased level of consciousness without suspected trauma.

Physical Findings
1. Patient has a decreased level of consciousness.
2. Systolic blood pressure > 90

EKG Findings
1. Heart rate > 60
2. NOT ventricular tachycardia
3. NOT supraventricular tachycardia

Differential Diagnosis
- Anemia
- Dysrhythmias
- Hypertension
- Hypoxia
- Myocardial ischemia / infarction
- Pulmonary Embolism
- Shock
- Toxic ingestion
- Drugs and Alcohol
- Electrolyte imbalance
- Hypoglycemia
- Infection, especially meningitis
- Psychiatric
- Seizure
- Stroke, Intracranial Bleeding, Head Injury

Protocol
1. Maintain airway and administer oxygen at high flow and high concentration preferably by non-rebreather face mask at 12-15/min. If respiratory effort and respiratory rate are normal for age and a pulse oximeter is available with a saturation reading greater than 95%, then oxygen administration is optional. Oxygen should be administered as needed to raise oxygen saturation to at least 95%.
2. Place patient on monitor and obtain rhythm strip. If dysrhythmia is present, proceed to the appropriate protocol.
3. Monitor vital signs frequently.
4. Initiate IV of normal saline at keep open.
5. Test glucose with rapid glucose assay.
6. If rapid glucose test result is less than 60, then administer glucose 25 g D50 IV push.
7. If rapid glucose test result is less than 60 and peripheral IV access is not obtained after the lesser of two attempts or five minutes, then administer glucagon 1 mg IM. After glucagon administration, continue to attempt IV access.
8. If the patient has signs of a possible narcotic overdose such as pinpoint pupils, slow respiration's, needle tracks on the antecubital fossa, or injection paraphernalia nearby, then administer naloxone (Narcan®) 2.0 mg IV push or IM (children 0.1 mg/kg up to 2.0 mg) (see note 2).
9. Note patient response to medication.
10. Begin transport to the hospital.

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Notes

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. If there is a strong suspicion of narcotic overdose, then administer naloxone as soon as possible. If the patient has inadequate spontaneous ventilation, then control the airway with bag-valve-mask ventilation until naloxone has been administered and the patient's response assessed.

C. Glucagon should improve the patient's level of consciousness within about 10 minutes of administration. However, glucagon must be followed with some glucose either IV if the patient does not awaken or orally if the patient is awake.

D. If the patient is on oral hypoglycemic agents, they should be strongly encouraged to come to the hospital for evaluation, regardless of their response to field treatment.

E. Intranasal Narcan (IN) may be used with an atomizer device starting at 2mg and using up to a total of 8mg. Each department should have training using this method. This route may take longer for a response than the IV method.

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Historical Findings
1. Patients older than **17** years of age.
2. Decreased level of consciousness without suspected trauma.
3. Prior medical history of insulin-dependent diabetes mellitus.
4. Following treatment, patient is conscious, alert to time, date and place, and requests that they not be transported to the hospital.
5. No 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, etc.
6. The patient's history reveals circumstances that may have contributed to the hypoglycemic episode such as lack of oral intake or an insulin reaction.
7. Not on oral hypoglycemic medication such as glypizide, glyburide, or chlorpropamide.

Physical Findings
1. Patient is initially found to have a decreased level of consciousness.
2. Systolic blood pressure ≥ 90 mm Hg or child with normal perfusion.
3. Patient has rapid glucose test of ≤ 60 mg/dL.
4. During treatment under the Altered Mental Status protocol, the patient responds quickly (< 10 minutes) to oral or IV glucose (D50W) to normal level of consciousness.
5. Repeat rapid glucose test is > 100 mg/dL.

EKG Findings
1. Heart rate > 60
2. NOT ventricular tachycardia
3. NOT supraventricular tachycardia

Protocol
1. The patient is assessed and treated per the Altered Mental Status protocol.
2. Repeat blood pressure is at least 90 mm Hg, pulse rate is at least 60, and the repeat rapid glucose test is at least 100 mg/dL.
3. The patient is given written instructions for follow-up care prior to being released.
4. The patient is released to the care of a responsible adult who will remain with the patient as an observer for a reasonable time and can call 911 should the symptoms recur.

Notes
A. Patients who have extensive medical history or other signs and symptoms unrelated to insulin-dependent diabetes mellitus should be strongly encouraged to be transported.
B. If the patient is on an oral hypoglycemic medication such as glypizide, glyburide, or chlorpropamide, the hypoglycemic episode may last hours or days. Patients on oral hypoglycemic agents should be strongly encouraged to be transported, regardless of their response to field treatment.
C. When treating patients who warrant transportation based on the above criteria but who refuse transport, paramedics shall contact medical control for assistance.
D. Instructions for follow-up care should include the following:

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a. Take action to prevent a recurrent episode such as remain in the care of another adult observer, consume a light meal to maintain a sufficient blood glucose level, monitor their blood glucose, and advise their personal physician of this episode.
b. Watch for signs and symptoms of another episode. Those signs and symptoms include:
   - Anxiousness
   - Excessive Sweating
   - Faintness
   - Impaired vision
   - Personality change
   - Trembling
   - Weakness & fatigue
   - Dizziness
   - Extreme hunger
   - Headache
   - Irritability
   - Pounding heartbeat
   - Unable to awaken
c. If another episode occurs, contact 911 immediately!

E. EMS should provide the patient with both verbal and written instructions on follow-up care following patient refusal of transport.

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Historical Findings

1. A medically stable patient who is manifesting unusual behavior including violence, aggression, altered affect, or psychosis.

Physical Findings

1. Patient demonstrates behavior including violence, delirium, altered effect, or psychosis.
2. If obtainable, serum blood sugar ≥ 60 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).
3. If obtainable, systolic blood pressure ≥90 mm Hg and ≤180 mm Hg (if assessment cannot be obtained prior to
4. Physical restraint, then measurement should occur after patient restraint whenever safe or feasible to do so).
5. If obtainable, heart rate ≥50 bpm (if assessment cannot be obtained prior to physical restraint, then measurement
6. Should occur after patient restraint whenever safe or feasible to do so).

Differential Diagnosis

- Anemia
- Drug / Alcohol intoxication
- Electrolyte imbalance
- Hypertension
- Hypoxia
- Metabolic disorders
- Pulmonary Embolism
- Shock
- Cerebrovascular accident
- Dysrhythmias
- Head Trauma
- Hypoglycemia
- Infection (especially meningitis / encephalitis)
- Myocardial ischemia / infarction
- Seizure
- Toxicological ingestion

Protocol

1. If EMS personnel have advance 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.
2. 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 patients ability to exercise and 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 effected with the assistance of police personnel (See restraint Protocol). It is recognized that urgent circumstances may necessitate immediate action by EMS prior to the arrival of police.
   A. 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.
3. Urgent circumstances authorize, but do not obligate, restraint by EMS personnel prior to police arrival. The safety and capabilities of EMS are a primary consideration. Police shall immediately be requested by EMS in any urgent circumstance requiring restraint of a patient by EMS personnel.

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4. 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 EMEGENCY ADDMISSION 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. Such APPLICATION FOR EMEGENCY ADDMISSION can only be implemented by a:
   A. Psychiatrist
   B. Licensed clinical psychologist
   C. Licensed physician
   D. Health or police officer
   E. Sheriff or deputy sheriff
5. 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.
6. If the patient is medically stable then he/she may be transported by police in the following circumstances:
   A. Patient has normal orientation to person, place, time, and situation.
   B. No evidence of medical illness or injury
   C. Patient has exhibited behavior consistent with mental illness.

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Scope

1. 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).

Physical Findings

1. Soft leather 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:
   - Anemia
   - Drug / Alcohol intoxication
   - Electrolyte imbalance
   - Hypertension
   - Hypoxia
   - Metabolic disorders
   - Pulmonary Embolism
   - Shock
   - Cerebrovascular accident
   - Dysrhythmias
   - Head Trauma
   - Hypoglycemia
   - Infection (especially meningitis / encephalitis)
   - Myocardial ischemia / infarction
   - Seizure
   - Toxicological ingestion

Protocol

1. 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.
2. The least restrictive means shall be employed.
3. Verbal de-escalation
   A. Validate the patient's feelings by verbalizing the behaviors the patient is exhibiting and attempt to help the patient recognize these behaviors as threatening.
   B. Openly communicate, explaining everything that has occurred, everything that will occur, and why the imminent actions are required.
   C. Respect the patient's personal space (i.e. asking permission to touch the patient, take pulse, examine patient, etc.).

Physical Restraints

1. All restraints should be easily removable by EMS personnel.
2. Restraints applied by law enforcement (i.e. handcuffs) require law enforcement officer to remain available to adjust restraints as necessary for the patient's safety. The policy is not intended to negate the need for law enforcement personnel to use appropriate restraint equipment to establish scene control.
3. To ensure adequate respiratory and circulatory monitoring and management, patients shall NOT be transported in a face down prone position.
4. 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.

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Documentation of Restraints

1. Patient restraint shall be documented on the run sheet and address any or all the following appropriate criteria:
   A. That an emergency existed and the need for treatment was explained to the patient.
   B. That the patient refused treatment or was unable to consent to treatment (such as unconscious patient).
   C. Evidence of the patient's incompetence (or inability to refuse treatment).
   D. Failure of less restrictive methods of restraint (if conscious, failure of verbal attempts to convince the patient to consent to treat).
   E. 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.
   F. That the treatment and/or restraint where for the patient's benefit and safety.
   G. The type of restraint employed (soft, leather, mechanical).
   H. Any injuries that occurred during or after the restraint.
   I. The limbs restrained ("four points").
   J. Position in which the patient was restrained.
   K. Circulation checks every 15 minutes or less (document findings and time).
   L. 1. The behavior and/or mental status of the patient before and after the restraint.

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Historical Findings
1. Patients older than 14 years of age.
2. Exposure to an allergen (insect sting, medications, foods, or chemicals).
3. Patient complains of itching, shortness of breath, tightness in chest or throat, weakness, or nausea.

Physical Findings (One or more)
1. Flushing, hives, or swelling.
2. Wheezing or stridor.
3. Anxiety or restlessness.
4. Pulse > 100 (adult).
5. Systolic Blood Pressure < 80

Protocol
1. Maintain airway and administer oxygen at high flow and high concentration preferably by non-rebreather face mask at 12-15/min. If respiratory effort and respiratory rate are normal for age and a pulse oximeter is available with a saturation reading greater than 95%, then oxygen administration is optional. Oxygen should be administered as needed to raise oxygen saturation to at least 95%.
2. Remove allergen (stinger from skin, etc).
3. Monitor cardiac rhythm and check vital signs frequently.
4. Administer epinephrine 0.3 ml 1:1000 solution subcutaneously only if age < 40 and either hypotension or severe respiratory distress is present, and begin transport.
5. If bronchospasm or wheezing is present, administer albuterol (Proventil) aerosol treatment 0.5 ml in 2.5 ml NSS via hand held nebulizer.
6. Initiate IV of normal saline at keep open rate. If the patient is hypotensive, begin 1 liter IV wide open.
7. Unless reaction is mild (i.e. limited to a few hives or rash), administer Benadryl 50 mg IV push. Benadryl may be given IM if IV access is not available.
8. Repeat epinephrine 0.3 mL 1:1000 solution subcutaneously if BP < 80 systolic and is in severe distress.
9. Notify the receiving hospital.
10. If, after five minutes, hypotension persists despite fluid challenge and epinephrine administration, consider repeat epinephrine administration.
11. If hypotension still persists, consider dopamine infusion.

Notes
A. Be aware of patients on β-blockers. They may not manifest the usual tachycardia or sympathetic adrenergic response to allergic stimuli.
B. Administration of epinephrine to the patient with known cardiovascular disease should be avoided unless the patient is extremely ill.

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Historical Findings
1. Patients greater than 14 years old
2. Patient suspected to have had grand mal seizure based upon description of eyewitnesses, incontinence of urine or stool, or history of previous seizures.

Physical Findings
1. MAY have current seizure activity.
2. Level of consciousness is decreased.

Protocol
1. Maintain airway and administer oxygen at high flow and high concentration preferably by non-rebreather facemask at 12-15/min. If respiratory effort and respiratory rate are normal for age and a pulse oximeter is available with a saturation reading greater than 95%, then oxygen administration is optional. Oxygen should be administered as needed to raise oxygen saturation to at least 95%.
2. Immobilize C-spine if evidence for significant trauma is present, otherwise position the patient in the lateral recumbent position.
3. Suction as needed.
4. Obtain vital signs and place on cardiac monitor.
5. Initiate IV with normal saline at keep open rate.
6. Check glucose; and if glucose is less than 60, administer 25 gm D50 IV push.
7. If there is a suspicion of narcotic overdose, then administer naloxone (Narcan) 2 mg IV push every 3 minutes up to a total of 8 mg. (Narcan can also be given IM/SQ and Intranasal-see notes).
8. Begin transport.
9. If patient is actively seizing give Versed 2-4 mg/min IV/IM or I/O until seizure resolves or a total of 8 mg is given. Be prepared to support the patient's respirations.

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 with seizures need only oxygen and attention to airway management and will not need treatment with Versed.
- C. If the patient is in the third trimester of pregnancy or up to 6 weeks postpartum AND is actively seizing, AND has no known seizure history, if available consider administration magnesium sulfate 4 g slowly IVP over 15 minutes.
- D. Intranasal Narcan may be used with an atomizer device starting at 2mg and using up to a total of 8mg. Each department should have training using this method. This route may take longer for a response than the IV method.
- E. Please 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.
- F. IM glucagon may be used for hypoglycemia if unable to get IV access to give glucose. The dose is 1 mg IM (one unit). Be aware that IM glucagon can take 8-10 minutes to start working. IV glucose is more effective than glucagon and should always be considered first.

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Historical Findings
1. History of actual or possible poisoning either through ingestion, inhalation, or skin exposure.

Physical Findings
1. Patient's level of consciousness is not altered. If there is alteration in level of consciousness, see the Altered Mental Status protocol M406.
2. Systolic blood pressure > 90 mmHg in an adult OR
3. Child age < 5: systolic BP > 75 mmHg or child age 5-10: systolic BP > 85 mm Hg.

Protocol
1. Evaluate scene for provider safety.
2. Maintain airway and administer high flow oxygen preferably by non-rebreather facemask at 12-15/min. If respiratory effort and respiratory rate are normal for age and a pulse oximeter is available with a saturation reading greater than 95%, then oxygen administration is optional. Oxygen should be administered as needed to raise oxygen saturation to at least 95%. If carbon monoxide exposure is suspected or the patient is cyanotic, then administer oxygen at 12-15/min via non-rebreather facemask regardless of saturation reading.
3. Obtain vital signs, evaluate breath sounds and level of consciousness.
4. If toxin remains on patient, wash or brush off as appropriate. See Contaminated Patient Protocol.
5. If there is eye exposure, flush the eyes with normal saline.
6. If patient has ingested medication or other substance, obtain container(s), if available, and bring them with the patient.
7. Begin transport as soon as possible.
8. Reassess vital signs, perfusion status, and level of consciousness frequently. If there is any change in these findings, notify the receiving hospital.

Notes
A. 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.
B. Since some toxic exposures have a high risk for causing rapid deterioration in the patient's mental status, the paramedic should not administer ipecac unless specifically ordered by the medical control physician.

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Historical Findings
1. High-risk groups: elderly, infants, outdoor workers, and alcoholics.
2. Predisposing factors:
   A. Increased loss of body heat due to:
      i. Prolonged exposure to cold
      ii. Inadequate clothing
      iii. Intoxication
      iv. Illness or injury
   B. Decreased heat production due to:
      i. Malnutrition
      ii. Endocrine disorders
   C. Impaired thermoregulation due to:
      i. Hypoglycemia
      ii. Drugs (alcohol, barbiturates, phenothiazines)
      iii. Sepsis
      iv. Central nervous system disorders.
3. Hypothermia can occur under relatively mild weather conditions.

Physical Findings
1. Variable presentation with a range of presenting symptoms from mild nonspecific complaints to unresponsiveness.
2. Mild symptoms include decreases in coordination, reflexes, and alertness.
3. If unresponsive, may appear pulseless, with pupils fixed and dilated.
4. Pulse rate may be severely bradycardic. A radial pulse may be very difficult to palpate. The pulse rate should be obtained with palpation of a central pulse (carotid or femoral) for at least one minute.
5. Extremities may be stiff resembling rigor mortis, or may be cyanotic or edematous.

EKG Findings
1. Bradycardia.
2. May see "J" or "Osborne" waves on rhythm strip.

Differential Diagnosis
- Cardiac Arrest
- Narcotic Abuse
- Coma
- Severe Shock

Protocol
1. *Gentle* handling of the patient is important to avoid inducing ventricular fibrillation.
2. Do NOT massage extremities (causes increased cutaneous vasodilation and decreases shivering).
3. Do NOT use hot packs (can cause serious burns, as well as possibly increased mortality).
   A. PULSE/BREATHING ABSENT
      i. Apply cardiac monitor. If the rhythm is ventricular fibrillation or ventricular tachycardia then defibrillate <u>once</u> at 200 joules (or bi-phasic equivalent)
      ii. Intubate the patient and ventilate with 100% *02* (heated to 42°C - 46°C [108°F - 115°F] if available).
      iii. Begin CPR and ALS.

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iv. Initiate transport to a facility capable of cardiopulmonary bypass.
v. Notify receiving hospital

B. *SPONTANEOUS RESPIRATIONS*
i. Monitor cardiac rhythm.
ii. Maintain airway and administer oxygen at high flow and high concentration by non-rebreather facemask at 12-15/min (heated to 42°C - 46°C [108°F - 115°F] if possible). If the patient is unconscious and not able to protect the airway, then perform endotracheal intubation.
iii. Initiate large bore IV of normal saline and begin to administer 1 liter (child 20 ml/kg) fluid bolus.
iv. Test glucose with rapid glucose assay.
v. If rapid glucose test is less than 60, then administer glucose 25g D50 (children < 6 years of age D25 2 cc/kg) IV push.

4. Administer Narcan 2.0 mg (children 0.1 mg/kg up to 2.0 mg) IV push.
5. Gentle evacuation is needed. Remove wet clothing, insulate with dry, warm blankets, and immobilize to avoid exertion by the patient.
6. Initiate transport.
7. Notify the receiving hospital so that preparations can be made to warm the patient.

Notes

A. Some special equipment may be needed to warm IV fluids and oxygen. However, given the short transport times present in most situations, warm blankets are probably the most practical equipment.

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Historical Findings

1. Patient has altered mental status, loss of clear speech, decreased sensation, or loss of motor function without suspected trauma.
2. MAY have past history of stroke or TIA.

Physical Findings

1. Altered mental status. May range from dizziness to complete unresponsiveness.
2. Speech disturbances - slurred, garbled, or incomprehensible speech or complete loss of speech.
3. Weakness or paralysis on ONE side of the body.
4. Weakness, paralysis, or loss of expression on ONE side of the face.

Protocol

1. Take body substance isolation precautions
2. Maintain airway and administer oxygen at high flow and high concentration preferably by non-rebreather facemask at 10 to 15 L/min. If respiratory effort and respiratory rate are normal for age and a pulse oximeter is available with an oxygen saturation reading greater than 95%, then oxygen administration is optional. Oxygen should be administered as needed to raise oxygen saturation to at least 95%.
3. If patient has an altered level of consciousness, place the patient in the left lateral recumbent position with the head and chest elevated.
4. Place patient on a cardiac monitor and document rhythm.
5. Establish intravenous access with a saline lock or an intravenous line containing normal saline solution to run at a keep open rate.
6. Determine the blood glucose.
7. If blood glucose is < 60 mg/dl, administer 25 grams of 50% dextrose by intravenous push.
8. Begin transport as quickly as possible.
9. Notify the receiving hospital of the projected time of arrival and report the time of the onset of the patient's symptoms.
10. Perform an ongoing assessment.

Notes

1. 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 TIA's can last from minutes up to one day. Thus the patient may initially present with typical signs and symptoms of a stroke, but those finding may progressively resolve. The patient needs to be transported to the hospital for further evaluation.
2. Some patients who have had a stroke may be unable to communicate but can understand what is being said around them.
3. Place the patient's affected or paralyzed extremity in a secure and safe position during patient movement and transport.
4. Hypertension in stroke patients should not be treated in the prehospital setting. Observations show that hypertension in
5. A stroke patient tends to improve without drug therapy.
6. New therapies for stroke are now available. However, successful use is only possible during a short time window after the start of symptoms. Early notification of the receiving hospital and minimizing scene time are important parts of a strategy to treat patients quickly.

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7. A simple method of physical exam for the stroke patient is: ask the patient to say "the sky is blue in Cincinnati." Ask the patient to smile or show his or her teeth. Finally ask the patient to hold his or her arms straight up in front with the palms toward the sky. Have the patient close his or her eyes. Watch to see if one arm drifts down. If only one arms drifts, the test is positive. If both arms drift down, the results are unclear.

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Historical Findings
1. High risk groups: elderly, infants, outdoor workers, athletes.
2. Predisposing factors:
   A. Impaired thermoregulation due to:
      i. Hypoglycemia
      ii. Drugs (Anticholinergic, phenothiazines, Antidepressants)
      iii. Infection
      iv. Central nervous system disorders.
3. Hyperthermia can occur with strenuous physical exertion and/or severe environmental conditions.

Physical Findings
1. Variable presentation with a range of presenting symptoms from mild nonspecific complaints to unresponsiveness.
2. Heat cramps are characterized by:
   A. Muscle cramps
   B. Hyperventilation
3. Heat exhaustion is characterized by:
   A. Volume depletion
   B. Fatigue
   C. Lightheadedness
   D. Nausea/vomiting
   E. Headache
   F. Tachycardia
   G. Hyperventilation
   H. Hypotension
   I. Body temperature may be normal
4. Heat Stroke (a true medical emergency) is characterized by:
   A. Elevated temperature
   B. Neurological symptoms
      i. Syncope
      ii. Irritability
      iii. Combativeness
      iv. Bizarre behavior
      v. Hallucinations
      vi. Hemiplegia
      vii. Seizure
      viii. Coma
      ix. Decorticate/Decerebrate posturing
   C. Classic lack of sweating can be delayed

Protocol
1. Removal of the patient from external heat sources
2. Removal of clothing
3. If possible, a patient's temperature should be documented.

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4. Promote evaporative cooling by positioning fans close to undressed patient and then spraying patient with tepid water (covering patient with wetted sheets should be avoided as this impairs evaporation).
5. Promote conductive cooling by applying ice bags (if available) to axilla, groin and neck (note: the neck is vitally important as it supplies blood to the brain).
6. If shivering begins, give patient 2-4 mg versed IV or IM.
7. If patient appears dehydrated then give 1 liter NS fluid bolus or 20 cc/kg for children
8. Notify receiving facility.
9. When core temperature reaches 104 F (40 C) discontinue cooling efforts to prevent "overshoot" hypothermia.

Notes

A. There is no minimum body temperature for heat related illnesses. Patients can be normothermic with heat cramps and heat exhaustion, but are usually hyperthermic with heat stroke. The level of hyperthermia (102, 104, 106, 108) does not necessarily correlate with the severity of heat stroke.
B. Many patients with true heat stroke are not dehydrated, while heat exhausted patients usually are dehydrated.
C. Shivering can begin when the skin temperature drops, but the core temperature remains high. Therefore Versed is given to stop shivering to prevent a patient's core temperature from rising despite cooling efforts.

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Historical Findings

1. Patients greater than 14 years old

Physical Findings

1. Patient has nausea
2. Patient has vomiting

Contraindications

1. Coma
2. Known hypersensitivity to Phenergan
3. Suspected high doses of CNS depressants
4. CNS Depression
5. Head Trauma

PROTOCOL

1. Assess need for drug therapy
   A. Check patient history for record of allergies / sensitivity to:
      i. Phenergan (Promethazine),
      ii. Promethazine HCL,
      iii. or other Phenothiazine drugs
      - Compazine, (prochloreperzine maleate)
      - Prolixin, (fluphenazine)
      - Stelazine, (trifluoperazine)
      - Trilafon (perphenazine)
      - Mellaril, (thioridazine)
      - Serentil, (mesoridazine besylate)
      - Thorazine, (chlorpromazine)
2. Assess patient size and age to determine appropriate dose.
3. Phenergan may be administered without a physician's order if the patient meets all the indications for use and no contraindications are present.
4. For IV Injection:
   A. Select an intravenous site with good blood return. Should not be administered in the small veins of the hand or wrist.
   B. Administer the drug according to standard, sterile intravenous injection procedure.
   C. DOSE
      i. 12.5 mg for nausea or vomiting > 50 kg and/or >14 years old diluted in 10ml of normal saline. Following injection, flush with an additional 10ml of normal saline.
      ii. Patients over 60 years old 6.25mg to 12.5mg diluted in 10ml of normal saline. Following injection, flush with an additional 10ml of normal saline.
      iii. Administer over 10 minutes, if any pain with the infection, the injection should be stopped immediately.
5. For IM injection:
   A. Select a large muscle site (i.e. deltoid or gluteus) for IM administration.
   B. Administer the medication deep IM using a 1-1.5" needle following standard, sterile procedure.

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C. DOSE
   i. 12.5mg to 25mg for all >50kg and/or >14 years old, no dilution required.
   ii. Patients over 60 years old 12.5mg to 25mg, no dilution required.
   iii. Be certain to aspirate injection site to avoid intra-arterial injection.

6. Chart site, time and dose given.
7. Monitor patient for signs of adverse or allergic reactions.

OVERDOSE

1. Signs and Symptoms
   A. Signs and symptoms from over dosage range from mild CNS Depression to severe hypotension, respiratory depression and unconsciousness.
   B. Stimulation may appear in children and the elderly.
   C. Atropine like effects, such as dry mouth, flushing and fixed and dilated pupils may occur.
2. Treatment
   A. Treatment is generally symptomatic and supportive.
   B. Oxygen and IV fluids may be useful.
   C. Extrapyramidal reactions (hyperreflexia, hypertonia, ataxia, athetosis, and extensor-plantar reflexes-Babinski reflex) may be treated with diphenhydramine (Benadryl) 25mg to 50mg IV or IM.

NOTES

A. Phenergan (Promethazine) may be administered to pregnant patients.
B. Phenergan should not be administered subcutaneously (SQ) due to cases of chemical irritation and tissue necrosis. Do not give intraarterial, this will likely cause severe arteriospasm and could possibly cause gangrene.
C. Do not give epinephrine as it may cause further hypotension.

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Surgical Treatment Protocols (S)

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Historical Findings
1. History of or suspected hemorrhage

Physical Findings (One or More):
1. Active severe bleeding with signs of shock OR
2. Signs of poor tissue perfusion such as abnormal mental status, cool clammy skin, delayed capillary refill, weak or absent radial pulse OR
3. Systolic blood pressure < 90 mm Hg in an adult OR
4. Child age < 5 systolic BP < 75 mm Hg or child age 5-10 systolic BP < 85 mm Hg.

Protocol
1. Maintain airway and administer high flow oxygen by non-rebreather facemask at 12-15/min.
2. Aggressively manage the airway. Intubate with C-spine control if the patient will tolerate the attempt. No more than one minute should be spent attempting endotracheal intubation in patients with spontaneous breathing.
3. Identify and treat life-threatening breathing problems such as open chest wounds. For treatment of tension pneumothorax see Tension Pneumothorax protocol.
4. If patient is a victim of blunt trauma (i.e. MVA, fall) or penetrating injury to head or neck, immobilize patient with rigid cervical collar, long back board, and immobilize head such that the patient's head is secured to back board. When time of transport to definitive care is more than 30 minutes, then apply MAST, but do not inflate.
5. Control external bleeding.
6. Begin transport as soon as possible to destination hospital as directed in Trauma Triage Protocol.
7. Monitor heart, obtain vital signs, and evaluate breath sounds and level of consciousness.
8. Without stopping transport, initiate 1-2 large bore IV's of normal saline with blood draw if possible. Give 500-1000 ml wide-open or 20 ml/kg in a child.
9. Reassess vital signs, perfusion status, and lung sounds at least every 5 minutes. Watch for signs of fluid overload.
10. Continue secondary assessment as time permits.

Notes
A. The key to good prehospital care of the hemorrhagic shock patient is rapid transport to definitive care. Except when the patient is entrapped, scene time should not ordinarily exceed 10 minutes.
B. 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.
C. Patients with penetrating chest trauma and abnormal vital signs are especially in need of immediate transport to definitive care. Early intubation of these patients improves outcome.
D. Application and inflation of MAST at the scene has been shown to add about 4 minutes to scene time without improving outcome. MAST use is contraindicated in penetrating chest trauma.
E. For patients with <u>penetrating trauma</u> the following two parameters should be used to assess the need for IV fluids:
    1. Absent or weak pulses and altered mental status in the absence of head injury or any signs of intoxication. In this situation give a 250ml bolus of normal saline or 10ml/kg for a child and reassess the patient. If needed repeat the bolus depending on patient's pulses and mental status.

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Historical Findings
1. History of loss of consciousness following head injury, OR
2. History of motor vehicle accident, diving accident, fall, or other trauma.

Physical Findings
1. Head contusions, abrasions, or lacerations, OR
2. Fluid or blood from nose, ears, or mouth, OR
3. Altered mental status.
4. May have loss of sensation or movement.
5. May have pain in back or neck.
6. No signs of shock. If shock is present, refer to Hemorrhagic Shock protocol.

Protocol
1. Control airway and administer oxygen at high flow and high concentration, preferably by non-rebreather facemask at 12-15/min. If respiratory effort and respiratory rate are normal for age and a pulse oximeter is available with a saturation reading greater than 95%, then oxygen administration is optional. Oxygen should be administered as needed to raise oxygen saturation to at least 95%.
2. If altered mental status, aggressively assure good oxygenation of patient and intubate with C-spine control. ONLY if the patient has obvious asymmetric pupils, hyperventilate at 20 breaths/minute (for a child hyperventilate at 30 breaths/minute).
3. Immobilize patient with rigid cervical collar, long back board, and immobilize head such that the patient's head is secured to back board.
4. Begin transport as soon as possible to destination hospital as directed in Trauma Triage Protocol.
5. Obtain vital signs and monitor cardiac rhythm.
6. Obtain Glasgow Coma Scale, if the patient is older than four years of age.
7. Start large bore IV of normal saline at keep open rate.
8. If hypoglycemia is suspected, then check glucose. If glucose is < 60, then administer 25g of D50 (child $\leq$ 10 years D25 2 cc/kg).
9. If narcotic overdose is suspected, administer 2 mg naloxone (Narcan®) IV push.
10. If Glasgow Coma Scale is less than 14 or spinal cord injury is suspected, then contact the receiving hospital.

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. In any multiple trauma patients, spine trauma should be assumed until proven otherwise in a hospital emergency department.
D. If the patient is less than or equal to four years of age, then obtain either the pediatric Glasgow Coma Scale or assess level of consciousness using the AVPU Scale.

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Historical Findings
1. Patient complains of shortness of breath, cough, or hoarseness.
2. Any patient with electrical injury.

Physical Findings
1. Second degree burns greater than 20% of body surface area, OR
2. Third degree burns greater than 15% of body surface area, OR
3. Singed nasal or facial hair, soot or erythema of mouth, or respiratory distress.

Protocol
1. Evaluate scene for safety.
2. Remove patient from source of burn including clothing.
3. Maintain airway and administer oxygen at high flow and high concentration preferably by non-rebreather face mask at 12-15/min.
4. If patient is unconscious or has any respiratory distress, intubate immediately.
5. Obtain vital signs and place on cardiac monitor.
6. Initiate IV of normal saline at keep open rate.
7. Remove all prostheses, rings, and constricting bands from all extremities.
8. Cover burns with clean, dry sheet.
9. Consider the administration of IV/IM morphine for pain in alert and hemodynamically stable patients, per protocol S505.
10. Transport patient to an appropriate facility capable of treating major bums.
11. Notify the receiving facility.

Notes
A. Consider carbon monoxide poisoning if the patient has headache, dizziness, nausea, vomiting, decreased mental status, syncope, or chest pain or was trapped in a closed space.
B. Remember that burn victims have often suffered other trauma. These patients should primarily be managed as multiple trauma patients.
C. Important historical information includes any inhalation problem or closed space exposure, duration of exposure and time elapsed since bum, chemical exposure, and significant past medical problems.
D. Remember to keep the burned patient warm. It is important to avoid hypothermia since the skin injury disables much of the body's heat conservation methods. Only bums of less than 10% of body surface area should be treated with local cooling such as wet dressings.
E. While many bum patients will require large amounts of IV fluid over the first 24 hours, they do **not** require large boluses of IV fluid prior to arrival at the hospital. It is easy to fluid overload the bum patient.

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Historical Findings
1. Pregnant woman who is in active labor as defined by regular, frequent uterine contractions and who feels the urge to push.

Physical Findings
1. Crowning of fetal part at vaginal opening.

Differential Diagnosis
1. Delivery not imminent.

Protocol
1. Assure airway patency and administer 0_2 at high flow and high concentration, preferably by non-rebreather face mask at 12-15/min. If respiratory effort and respiratory rate are normal for age and a pulse oximeter is available with a saturation reading greater than 95%, then oxygen administration is optional. Oxygen should be administered as needed to raise oxygen saturation to at least 95%.
2. Obtain vital signs and begin transport.
3. If time permits, establish IV access with one large bore catheter (16 gauge preferred) and begin normal saline at keep open rate
4. Assist with normal delivery.
5. If baby is delivering in mal-presentation (e.g. foot or arm), elevate hips of mother and transport immediately.
6. If cord is prolapsed:
   A. Relieve pressure on the cord
   B. Elevate hips of mother
   C. Keep cord moist
   D. Transport
7. If cord is wrapped about neck:
   A. Attempt manual removal
   B. If unsuccessful, then cut cord after clamping prior to completing delivery.
8. After the infant's head is delivered, suction the mouth, oropharynx, then nose.
9. 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 newborn resuscitation protocol if needed.
10. Apply local pressure to any visible bleeding sites.
11. Notify the receiving hospital.
12. Resume transport to hospital with labor and delivery service.
13. If a complication such as massive bleeding or neonatal distress occurs, proceed to nearest appropriate hospital.
14. Assist with delivery of placenta and begin fundal massage.

Notes
A. Only deliver the placenta when it has detached. Do not pull on the umbilical cord to force out the placenta as this can lead to retained placenta or uterine eversion.
B. Pregnant teenagers with vaginal bleeding or imminent delivery should be taken to a hospital with a labor and delivery service. If uncertain where patient should be taken, then contact medical control.

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Historical Findings
1. History of actual or suspected eye injury.
2. MAY have foreign body sensation or pain in eye.

Physical Findings
1. MAY have visible foreign body or visible globe laceration.
2. MAY have light sensitivity.
3. MAY have poorly reactive or non-reactive pupil.

Protocol
1. If there is an impaled object, then stabilize it in place.
2. If there is evidence of a penetrating eye injury such as visible globe laceration or fluid draining from the globe, then cover the affected eye with *a metal* eye patch. Do not press on the globe.
3. If the patient has a chemical exposure to the eye or a non-penetrating foreign body in the eye, then proceed in the following manner:
   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. If there has been a chemical exposure, then begin eye irrigation by instilling copious amounts of tap water or normal saline solution.
   D. After 20 minutes, a second dose of proparacaine may be given if needed.

Notes
A. Remember that eye injuries can cause a great deal of patient anxiety. Provide reassurance.
B. The time until onset of anesthesia after proparacaine instillation ranges from 6 to 20 seconds.
C. Local instillation in the eye rarely produces adverse effects. System reactions are unlikely when used in recommended doses.
D. 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°.

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Historical Findings

1. Patients older than 14 years of age
2. Patients experiencing pain due to isolated extremity deformity.
3. Patients experiencing pain due to severe burns.
4. No history of allergy to Morphine Sulfate (MSO_4)
5. Major Burns (see protocol for Major Burns)
6. Other painful conditions, initiate online medical control.

Physical Findings

1. Systolic blood pressure > 100 mmHg.
2. No altered level of consciousness, mental status change, or suspected head injury.
3. No signs or symptoms of circulatory shock.

Protocol

1. Perform continuous pulse oximetry and closely monitor patient's respiratory status.
2. Administer Morphine Sulfate 5mg IV or IM (if unable to start IV).
3. Recheck blood pressure, respirations, and mental status.
4. If patient's pain is not relieved and their systolic blood pressure remains > 100 mmHg, repeat Morphine Sulfate 5mg IV or IM.
5. If patient experiences persistent respiratory depression, Naloxone (Narcan) can be administered 2mg IV.

Notes

1. Pain medications can be given prior to splinting if the patient is hemodynamically stable.
2. Pain control is an important medical intervention. Recent medical research indicates that the development of pain management protocols could contribute to the improvement of the patient's prehospital pain therapy. It is the intention of the Protocol Subcommittee that patients with the above-mentioned historical and physical findings be given pain relief medication.
3. Current research on prehospital pain management looks at various agents for pain control in the prehospital setting. Morphine Sulfate was selected due to its efficacy, and it's placement in most EMS drug licenses.

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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 pre-hospital 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 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*

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 Patients, as identified in this document, should be transported to "THE NEAREST TRAUMA CENTER". *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.

D. Pre-arrival notification of the receiving facility is essential!

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 EMS Provider to the Level I or II trauma center.*

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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

IV. USE OF GUIDELINES
A. Determine if the patient qualifies as a trauma patient
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.

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

A. PHYSIOLOGIC CRITERIA
   1. Significant signs of shock accompanied by:
      a. Pulse > 120 or blood pressure < 90 (geriatric patients may be in shock with a BP >90)
   2. Airway or Breathing Difficulties
      a. Respiratory rate of <10 or >30
      b. Intubated patient
   3. Neurologic Considerations
      a. Evidence of Head Injury
      b. Glascow coma scale < 13 or equal to
      c. Alteration in LOC during examination or thereafter; LOC > than 5 min.
      d. Failure to localize pain.
      e. Suspected spinal cord injury (paralysis due to an acute injury; sensory loss)

B. ANATOMIC CRITERIA
   1. Penetrating trauma (to the 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)
   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. Pelvic fracture
      d. Flail chest
   5. Signs or symptoms of spinal cord injury.
   6. Burn injury >10% TBSA and potential for other associated traumatic injuries

C. OTHER CRITERIA/CONSIDERATIONS THAT ALONE DO NOT CONSTITUTE A TRAUMA PATIENT
   1. Significant Mechanisms of Injury Should Prompt a High Index of Suspicion
   2. Age >60 Should Prompt a High Index of Suspicion

II. Transportation of the Adult Trauma Patient

A. Ground Transportation <u>Time</u> 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 → nearest appropriate facility

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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.
      e. *** *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. If air medical transportation is unavailable (e.g., weather conditions), patient should be transported by ground guidelines as listed above.
      b. 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.
      c. 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.
      d. Patients with uncontrolled ABC's 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.
      e. 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.
            - Total transport time includes any time at scene waiting for helicopter and transport time to trauma center.
            - 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.

I. Evaluation of the Pediatric Trauma Patient

A. PHYSIOLOGIC CRITERIA

1. Significant signs of shock (weak pulses, pallor) accompanied by:
   a. Tachycardia (Table 2) or bradycardia (Table 3)
   b. Hypotension (Table 4)
2. Airway/Breathing difficulties
   a. Intubated patient
   b. Tachypnea (Table 1)
   c. Stridor
   d. Hoarse voice or difficulty speaking
   e. Significant grunting, retractions
   f. Cyanosis or need for supplemental oxygen
3. Neurologic considerations
   a. Evidence of head injury
      i. Glascow Coma Scale ≤ 13
      ii. Alteration in LOC during examination or thereafter; LOC > 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 and extremities proximal to the 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 which is relieved (an unrelieved tension pneumothorax would fit the definition of an unstable ABC)
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. Pelvic fracture
   d. Flail chest
5. Signs or symptoms of spinal cord injury.
6. Burn injury >10% TBSA and potential for other associated traumatic injuries.

C. OTHER CRITERIA/CONSIDERATIONS FOR THE PEDIATRIC TRAUMA PATIENT WHICH ALONE DO NOT CONSTITUTE A 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 crashes

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2. Special situations that may require the resources of a pediatric trauma center:
   a. Congenital defects
   b. Chronic respiratory illness
   c. Diabetes
   d. Bleeding disorder or anticoagulants
   e. Immuno-suppressed patients (i.e., patients with cancer, organ transplant patients, etc.)

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)
   2. Greater than 30 minutes to a Pediatric Trauma Center 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.
      e. ***Pre-arrival notification of 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 if air medical transportation is unavailable.
      b. (e.g., weather conditions), patient should be transported by ground guidelines as listed above.
      c. Air transport if dispatched t 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 ABC's 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.
      g. Reasons to consider a call for air transport:
         i. Prolonged extrication
         ii. Multiple victims/trauma patients
         iii. Time/distance factors:

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

Table 1: Bradycardia	
Age	**Heart Rate (bpm)**
Infant	80
Child	70
Adolescent	60

Table 2: Maximum Acceptable Heart Rates by Age	
Age	**Heart Rate (bpm)**
< 6 months	180
6 months – 1 year	170
1 year – 2 years	150
3 – 7 years	140
8 – 11 years	130
12 – 16 years	120
Therapy should be reserved for the patient, who is symptomatic, as manifested by signs or symptoms of decreased blood flow to end organs.	

Table 3: Minimum Acceptable Systolic Blood Pressure by AGE	
Age	**Systolic Blood Pressure**
<1 month	60 mmHg
1 month – 1 year	70 mmHg
>1 year	70 + (age in years x 2)

Table 4: Minimum Acceptable Respiratory Rates by AGE	
Age	**Respiratory Rate (resp/min)**
<6 month	50
6 month – 6 years	40
>6 year	30

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Pediatric Treatment Protocols (P)

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PEDIATRICS

NEWBORN RESUSCITATION – P600

Historical Findings

1. Newborn infant

Physical Findings

1. Central cyanosis, poor or no respiratory effort, or limp muscle tone.

Protocol

1. Ensure adequate airway. Suction mouth, oropharynx, then nose.
2. Dry infant to provide stimulation and prevent chilling. Keep the infant warm, especially the head.
3. 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 100% oxygen 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 at a ratio of 3:1 with breaths.
4. Check color. If there is central cyanosis, provide 100% oxygen and assist ventilation's if needed.
5. Assess response to oxygen and ventilation. If heart rate remains less than 100 after 30 seconds of BVM ventilation, reassess airway and consider intubation.
   FULL TERM: 3.0 - 3.5 ET tube
   PREMATURE: 2.5 - 3.0 ET tube
6. Assess response to intubation. Check the position of the endotracheal tube frequently and document the centimeter mark at the gum line. If heart rate < 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.
7. Contact medical control.
8. Transport as soon as possible.
9. If heart rate is still < 60 after 30 seconds of chest compressions and adequate assisted ventilation, consider epinephrine 1:10,000 at 0.4 mL IV (0.2 mL for preterm newborn). If vascular access is not available, then give epinephrine 1:10,000 at 0.8 mL via ET (0.4 mL for preterm newborn). Repeat epinephrine every 3 to 5 minutes until heart rate is greater or equal to 60.
10. If hypovolemia is suspected due to blood loss at delivery, then give normal saline 40 mL (10 mL/kg) IV (20 mL for preterm newborn).
11. Provide medical control with patient update.

Notes

A. Cyanosis of the hands and feet ALONE can be NORMAL.
B. Newborns lose heat rapidly and need to be kept warm to decrease oxygen demands and prevent metabolic acidosis.
C. 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.
D. Thick meconium ALONE is NO LONGER a reason to intubate & suction a newborn. Intubation and suctioning is reserved for newborns with thick meconium who are NON-VIGOROUS (poor respiratory effort, decreased muscle tone, AND heart rate less than 100).
E. It is important that you inform medical control of the length of your resuscitation since the new AHA guidelines (Dec. 2005) support the PHYSICIAN discontinuation of resuscitation for newborns born without a heart beat and respirations after 10 minutes.

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PEDIATRICS
PEDIATRIC PULSELESS ARREST – P601
(PEA AND ASYSTOLE)

Historical Findings
1. Age less than or equal to 14 years.
2. Patient is unconscious.

Physical Findings
1. Patient is apneic
2. Patient has no pulse.

EKG Findings
1. There is an organized cardiac rhythm with QRS complexes indicating PEA
2. Patient shows asystole in the monitor in two or more leads.

Protocol
1. Ensure airway and begin ventilation with bag-valve-mask with 100% oxygen.
2. Begin CPR and consider intubation
3. Check cardiac rhythm immediately resume CPR.
4. Establish an IO or other vascular access with normal saline at keep open rate.
5. Epinephrine 1:10,000 at 0.1 mL/kg IO/IV. If vascular access is not available, then give epinephrine 1:1000 at 0.1 mL/kg via ET (maximum dose 5 mL)
6. Begin transport. **Identify and treat causes** ***(see Note B:*** *Start 20 mL/kg bolus of normal saline for hypovolemia & bilateral chest needle decompression for tension pneumothorax)**).***
7. Reassess airway and breathing frequently, as hypoxia is a top cause of PEA.
8. Contact medical control.
9. Administer normal saline 20 ml/kg IV or I0.
10. If PEA persists after 3 to 5 minutes, repeat epinephrine 1:10,000 at 0.1 mL/kg (maximum dose 5 mL) IV, IO, or 1:1000 at 0.1 mL/kg per ET.

Medical control may consider the following:
11. Additional 20 mL/kg fluid boluses.
12. Needle compression of the chest.

Notes
A. Airway management with adequate bag-valve-mask (BVM) ventilation is a priority, and intubation should be considered if ventilation and oxygenation with BVM is difficult to maintain.
B. Since a main cause of PEA is hypoxia, the effectiveness of BVM ventilation and oxygenation should be reevaluated constantly.
C. The reversible causes of PEA include hypovolemia, cardiac tamponade, tension pneumothorax, hypoxemia, acidosis, and pulmonary embolism

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PEDIATRICS

PEDIATRIC BRADYCARDIA – P602

Historical Findings
1. Age less than or equal to 14 years.

Physical Findings
1. Alteration of level of consciousness OR
2. Evidence of poor circulation (delayed capillary refill, or weak peripheral pulses) OR
3. Evidence of respiratory distress or failure.

EKG Findings
1. Rhythm is sinus bradycardia for child's age.

The patient must be symptomatic before proceeding with this protocol.

Protocol
1. Ensure airway, apply 100% oxygen, bag-valve-mask (BVM) ventilate as needed, and recheck pulse rate.
2. If despite adequate oxygenation and ventilation, the heart rate is < 60 in a newborn or child, perform chest compressions at a rate of 100 per minute.
3. Establish vascular access or IO (IO for evidence of shock: altered mental status and poor skin perfusion or weak peripheral pulses).
4. Epinephrine 1:10,000 at 0.1 ml/kg IV or IO. If vascular access is not available, then give epinephrine 1:1000 at 0.1 ml/kg via ET (maximum dose 5.0 ml).
5. Begin transport.
6. Reassess airway and breathing frequently.
7. Contact medical control.
8. If symptomatic bradycardia persists, repeat epinephrine IV/IO every 3 to 5 minutes.
9. If symptomatic bradycardia persists, give atropine 0.02 mg/kg (min 0.1 mg, max 1.0 mg) IV, ET, or IO.
10. Reassess airway and breathing.
11. If hypotensive, normal saline 20 ml/kg IV push.

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.

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PEDIATRICS
PEDIATRIC SUPRAVENTRICULAR TACHYCARDIA (PSVT) – P603

Historical Findings
1. Age less than or equal to 14 years.
2. Older child may complain of chest pain or rapid heart beat.

Physical Findings
1. Heart rate in infants less than 2 years is usually greater than 220. Heart rate in older children is usually greater than 180.
2. The unstable patient displays signs of shock with weak or no distal pulse, delayed capillary refill, poor skin perfusion and change in mental status.

EKG Findings
1. QRS duration < 0.08 (2 little boxes).
2. P waves may or may not be seen.
3. Little variability in heart rate noted with respiration and movement.

Protocol
1. Ensure airway and apply 100% oxygen via non-rebreather facemask.
2. Obtain 12 lead EKG if available

Stable Patient with Adequate Perfusion
3. Consider one attempt at vagal maneuvers (crushed ice to the mid face for 15 seconds).
4. Attempt vascular access preferably in an antecubital vein. Use normal saline at keep open rate.
5. Contact medical control.
6. Administer Adenosine 0.1 mg/kg IV rapid IV push. (Maximum first dose 6 mg) Adenosine should be administer as close to the heart as possible, preferably in the antecubital vein. Consider use of a double stopcock to immediately administer 5 mL flush immediately.
7. May double and repeat Adenosine once IV rapid IV push. (maximum second dose 12 mg).
8. If the patient is conscious and **only on the order of** a **medical control physician give** Versed 0.1 mg/kg (max 5 mg) IV/IM or other medications as directed by medical control.
9. **Only on the order of a medical control physician:** synchronized cardioversion 0.5 J/kg
10. If unsuccessful, repeat synchronized cardioversion at 1 J/kg
11. If unsuccessful, repeat synchronized cardioversion at 2 J/kg.
12. Reassess ABC's and transport.

Unstable Patient (Poor Perfusion):
3. Contact medical control.
4. If IV access has been established, preferably in an antecubital vein, medical control may consider administration of adenosine 0.1 mg/kg rapid IV push (Maximum first dose 6 mg).
5. If IV has not been established, prepare for immediate cardioversion.
6. If the patient is conscious and **only on the order of** a **medical control physician give** Versed 0.1 mg/kg (max 5 mg) IV/IM or other medications as directed by medical control.
7. **Only on the order of a medical control physician:** synchronized cardioversion 0.5 J/kg.

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8. If unsuccessful, repeat synchronized cardioversion at 1 J/kg.
9. If unsuccessful, repeat synchronized cardioversion at 2 J/kg.
10. Reassess ABC's, consider CPR, and transport.

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

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PEDIATRIC PULSELESS ARREST – P604 (VENTRICULAR FIBRILLATION AND VENTRICULAR TACHYCARDIA)

Historical Finding
1. Age is less than or equal to 14 years.
2. Patient is unconscious.

Physical Findings
1. Patient is apneic.
2. Patient has no pulses.

EKG Findings
1. Ventricular fibrillation or ventricular tachycardia without pulse.

Protocol
1. Begin CPR and bag-valve-mask (BVM) ventilation.
2. Apply quick look with paddles if not already monitored.
3. If rhythm is ventricular fibrillation or ventricular tachycardia without pulses, defibrillate immediately at 2 joules/kg (max 200 J).
4. Immediately resume CPR for 2 minutes or 5 cycles
5. Check cardiac rhythm. If PEA or asystole, use appropriate protocol.
6. If ventricular fibrillation or ventricular tachycardia without pulses, resume CPR immediately while preparing to deliver shock.
7. Defibrillation at 4 J/kg (max 360 J) and resume CPR immediately.
8. Consider intubation.
9. Establish IO or vascular access. IO is indicated if unable to obtain IV within 90 seconds. Use normal saline at keep open rate.
10. Administer epinephrine 1:10,000 at 0.1 mL/kg IV/IO. If IV or IO is unattainable, give epinephrine 1:1000 at 0.1 mL/kg via ET (maximum dose 5 mL). Repeat epinephrine every 3 to 5 minutes, and follow each dose with 2 minutes of CPR or 5 cycles.
11. Check cardiac rhythm. If PEA or asystole, use appropriate protocol.
12. If ventricular fibrillation or ventricular tachycardia without pulses, resume CPR immediately while preparing to deliver shock.
13. Defibrillate at 4 J/kg (maximum 360 joules), then resume CPR immediately.
14. Administer amiodarone 5 mg/kg (max 300 mg) IV/IO push then resume CPR immediately.
15. If no change, give lidocaine 1 mg/kg IV/IO push then resume CPR immediately, contact medical control, and go back to step 4.
16. Transport to closest appropriate facility

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PEDIATRIC PULSELESS ARREST – P604 (VENTRICULAR FIBRILLATION AND VENTRICULAR TACHYCARDIA)

Notes

A. Ventricular fibrillation is rare in children, unlike adults. It is usually due to hypoxia or cardiac disease.
B. As in all pediatric cardiac arrests, airway control is a key factor in improving the odds of successful resuscitation.
C. Dilute amiodarone by mixing 150 mg of amiodarone in 100 mL of normal saline. This is 1.5 mg/mL
D. Consider the use of a stopcock for the administration of amiodarone
E. When choosing joules for defibrillation in pediatric patients, round up.
F. Limit the time a pulseless patient is not getting good CPR.

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PEDIATRICS

PEDIATRIC STRIDOR – P605

Historical Findings

1. Age 6 months to 6 years.
2. Barky "seal" sounding cough with hoarse voice and stridor.
3. May have fever and cold symptoms
4. No history suggesting foreign body aspiration.

Physical Findings

1. Inspiratory and expiratory stridor at rest.
2. Chest wall retractions.

Differential Diagnosis

- Asthma
- Croup
- Foreign body aspiration
- Bacterial tracheitis
- Epiglottitis

Protocol

1. Keep the patient calm. You may have a parent or other trusted adult administer oxygen by non-rebreather mask or blow-by to keep oxygen saturation above 94%.
2. Place the patient on a cardiac monitor.
3. Contact medical control.
4. **Medical control may order** epinephrine 0.5 mL of 1:1000 solution mixed in 2.5 mL of normal saline, administered via updraft nebulizer with oxygen and a facemask.
5. Begin transport.
6. Reassess patient frequently.
7. Continue normal saline mist via nebulizer when the epinephrine nebulizer is complete.

Notes

A. 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 epiglottitis 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 breath oxygen by mask or blow-by as long as this does not cause the patient to become upset.

B. The purpose of the medical control call is to allow the medical control physician input into the decision to administer nebulized epinephrine. The potential downside to giving nebulized epinephrine is that the patient will need to be observed for 3-4 hours. If the case of croup is mild and receives nebulized epinephrine, the patient will require an unnecessarily longer emergency department stay.

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PEDIATRICS

PEDIATRIC RESPIRATORY DISTRESS – P606

(Obstruction or Foreign Body Aspiration)

Historical Findings

1. Age is less than or equal to 14 years
2. Sudden onset shortness of breath in a previously well pediatric patient
3. Patient MAY have history suggestive of foreign body aspiration such as sudden onset of shortness of breath while eating or playing with a small toy.

Physical Findings

1. May have decreased or no air movement on exam
2. May have retractions and accessory muscle use as they struggle to breath
3. May have drooling
4. May be cyanotic secondary to hypoxia
5. May be unconscious secondary to hypoxia

Differential Diagnosis

- Bacterial tracheitis
- Epiglottitis
- Croup
- Foreign body aspiration

Protocol

1. If the patient is alert, awake, and still breathing on his or her own (partial airway obstruction):
   A. Administer oxygen by non-rebreather facemask at 12-15/min. If patient is a young child, have the parent help administer the oxygen.
   B. 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.
   C. Obtain vital signs and apply cardiac monitor.
   D. Perform patient assessment. Do not perform a throat exam.
   E. Begin transport with patient as comfortable as possible. Do not start an IV to avoid aggravating the child and worsening the airway obstruction.
   F. If wheezing, consider an albuterol nebulizer treatment.
   G. Notify the receiving facility.
2. B. If the patient is alert, awake, and obviously choking (complete airway obstruction):
   A. 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.
   B. For the child from 1 year to puberty, give abdominal thrusts (Heimlich) until obstruction is relieved or patient is unconscious.
   C. If the obstruction is relieved, follow Protocol Section 1, A through G above.
3. If the patient is unconscious:
   A. Begin CPR and attempt to bag-valve-mask ventilate while preparations are made to intubate.
   B. Using the laryngoscope, visualize the posterior pharynx and vocal cords for evidence of a foreign body.
   C. Remove any foreign bodies very carefully with a suction device or Magill forceps.
   D. 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.
   E. If above methods fail, perform needle cricothyrotomy (See Needle Cricothyrotomy—Pediatrics Protocol).

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F. Begin transport to the closest appropriate facility while continuing CPR until patient begins breathing spontaneously or you transfer care to the receiving hospital.
G. Notify receiving hospital so they may prepare for your arrival.

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PEDIATRICS
PEDIATRIC RESPIRATORY DISTRESS – P607
(Wheezing or Asthma Exacerbation)

Historical Findings
1. Age less than or equal to 14 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

Physical Findings
1. Lung exam has wheezing, decreased breath sounds, or poor air exchange.
2. May have retractions, rapid respiratory rate, or pursed lip breathing.

Differential Diagnosis
- Asthma
- Foreign body aspiration
- Bronchiolitis
- Pneumonia

Protocol
1. Maintain airway and administer oxygen by non-rebreather facemask at 12-15/min. Oxygen should be administered as needed to keep oxygen saturation at least 95% AND in children with any element of respiratory distress.
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, and skip to #9 below.
3. Allow patient to sit up in a position of comfort.
4. Obtain vital signs and apply cardiac monitor.
5. Perform patient assessment.
6. Administer albuterol aerosol 0.5 mL in 2.5 mL normal saline via mask or hand-held nebulizer depending on the age/ability of the patient. Blow-by albuterol nebulization is of NO effect and should not be used when a mask is available. The same dose of albuterol may be given to all patients.
7. Begin transport.
8. Deliver up to a total of three albuterol nebulizer treatments en route if needed. Contact medical control if additional treatments are needed.
9. If the patient is in impending respiratory failure, contact medical control while establishing an IV.
10. Medical control may order administration of epinephrine 1:1000 solution **SQ**. The dose is 0.01 mL/kg **SQ** (max 0.3 mL).

Notes
A. 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.

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PEDIATRICS

ALTERED MENTAL STATUS – P608

Historical Findings

1. Age less than or equal to 14 years
2. Patient has decreased level of consciousness WITHOUT suspected trauma

Physical Findings

1. Patient has a decreased level of consciousness (i.e., alert only to pain OR entirely unresponsive)
2. Age-appropriate (See pediatric Appendix B) normal systolic blood pressure

EKG Findings

1. Heart rate > 60
2. NOT ventricular tachycardia
3. NOT supraventricular tachycardia

Differential Diagnosis

- Cardiac dysrhythmias
- Hemodynamic shock
- Metabolic disturbances
- Hyperammonemia
- Hypoglycemia
- Psychiatric
- Toxicologic (including alcohol and drugs)
- CNS infection (including encephalitis or meningitis)
- Hypoxia
- Electrolyte disturbances
- Hypernatremia
- Hyponatremia
- Seizures
- Unsuspected head injury (including bleeding, stroke, or child abuse)

Protocol

1. Maintain airway and administer oxygen by non-rebreather facemask at 12-15/min. Oxygen should be administered as needed to keep oxygen saturation at least 95% AND in children with any element of respiratory distress.
2. Place patient on monitor and obtain rhythm strip. If dysrhythmia is present, proceed to the appropriate protocol.
3. Monitor vital signs frequently.
4. Place an IV and keep open with normal saline. 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 bolus of normal saline (max 1 liter).
5. Test fingerstick glucose.
6. If glucose is less than 60, in children greater than 2 years of age, administer 1 mL/kg of D50 IV push. For children less than 2 years of age, administer 2 mL/kg of D25 IV push. D25 is made by mixing D50 1:1 with normal saline.
7. If glucose is less than 60 and peripheral IV 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 access.
8. If the patient has signs of a possible narcotic overdose such as pinpoint pupils, slow respirations, needle tracks on the antecubital fossa, or injection paraphernalia nearby, then begin bag-valve-mask ventilation while preparing to administer naloxone (Narcan) IV/IM. The dose is 0.1 mg/kg (max 2.0 mg).
9. Note patient response to medication.
10. Begin transport to the hospital. Notify receiving hospital so they may prepare for your arrival.

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Notes

A. 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."

B. Younger children are particularly prone to developing hypoglycemia from alcohol ingestions.

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PEDIATRICS

ANAPHYLAXIS / ALLERGIC REACTION – P609

Historical Findings

1. Age less than or equal to 14 years
2. Exposure to an allergen (insect sting, medications, foods, latex, or chemicals).
3. Patient complains of itching, shortness of breath, tightness in chest or throat, weakness, or nausea

Possible Physical Findings

1. Flushing, hives, or swelling of extremities
2. Swelling of the face, lips, or tongue
3. Wheezing or stridor
4. Anxiety or restlessness
5. Tachycardia for age
6. Low systolic blood pressure for age

Protocol

1. Maintain airway and administer oxygen by non-rebreather facemask at 12-15/min. Oxygen should be administered as needed to keep oxygen saturation at least 95% AND in children with any element of respiratory distress.
2. Remove exposure to allergen, if possible (bee stinger, for example).
3. Monitor cardiac rhythm and check vital signs frequently.
4. If respiratory symptoms **or** low blood pressure are present, administer **SQ** epinephrine 0.01 mL/kg of 1:1000 solution (max 0.3 mL), start an IV for a 20 mL/kg IV bolus (max 1 liter), and contact medical control.
5. Begin transport.
6. If wheezing is present, administer an albuterol nebulizer treatment 0.5 mL in 2.5 mL of normal saline via mask or hand-held nebulizer depending on patient's age/ability. Do not use blow-by albuterol, because it is ineffective; use a mask for the nebulized albuterol instead.
7. Contact medical control to administer diphenhydramine (Benadryl). The dose is 1 mg/kg IV/IM (max 50 mg).
8. Medical control may have you administer more **SQ** epinephrine and normal saline boluses if the patient remains in distress.

Notes:

A. Anaphylaxis (i.e., generally rash and respiratory distress) 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.

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PEDIATRICS
SEIZURES – P610

Historical Findings
1. Age less than or equal to 14 years
2. Recent suspicion of seizure activity based upon description from eyewitnesses, parents, or caretakers
3. Patient may or may not have a known history of seizure disorder

Physical Findings
1. The patient may currently display seizure activity.
2. The patient may now be post-ictal ("after seizure") with a decreased level of consciousness.
3. The patient may have focal neurological deficits, which should be noted.
4. The patient may have a fever.

Protocol
1. For all actively seizing patients, reposition the airway and administer oxygen by non-rebreather facemask at 12-15 L/min. Support the patient's breathing with bag-valve-mask ventilation if necessary. If the patient is post-ictal and the respiratory rate and effort are normal for age with a pulse oximeter reading (if available) greater than 95%, then oxygen administration is optional.
2. 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.
3. Suction as needed.
4. Obtain vital signs and place on cardiac monitor.
5. Initiate IV with normal saline at keep open rate.
6. Check a fingerstick glucose in all actively seizing patients. For children 6 years and older, if glucose is less than 60, administer 1 mL/kg (max 50 mL) of D50 IV push. For children less than 6 years of age, first mix D50 1:1 with normal saline to make D25. Then administer 2 mL/kg of this D25 mixture by IV. ***See Note F*** below for information about the use of glucagon.
7. If there are pinpoint minimally reactive pupils bilaterally or there is a suspicion of narcotic overdose, administer nalaxone (Narcan) 0.1 mg/kg IV/IM (max 2 mg).
8. Begin transport.
9. If patient has been actively seizing for at least 5 minutes, give midazolam (Versed) 0.1 mg/kg IV/IM (max 5 mg). Be prepared to support the patient's airway (nasopharyngeal airway) and breathing (bag-valve-mask ventilation) if necessary.
10. If still seizing 15 minutes following Versed administration or if the patient requires respiratory support, contact medical control so they may prepare for your arrival.

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 post-ictal upon your arrival, needing only oxygen and airway maintenance.
C. If the patient is in the third trimester of pregnancy or up to 6 weeks postpartum AND is actively seizing, AND has no known seizure history, consider administration magnesium sulfate 4 g slowly IV over 15 minutes.
D. Please be aware that rectal Valium (Diastat) 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.

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E. 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 parents' or caretakers' impressions of what is and is not seizure activity in a child with a known seizure disorder (e.g., children with special needs).

F. IM glucagon may be used for hypoglycemia if unable to get IV access to give glucose. The dose is 0.5 mg IM (half a unit) for newborns, infants, and children ≤20 kg. The dose for children >20 kg and adults is 1 mg IM (one unit). Be aware that IM glucagon can take 8-10 minutes to start working. IV glucose is more effective than glucagon and should always be considered first.

G. 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. These deserve to be treated with benzodiazepines just as any other seizure lasting that long would be.

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Historical Findings
1. Age less than or equal to 14 years
2. History of actual or possible poisoning either through ingestion, inhalation, or skin exposure

Physical Findings
1. Patient has a NORMAL level of consciousness. For altered mental status, see appropriate pediatric protocol.
2. Normal systolic blood pressure for age.

Protocol
1. Evaluate scene for provider safety.
2. Maintain airway and administer oxygen by non-rebreather facemask at 12-15/min. Oxygen should be administered as needed to keep oxygen saturation at least 95% AND in children with any element of respiratory distress. If carbon monoxide exposure is suspected or the patient is cyanotic, then administer oxygen at 12-15/min via non-rebreather facemask regardless of saturation reading.
3. Assess breath sounds, circulation, and level of consciousness. Then obtain vital signs.
4. If the patient has altered mental status, refer to the appropriate pediatric protocol.
5. If toxin remains on patient, wash or brush off as appropriate. See Contaminated Patient Protocol.
6. If there is eye exposure, flush the eyes with normal saline.
7. If patient has ingested medication or other substance, obtain container(s), if available, and bring them with the patient to the emergency department.
8. Begin transport as soon as possible.
9. Reassess breath sounds, circulation, level of consciousness, and vital signs frequently. If there is any change in these, notify medical control of the receiving hospital.

Notes
A. 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 medical control can enhance the prehospital care of patients with potentially dangerous exposures and is encouraged.
B. Ipecac is no longer recommended under any circumstances for ingestions.

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ACADEMY OF MEDICINE OF CINCINNATI
PARAMEDIC PROTOCOLS FOR SW OHIO

PEDIATRIC MEDICATION CHART – P612

Age		0-3 m	6 m	9-24 m	3 y	6 y	8 y	10 y	12 y	14 y
Weight	lbs kg	6-7 3	11 5	20 10	30 15	40 20	50 25	60 30	80 40	100 50
Vital Signs	Low Limit Sys BP Pulse	60-70 100-118	70 100-180	70-75 90-160	75-80 80-140	80 70-130	80 70-130	85 60-120	85 60-120	90 60-120
Airway	ET size	3.0-3.5	3.5	4.0-4.5	5.0	5.5	6.0	6.5	7.0	7.0
Drugs	Atropine - ET/IV/IO	0.1 mg	0.1 mg	0.2 mg	0.3 mg	0.4 mg	0.5 mg	0.6 mg	0.8 mg	1 mg
	Diphenhydramine (Benadryl) -1 mg/kg - IM/IV			10 mg	15 mg	20 mg	25 mg	30 mg	40 mg	50 mg
	Bicarbonate 4.2% - IV/IO	6 mL	10 mL							
	Bicarbonate 8.4% - IV/IO			10 mL	15 mL	20 mL	25 mL	30 mL	40 mL	50 mL
	Dextrose 25%* - IV/IO	6 mL	10 mL	20 mL						
	Dextrose 50% - IV/IO				15 mL	20 mL	25 mL	30 mL	40 mL	50 mL
	Epinephrine 1:10,000 - **- IV/IO**	0.3 mL	0.5 mL	1 mL	1.5 mL	2 mL	2.5 mL	3 mL	4 mL	5 mL
	Epinephrine 1:1000 **- ET**	0.3 mL	0.5 mL	1 mL	1.5 mL	2 mL	2.5 mL	3 mL	4 mL	5 mL
	Epinephrine 1:1000 **- Subcutaneous** (SQ)		0.05 mL	0.1 mL	0.15 mL	0.2 mL	0.25 mL	0.3 mL	0.3 mL	0.3 mL
	Amiodarone (Cordarone)† - 5 mg/kg - IV/IO	15 mg	25 mg	50 mg	75 mg	100 mg	125 mg	150 mg	200 mg	250 mg
	Glucagon‡ - IM	0.5 mg	0.5 mg	0.5 mg	0.5 mg	1 mg	1 mg	1 mg	1 mg	1 mg
	Lidocaine 1% - 1 mg/kg - ET/IV/IO	3 mg	5 mg	10 mg	15 mg	20 mg	25 mg	30 mg	40 mg	50 mg
	Morphine Sulfate - 0.1 mg/kg - IV/IM				1.5 mg	2 mg	2.5 mg	3 mg	4 mg	5 mg
	Naloxone (Narcan) - ET/IV/IO/IM	0.3 mg	0.5 mg	1 mg	1.5 mg	2 mg	2 mg	2 mg	2 mg	2 mg
	Midazolam (Versed) - 0.1 mg/kg - IV/IM	0.3 mg	0.5 mg	1 mg	1.5 mg	2 mg	2.5 mg	3 mg	4 mg	5 mg
IV/IO Fluid Bolus	Normal Saline (20 mL/kg)	60 mL	100 mL	200 mL	300 mL	400 mL	500 mL	600 mL	800 mL	1 Liter
Defibrillator	Round up to closest #	6 J	10 J	20 J	30 J	40 J	50 J	60 J	80 J	100 J

*Mix 1/2 amp of D50 (25 mL) with 25 mL of normal saline
†Mix 150 mg of Amiodarone in 100 mL of normal saline for a 1.5 mg/mL solution
‡1 unit is equal to 1 mg
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Invasive Treatment Protocols (T)

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Indications
1. Symptomatic bradycardia unresponsive to atropine or
2. Asystole or
3. Pulseless idioventricular rhythm.

Contraindications
1. Hypothermia
2. Children age > 14.

CONSCIOUS OR SEMI-CONSCIOUS PATIENTS WITH A PULSE
Protocol
1. Connect pacing electrodes and cables.
2. Notify receiving facility.
3. Begin pacing at a rate of 70 with current output at 20 mA. Increase current output by 20 mA every 10 seconds until either cardiac capture occurs, the patient complains of significant pain from the pacemaker, or maximal output is reached.
4. If capture occurs, reassess peripheral pulses and vital signs.

PULSELESS OR UNCONSCIOUS PATIENTS
Protocol
1. If pulseless, interrupt chest compressions briefly to apply pacing electrodes to chest and back.
2. Initiate pacing at a rate of 100 and maximum current output.
3. Once pacing has begun (as indicated by chest wall twitching), interrupt chest compressions and assess peripheral pulses. If pulse is present, discontinue chest compressions and assess blood pressure. If pulse is absent resume chest compressions.
4. Notify receiving facility

Notes
A. Remove any nitroglycerin patches or pads before pacing or defibrillating.
B. Consider sedating conscious patients when pacing.

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Indications:

1. Treatment of tension pneumothorax is simple, but the complications of the procedure can be lethal. Diagnosis must be accurate and is not always easy. Field treatment is indicated when the life of the patient is in danger and treatment cannot be delayed until arrival at the hospital.[1]
2. Field relief of tension pneumothorax is indicated ONLY when the patient has progressive severe respiratory distress with cyanosis, decreased breath sounds on the affected side, and hypotension. In addition the patient may have distended neck veins and tracheal shift away from the affected side. If the patient is intubated, there should be increasing difficulty in ventilating. Hypotension can be detected by noting loss of radial pulse. Usually there will be loss of consciousness as well.

Differential Diagnosis

1. Simple pneumothorax without tension
2. Hemothorax
3. Cardiac tamponade

Complications

1. Hemorrhage from vessel laceration.
2. Creation of a pneumothorax if one was not already present.
3. Laceration of the lung.
4. Infection.

Procedure

1. Maintain airway and administer oxygen by non-rebreather face mask at 12-15/min.
2. Expose the entire chest.
3. Clean the affected side.
4. Prepare for the procedure using on of three techniques:
   A. Attach a 2" or longer 12 – 14 gauge IV catheter and needle to a large syringe, or
   B. Puncturing the IV catheter and needle through a condom (the finger of a rubber glove will not work) or,
   C. Simply use the IV catheter and needle alone.
   D. Insert the 12 – 14 gauge IV catheter and needle assembly in one of two locations:
      i. Over the top of the rib in the second or third intercostal space in the *midclavicular* line, or,
      ii. Over the top of the rib of the fifth or sixth intercostal space in the *midaxillary* line.
   E. If a tension pneumothorax is present, then a rush of air will be heard or the plunger of the syringe will be easy to pull back.
   F. Remove the needle from the catheter and leave the plastic catheter in place.
   G. If a condom is not available, then attach a one-way valve device to the end of the catheter.

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Notes

A. Tension pneumothorax is rare; but when present, it must be treated promptly.

B. Non-tension pneumothorax is relatively common, is not immediately life threatening and should not be treated in the field.

C. Positive pressure ventilation may lead to the development of a pneumothorax and to rapid progression to tension pneumothorax.

D. If neither a condom nor one-way valve device is available, then attach the end of a standard intravenous tubing set to the catheter. Cut off the drip chamber and place the cut end under water in a basin or bottle. The water-seal basin or bottle must be kept lower than the catheter penetrating the chest wall.

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Indications
1. Acute upper airway obstruction which cannot be relieved using basic airway maneuvers, finger sweep, or endotracheal visualization and Magill forceps removal.[1]
2. Respiratory arrest with facial or neck anatomy or injury that makes endotracheal intubation impossible.

Causes of Upper Airway Obstruction
1) Massive facial trauma
2) Foreign body aspiration
3) Laryngoedema
4) Laryngospasms
5) Airway burns
6) Laryngeal
7) Epiglottitis

Complications
1. Bleeding
2. Vocal cord injury
3. Failure to place the catheter in the trachea

Protocol
1. Following exposure of the neck, identify the trachea, cricoid cartilage and cricothyroid membrane.
2. Prep the skin, if time permits.
3. Puncture the cricothyroid membrane with the cannula attached to a syringe and direct the tip toward the low back or feet.
4. Direct the cannula downward with continual aspiration.
5. When air is easily aspirated, slide the cannula off the needle and advance into the trachea.
6. Remove the needle and connect the cannula to the manual jet ventilator device.
7. Ventilate the patient using 1 second bursts of oxygen from the 50 psi manual source. The rate used should be at least 20 per minute.

Notes
A. An alternative technique using a wire guided instrument set, such as the Pertrach kit, may be used at the discretion of the system medical director.

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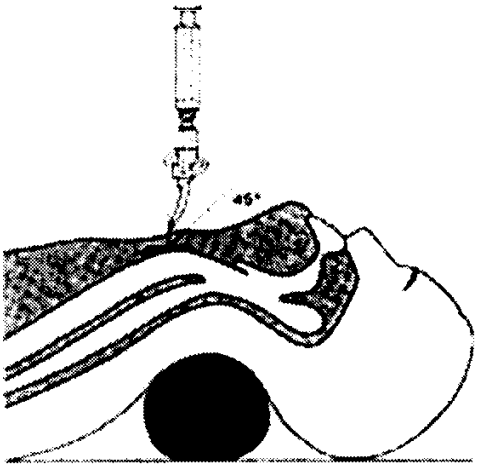
NOTE: This Protocol has not been approved or endorsed by the Academy of Medicine but may be an alternative to a needle cricothyrotomy. This should be discussed and agreed upon with your Medical Director.

Indications

1. Acute upper airway obstruction which cannot be relieved using basic airway maneuvers, finger sweep, or endotracheal visualization and Magill forceps removal.
2. Respiratory arrest with facial or neck anatomy or injury that makes endotracheal intubation impossible.

Causes of Upper Airway Obstruction

1. Massive facial trauma
2. Foreign body aspiration
3. Laryngoedema
4. Laryngospasms
5. Airway bums
6. Laryngeal fracture
7. Epiglottitis

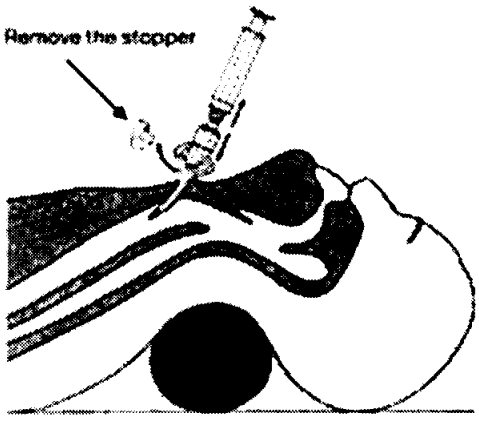


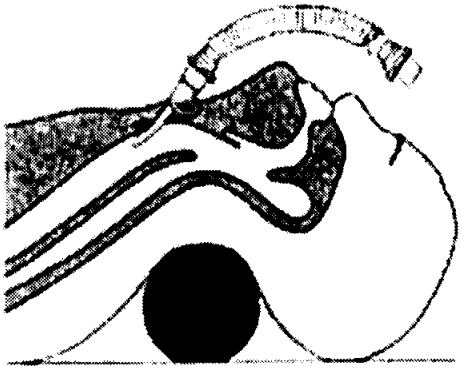
Complications

1. Bleeding
2. Vocal cord injury
3. Failure to place the catheter in the trachea

Procedure:

1. Place the patient in a supine position. Assure stable positioning of the neck region (place a pillow or piece of clothing under the patient's shoulders) and hyperextend the neck.
2. Ensure the neck region is stabilized for puncture.
3. Secure the larynx laterally between the thumb and forefinger, identify the cricoid puncture site midline between the thyroid cartilage and cricoid cartilage.
4. Firmly hold and introduce the device at a 90 degree angle into the trachea.
5. After puncturing the cricoid space check the entry of the needle into the trachea by aspirating air through the syringe. if air is present the needle is within the trachea.
   A. Should no aspiration of air be possible because of an extremely thick neck, it is possible to remove the stopper and carefully insert the needle further until entrance into the trachea is made.
6. Change the angle to 60 degrees caudally and advance the device into the trachea to the level of the stopper.





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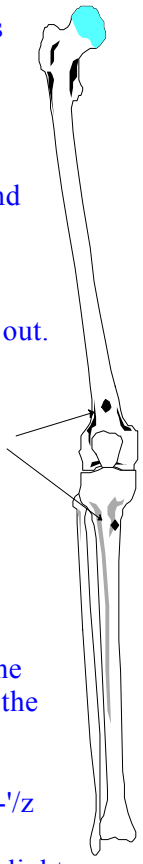
7. Remove the stopper. Be careful not to advance the device further with the needle still attached.
8. Hold the needle and syringe firmly and slide only the plastic cannula along the needle into the trachea until the flange rests on the neck.
9. Remove the syringe and needle.
10. Secure the device in place and connect ventilation device tubing to the 15mm connector.

Historical Findings
1. Age ≤14 years old.

Indications
1. Emergency vascular access for the pediatric patient when peripheral intravenous access is unavailable.
2. Cardiopulmonary arrest (non-breathing and absent central pulses).
3. The patient *must have* uncompensated shock (absent peripheral pulses or systolic blood pressure less than 70 mm Hg) when a peripheral IV cannot be established after two attempts (attempts can include actual venipunctures or looking at two different sites to find a vein).

Contraindications
1. Use of a limb with a suspected fracture or prior puncture of the bone since fluid will leak out.
2. Placement through an infected or burned area unless this is the only available site.

Complications
1. Extravasation (leaking / effusion) of fluids into the subcutaneous tissue
2. Infection of tissue or bone
3. Injury to the epiphysis (growth plate)



Procedure
1. The preferred site is the proximal tibia, one fingerbreadth (1-3 cm) below the prominence (tibial tuberosity) on the flat anteromedial surface. A different bone should be chosen if the primary bone is fractured or the overlying skin is burned or infected. A secondary site is the distal femur in the midline approximately 3 cm above the patella.
2. Prep the skin.
3. Adjust the bone marrow needle for insertion by lowering the depth guard to cover about'/-'/z of the needle.
4. Insert a 15-18-gauge bone marrow needle through the skin with the point directed at a slight angle away from the knee (away from the growth plate). Use a boring or screwing motion until a give is felt upon entering the marrow cavity. If a pop or give is not felt, then raise the depth guard on the needle and continue to apply pressure.
5. Remove the stylet and attempt to flush the needle with IV solution. If the solution can be flushed and there is no evidence of swelling around the site, then the needle can be safely assumed to be in the correct place. If resistance is met, then try to pull the needle back slightly and flush again. If still unsuccessful, the remove needle and try again in a different bone.
6. Attach IV tubing with stopcock to needle.
7. Screw the flange of the needle so it is flush to the skin and tape it in place.
8. Begin infusion of medications and fluids *(a pressure bag or a syringe may be needed).*
9. If using an IO insertion device, follow manufacturer instructions.

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Notes

A. Medications and fluids should be given push since gravity flow is often slow.
B. If unable to push fluid from the syringe, consider the following:
C. If "pop" was not felt, continue advancing needle until pop is felt.
D. A piece of bone may be blocking the end of the needle. Reinsert the stylet, remove it, and reattempt to push fluid.
E. The tip of the needle may have gone through the marrow cavity and is the other side of the bone. Slowly pull back the needle while pushing fluids from the syringe. When you are able to push fluid from the syringe easily without swelling around the site, secure the needle in place and continue giving fluids and medications.
F. If there is swelling around the site due to fluids in the soft tissues, consider the following:
G. The fluid may be leaking from a previous puncture site.
H. It may be leaking through the hole around the needle, which was enlarged by bumping or jiggling the needle.
I. The needle may have gone all the way through the bone and the fluid is leaking from the end of the needle on the other side. You must remove the needle and attempt access in another bone.

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Indications

1. Emergent venous access when patient's life is in imminent danger or patient is in cardio-respiratory arrest, and
2. A peripheral IV cannot be established after two attempts (attempts can include actual venipunctures or looking at two different sites to find a vein), and
3. Patient has central venous access device (CVAD) present.

Devices

1. Indwelling Catheter(s) – Venous access devices whose ports are Luer-locked or capped. Tip of the catheter is located in large vein or superior vena cava. Available brands include Hickman, PICC Line, and Midline.
2. Implanted Ports – Single or double (oval) reservoir located under skin on chest or forearm. To access, one must insert a needle through skin into the rubber septum. The catheter tip is located in large vein or superior vena cava. Available brands include Port-a-Cath.
3. Aphoresis (the re-transfusion of a donor's or patient's own blood from which certain constituents have been removed) or Hemodialysis Accesses.
   A. Indwelling Catheters — Large bore, short length double catheters (may have third tail or lumen). "Arterial" and "venous" lumens are actually side-by-side in subclavian, internal jugular, or femoral vein. Available brands include Quinton and Perma Cath.
   CAUTION: These devices contain high concentrations of heparin. It must be discarded prior to use.
   B. 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.

Procedure

1. Identify if CVAD is accessible by standard prehospital equipment. (Implanted ports, AV fistulas, and grafts should be accessed by special, non-coring [Huber-type] needles.)
2. Identify shut-off, clamps, caps, heparin/saline lock, etc., and clamp line if disconnecting or opening.
3. Access the device after cleansing with Betadine prep.
4. Aspirate with 10-20-cc syringe until blood returns, 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.
5. Discard aspirated fluid.
6. Flush lumen or port with 10-cc saline, avoiding excessive pressure.
7. Establish IV connection, avoiding air entry.
8. Secure connections with Luer lock or tape.

Notes

A. Arterial bleeding will result if the needle is dislodged from a dialysis graft or fistula.
B. Dialysis fistulas and grafts (located under skin or arm) may have high back pressure and require positive pressure to infuse.
C. When attempting to insert a needle into a dialysis fistula, avoid the scar line or any lumpy areas in the graft or fistula. Follow the track marks that are present from previous use of the site for dialysis.

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The following policy and procedure is to be followed for all patients with potential or actual injury to any part of the spine. Airway and ventilation are paramount, and none of the guidelines listed below are intended to compromise or prevent maintenance of these vital functions.

Indications
A patient should be immobilized if any of the following are present:
1. Significant multi-system trauma
2. Inability to conduct a reliable history and physical (i.e. presumed intoxication, non-English speaking, mental disability) and significant mechanism of injury (defined in Notes)
3. Obvious neurological deficit

Omission Criteria: - A patient does NOT need c-spine immobilization if ALL of the following are present:
1. Age >16, <64
2. Normal mental status
   A. --no signs of intoxication
   B. --GCS 15
   C. --alert and oriented to person, place, time, events
3. No distracting injuries
   A. --obvious fracture/dislocation
   B. --suspected fracture requiring splint
   C. --injury requiring administration of pain medication
4. No neurological deficit
5. No mid-line spine pain/tenderness on palpation of spinous processes

Patients who do not meet all of these omission criteria may not need immobilization, based on provider judgment (examples: restrained 12 year-old in minor MVC without complaint, Spanish-speaking male with isolated ankle injury after fall).

Procedure
1. The following procedure is to be used to properly immobilize the patient when injury to the cervical spine is possible:
   A. The neck must be maintained in a neutral position at all times by direct manual and/or mechanical means. DO NOT APPLY TRACTION AT ANY TIME.
   B. While maintaining the neutral position, you may apply an APPROVED mechanical adjunct to further stabilize the neck prior to or upon placing the patient on a long immobilizer. The following devices are approved mechanical adjuncts for cervical spine immobilization:
      i. Kendrick Extrication Device (KED), XP1, or equivalent
      ii. Cervical Immobilization Device (CID)
      iii. Rigid cervical collar properly fitted
   C. As soon as practical, the patient will be placed supine on a long immobilizer. The following such devices are approved:
      i. Scoop stretcher
      ii. Long spine board (wood or equivalent radiolucent material)
      iii. Stokes litter (high angle rescue only)
      iv. Full body vacuum splint

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D. Straps must also be placed across the patient's chest, pelvis, and legs to secure their body to the long immobilizer. CAUTION: It is DANGEROUS to secure the head if the BODY is allowed to move on the long immobilizer. This will subject the neck to unacceptable torque and bending. Airway secretions and vomitus are to be cleared using suction devices. If necessary, the patient may be log rolled together with the immobilization equipment for the purpose of airway maintenance.
E. Once the patient is on the long immobilizer so they cannot slip around on it, lateral neck supports such as towel rolls, Head bed, or equivalent must be applied and the patient's head taped across the forehead and collar.

2. The following procedure is to be used to immobilize the thoracic and lumbar spine when injury to the cervical spine is highly unlikely:
   A. Suspected cervical spine problems are to manage as above. The spine must be maintained in a neutral position at all times by direct manual and/or mechanical means. If the cervical spine has been cleared, either because of a mechanism of injury isolated to the lower spine, such as direct trauma to only to the lumbar spine, or because of other factors that make cervical spine injury extremely unlikely, then cervical immobilization is not necessary.
   B. As soon as practical, the patient will be carefully placed on a long immobilizer. The following such devices are approved:
      i. Scoop stretcher
      ii. Long spine board (wood or equivalent radiolucent material)
      iii. Stokes litter (high angle rescue only)
      iv. Full body vacuum splint
   C. The patient must be securely fastened to the long immobilizer with straps across the chest, pelvis, and legs to prevent any torque or twisting of any part of the spine. Airway secretions and vomitus are to be cleared using suction devices. If necessary, the patient to be log rolled together with the immobilization equipment for the purpose of airway maintenance.

Notes

A. Prior to using this protocol in the field, each EMT must attend a training course in the proper use of this protocol. The medical director of the EMS service that employs the EMT must approve this course. The medical director must also certify that the EMT has successfully completed the training course and is ready to use this protocol in the field.
B. "Significant mechanism of injury" refers to "violent impact forces that are clearly capable of damaging the bony spinal column" such as a high velocity vehicle crash, a fall from a 20 foot roof, or a high velocity gunshot wound near the spine.' All of these patients should be immobilized regardless of the lack of signs and symptoms.
C. The elderly may have altered perception of pain and therefore may not report the same intensity of symptoms as younger patients. Therefore extra caution is in order when assessing elderly patients.
D. Keep in mind that patients who are immobilized properly on a long immobilization device with cervical immobilization will not be able to reliably protect their airways in the event they vomit. Therefore it is imperative that a working suction device be handy to clear vomit from the patient's upper airway.
E. The mere smell of alcohol does not mean that the patient is intoxicated. However, if there is any question about whether or not the patient is intoxicated, then the patient should be treated as if he has a spine injury, at least until he is "calm, cooperative, sober, and alert enough to give a reliable exam.'"

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F. When treating injured patients, field personnel must keep in mind that clear, unobstructed x-rays of the spine are essential for proper hospital evaluation of the injured patient. With this in mind and faced with a choice between radiopaque (e.g.. steel, thick aluminum) and radiolucent (e.g.. plastic, wood) immobilization devices, the latter should be used. On the other hand, proper emergent handling of the patient at the scene may preempt this consideration and require the use of devices of a higher radiodensity

G. Current research shows that selective spinal immobilization can be safely done in the pre-hospital setting. The same research also shows that immobilization can cause respiratory compromise and increased pain in patients without bony spine injuries.

Introduction
Management of airway, ventilation, and oxygenation in the critically ill patient is a primary function of the paramedic. Intubation is often indicated in such patients, but occasionally it cannot be accomplished by the oral route. Nasotracheal intubation is a valuable alternative procedure to provide optimal respiratory management in some of these cases.

Nasotracheal intubation requires both skill and patience to perform correctly. It is frequently more time-consuming than orotracheal intubation. Nasal intubation can have serious complications including epistaxis, sinusitis, and increased intracranial pressure. It should be reserved for the critically ill patient who has failed to respond to conventional airway and pharmacological interventions such as 100% oxygen by bag-valve-mask ventilation, nitroglycerin, and furosemide.

Indications
1. Breathing patients requiring intubation where direct visualization of the posterior pharynx is difficult or impossible, e.g., the inability to open the patient's jaw or blood or emesis in the airway obscuring direct visualization of the vocal cords, OR
2. Breathing patients with severe respiratory distress indicated by decreasing level of consciousness, cyanosis, ineffective or decompensating respiratory effort.

Contraindications
1. Apnea
2. Suspected epiglottitis characterized by a sore throat, fever, and drooling
3. Pediatric patients weighing less than 30 kg (8 years old). This group of patients is best managed with orotracheal intubation or bag-valve-mask ventilation.
4. Suspected mid-facial fractures or suspected basilar skull fractures indicated by head or facial trauma with nasal hemorrhage, periorbital ecchymosis or swelling, hemorrhage from ear canals, or maxillary bone deformity and instability.
5. Head injury
6. History of bleeding disorders or current anticoagulation therapy with agent such as warfarin (Coumadin®').
7. Penetrating neck trauma or suspected laryngeal injury due to blunt trauma

Complications
1. Unrecognized esophageal intubation with subsequent hypoxic brain injury
2. Nasal bleeding
3. Turbinate avulsion
4. Nasopharyngeal or retropharyngeal laceration
5. Injury to vocal cords, epiglottis, or other airway structures
6. Vomiting and subsequent aspiration
7. Sinusitis, otitis media, bacteremia

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Protocol

1. Begin pre-oxygenation with 100% 0_2 prior to the procedure. If the patient is conscious, explain what is about to happen. Ensure that the scene is calm enough to hear the air exchange when advancing the tube.
2. Instill phenylephrine HCL 0.25% or oxymetazoline 0.05%, two or three drops or sprays into both external flares. Early installation allows adequate time to effect vasoconstriction of the nasal mucosa.
3. Administer a spray of cetacaine or lidocaine into the posterior pharynx, if possible, to reduce the gag reflex.
4. Lubricate a nasopharyngeal airway with 2% lidocaine gel or 2% lidocaine viscous and insert it into the larger flare. This will anesthetize the nares while the remaining equipment is assembled.
5. Prepare suction. In addition to vomiting, bleeding in the posterior pharynx may occur due to insertion of the endotracheal tube.
6. Choose an endotracheal tube. The primary criterion for tube size is the nasal canal diameter. Often a 7.0-mm tube is the best size for adults. Rarely a tube less than 6.5-mm will be necessary. ET tubes with attached pull-rings (Endotrol) are preferable for the procedure.
7. Aggressively press the 15-mm adapter into the tube end. It is extremely difficult to re-affix the adapter after the tube has been placed. Attach a 10-ml syringe to the cuff inflation valve and check the cuff for air leak. Remove the stylet from the tube if it is in place. A lighted stylet with the internal wire removed may be placed into the tube to assist endotracheal tube placement.
8. If a lighted stylet is not used, consider attaching the airflow whistle to the adapter end of the ET tube. This will assist detecting air movement as the tube is advanced into the trachea.
9. Lubricate the endotracheal tube with 2% lidocaine gel or 2% lidocaine viscous.
10. Position the patient with head in midline, sniffing position. Use neutral neck position with a cervical immobilization collar in place if cervical spine injury is suspected. The patient may be in a sitting or upright position; patients in severe
11. Respiratory distress should be intubated in the upright position. Remove the naso-airway from the selected nares.
12. With gentle steady pressure, advance the tube perpendicular to the facial plane through the nares to the posterior pharynx. The beveled edge of the tube is placed against the nasal septum to reduce the risk of bleeding. Advancing the tube tip along the nasal floor avoids the turbinates and reduces the incidence of epistaxis. Never force the tube. If resistance is felt, the tube could be dissecting under the nasal or pharyngeal mucosa. Withdraw the tube part way, redirect, and advance again with gentle steady pressure.
13. Keeping the curve of the tube exactly midline, continue advancing slowly while listening to air movement and watching for condensation in the tube. When the tube tip is nearest the trachea, air movement will feel the strongest and sound the loudest. It may be helpful to obstruct the mouth and the opposite nares.
14. A slight resistance may be felt just prior to entering the trachea. At the onset of the next inspiration, advance the tube into the trachea with a quick, controlled movement. Usually the first sign of correct passage is a violent cough.
15. Advance the tube approximately one inch further and then inflate the cuff.
16. If the patient develops laryngospasm or if the tube enters the esophagus, withdraw the tube slightly. Reposition the tube tip above the level of the cords and wait until the patient repeats inhalation. Re-attempt tube advancement. Application of cricoid pressure may assist successful passage of the tube into the trachea.
17. 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.

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18. Attach the esophageal intubation detector and attempt to aspirate air. If air does not return, then reattempt intubation as in step 14. A detector of end-tidal carbon dioxide may be used in place of the esophageal intubation detector.
19. Ventilate and auscultate for bilateral breath sounds in the axilla and for the absence of ventilatory sounds in the epigastrium.
20. Tape or securely tie the tube with umbilical tape or other suitable material.

Notes

A. The attempt to nasotracheally intubate the patient should not exceed three minutes from the time the ET tube is first introduced into the patient's nares. Oxygenation should occur during the procedure. This may be accomplished by applying oxygen to the endotracheal tube as it rests in the oral pharynx. A nasal cannula may also be used to place oxygen in the patient's mouth or nose.
B. Whenever possible, pulse oximetry should be used during the procedure to monitor the patient's oxygenation status.
C. Nasotracheal intubation is not a panacea (a supposed cure for all diseases or problems). Some patients who need intubation are best managed with rapid sequence intubation techniques, including the use of paralytic drugs. The paramedic must use judgment in choosing the best method of airway management for an individual patient. Factors to be considered include extrication and transport time, time interval to accomplish nasotracheal intubation, and the patient's ventilatory and oxygenation status. Some patients are best served by application of 100% oxygen by non-rebreather facemask followed by urgent transport to a center capable of rapid sequence intubation. In general most breathing head injury patients fall into this category because the adverse response to the pain of nasotracheal intubation is likely more harmful than the short delay to definitive placement of an endotracheal tube.
D. Topical local anesthetic sprays are toxic if they are overused. Lidocaine spray is delivered in a metered 10-mg dose. In general the maximum dose of lidocaine spray is ten sprays. Cetacaine spray is delivered by a continuous spray. In general, no more than two seconds of spray should be used in a patient.
E. If the patient can vocalize, then the endotracheal tube has not passed through the vocal cords.
F. 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 when esophageal intubation is discovered is that "the tube moved." After each patient movement (e.g. board to stretcher, stretcher to ambulance), the tube position should be rechecked.
G. 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 where an attempt is defined as insertion of a endotracheal tube into one of the nares
    d. Depth of insertion (i.e. "X" number of centimeters at the nares)
    e. Complications
    f. Method of confirmation of correct placement (e.g. esophageal intubation detector, clinical exam).

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H. Prior to using this protocol in the field, the paramedic must complete an Academy of Medicine approved training program; and the paramedic's skill must be verified by the emergency medical service's Medical Director.

I. When in doubt, take it out; and assure oxygenation by another attempt or method.

Introduction

1. In the prehospital setting, a small percentage of endotracheal tubes are placed incorrectly. To lessen the possibility of adverse affects, all providers placing endotracheal tubes will use a device to aid in verifying correct endotracheal tube placement.
2. As the operator in charge of the airway, the EMS provider is accountable for correct tracheal placement of the endotracheal tube up until the patient is safely positioned on the stretcher in the emergency department and the receiving physician agrees that the tube is correctly positioned.

Indications

1. Any patient in which endotracheal intubation is required.

Protocol

1. Intubate patient using proper procedure.
2. Before passing the endotracheal tube, you must be able to see at least part of the vocal cords. Visualize the tube passing through the vocal cords.
3. Inflate ET cuff. (Patients less than 8 years of age should be intubated using ET tubes without a cuff.)
4. Begin ventilations and simultaneously confirm tracheal placement using the following techniques and adjunctive measures:
   A. Auscultate for equal, bilateral breath sounds at the axillae and for the absence of ventilating sounds over the stomach. Adjust depth of tube position to correct for any misplacement into a mainstem bronchus as needed. If there are breath sounds noted in the epigastric region and an absence of breath sounds in the axillary regions then an esophageal intubation should be suspected and the endotracheal tube should be removed following immediate cuff deflation. Bag-valve-mask airway management should then be resume until repeat endotracheal intubation is attempted or other modalities of airway are instituted.
   B. Document the presence of carbon dioxide in the air leaving the endotracheal tube. A variety of carbon dioxide detection devices are available including electronic and colorimetric varieties. The appropriate use of these devices is outlined below:
      i. If CO2 is present (based upon an electronic or colorimetric device), then leave the endotracheal tube in place.
      ii. If CO2 is absent and the patient has a pulse, then check tube placement by (a) using an esophageal detector device (see Note #2) or (b) directly visualizing the endotracheal tube passing through the glottic opening. If neither of these can be successfully accomplished or the tube is positioned improperly, then remove the tube and re-attempt intubation following bag-valve mask ventilation.
5. If proper placement is verified, secure the tube with normal procedure. In children eight years of age or younger, immobilize the patient using a backboard and a head immobilization device to keep the head from moving relative to the chest. In all patients, any necessary measures should be undertaken to minimize patient head and neck movement in order to reduce the likelihood of ET tube movement.
6. Document the depth of the ET tube at the level of the patient's teeth in any successful intubation.
7. Recheck endotracheal tube placement after each patient movement.

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Notes:

1. When using the colorimetric CO2 detector, interpretation is only valid after a minimum of six (6) ventilations has been administered to the patient with the bag-valve. Following intubation, the CO2 detector should be attached as soon as possible, but final interpretation of color change should be delayed until at least 6 ventilations have been performed.
2. The proper placement of an endotracheal tube (ET) can be confirmed using an esophageal detection device using the following guidelines: If air is easily aspirated, then the ET tube is in the trachea. Remove the esophageal detection detector and ventilate the patient using the ET tube. If air is not easily aspirated, then the ET tube is most likely in the esophagus. Remove the ET tube, ventilate the patient with a bag-valve mask, and attempt intubation again.
3. During any situation in which the patient is being transferred or moved such that direct control of the airway (including the ET tube, bag-valve mask, or any other airway components) cannot be guaranteed, then the ET tube should be disconnected from the bag-valve mask and re-attached only when direct control of the airway is restored.

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PEDIATRICS

NEEDLE CRICOTHYROTOMY PEDIATRIC – T709

Indications
1. Age less than or equal to 14 years
2. Acute upper airway obstruction which cannot be relieved using basic airway maneuvers, finger sweep, endotracheal visualization with Magill forceps removal, or endotracheal intubation.
3. Respiratory arrest with facial or neck anatomy or injury that makes endotracheal intubation impossible.

Causes of Upper Airway Obstruction
1. Massive facial trauma
2. Airway burns with edema
3. Foreign body aspiration
4. Laryngoedema or angioedema from allergic reactions
5. Laryngeal fractures
6. Epiglottitis or other life-threatening local infections with swelling of upper airway structures

Complications
1. Subcutaneous emphysema
2. Bleeding (minimized by puncturing in the lower third of the cricothyroid membrane to avoid vessels)
3. Pneumothorax (from allowing insufficient time for passive exhalation in between breaths)

Protocol
1. Following exposure of the neck, identify the trachea, cricoid cartilage and cricothyroid membrane below it.
2. Prep the skin, if time permits.
3. Attach a 5 mL syringe with 2-3 mL of saline to a 16 or 18 gauge angiocatheter.
4. Hold the trachea in place and provide skin tension with the thumb and fingers of non-dominant hand.
5. 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 toward the patient's feet.
6. 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.
7. Remove the needle with the syringe and connect the cannula to a manual jet ventilator device.
8. Ventilate the patient using 1 second bursts of oxygen from the 50 psi manual source. The rate used should be at least 20 per minute.

Notes
1. Because children vary greatly in size from one to another, many commonly used rescue airway devices for adults such as QuickTrach by Rusch, Inc. are not approved for use in pediatric patients.
2. Prepackaged kits to obtain tracheal access using a Seldinger-type technique are available. For example, Pertrach by Pertrach Inc. can be used for pediatric patients with airway obstruction. This type of product should be used only upon the direction of medical control, however.
3. If the cricothyroid membrane cannot be located, the catheter may be safely inserted in a lower intercartilaginous tracheal space.

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The following medications are used in these protocols:

- ADENOSINE
- AMIODARONE (CORDARONE®)
- ASPIRIN
- ATROPINE
- BENADRYL® (DIPHENHYDRAMINE)
- BICARBONATE
- DEXTROSE 50%
- DOPAMINE
- EPINEPHRINE 1:1000
- EPINEPHRINE 1:10,000
- GLUCAGON
- LASIX® (FUROSEMIDE)
- LIDOCAINE
- MAGNESIUM SULFATE
- MORPHINE SULFATE
- NARCAN® (NALOXONE)
- NITROGLYCERIN TABLETS
- NORMAL SALINE FOR INJECTION
- OXYGEN
- PROMETHAZINE (PHENERGAN)
- PROPARACAINE (ALCAINE)
- PROVENTIL® (ALBUTEROL) AEROSOL
- STERILE SALINE IRRIGATION
- TETRACAINE
- VASOPRESSIN
- VERSED

1:1 with sterile water

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Ohio Public Safety - Division of EMS

Scope of practice and EMS Board approved extended scope of practice for Ohio EMTs

	AIRWAY MANAGEMENT	1st	B	I	P	Medical Director
1.	Open and maintain the airway	X	X	X	X	
2.	Oropharyngeal airway adjunct	X	X	X	X	
3.	Nasopharyngeal airway adjunct	X	X	X	X	
4.	Obstructed airway adjunct	X	X	X	X	
5.	Oral suctioning	X	X	X	X	
6.	ET Suctioning		X	X	X	
7.	Trach tube replacement and suctioning				X	YES
8.	Pulse oximeter equipment application / reading		X	X	X	YES
9.	Oxygen administration					
	a. Nasal cannula	X	X	X	X	
	b. Non-rebreather mask	X	X	X	X	
	c. Mouth-to barrier device	X	X	X	X	
10.	Ventilation management					
	a. Bag-Valve-Mask	X	X	X	X	
	b. Ventilation with a flow-restricted O_2 powered device	X	X	X	X	
11.	Oro-tracheal intubation				X	YES
	a. Pulseless / apneic patients only		X	X		YES
12.	Nasotrachael intubation				X	YES
13.	Cricothyrotomy, surgical				X	YES
14.	Cricothyrotomy, needle				X	YES
15.	Dual lumen airway				X	YES
	a. Pulseless / apneic patients only		X	X		YES
16.	Laryngeal Mask Airway (LMA)				X	YES
	a. Pulseless / apneic patients only		X	X		YES
17.	Ventilatory management – 16 years or older				X	YES
	NOTE: Medical Direction may either come in the form of on-line "or" protocol direction, EXCEPT where otherwise noted as "on-line" specific in this matrix.					
	CARDIAC MANAGEMENT	1st	B	I	P	Medical Director
1.	Automated External Defibrillator(AED)	X	X	X	X	
2.	Cardiac monitor strip interpretation			X	X	YES
3.	Manual defibrillation			X	X	YES
4.	Cardiopulmonary Resuscitation (CPR)	X	X	X	X	
5.	Transcutaneous Cardiac pacing				X	YES
6.	Baby Aspirin administration		X	X	X	YES
7.	Cardiac medication administration				X	YES
8.	Cardioversion				X	YES
9.	12-lead EKG performance & interpretation				X	YES
10.	Chest compression assist devices		X	X	X	YES

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	MEDICAL MANAGEMENT	1st	B	I	P	Medical Director
1.	Glucose monitoring system use (with C.L.I.A waiver in place)		X	X	X	YES
2.	Peripheral IV blood specimens			X	X	YES
3.	Oral glucose administration		X	X	X	YES
4.	Auto-injector Epinephrine (Pt. Assisted)	X	X	X	X	YES
5.	Epinephrine administration (Subcutaneous)			X	X	YES
6.	Activated Charcoal administration		X	X	X	YES
7.	Nitroglycerine administration (Pt. Assisted)		X	X	X	YES
8.	Nitroglycerine administration (Non-pt. Assist)				X	YES
9.	Metered dose inhaler (Pt. Assisted)		X	X	X	YES
10.	Nebulized medications				X	YES
	Patient Assisted Definition: a. May assist with patient's prescription upon patient request and with written protocol. OR b. May assist from EMS provided medications with on-line medical direction					
	PRE-HOSPITAL ALS ASSISTANCE	1st	B	I	P	Medical Director
1.	Set up of IV administration kit		X	X		YES
2.	Cardiac monitor/12-lead EKG application		X	X		YES
	NOTE: Medical Direction may either come in the form of on-line "or" protocol direction, EXCEPT where otherwise noted as "on-line" specific in this matrix.					
	TRAUMA MANAGEMENT	1st	B	I	P	Medical Director
1.	PASG		X	X	X	YES
2.	Long spine board	X	X	X	X	
3.	Short spine board	X	X	X	X	
4.	Splinting devices	X	X	X	X	
5.	Traction splint		X	X	X	
6.	Cervical Immobilization Device (CID)	X	X	X	X	
7.	Helmet removal		X	X	X	YES
8.	Rapid extrication procedures		X	X	X	
9.	Needle decompression of the chest				X	YES
10.	Soft tissue management	X	X	X	X	
11.	Management of suspected fractures	X	X	X	X	
	PREPARATORY / BASIC PERFORMANCES	1st	B	I	P	Medical Director
1.	BSI precaution/administration	X	X	X	X	
2.	Taking and recording of vital signs	X	X	X	X	
3.	Patient Care Report (PCR) documentation	X	X	X	X	
4.	Emergency childbirth management	X	X	X	X	
5.	Trauma triage determination per OAC 4765-14-02	X	X	X	X	
	OTHER	1st	B	I	P	Medical Director
1.	Medication administration (Protocol approved)				X	YES
2.	IV lifeline and fluid administration			X	X	YES
3.	Intraosseous infusion			X	X	YES
4.	Saline lock initiation			X	X	YES
5.	IV infusion pump				X	YES
	NOTE: Medical Direction may either come in the form of on-line "or" protocol direction, EXCEPT where otherwise noted as "on-line" specific in this matrix.					

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Historical Findings

1. Patients exhibiting signs and symptoms of nerve agent poisoning.
2. 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.

Physical Findings

S – Salivation
L – Lacrimation (Tearing)
U – Urination
D – Defecation
G – Gastrointestinal Distress
E – Emesis

Protocol

1. SELF PROTECTION OF THE RESCUER IS THE FIRST PRIORITY. Withdraw all EMS assets to a safe distance and notify the appropriate Hazardous material 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.
2. Administer one Mark-1 auto-injector kit (one atropine auto-injector (2mg), followed by one pralidoxime chloride 600mg (2-PAM) auto-injector). If severe signs and symptoms are present from the onset, administer the maximum dose of three Mark-1 auto injector kits in rapid succession (three atropine and three 2-PAM). Contact medical control and transport the patient.
3. For patients with mild to moderate symptoms assure airway patency (intubate if necessary) and administer high flow oxygen.
4. If practical, place patient on cardiac monitor
5. Establish IV of 0.9% sodium chloride at TKO.
6. If signs and symptoms are still present after 5-10 minutes, give second Mark-1 auto injector kit.
7. If signs and symptoms are present after an additional 10 minutes, give Mark-1 auto injector kit for the third time. If signs and symptoms persist, do not give additional antidote. Contact medical control.
8. Administer Versed 2-4 mg IV/IM until patient's speech slurs or a total of 8 mg is given for seizure activity

Notes:

A. Maintain the patients airway with suction as needed.
B. Pralidoxime chloride is most effective if administered immediately after exposure and is less effective if given more than six (6) hours after termination of exposure.
C. Diagrams:

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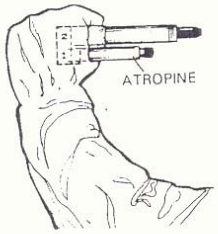
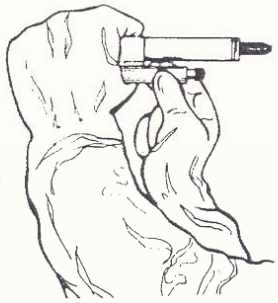
USE OF THE MARK I AUTOINJECTOR KIT QUICK REFERENCE

NOTE: The following steps should be demonstrated with a MARK I training kit or an expended actual MARK I in which the needles have been snapped off; enlist the aid of one of the students to assist in the demonstration.

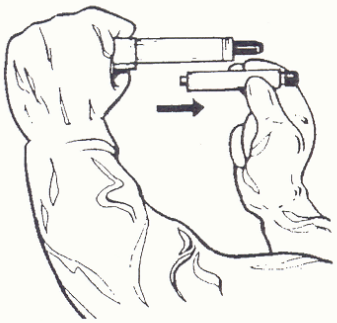
1. Remove the Nerve Agent Antidote Kit (MARKI kit) from its storage location.
2. With your non-dominant hand, hold the autoinjectors by the plastic clip so that the larger autoinjector is on top and both are positioned in front of you at eye level.





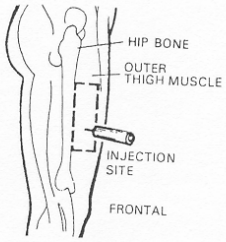
3. With the other hand, check the injection site (thigh or buttocks) for buttons or objects in pockets which may interfere with the injections.
4. Grasp the atropine (green-tipped) autoinjector with the thumb and first two fingers.

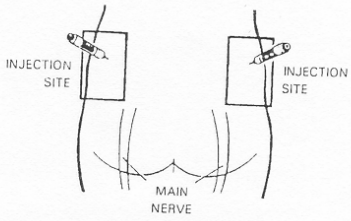
5. Pull the injector out of the clip with a smooth motion.



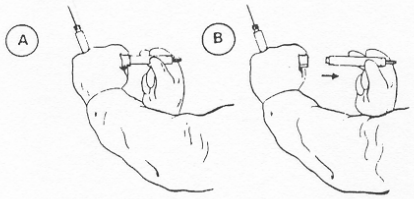
USE OF THE MARK I AUTOINJECTOR KIT (continued)

6. Hold the autoinjector like a pen or pencil, between the thumb and first two fingers.
7. Position the green tip of the autoinjector against the injection site (thigh or buttocks).





8. Apply firm, even pressure (not a jabbing motion) to the injector until it pushes the needle into the thigh or buttock.
9. Hold the injector firmly in place for at least 10 seconds. The seconds can be estimated by counting "one one thousand, two one thousand," and so forth.
10. Carefully remove the autoinjector.
11. Place the used autoinjector into a sharps container.
12. Pull the 2-PAMCl autoinjector (black-tipped) out of the clip and inject using the procedures outlines in steps 4 through 11.



13. Annotate the number of autoinjectors administered on an ambulance run report or (in a mass casualty situation) on the triage tag.

Historical Findings

1. Patient states they have had direct contact or exposure to a known hazardous material, toxin, or an unknown potentially hazardous substance

Physical Findings

1. Patient has signs and symptoms consistent with some form of chemical inhalation or exposure

Protocol

1. Attempt to ascertain the:
   A. type and name of material involved
   B. form of the material – liquid, gas or solid
   C. the amount of material the patient contacted or inhaled
2. Attempt to obtain an MSDS and other pertinent information sheets on material(s)
3. Determine whether the patient was exposed versus contaminated
   A. Exposure indicates the patient has inhaled a gas or had minimal contact with a potentially hazardous or toxic substance
   B. Contamination indicates the patient has come in direct contact with or inhaled a significant quantity of the substance involved
   C. 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
4. 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.
   A. Substances with a high risk for secondary contamination include:
      i. - acids, alkalis, corrosives (if concentrated)
      ii. - asbestos (large amounts, crumbling)
      iii. - cyanide salts and related compounds (e.g., nitriles) and hydrogen cyanide
      iv. - hydrofluoric acid solutions
      v. - nitrogen containing and other oxidizers which may produce methemoglobinemia (aniline, aryl amines, aromatic nitro-compounds, chlorates, etc.)
      vi. – pesticides
      vii. - PCBs (polychlorinated biphenyls)
      viii. - phenol and phenolic compounds
      ix. - many other oily or adherent toxic dusts and liquids
   B. Although rare, in some cases, the patient's exhalation may contain hazardous gases
5. If field decontamination is indicated, consult a hazardous materials team and/or poison control for guidance
6. Notify the receiving hospital as soon as possible of the situation. Information relayed should include, but is not limited to:
   A. the number of patients
   B. the name of the material involved if known
   C. the form of the materialthe amount of material the patient contacted or inhaled
   D. the length of the exposure
   E. whether field units consider this an exposure or contamination
   F. whether field decontamination is indicated, and if so, what level of decontamination is being performed

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G. patient condition including specific signs and symptoms
H. whether field units feel further decontamination will be needed at the hospital
I. ETA to the receiving hospital

Notes

A. 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:
   a. The personal safety of EMS crewmembers and other emergency response personnel is paramount
   b. Consider whether there is time to wait for a Hazardous Materials Team or engine company
   c. 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)
   d. To adequately decontaminate a patient, clothing should be removed
   e. In most cases, bleach should not be used on skin; Plain water and a soap (such as Simple Green®, Dawn®, or Tide®) is often all that is needed
   f. Powdered chemicals should first be brushed off the skin, then the skin should be flushed with ***copious amounts*** of water
   g. 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
   h. Consult field references if available for guidance

B. 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.

C. 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.

D. Contamination by organophosphates (i.e. pesticides) often presents with gastrointestinal signs and symptoms. Chemical warfare agents also produce a similar clinical picture. The following acronym may be helpful in recognizing organophosphate poisoning.

S – Salivation	S – Salivation
L – Lacrimation (Tearing)	L – Lacrimation (Tearing)
U – Urination	U – Urination
D – Defecation	G – Gastrointestinal emptying
G – Gastrointestinal Distress	B – Bradycardia; Bronchial constriction
E – Emesis	A – Abdominal effects
	M – Miosis (Constricted pupils)

If these signs and symptoms are present and a chemical warfare agent is suspected, see "Appendix C: Mark 1 Kit Protocol"

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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, 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.

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 supercede the local incident command system or local medical control but rather to provide broad guidelines that are common from community to community.

MCI Management Considerations:

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:

- Assign a Triage Unit
  - Can be first-in units; depends on hazard mitigation concerns
- Notify area hospitals that an MCI has occurred
  - Utilize the Disaster Net radio system through local communications center
- Request additional transport units as necessary
  - Consider establishing a Staging Area for incoming units and resources
- If appropriate, move patients to a Treatment Area
  - The Treatment Area is under the direction of a Treatment Unit Leader
  - Consider personnel and equipment required to move victims
- Establish a Transportation Unit or Group
  - The Transportation Unit or Group will handle hospital coordination and communication
- Report completion of EMS Tactical Benchmarks
  - All patients triaged
  - All patients tagged as "IMMEDIATE" transported
  - Other benchmarks as determined by local authority

For a larger MCI, Command personnel should also consider the following:

- Request additional resources such as the Red Cross Medical Assistance Team (MAT) and other MCI-equipped units (e.g. supply trailers / vehicles)
- Establish a medical supply sector
- Establish multiple Treatment Areas as necessary
- Request ancillary support services
- Request buses for transport of patients or for use as holding areas or rehab areas at the scene

Guidelines for Triage

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.**

The first step is to order all ambulatory patients to walk to an assigned area. These patients are initially tagged MINOR (green).

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.

Evaluate each patient using **RPM**:

R = Respiration

- If the victim is NOT breathing quickly clear the mouth and open the airway
  - If the victim resumes breathing tag the patient as IMMEDIATE (red)
  - If the victim needs help maintaining an airway tag as IMMEDIATE (red)
    - If medically appropriate, insert an oropharyngeal airway
  - If you doubt the patient's ability to breathe tag as IMMEDIATE (red)
  - If apnea persists despite simple maneuvers tag as DEAD (black)
- If the victim is breathing >30 bpm tag as IMMEDIATE (red)
- If the victim is breathing <30 bpm move on to "P=Perfusion (Pulse/Circulation)"

P = Perfusion (Pulse/Circulation)

- Control severe bleeding
- Check a **radial** pulse for five to ten seconds
  - If irregular or absent tag the victim as IMMEDIATE (red)
- If the radial pulse is present move on to "M=Mental Status"

M = Mental Status

- Performed on patients who have adequate breathing and adequate circulation.
- Test by having the patient follow a simple command:
  - Open your eyes, close your eyes, and squeeze my hand
- Patients who can follow these commands are tagged DELAYED (yellow)
- 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 crew(s) that are 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 retriaged 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.

The primary goal in the management of multi-patient or mass casualty incidents is to do the most good 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.

The JumpSTART Rapid Pediatric Triage System

"If a patient looks like a young adult, use START; if he/she looks like a child, use JumpSTART."

STEP 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.

> 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.

STEP 2

Nonambulatory 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.

> **STEP 2A**
>
> 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.
>
> **STEP 2B**
>
> 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.

STEP 3

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.

STEP 4

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.

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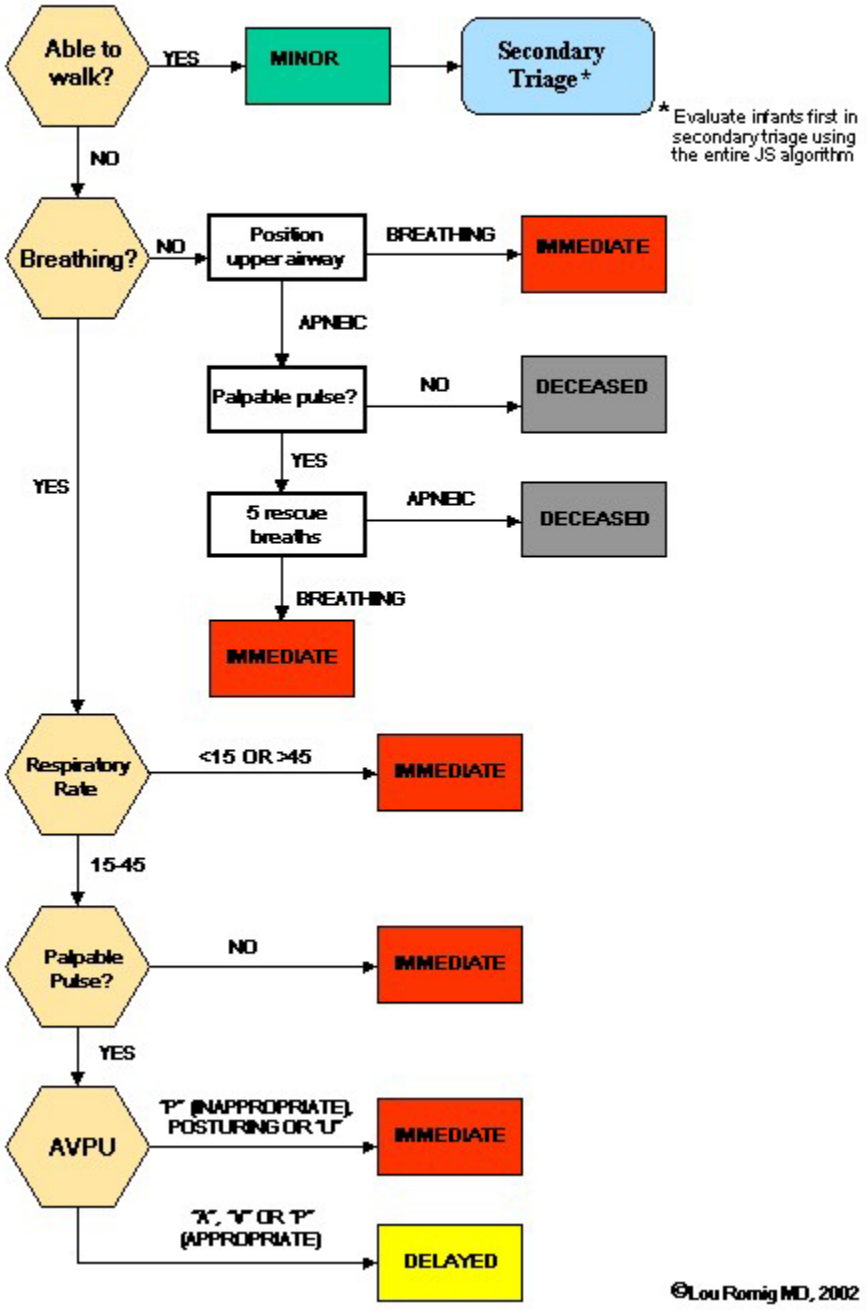
STEP 4 continued
If there are palpable peripheral pulses, the rescuer assesses mental status (**Step 5**). If there are no peripheral pulses, the patient is categorized as an **immediate** (**RED**) patient and the triage officer moves on.

STEP 5
All patients at this point have "adequate"ABC's. 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.

The "JumpSTART" Rapid Pediatric Triage System, Lou Romig, MD, FAAP, FACEP

JumpSTART Pediatric MCI Triage©



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