

Boulder County

Protocol Manual

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- *Administration*
- *Side Effects and Special Notes*

How to use this manual

Section 1-1

This manual is intended to serve multiple purposes. First, it outlines the Basic Standards of Care for EMS personnel in the Boulder County EMS system. As a Standard of Care, the manual is to be used by First Responders, EMT-Basics, EMT-Intermediates and EMT-Paramedics, as a means of determining the level of care to be administered in any given situation. It is also the standard used by the Medical Advisors to evaluate care throughout the system.

Secondly, this manual may serve as a resource for EMS personnel who are interested in obtaining more information about assessment and treatment modalities. Background information for all levels of prehospital care is included to make this a comprehensive resource.

Advanced procedures such as the administration of medications and invasive techniques, require advanced training. However, each individual within the Boulder County EMS system is responsible for the following:

- Performing to the best of his or her level
- Following the guidelines set forth in the protocol manual
- Maintaining current certification
- Participating in continuing education

The EMS field is rapidly changing. Because of this, standards of care are not set in stone, but are subject to revisions. With the help of prehospital personnel, these protocols will be reviewed and revised regularly by the Physician Advisors. Revisions, additions, or deletions, will be forwarded to each agency with an explanation of the revision and the new protocol. Suggestions or ideas for modifications in protocols are always welcome. Comments should be relayed to the individual Physician Advisors.

These protocols have been adapted from Protocols for Prehospital Emergency Medical Care, (Williams and Wilkens) by Abbot, et al. We would also like to acknowledge our appreciation to Scott Bourn who wrote the initial protocol book on which this document is based, Stephanie Vamos, Lang Smith, AMR of Boulder, the EMS staff at Avista Hospital, Boulder Community Hospital and Longmont United Hospital for producing past protocol manuals.

This manual may not be copied in its entirety or in portions without the express permission of the Physician Advisors of Boulder County.

Acts Allowed

Section 1-3

The Acts allowed are determined by the State Health Department, Avista Hospital, Boulder Community Hospital and Longmont United Hospital

x = Standing orders which can be performed without direct approval.

DO = Direct orders in which verbal permission must be obtained from the physician (* or attending Paramedic in the case of EMT-IV) before performing procedure.

x/DO = Standing orders in some cases, direct orders in others. See individual protocol.

Procedures	FR	EMT-B	EMT-IV	EMT-I	EMT-P
Vital signs	x	x	x	x	x
Manual airway management	x	x	x	x	x
Oropharyngeal placement	x	x	x	x	x
Nasopharyngeal placement	x	x	x	x	x
Pharyngeal suction	x	x	x	x	x
Oxygen therapy	x	x	x	x	x
a) nasal cannula	x	x	x	x	x
b) non-rebreather mask	x	x	x	x	x
c) ambu-bag	x	x	x	x	x
CPR	x	x	x	x	x

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Soft tissue management	x	x	x	x	x
Fractures/dislocations	x	x	x	x	x
a) Sheet or other commercial pelvic splint	x	x	x	x	x
Shock Management					
a) Trendelenburg	x	x	x	x	x
Childbirth care	x	x	x	x	x

Section 1-3

Procedures	FR	EMT-B	EMT-IV	EMT-I	EMT-P
Glucometer	x	x	x	x	x
Pulse Oximetry	x	x	x	x	x
Automatic External Defibrillation	x	x	x	x	x
Administer medication:					
a) Acetylsalicylic acid (Aspirin)		x	x	x	x
n) Epinephrine AutoInject		DO	DO	x	x

Procedures	FR	EMT-B	EMT-IV	EMT-I	EMT-P
u) Metered Dose Inhaler (home med)		x	x	x	x
z) Nitroglycerine		DO	DO	x	x
aa) Oral glucose	x	x	x	x	x
bb) Oxygen	x	x	x	x	x

x = Standing orders which can be performed without direct approval.

DO = Direct orders in which verbal permission must be obtained from the physician (* or attending Paramedic in the case of EMT-IV) before performing procedure.

x/DO = Standing orders in some cases, direct orders in others. See individual protocol.

FR: First Responder or equivalent certification

EMT-B: Emergency Medical Technician - Basic

EMT-IV: Emergency Medical Technician - IV/MAST certification

EMT-I: Emergency Medical Technician - Intermediate

EMT-P: Emergency Medical Technician - Paramedic

Alcohol Impaired and Mentally Ill Patients**Section 1-4**

Boulder County Mental Health, individual health practitioners, law enforcement agencies, or private citizens may initiate ambulance calls for the evaluation and possible transport of individuals who may be mentally ill or who are significantly impaired by alcohol. The following procedures will be followed:

Procedure

Local law enforcement should be requested to respond to the scene if there is a potential safety problem or if a 72-hour hold will be required. Boulder County Mental Health will automatically initiate law enforcement response when they initiate an ambulance call. If law enforcement coverage is not present upon arrival, wait for coverage prior to patient contact. Individual judgment must be applied as to the safety of the scene when a life-threatening situation is suspected.

Confirm and document law enforcement custody on a 72-hour mental health or alcohol hold prior to transporting against the patient's consent.

Prior to transporting a patient from a residence or medical facility to another care facility, confirm that the receiving facility is expecting the patient and will accept them. All paperwork must be filled out completely and signed prior to transport. If the transport involves a critically ill or injured patient, the paperwork is a secondary concern and can be sorted out later.

The appropriate ambulance agency will be requested to transport psychiatric patients when ambulance transport is considered appropriate or when other means of transportation have been exhausted. This will be determined by Boulder County Mental Health or the emergency physician and is not a topic of discussion at the time of transfer.

Notify the emergency department of all transfers to the ED as soon as possible so that appropriate security arrangements can be made.

Patients who voluntarily accept transport and medical evaluation should not be placed on a hold unless there is a concern that the patient may change his or her mind.

A mental health hold cannot be placed on an intoxicated patient. In these circumstances, an alcohol hold can be used. If the situation is unclear, contact the base physician for advice.

Patient Refusal**Section 1-5****Patient Refusal Conditions:**

The patient is over the age of 18 or an emancipated minor, or in the military.

The patient is deemed to be competent and is able to make rational decisions.

The patient is not suffering from and/or sustained a life or limb threatening injury.

The patient has been informed and understands the nature of his/her illness or injury and understands the potential complications that may arise from denying medical care.

The base physician may be contacted if there are questions concerning patient competency or implied consent with possible life threatening illness is going to be applied, where a patient understands potential life threat and is still denying treatment or transport.

Patient Can Not Refuse if:

The patient is not deemed competent or capable of making a rational decision due to:

- Influence of a substance such as alcohol where the patient is not coherent and/or not oriented.
- Influence of recreational or prescribed medications.
- Suicidal or homicidal behavior.
- Impaired judgment due to hypoxia, illness or injury.
- Organic causes such as retardation or senility.

The patient is under the age of 18, unless the child is emancipated, married, pregnant or a member of the armed services. A parent or guardian has the right to refuse care for the child. Minor's consent can become very tangled when a parent or guardian refuses care on a child who is suffering from a life or limb threatening condition. If this situation arises, contact the police or sheriff's officer and initiate care. Withholding care in this setting is considered child abuse.

Special notes

All levels of training in EMS are able to accept patient refusals under the following guidelines. If the patient condition meets the criteria for a BLS attendant during transport as outlined in this protocol book, then a BLS provider may accept the refusal without an ALS provider present. If the patient condition meets the criteria for an ALS attendant, then an ALS provider **MUST** handle the refusal, a BLS provider may not handle the refusal alone.

In order to transport a patient against his/her will, the patient must appear to be incompetent and suffering from a potential injury or illness. If questions arise, contact the base physician for advice.

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An uninjured minor can only be released to a parent or guardian. If a police officer or sheriff is willing to take responsibility for the minor, you can release the child to their care. If they are unavailable or unwilling to accept responsibility, you must care for the minor until the parent or guardian arrives to accept responsibility or the patient is transported to the hospital. Under no circumstance is a minor to be released to another minor or left on the scene. If a question arises, contact medical control.

Solicit law enforcement assistance when transporting a patient against his/her will.

Document all confrontation incidents appropriately and have the receiving physician sign the report.

If the patient is competent, they have the right to refuse treatment.

Patient Restraint

Section 1-6

Policy

It may be necessary to restrain a patient to ensure the safety of the patient and the EMS personnel in the setting of a violent or potentially violent patient.

In some instances, the patient may need to be restrained in order to conduct a therapeutic procedure, such as intubation or IV insertion.

Procedure

The type of restraints used should restrict the movement of the patient without causing injury. Types of acceptable methods include Kerlix, soft restraints, leather straps, "quick cuffs", handcuffs, or restraint to a scoop/long spine board.

Have enough resources available. It is much easier and safer to restrain a combative patient with four people than just two. Call for additional resources if they are needed.

Do not use excessive force in restraining a patient. Avoid pulling or yanking hair. However, sometimes injuries may occur when a patient is excessively violent. Your personal safety is of paramount importance and is the first priority.

Once restraints have been applied, it is important to constantly monitor the patient. An attendant must be physically present with the patient at all times while the patient is restrained. Distal circulation must be checked and documented every 15 minutes if extremities are restrained.

Many patients with abnormal behavior have an organic etiology. Do not overlook the possibility of head injuries, hypoxia, drug ingestion, hypoglycemia or neurological disorders by assuming the patient's only problem is a psychiatric one.

Always check the patient for weapons. Keep in mind that just about anything can be a weapon such as cowboy boots, jewelry, belt buckles, etc.

Document the reason for restraining a patient, the location and the of restraints used. Documentation should also reflect the inadequacies of less restrictive means of control such as medication or verbal interaction.

In the instances where patient assessment and care are impossible due to the patient's combativeness, consider the use of medication for restraint.

Chemical restraints can be used if needed. The preferred initial method of restraint for patients are physical restraints. However, chemical restraints may be used at the discretion of the attending paramedic on scene.

Continuing Education

Section 1-7

Policy

Continuing education is an important part of proficiency in the realm of emergency medicine. In addition to providing a review of skills and concepts which were learned during the initial training, continuing education is valuable in providing information in new areas of medical technology.

The continuing education policy is designed to be flexible in order to meet a variety of needs. Our objective is to encourage the participation of First Responder's, EMT's and Paramedics throughout the EMS system. Both the State of Colorado and the Boulder County Hospitals have taken a position in which continuing education is vital for recertification. It is the intent to offer a variety of continuing education programs during the course of any given year in order to make it easy for all levels of EMS personnel to accrue the necessary continuing education to remain in good standing within the system and to ensure the delivery of the highest level of patient care possible.

Continuing Education Options:

Departmental in-services provided by an approved training agency.

The regular training sessions offered by CE providers in the area.

The continuing education sessions at Avista Hospital, Boulder Community Hospital, or Longmont United Hospital.

Continuing education at regional training centers or conferences.

Education workshops.

Case reviews.

Noncompliance

Failure to attend the minimum number of CE dictated by this section shall result in suspension of medical privileges until such time as the individual is counseled by her/his Physician Advisor or her/his designee. Individuals who do not comply with the continuing education requirement are subject to the official discipline policy. However, it is the intent of this policy to remain flexible and the Physician Advisors will try to avoid any disciplinary measures except in extraordinary circumstances.

Section 1-7

Continuing Education Requirements:

First Responder or equivalent

- CPR certification every 2 years, must remain certified
- 12 hours of continuing education annually

EMT-Basic

- CPR certification every 2 years, must remain certified
- 12 hours of continuing education annually

EMT-Basic IV/MAST

- CPR certification every 2 years, must remain certified
- 12 hours of continuing education annually
- Successful completion of a Colorado certified IV/MAST course
- Permission from the Physician Advisor
- One successful IV insertion per month. This can be completed either in the field or during a clinical. The student must maintain a record book, which keeps track of all IV insertions. This book must be turned in at the end of each calendar year to obtain approval for IV certification for the following year.

EMT-Intermediate

- CPR certification every 2 years, must remain current
- 12 hours of continuing education annually
- Successful completion of a Colorado certified IV/MAST course
- Permission from the Physician Advisor
- PALS and ACLS certification every 2 years
- One successful IV insertion per month. This can be completed either in the field or during a clinical. The student must maintain a record book, which keeps track of all IV insertions. This book must be turned in at the end of each year to obtain approval for IV certification for the following year.

EMT-Paramedic

- CPR certification every 2 years, must remain current
- 18 hours of continuing education annually
- Permission from the Physician Advisor
- PALS and ACLS certification every 2 years

Documentation and Record keeping

Section 1-8

Continuing education and training records

Maintenance of training and education records is the responsibility of the individual EMS personnel and his/her affiliated agency. The individual training agencies will provide the necessary forms and keep permanent attendance records of all continuing education courses they sponsor.

Credentials and certification

The individual is responsible for keeping current certification at the appropriate level. At midnight on the date of expiration of certification, the individual will not be allowed to practice under these protocols until recertification is achieved. Be aware of expiration dates.

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Recertification, especially for an EMT, can be a time-consuming process. Do not leave it until the last minute! The grace period for education and testing pertains to recertification only. It does not apply to the ability to perform medicine. Once the certification expires, the EMT is NOT allowed to practice under these protocols. Failure to abide by this policy will result in swift and harsh punitive measures. A copy of all certifications must be given to the employer and the Physician Advisor and/or the training agency.

Patient report forms

A patient report form must be completed for every patient contact, regardless of the patient's final outcome.

The following information must be completed on each report:

- appropriate physical exam and history
- medications taken by the patient
- allergies
- therapeutic interventions, recorded with the time of administration and response to therapy
- authorization of direct order procedures recorded with the name of the physician
- a copy of 6 second EKG strips attached to the report

The trip report form must be completed immediately following the call by the individual who rendered primary care. Transporting agencies should have the report signed by the physician or RN at the receiving hospital.

For agencies using the current Boulder County Patient Report form, the reports are in a triplicate or quadruplicate format. The white form is for the agency's permanent records and should be kept for a minimum of 10 years. Due to patient confidentiality, the forms must be kept in a secure location. The yellow copy is used for agency QA, and the pink one is for the Physician Advisor's QA process. A legible copy must be left at the hospital for the patient's records if the agency transports. This can either be the fourth sheet, or a photocopy of the original document. If the agency does not transport, the fourth sheet may be destroyed.

With the developing trends in the medico-legal field, it is essential that the proper records are maintained. Because the trip report is a legal document, it must be filled out completely and accurately. This is for the protection of the EMS system, the agency, the hospital, the Physician Advisor and the individual should any litigation arise.

If it is determined that pertinent information was left out of the original document, additional information can be added in the form of an addendum. The addendum must indicate that the information has been added after the initial date, and be signed and dated appropriately.

Destination Protocol

Section 1-9

Destination facilities

There are currently three hospitals in Boulder County operating full service emergency departments - Boulder Community Hospital, Longmont United Hospital, & PorterCare Avista Hospital. 911 dispatch ambulances should transport to a hospital based emergency department except in limited cases as outlined in this section. The three Boulder County hospitals currently operate at the same level, all are Level 3 trauma centers, and there is no distinction in the services provided. There are some specialty patients that may be best served by a specialized care facility such as serious burns or carbon monoxide poisoning - these patients may be directly transported to the specialized facility or stabilized at a Boulder County hospital & transferred.

Patient destination is determined in the following order:

- The facility requested by the patient, family or personal physician.
- Critical patients should be taken to the closest full service emergency department. Any transport of a critical patient somewhere other than the closest full service emergency department may be reviewed at a later date to insure that the decision was proper. This may apply to burns, carbon monoxide poisoning or multiple victims.
- Non-critical patients with no hospital preference should be transported to the closest full service emergency department.
- The medical control base physician should be contacted for advise or questions regarding patient destination.

Certain non-critical patients may be appropriately treated at a non-hospital based facility. This should be per patient request and must follow all the guidelines in the following section on transport to non-hospital based facilities.

Divert policy

From time to time the destination hospital may be unable to provide a specific service because of bed unavailability, technical malfunction or patient saturation. The following procedure shall be utilized in such situations.

- In general, the destination hospital will accept and stabilize all patient requiring emergency treatment and evaluation within its service area. The hospital will then arrange for the appropriate transfer to another facility if it is unable to provide inpatient services.
- If a hospital is on complete divert status due to an internal or external disaster, Boulder Communications will be notified, which will in turn, notify all of the Boulder County agencies.

Overview

Medical helicopters play a vital role in patient transportation in Boulder County. Like any other therapeutic procedure, there are times when a helicopter is advantageous and times when it is not. Improper use of a helicopter can cause a delay in a patient reaching the hospital, or make one of the limited number of helicopters unavailable for a true emergency.

A helicopter should be considered in one of four situations: multiple critical patients, extended transport time, extended extrication or evacuation times, or need for a specialty hospital.

- An MCI with numerous critical patients might overwhelm the EMS system. It may be appropriate to send some of the critical patients outside of the county system. In the setting of mass casualties, Boulder County has limited resources. In the event of more than two (2) trauma red patients, a helicopter should be considered so that the patients may be transported to an appropriate facility such as a Level 1 trauma center in Denver.
- If ground transportation is extended, excluding the mountains, there are very few areas in the county that are more than 20 minutes away from a hospital. It is better for a critical patient if the ambulance is on scene for a minimal period of time and transported to the nearest facility, than to remain on scene 20 minutes waiting for a helicopter. Some agencies may have a protocol that differs from this. Follow your agencies protocol and the orders from your Physician Advisor.
- If there is a need for definitive care not offered in Boulder County such as:
 - Critical burns in adults: University Hospital
 - Critical Burns in children: The Children's Hospital
 - Carbon monoxide: Hyperbaric chambers at PSL
 - Pediatric trauma: The Children's Hospital, also acceptable are Denver Health Medical Center, and Saint Anthony Central Hospital

Under no circumstances should a helicopter be used for routine transportation.

Consider calling for a helicopter early on in the call if a long on-scene time is expected (i.e. long extrications or evacuations). This will get the patient to the proper facility faster.

The goal in dealing with a critical patient is rapid transport to definitive care. Optimally, it is best if the patient is rapidly packaged on scene and ground transportation is initiated. A landing zone can be set up for a location enroute or at the destination hospital. It is detrimental to patient care to wait on scene extended periods of time for a helicopter's arrival.

With the location of the hospitals in Boulder County, the terrain, and helicopter bases, most locations east of Peak-to-Peak Highway will not necessitate air transport. In these instances, ground transportation will be faster than waiting for a helicopter. Obviously, there are many exceptions to this theory. Common sense and decisions regarding what is best for the patient should dictate all decisions.

Section 1-10

General information

If a helicopter is to be utilized, it is important that it be requested as soon as possible. It defeats the purpose of calling one if the scene time is delayed by 20 minutes waiting for the helicopter to arrive.

There are three helicopter services available for the Boulder County area. These are Air Life in Aurora, St. Anthony's Flight for Life in Denver, and NCMC Air Life in Greeley. Each service uses a different model of helicopter all of which have subtle differences in their performance. The requesting agency has the prerogative to use whichever service they wish. However, it is important to remember that time is usually of the essence, and the closest helicopter service available should be used. General guidelines: north of Hwy 52 and Lefthand Canyon - Air Life Greeley, south of Hwy 52 and Lefthand Canyon - Flight for Life. If they are unavailable, the next closest helicopter service should be requested.

The Fire Department, Fire Protection District or Sheriff's Department will be responsible for establishing a landing zone and handling all communication with the helicopter.

If, on further patient assessment by the requesting agency or the paramedic, it is determined that the helicopter is not indicated, it should be canceled. The ultimate decision will be made by the highest medical authority on the scene. Any disputes will be handled at a later time, not on the scene!

The helicopter is a valuable resource that can significantly decrease response times. It should not be used for routine transportation that could be accomplished by ground transport, or based solely on mechanism of injury.

Once a helicopter has been requested, the ground ambulance should continue in until the helicopter is airborne with the patient. Upon arrival at the scene, the paramedic should re-evaluate the scenario to see if the helicopter is still appropriate. If the patient is packaged and ready for transport, and the helicopter cannot be visually seen, then transport of the patient to the nearest appropriate facility should begin. Follow your agencies protocol in this matter if it differs from this. If it is still deemed necessary for the patient to be transported by

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helicopter (i.e. burns, etc.), then have the helicopter meet the ambulance at the hospital you are transporting to for a patient hand off. This allows for the patient to arrive at a hospital with physician assessment and care in the most efficient manner. The receiving facility may then choose whether to continue with transport out of County via helicopter. There have been several occasions when the helicopter has been unable to land or take off due to a variety of reasons.

Physician/Paramedic interaction in the field

Section 1-12

The Board of Medical Examiners has promulgated the Duties, Functions, and Acts Authorized to be Performed by Emergency Technicians effective November 30, 1979. Each EMS worker functions under the auspices of a specific Physician Advisor who has prepared protocols governing field performance. This establishes a physician-patient relationship. The Board of Medical Examiners has determined that the term "supervisory physician" (as appears in Section 5.2 of the Acts Allowed) refers to the physician who has established the protocol and under whose license the Paramedic or EMT is functioning.

In view of the growth of prehospital care within the State of Colorado and nationally, there exists an increasing probability of interaction between EMS personnel on duty and a physician at the scene in the field. The possibilities for conflicts arise between the two, which might be to the detriment of patient care.

The patient's personal physician present on scene

In general the paramedic or EMT should defer to the orders of the private physician. If the medical orders conflict with protocols or appear to be detrimental to patient care, the EMS provider should:

- Suggest an alternative treatment plan to the physician.
- Advise the physician of the expectations of the Physician Advisor and the Emergency Department.
- Recommend the physician speak with the base physician and agree upon a plan.

The EMS providers' responsibility reverts back to protocols at any time that the physician is not longer in attendance.

The physician on scene has no prior relationship to the patient

If the EMS providers are presented with a physician who is already on scene or arrives later, they should:

- Identify himself or herself to the physician and ask him or her of their observations.
- Ask the physician to identify himself/herself and their area of expertise.
- Advise the physician of the capability of the EMS providers and that they are under the direct supervision of the Emergency Department physician license.
- Advise the physician the he or she is welcome to assist in patient care. However if he or she wishes to take charge of a patient on scene, he or she will be required to be in attendance of the patient until arrival at the hospital. Failure to do so would constitute and act of abandonment, unless there are extenuating circumstances such as a mass casualty situation.

If there is a discrepancy between the orders given by the base physician and the physician on scene, the EMS providers are to follow the base physician requests, and have the physician on scene speak with the base physician.

The EMS personnel are similarly instructed to utilize the expertise of an on-scene physician when appropriate, while keeping in mind that they must adhere to their specific protocols at all times.

Quality Improvement and Quality Assurance Program

Section 1-13

Goal of the Quality Improvement and Quality Assurance Program

The purpose of the Quality Improvement (QI) and Quality Assurance (QA) Program is to ensure that the EMS system is functioning efficiently and that the highest standard of patient care possible is being rendered on a consistent basis. In order to monitor this extremely complex field, a number of checks and balances have been designed. The QI/QA program is intended to be educational by monitoring the effectiveness of the EMS system. This allows us to identify any weak areas and correct them, acknowledge any strengths, recognize developing trends and meet the new demands, supply the education required to maintain the necessary skills, and provide for the physical and legal safety of all EMS personnel. Although the program includes disciplinary features, the focus of the program is on improvement through education and self-analysis.

Components of the QI/QA program

Provision of protocols, which set the standard of care, policies, and procedures.

Medical trip report review:

- evaluation of the quality of the report
- appropriateness of patient assessment and care

- compliance with protocols
- patient follow-up
- completeness of data base information

Continuing education in the didactic and clinical arena. This serves to reinforce prior knowledge and introduce new and innovative material.

Observation of field management by use of ride-alongs.

Critiques of mock drills, skills labs and scenarios.

Assessment of individual performance skills based on the level of certification.

Certification, credential and continuing education requirements confirmation.

Recognition Procedures

Areas that deserve recognition shall be acknowledged in an official form. These might include an outstanding performance on a specific call, or a consistent performance over a period of time. The acknowledgments will be presented to the individuals involved and the Physician Advisor. The permanent record will be kept on file with the agency of the individual.

Recognition can be generated from the Physician Advisor or an agency member. If there is an incident that deserves recognition, please contact the Physician Advisor so that it is not overlooked.

Discipline Procedure

The discipline policy is designed to protect the interest of the patient, the Physician Advisor and the individual EMS provider. It insures that only the highest level of patient care is offered by the EMS system and provides a means for mandating such care within the system. This is also necessary since all medical care and procedures rendered in the field are done so under the license of the Physician Advisor. It also guarantees that the EMS personnel are given a fair evaluation and are not penalized for practicing proper and adequate medicine. No First Responder, EMT, or Paramedic will be discharged from the system in an arbitrary and capricious manner. Our goal is to correct unsatisfactory care through education and training rather than punitive actions.

A step-by-step procedure has been developed that should be followed by anyone who has a grievance.

Procedure:

- An incident report is completed outlining the nature of the event. These occur when there is a breach of protocol either in an acute or chronic setting. Examples would include failure to perform spinal immobilization on a patient with neck pain, administration of an incorrect drug, etc.
- A copy of the report and any relevant documentation, (i.e. patient report), should be turned in to the Physician Advisor.
- The event is fully investigated to determine what actually occurred and the reasoning behind the decision that was made. It is very important that only the facts are presented rather than rumors and innuendoes.
- Action taken will depend on the following criteria:
 - Severity of the incident. This is based on the breach of standard of care and the patient's outcome.
 - Circumstances surrounding the incident. Levels of care are often dictated by the surrounding environment.
 - Previous history of incidents involving the individual involved.
 - Any other mitigating factors.

Standard of Care

Section 1-14

Policy

The standard of care is defined as, "The minimum acceptable care, based on state laws and the protocols set forth by Avista Hospital, Boulder Community Hospital and Longmont United Hospital".

The standard of care will be used to determine which acts are to be allowed for each level of training. It will also allow the individual to understand what is expected of him or her.

These Protocols are to be used as guidelines not "the law". Each emergency is different and requires a person to make judgments and decisions that may not fit directly into one specific protocol. Knowing this, the protocols should be used as guidelines and a tool to help the EMS personnel provide medical care to their patient.

Provision of care

EMS personnel are expected to perform to the level of their training at all times. Care will not be modified or altered based on the patient's race, religion, beliefs, medical prognosis or condition.

Responsibility for patient care is delegated to the individual with the highest level of medical training. The hierarchy of medical control is as follows:

- First Responder or equivalent certification (FR)

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- Emergency Medical Technician - Basic (EMT-B)
- Emergency Medical Technician - IV/MAST (EMT-IV)
- Emergency Medical Technician - Intermediate (EMT-I)
- Emergency Medical Technician - Paramedic (EMT-P)
- Physician Advisor

FR, EMT-B, and EMT-IV are considered Basic Life Support providers. EMT-I, EMT-P, RN's, and Physicians are considered Advanced Life Support providers.

The patient should receive the most appropriate level of care available in all situations. Denying a patient advanced life support in favor of basic life support care in an advanced life support situation constitutes an act of willful negligence and is not in the best interests of the patient's welfare.

Transport of patients should always be conducted with an ACLS unit unless extenuating circumstances have made them unavailable. The patient should be evaluated by the personnel on scene who has the highest level of training.

Determination of Primary Attendant

Occasionally, there are instances in which it is very clear that BLS care will suffice. In these situations, it is permissible that the patient be cared for by a First Responder or EMT as long as an ALS provider is available. This is a very serious decision and should not be taken lightly or capriciously. If, after the ALS provider has completed an assessment of the patient, it is deemed that the patient is not suffering from a life-threatening event, it is permissible for a First Responder or EMT to act as the primary attendant. This will not be allowed if there has been any pharmacological intervention that exceeds the training level of the BLS attendant. The ultimate responsibility for patient care will still fall to the ALS provider, even if the First Responder or EMT is the attendant. Any deviation from this protocol must have base physician approval.

To assist in determination of BLS care vs. ALS care the following categories can be used as general guidelines. This list is not to be considered complete or exact since there are too many variables and "gray areas" to calculate. If there is a question as to whether or not it is appropriate to allow a First Responder or EMT to attend, either contact the base physician or defer to an ALS attendant.

Basic Life Support in Nature

The following incidents are considered BLS in nature and may be attended by an EMT, upon paramedic or base physician approval, and as long as the paramedic is present and can assume control if the patient's condition should deteriorate. If a BLS transport is requested, it must be cleared by the base physician prior to transport. The physician does not need to be contacted if the transport is for relay purposes only.

- Abdominal pain without orthostatic changes in vital signs.
- Amputated parts with non-significant bleeding.
- Behavioral disorders that are organic in nature.
- Burns that do not involve the respiratory tract, the face, open fractures and are under 9% surface area.
- Isolated extremity injuries such as abrasions, contusions, sprains, strains, fractures and dislocations in which no extenuating circumstances exist such as loss of distal pulses, severe bleeding or major mechanism of injury.
- Hypoglycemia in which the mentation has returned to normal after administration of D50.
- Non-specific neck or spinal pain in which extenuating circumstances do not exist, such as diminished neurological function or significant mechanism of injury.
- Routine non-emergent transport such as doctor's appointments for patients who do not have an acute problem.
- Seizure patients with a known disorder who are alert and oriented.
- Syncope in a non-cardiac setting in which vital signs are within normal limits.
- On the discretion of an EMT-I or EMT-P. If there is any question as to the nature of incident, contact the base physician for disposition.

Advanced Life Support in Nature

The following incidents are considered ALS in nature and may not be attended by an EMT or transported by a BLS ambulance unless it is being utilized for relay purposes only.

- Abdominal pain with changes in orthostatic vital signs.
- Amputated parts in the setting of profound blood loss or exsanguination.
- Anaphylaxis and allergic reactions of any etiology.
- Behavioral disorders of unknown etiology or non-organic causes.
- Burns of the respiratory tract, face, associated with trauma or greater than 9%.
- Cardiac arrest.
- Cardiac arrhythmias of any nature such as bradycardia, tachycardia or irregular beats, etc.
- Chest pain of cardiac or unknown etiology.

- Childbirth, pre-partum and postpartum.
- Drowning or near drowning.
- EKG monitoring.
- Fractures or dislocations with diminished or absent distal circulation, or sensation.
- Head trauma especially if there has been an associated loss of consciousness or mechanism of injury such as starring to the windshield.
- Hyperthermia and hypothermia.
- Hypertension, (diastolic pressure >110 mmHg or systolic >200 mmHg).
- Hypoglycemia, without a return to normal mentation after D50 administration, or hyperglycemia.
- Poisonings or overdoses either intentional or accidental
- Respiratory distress of any etiology; i.e., asthma, COPD, epiglottitis, chest trauma etc., with the exception of hyperventilation syndrome that has resolved.
- Seizures of unknown etiology or initial occurrence.
- Shock, any patient exhibiting signs or symptoms of shock, such as altered mentation, hypotension, or tachycardia.
- Spinal trauma with diminished neurological function.
- Syncope, (fainting) or any other loss of consciousness either due to trauma or medical causes, in which vital signs are not within normal limits.
- Unconsciousness, coma or altered mentation.
- Vaginal bleeding.
- Multi-systems trauma or major mechanism of injury.
- Patients with vital signs outside of normal limits.
- The patient has received any pharmacological intervention other than IV insertion, O2 or D50.
- The return to the hospital is emergent.
- The patient has received advanced procedures such as intubation, pharmacological therapy or cardiac monitoring and in which the patient is experiencing an abnormal rhythm.

Under NO circumstances, (other than that of a disaster situation in which ALS care is not available), is a patient who falls under the ALS category to be solely attended by or transported by BLS personnel. This is detrimental to the patient's well being and places the EMS personnel and the Physician Advisor in legal jeopardy.

This policy has not been designed to stifle, limit or curtail the experiences of BLS personnel. Our primary goal is to ensure that optimal patient care is being rendered. With this in mind, we encourage BLS personnel to be as involved with the delivery of ALS care. This enhances their learning experience and improves their EMS skills. When possible, we urge them to assist the ALS crew or ride in with the ambulance to enhance their experience. As important as this is however, it is crucial that the patient receive the highest level of care possible, as that is the primary goal.

Knowingly withholding or denying advanced levels of care is a serious act. Failure to abide by this policy will result in immediate punitive action.

In many cases, time is of the essence for the patient. For rural areas that have a BLS transport unit, relaying the patient to the ALS service may save valuable time. Common sense should dictate the use of relays. Information that should be taken into consideration include:

- ETA for the ALS service.
- Road and weather conditions.
- Availability of EMS personnel available in district to handle other incidents.
- Condition of the patient.

In some cases, it is feasible for a BLS unit to transport a patient to a medical facility. This can be a very perilous if the patient should deteriorate enroute and ALS care is not available. In order for a BLS service to transport to a medical facility, BYPASSING ALS care, the base physician or responding ALS unit must approve of the transport. There will be no exceptions unless a mass casualty setting exists.

Each EMS agency is responsible for completing a patient report. The report should reflect the assessment and care rendered by their agency.

Transfer or hand-off of a patient can only be made to a health care provider of equal or higher training. Failure to abide by this constitutes abandonment.

Under no circumstances will bickering or fighting be tolerated on scene in front of a patient or family members. If discrepancies occur, the base physician should be contacted immediately for advice. The incident will be discussed and settled at a later date, but not on scene.

Obtaining drug orders and refusals

Any drug or procedure under the category of "Standing Order" does not require verbal permission from a physician for administration. If there is a question as to whether or not a standing order procedure should be conducted, contact the base physician for advice.

Any drug or procedure under the category of "Direct Order" must have verbal approval from the base physician. Determination of the base physician is as follows:

- If the patient's destination hospital is in Boulder County, a physician at the receiving facility will act as the base physician, regardless of origination of the patient.

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- If the patient's destination hospital is outside of Boulder County, the EMS personnel should contact the physician at their base hospital, unless advised differently by your Physician Advisor or base hospital physician.
- Only one base physician may be contacted unless a transfer of care is directed by the base physician. Under NO circumstances will "shopping for drug orders" be allowed. If an individual is denied for a specific order, he or she is not allowed to contact another hospital for permission. Failure to abide by this will result in immediate and severe punitive measures.

When obtaining an order or getting a consult, it is imperative that the EMS personnel speak directly to the base physician. Pertinent facts can get lost if the information is relayed through a number of sources. The conversations should take place on a recorded telephone line, such as the patch matrix system. This will act as documentation for the order.

It is understood that there may be times when it is not feasible to contact a base physician due to terrain constraints or accessibility of the physician in the emergency department. If the situation arises in which is impossible for the EMS personnel to contact the base physician, the EMS provider may proceed with the procedure as long as it is a necessary and needful procedure. This incident will be examined carefully for two reasons. The first is to determine if the care was appropriate and conducted correctly. The second is to investigate why communication did not occur and determine if any changes need to be implemented to prevent the problem from occurring again. This process is not meant to punish or penalize the EMS provider, it is designed to ensure improvements for the future.

Noncompliance with the Boulder County Protocols

Section 1-15

Adherence to medical and procedural protocols is paramount to providing optimal patient care to the citizens and visitors of Boulder County. Through chart review, training, and continuing education, protocol compliance can be assured.

Policy

This policy covers all aspects of the county protocols, including patient care, continuing education, documentation, and procedural issues. Noncompliance discipline will be applied on a case-by-case basis and will be decided between the individuals' Physician Advisor and the medical officer of the agency for which the individual works or volunteers.

Non-life-threatening noncompliance issues will be handled in the following manner:

- First offense will result in a verbal reprimand
- Second offense for the same or similar will result in a written reprimand.
- Third offense for the same or similar will result in suspension of medical privileges.

Life-threatening noncompliance issues will be handled in the following manner:

- First offense will result in suspension of medical privileges.
- Second offense for the same or a similar issue will result in revocation of medical privileges.

Reinstatement is contingent upon approval of the Physician Advisor and the agency's manager or chief.

The decision of the Physician Advisor is final and not subject to appeal.

Hospital Communication Procedure

Section 1-16

The purpose of the call-in report is to furnish the receiving facility or agency with information that is important for the transfer of care. It is not designed to be a full, detailed report on the patient's condition. The goal is to relay pertinent information that is vital to the receiving facility's ability to prepare for the patient's arrival. The radio report should not take any longer than 60 seconds unless mitigating circumstances arise, such as a request for a drug order, cardiac arrest, or refusal.

The preferred method of contact for drug or procedure orders is through the patch matrix system by telephone. By using this system, there is a recorded record of the communications between the EMS provider and the hospital. This is best for the protection of the EMS provider and the hospital provider on the line as well. If needed, you can call in to a hospital on a non-recorded line or on the radio. Patient reports can be given by any of these methods.

Call-In Procedure

Radio:

Select the appropriate frequency channel for the hospital. Transmit as you would normally over the radio, but make sure not to give lengthy amounts of information without pauses or you may have to repeat things.

Patch Matrix:

Once a connection is made, you will need to enter a 4-digit unit ID number and a 2-digit hospital ID number in order to be connected to the proper hospital. Once connected, provide the hospital with the following information:

Unit number: vehicle or personnel identification.

Status or code: emergency vs. non-emergency transport.

Patient information: number of patients, age, and sex.

Subjective Findings

Chief complaint: shortness of breath, syncope, chest pain, neck pain, etc.

Relevant history: auto accident, fall victim, seizure, chest pain for six hours, head-on collision at high rate of speed, restrained passenger, etc.

Past medical history: only if pertinent to the chief complaint such as similar problems in past, medications, allergies, etc.

Objective Findings

Pertinent results of the secondary exam: lacerations, broken bones, areas of tenderness, mini-neuro exam if appropriate, cyanosis, JVD, rales, etc. (only in as much detail as necessary for preparation or direct treatment enroute).

Level of consciousness.

Vital signs: pulse, blood pressure, respirations, and skin tone. It is acceptable to state "Vital signs within normal limits" as long as they are. It is not necessary to give the exact vitals unless they are outside of the norm.

Resuscitation and DNR Orders

Section 1-17

Do Not Resuscitate (DNR) Indications or Advanced Directives

A DNR Order is a written document in which the physician, in the best interest of the patient, and after consultation with the patient and/or family, has deemed it appropriate that the patient should not be resuscitated in the setting of a cardiopulmonary arrest. The family or caregiver must produce a written document of the DNR order, which has been signed by the physician. As of January 1993, these are also in the form of a bracelet. These "No CPR" bracelets, act as advanced directives and can be acknowledged as valid DNR orders.

In such cases, the patient's comfort is of paramount interest to the pre-hospital care provider. Invasive and painful procedures should be avoided if at all possible.

The following procedures should NOT be performed on DNR patients who are in cardiopulmonary arrest:

- CPR
- Intubation
- Defibrillation
- MAST Pants
- Lights and sirens transport
- "CORE" drug administration
- Cardiac pacing

The following procedures MAY BE performed depending upon clinical judgment and consultation with the patient, the private physician or the appropriate hospital physician. This pertains to patients who are not in arrest yet, but are in the process of dying. Since this can be such a gray area, contact the base physician for advice.

- Position of comfort
- Airway control such as manual positioning and use of bag valve mask. Intubation is specifically excluded.
- Suction
- IV line for hydration and analgesics
- Foley catheter for urinary retention
- Oxygen for dyspnea and hypoxia
- Treatment of injuries or illness that are not a cardiac arrest situation

Candidates for Resuscitation

All patients in cardiac and/or pulmonary arrest without a valid DNR order, will be resuscitated with the following exceptions:

- Those patients who are obviously dead and beyond any chance of resuscitation. This includes patients who are decapitated, have rigor mortis, tissue decomposition or dependent lividity. The safety of the EMS personnel must also be taken into consideration if the resuscitation attempt might endanger the rescue personnel.
- Those patients in which a nurse or family member can show you a "Do Not Resuscitate" order in writing from the patient's current attending physician, or the patient has a "No CPR" bracelet or necklace. If there are any questions as to the validity of this order, proceed with resuscitation, and contact the base physician as soon as possible.

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- Upon a verbal order from an attending physician who is present at the time. You must be able to verify that this person is, in fact, the attending physician who knows this patient well. Should there Section 1-16
- be any question concerning this physician, you should proceed with resuscitation and ask that person to immediately contact the Emergency Physician at your base hospital.
- Should you receive a verbal order not to resuscitate via radio or telephone from someone claiming to be the attending physician, you should have that person call the Emergency Physician on duty at your base hospital. If the base hospital physician agrees with the "Do Not Resuscitate" request, then he or she will contact you by telephone or radio. You should proceed with resuscitation attempts in this case until you hear from your base hospital physician.
- In the case of an obvious code black, or if an arrest is called in the field, the Boulder County Coroner's office asks the following:
 - Do not run an EKG strip on obvious code black patients, i.e., decomposition or rigor mortis.
 - Do not remove any medical devices from the body. This includes endotracheal tubes, NG tubes, IV lines, pacer pads etc.

Section 1-17

- Be aware of the scene and the surroundings. Do not destroy, tamper with, or remove anything from the scene. This is considered evidence and will be used in the investigation.
- Do not change the location or position of the body if there are signs of obvious death, or after the arrest has been called.
- Under no circumstances is the deceased patient to be used for practice procedures, especially invasive techniques such as intubation, NG tube placement and IV lines. Clinicals can be arranged for intubation and IV practice through the EMS department and are the proper setting for enhancing specific skills. Failure to abide by this policy will result in immediate punitive actions.

Always contact the base physician to confirm a DNR order or to cease resuscitative measures in the field.

Refer to the hypothermia protocol for hypothermic cardiac arrest patients.

Roles and Responsibilities

Section 1-18

First Responder or equivalent certification

The First Responder is often the individual who is first on scene. His or her primary responsibility is to assess scene safety, patient condition, and initiate life saving procedures to the ill or injured, until advanced personnel arrive.

Acts Allowed:

- Airway management: manual positioning, nasopharyngeal airway, oropharyngeal airway, and bag valve mask device
- Airway suction
- Application of hot and cold packs
- Bandaging and control of bleeding
- Cardiopulmonary resuscitation
- Eye irrigation and flushes
- Manual traction and stabilization
- Assist in childbirth
- Application of splints
- Spinal immobilization
- Monitor vital signs
- Oxygen therapy
- Oral glucose administration
- Glucometer*
- Automatic External Defibrillation*
- Pulse Oximetry*

*requires additional certification and/or training

Requirements:

- Completion of a recognized First Responder course or another course that meets current DOT First Responder guidelines.
- Recertification every 3 years through original certifying agency or other agency that provides a First Responder Refresher that meets or exceeds DOT guidelines.

- 12 hours of continuing education per year
- CPR certification every 2 years, must remain current
- AED operation requires Physician Advisor approval and a proficiency check every 6 months to remain authorized.
- Sponsorship from a Physician Advisor

Emergency Medical Technician - Basic (EMT-B)

The EMT-B is certified by the State of Colorado to render basic medical care. He or she is responsible for continuation of care from the first responder and to assist the paramedic in patient care. His or her primary responsibility is to assess the patient, stabilize and initiate life saving procedures to the ill or injured.

Acts Allowed:

- Airway management: manual positioning, nasopharyngeal airway, oropharyngeal airway, and bag valve mask device
- Airway suction
- Application of hot and cold packs
- bandaging and control of bleeding
- Cardiopulmonary resuscitation
- Eye irrigation and flushes
- Manual traction and stabilization
- Assist in childbirth
- Application of splints
- Spinal immobilization
- Monitor vital signs
- Oxygen therapy
- Oral glucose administration
- Administer EpiPens
- Administer Aspirin orally
- Glucometer
- Assist with administration of approved medications
- Initiate intravenous therapy*
- Administer 50% Dextrose intravenously*
- Apply and inflate MAST pants*
- Automatic External Defibrillation*
- Pulse oximetry*

* requires additional certification and/or training

Requirements:

- Completion of a recognized EMT-B course and recertification every three years
- 12 hours of continuing education per year
- CPR certification every 2 years, must remain current
- Sponsorship from a Physician Advisor
- IV certification requires completion of an approved IV/Mast course, permission of the agency and Physician Advisor, and one successful IV initiation each month.
- AED operation requires Physician Advisor approval and a proficiency check every 6 months to remain authorized.

IV training/certification and maintenance of IV authorization by EMT-Bs

Initial IV training / authorization: EMT-Bs wishing to start prehospital IVs under the auspices of their Physician Advisor shall present proof of completion of a recognized IV training course before IV privileges are granted.

Maintenance of IV authorization: EMT-B/IV personnel shall maintain a signature card documenting a minimum of six (6) successful IV starts every six (6) months. IVs may be started on patients in the field, on colleagues during training sessions, or at clinical sessions in a hospital setting. IV starts must be documented and signed off by an R.N., MD, or paramedic. The IV signature card must be submitted to the individual's medical director every six (6) months for review.

EMT-B/IV personnel who do not comply with any portion of this policy shall have their IV privileges suspended until they have been counseled by their Physician Advisor or his/her designee.

Emergency Medical Technician - Intermediate (EMT-I)

The EMT-I is certified by the State of Colorado to render advanced medical care. He or she is responsible for continuation of care from the first responder and EMT-B, and to assist the paramedic in patient care. His or her primary responsibility is to assess the patient, stabilize and initiate life saving procedures to the ill or injured.

Acts Allowed:

- Airway management: manual positioning, nasopharyngeal airway, oropharyngeal airway, and bag valve mask device, EOA insertion, oral and nasal intubation
- All skills performed by EMT-Basics
- Initiate intravenous therapy
- Intraosseous IV infusion
- Administer cardiac drugs and approved non-cardiac drugs
- EKG interpretation
- Defibrillation

Requirements:

- Completion of a recognized EMT-I course and recertification every three years
- 12 hours of continuing education per year
- PALS and ACLS certification every 2 years
- CPR certification every 2 years, must remain current
- Sponsorship from a Physician Advisor

Emergency Medical Technician - Paramedic Trainee (EMT-P)

A Paramedic Trainee is defined as an employee who is presently in paramedic school and has sufficiently progressed with the didactic and field education so that the individual can efficiently operate in the field as a paramedic. The transition from EMT to Paramedic is generally at the time at which the individual has completed the didactic portion of the program

A Trainee must:

- Be approved by the Physician Advisor
- Work with another Paramedic at all times in order to operate as a trainee.

Trainee status is moved to Paramedic upon the receipt of Paramedic certification by the State and upon approval by the Physician Advisor.

A Trainee may perform all of the skills of a Paramedic under supervision of an approved Paramedic.

Emergency Medical Technician - Paramedic (EMT-P)

The EMT-P is certified by the State of Colorado to render advanced medical care. He or she is responsible for continuation of care from the first responder, EMT-B and EMT-I. His or her primary responsibility is to assess the patient, stabilize and initiate life saving procedures to the ill or injured.

Acts Allowed:

- All skills performed by EMT-Basics and EMT-Intermediates
- Administration of cardiac and non-cardiac drugs
- Cardioversion
- Chest decompression
- Cricothyrotomy
- NG tube placement
- Foley catheter placement
- External and jugular IV placement
- Cardiac pacing
- Valsalva maneuvers

Requirements:

- Completion of a recognized EMT-P course and recertification every three years
- 18 hours of continuing education per year
- PALS and ACLS certification every 2 years
- CPR certification every 2 years, must remain current

- Sponsorship from a Physician Advisor

Physician Advisor (PA)

The roles of the PA are defined by the Board of Medical Examiners and the State Health Department. The following description is taken from the *Rules Defining the Duties and Responsibilities of Emergency Medical Services Physician Advisors*, by the Colorado State Health Department.

The responsibilities of a Physician Advisor shall include:

- Notifying the Board and the Department as to the service agencies for which medical control functions are being served.
- Establishing a medical quality control program for each service agency being advised which assures the continuing competency of the performance of the agency's EMT-B's, EMT-I's and/or Paramedics. This quality control program shall include but not be limited to, medical care audits, observation, critiques, continuing medical education, and direct supervisory communications. The medical quality control program for a service agency's EMT-Bs, EMT-Is or Paramedics shall be submitted to the Department. The Department shall evaluate the medical quality control program and forward it, along with a written evaluation, to the Board for final approval.
- Establishing written protocols and/or standing orders, where appropriate.
- The Physician Advisor shall provide monitoring and supervision of the medical field performance of each advised service agency's EMT-B's, EMT-I's and Paramedics. This responsibility may be shared with other physicians and/or registered nurses. The Physician Advisor shall retain ultimate authority and responsibility for establishing protocols and standing orders and the competency of the performance of authorized medical acts.
- The Physician Advisor shall ensure that each verbal order, written standing order, and/or protocol is appropriate for the certification and skill level of each of the individuals to whom the performance of medical acts is delegated and authorized. The Physician Advisor shall be familiar with the training, knowledge, and competence of each of the individuals to whom the performance of such procedures is delegated.
- The Physician Advisor shall be accountable to the Board for all actions in the authorization and delegation of medical acts, procedures, medical quality control programs, use of standing orders, and establishment of protocols which fail to meet generally accepted standards of medical care.

Section 1-18

Role of the Agency Medical Officer

The medical officer or designee is responsible for the following:

- Insure that the Physician Advisor or designee is given a current roster and copies of current certification for all of the EMS personnel within their agency, and to advise the Physician Advisor or designee of the initiation or termination of any members, within 30 days of change of status.
- Act as a liaison with their CE Training Group in determining topics for continuing education, skill labs or quality assurance concerns.
- Confirm that a patient report is completed by the appropriate personnel on all patient contacts. He or she is responsible for ensuring that the reports go through the QA process, and assisting in any QI if necessary.
- Communicate any questions, comments, concerns or suggestions regarding the protocols to the Physician Advisor, and notify the agency EMS providers of any changes that occur.
- Insure that all members of the agencies EMS providers receive a copy of the protocol book, are familiar with its contents, and agree to abide by its terms.
- Communicate any concerns regarding competency of an agency EMS provider to the Physician Advisor.

Requirements for Physician Advisor sponsorship

The individual requesting sponsorship must maintain one of the following certifications:

- First Responder or equivalent certification
- EMT-Basic
- EMT-Basic IV/MAST
- EMT-Intermediate
- EMT-Paramedic
- Registered Nurse

The individual must be a member in good standing with a pre-hospital agency, either paid or volunteer, that is affiliated with Avista Hospital, Boulder Community Hospital. or Longmont United Hospital.

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The individual must provide copies of current certification to their Physician Advisor.

The individual must agree to abide by the policies and procedures set forth in this manual.

Upon completion of the criteria listed above, the individual will be allowed to carry out any procedures applicable to his or her level of training as listed in the Acts Allowed. Sponsorship for the individual is only in effect while the individual is acting as a member of their agency. Sponsorship will be terminated if the individual is not a member in good standing with their agency, or at the discretion of the Physician Advisor.

Must have special permission from the Physician Advisor in order to practice under the Physician Advisor's license as a RN in the field. The Physician Advisor will determine what skills and procedures can be performed by the RN.

Patient Assessment

Section 2-1

Environment and Scene Management

Recognize environmental and personal safety hazards.

Identify the total number of patients, and initiate triage if necessary.

Identify the mechanism of injury or chief complaint, location and position of patient(s).

Identify EMS personnel.

Call for backup and appropriate responses, such as LEU, BES, RMR, helicopters or additional ambulances.

Initial Assessment

Airway: open, check for adequacy, note potential problems.

Breathing: respiratory noises and effort, skin color, behavior.

Circulation: stop exsanguinating hemorrhage, note presence and quality of pulse.

C-spine: immobilize CTLS spine if indicated.

Shock: watch for cool, clammy, pale skin, thirst, agitation or altered level of consciousness.

The primary should take 30 seconds or less to complete.

Spinal immobilization should be completed immediately following the primary exam if indicated.

A rapid trauma assessment should be performed here if needed.

Detailed Physical Exam

HEENT (Head, ears, eyes, nose and throat)

- Palpate for deformities, asymmetry, blood, pain to the skull and facial area.
- Recheck airway for potential compromise such as dentures, loose teeth, blood or vomit.
- Eyes: Check the pupils for equality and responsiveness to light, foreign bodies, contact lenses, lacerations, and blurred, abnormal, or lost vision.
- Nose: check for deformity, bleeding, and discharge.
- Ears: check for bleeding or discharge.

CTLS spine:

- Evaluate for deformity or point tenderness.
- Assess neurological function.

Chest:

- Note wounds, neck vein distention, use of accessory muscles for respiration, altered voice, sucking chest wounds or tracheal deviation.
- Palpate for tenderness, sounds, fractures, unequal rise of chest and crepitus.
- Have patient take deep breath: recheck wounds for air exchange and symmetry of breathing.
- Listen to breath sounds on anterior and posterior chest.

Abdomen:

- Inspect for wounds, bruising or distension.
- Palpate for tenderness, guarding or rigidity.

Pelvis:

- Palpate and compress for tenderness, instability. Do not rock the pelvis.
- Measure length of legs to check for shortening or rotation.

Shoulders/Upper extremities:

- Palpate symmetrically for wounds, fractures, and tenderness.
- Check for distal pulses, movement and sensation.
- Check for capillary refill.
- Check for equal grip strength.

Lower Extremities:

- Palpate symmetrically for wounds, fractures, and tenderness.
- Check for distal pulses, movement and sensation.
- Check for capillary refill.
- Check for equal strength in feet.
- Check for shortening and rotation of the legs.

The detailed physical exam should take 1-2 minutes to complete, and should be systematic, though exact order may vary.

Do not interrupt the detailed physical exam to render treatment unless there is a deterioration in the ABC's noted.

Obtain quantitative vital signs after secondary survey is completed.

Vital Signs

Obtain the first quantitative set of vital signs within the first 5 minutes if possible (pulse, blood pressure, respiratory rate, level of consciousness, and skin tone).

Repeat vital signs according to patient's condition. Try to obtain at least one more set prior to transport or while enroute, if time permits. However, transportation should not be delayed to obtain additional vital signs.

Note neurological status: monitor level of consciousness and neurological function, (see Neurological Assessment).

Stable/Unstable Defined

Stable – The pt. is awake, alert and oriented, BP is above 90 systolic, no chest pain, warm dry skin.

Unstable – The pt demonstrates any of the following: confusion, sluggish, altered mental status, BP less than 90 systolic, chest pain, cool/clammy skin, dyspnea or has pulmonary edema.

Adequate Respirations are defined as a respiratory rate between 10 and 20 with all the following characteristics:

- Normal depth
- Absence of accessory muscle use
- Clear lung sounds
- No or very little sign of distress

Inadequate Respirations are defined as: a

- Respiratory rate less than 10 or greater than 30, or
- Respiratory rate between 10 and 20 in the presence of
 - Shallow/labored respirations, or
 - Wheezes, or
 - Wet sounds, or
 - Blue, gray or mottled skin

Patient History

Section 2-2

Medical Emergencies

The following information should be investigated regarding the chief complaint:

- Onset of symptoms

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- Provocation or revocation of symptoms
- Quality of symptoms (i.e. sharp, dull, pressure, etc.)
- Radiation of pain or pressure
- Severity of pain or discomfort on a scale of 1 - 10
- Duration of symptoms (Time)
- Associated symptoms such as nausea, syncope...
- Location of symptoms
- Pertinent negatives.

Relevant past medical history.

Allergies.

Medications and drugs: chronic and "on board".

Survey of surroundings for evidence of drug abuse, mental functioning, family problems.

Traumatic Emergencies

The following information should be investigated regarding the chief complaint and mechanism of injury:

- Cause of accident
- Mechanism of Injury (MOI), including:
 - Implements used, such as caliber of gun, or length of knife
 - Trajectory if thrown or ejected from vehicle, or height of fall
 - Speed and type of accident
 - Use of seat belt or helmet
 - Height of fall
 - Damage to vehicle (intrusion, windshield and steering wheel damage, etc.)
 - Loss of consciousness
 - Presence of alcohol or drugs

Patient complaints: evaluate the same as medical complaints.

- Relevant past medical history
- Allergies

Patient Management Standards

Section 2-3

Airway Management

Open the airway with either the head tilt/chin lift method or modified jaw thrust if a spinal injury is suspected. Use of a nasal pharyngeal airway (NPA), or an oral pharyngeal airway (OPA), will assist in maintaining a patent airway and should be used whenever indicated.

The patient should be positioned to protect the airway from aspiration of emesis, such as lateral recumbent or prone position. If the patient is on a backboard or scoop, the patient must be immobilized with straps across the chest and body to prevent movement of the C-spine when rolled.

Monitor the adequacy of oxygenation and ventilation.

Administer the appropriate amount of oxygen if supplemental oxygenation is indicated.

Assist ventilation with the use of a bag valve mask device or positive pressure ventilation system if the patient's own ventilation is not adequate.

Suction the patient as needed

Consider intubation by the oro/nasotracheal route as described in Section 4-9 & 4-10

Medical Emergency Management

Correct any airway and oxygenation deficiencies.

Based on a primary and secondary exam, determine type of emergency and design a treatment plan.

Recognize and treat types of shock.

Monitor patient status and vital signs.

Communicate effectively with patient, ambulance crews and hospital base.

Anticipate and recognize unstable conditions that may require immediate transport.

Traumatic Emergency Management

Correct any airway and oxygenation deficiencies.

Based on a primary and secondary exam, determine type of emergency and design a treatment plan.

Recognize and treat types of shock.

Immobilize cervical spine when appropriate.

Dress all wounds and splint all fractures.

Identify and consider mechanism of injury.

Communicate effectively with patient, ambulance crews and hospital base.

Anticipate and recognize unstable conditions that may require immediate transport.

Initiate a triage system in any situation involving more than three patients.

Triage

Assign one medical person to control the scene. This person should be the highest medical authority available and should be on the scene early on. This person shall assign someone to initiate triage. The triage method to use is the START method (Simple Triage And Rapid Transport).

Complete an initial survey on all patients, before any treatment is rendered.

Request any additional resources that will be necessary such as subsequent ambulances, helicopters, extrication equipment, or lighting, as early as possible.

Section 2-3

Categorize patients according to their priority and assign personnel to complete assessment and treatment on that basis.

- **Red category** - highest priority: These are patients with life threatening problems that are survivable. These include shock, third degree burns, severe head injuries, pneumothorax, eviscerated organs ...
- **Yellow category** - second priority: These are patients with injuries that will need to be treated but are not in eminent danger of dying. Examples are minor burns, multiple fractures, neck pain with neuro deficits, minor head injuries...
- **Green category** - third priority: These are the patients who need medical attention eventually but are not in any imminent danger. Examples would include, isolated fractures, lacerations, sprains, neck pain without neuro deficits...
- **Black category** - lowest priority: These are the patients who are already deceased or have sustained injuries that are not survivable. This would include decapitation, open head injuries with brain matter present, trauma arrests...

Below is a brief summary of the START triage method:

- 1) Ask all patients to get up and walk, all walking wounded are initially **green**.
- 2) Check respirations: if absent, open airway, if still absent the patient is a **black**.
if absent, open airway, if they return the patient is a **red**.
if >30/min the patient is a **red**.
if <30/min, proceed to step 3.
- 3) Check hemodynamic status: if radial pulse absent, or skin pale, cool diaphoretic, or cap refill > 2 sec, then the patient is a **red**.
if radial pulse present, or skin pink, warm, dry, or cap refill < 2 sec, then proceed to step 4.
- 4) Check mental status: if patient has altered LOC or unable to follow simple commands, then the patient is a **red**.
if patient had normal mentation, awake and oriented, the patient is a **yellow**.

Extrication

Survey the scene for potential hazards, number of patients and need for additional resources.

Call for additional resources such as helicopters, ambulances, special extrication tools, lighting, etc.

Stabilize vehicle prior to entry.

If the patient has no pulse or respirations, and extensive extrication is required before CPR can be initiated, the patient should be considered code black, if other viable patients require care.

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Teamwork

The highest medical authority on scene should be in control of patient care. It is confusing to a patient to have more than one person asking questions, so only one person should be designated as leader.

The assistants should follow directions unless that directive will cause a danger to the EMS personnel or the patient.

Communication is of extreme importance during a call. Almost all of the confusion and mistakes made during a scene can be traced to poor communication.

Abdominal Pain**Section 3-1****Subjective information**

Pain: information gathered should include the location, quality, radiation, onset, changes with position, referred pain (indicating diaphragmatic irritation), rebound tenderness (indicating peritoneal irritation), or point tenderness.

Associated symptoms: nausea, vomiting, vaginal discharge, diarrhea, syncope, blood in feces or urine, last menstrual period, last bowel movement.

History: medications, previous medical history, appendectomy, recent surgery/trauma or possible pregnancy.

Objective information

Abdomen: guarding or rigidity (indicating peritoneal irritation), or distension.

Vital signs: within normal limits, hypovolemic shock, or orthostatic changes.

Emesis: amount, consistency, presence of blood, or coffee ground like.

Feces: frank blood present, black and tar-like, constipation.

Skin: color, temperature and tone.

Treatment

Procedure	FR EMTB	EMTB IV	EMT I	EMT P
Position of comfort	x	x	x	x
Monitor vital signs (check for orthostatic changes)	x	x	x	x
Vital signs stable:				
a) O2: 2-6 l/min by nasal cannula	x	x	x	x
b) IV: One large bore IV with normal saline TKO rate		x	x	x
Vital signs unstable:				
a) Trendelenburg position	x	x	x	x
b) O2: 10-15 l/min by mask	x	x	x	x
c) IV: 2 large bore with normal saline		x	x	x
d) Fluid challenge of 250 - 500 cc		x	x	x

x = standing order DO = direct order only

Subjective information

Time and mechanism of amputation.

Care of amputated portions and tissue prior to EMS arrival.

Neurological function of remaining portions.

Pain: location, severity, duration.

Objective information

Vital signs: watch for signs of hypovolemic and psychogenic shock.

Estimate type and amount of bleeding: arterial vs. venous.

Assess for associated fractures, sprains and strains.

Assess for possible spinal trauma based on mechanism.

Evaluate injury site for structural attachments in partial amputations.

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Control bleeding: direct pressure, elevation, pressure point and, as a last resort, tourniquet.	x	x	x	x
Monitor vital signs.	x	x	x	x
Bandage wound with sterile dressing moistened with a sterile saline solution.	x	x	x	x
Preserve all tissue in sterile gauze moistened with a sterile saline solution. Keep all parts cool. Be careful not to freeze the parts!	x	x	x	x
Vital signs stable:				
a) O2: 2-6 l/min by nasal cannula	x	x	x	x
b) IV: One large bore IV with normal saline TKO rate		x	x	x
Vital signs unstable:				
a) Trendelenburg position	x	x	x	x
b) O2: 10-15 l/min by mask	x	x	x	x
c) IV: Two large bore IVs with normal saline		x	x	x
d) Fluid challenge of 250 - 500 cc		x	x	x

x = standing order

DO = direct order only

Specific Precautions

Time is of the greatest importance in attempts to reattach the severed part. If transport time will be delayed, consider sending the amputated part to the hospital ahead to be prepared for reattachment.

Partial amputations should be dressed and splinted in anatomical position to insure optimal blood flow. Avoid twisting or crushing the damaged parts.

Do not place the severed part on dry ice or submerge it in ice. Once the tissue has been frozen, the chances of successful reattachment will diminish drastically.

Amputations often do not bleed a lot. Control the bleeding with direct pressure, elevation and pressure points. Avoid tourniquets except as a last resort.

Subjective information

The patient may complain of itching, difficulty breathing, chest tightness, throat tightness, nausea, abdominal cramps, hives, blotchy skin, swelling to mouth, eyes and tongue, difficulty swallowing, diarrhea or vomiting.

History of known allergies or previous anaphylactic reactions may be present.

Exposure to allergenic substance such as drugs, insect bites, chemicals, foods or exercise.

Objective information

Respiratory: wheezing, hoarseness, stridor, respiratory distress, diminished tidal volume.

Vital signs: watch for decreasing blood pressure and other signs of shock.

Edema: swelling to lips, eyes, tongue and airway.

Skin: hives, rashes, flushed or blotchy.

Vomiting or diarrhea.

Level of consciousness: normal mentation or anxious to comatose.

Treatment

Procedure	FR	EMT B	EMTB IV	EMT I	EMT P
Stable, limited body system reaction and BP > 90	x	x	x	x	x
O2: 10-15 l/min by mask	x	x	x	x	x
Remove injection mechanism if a bee or wasp sting	x	x	x	x	x
Monitor vital signs	x	x	x	x	x
IV: 1-2 large bore with normal saline TKO rate			x	x	x
If wheezing present: Administer Albuterol/Atrovent updraft EMT I's – give Albuterol only				x	x
If urticaria (hives), itching or angioedema present: Administer 25 mg diphenhydramine, IM				x	X
If multiple body systems effected and BP >70 - <90					
a) 250 - 500 cc fluid bolus, repeat as necessary to maintain BP			x	x	x
b) 0.3 mg epinephrine 1:1000 SQ q 10 minutes if needed If s/s improve slowly or cease to improve, massage the injection site.				DO	x
c) 125 mg Solu Medrol IV					x
d) 50 mg Diphenhydramine IM or IV					x

x = standing order DO = direct order only

Procedure	FR	EMT B	EMTB IV	EMT I	EMTP
If blood pressure <70, patient is critical:					
a) 500 cc fluid bolus, repeat as necessary to maintain BP			x	x	x
b) 0.1 mg epinephrine 1:10,000 slow IV push q 5 if needed				DO	x
c) 50 mg Diphenhydramine slow IV push					x
d) 125 mg Solu Medrol IV					x
e) EpiPen administration		DO	DO	x	x
If bronchospasms are persistent, consider Albuterol and Atrovent updraft, see Respiratory Distress protocols. EMT-I's give Albuterol only.				x	x

x = standing order DO = direct order only

Specific Precautions

If the patient is suffering severe respiratory distress, such as 1-2 word dyspnea, regardless of the blood pressure, administer the EpiPen.

Anaphylactic shock may occur within seconds to minutes with an injected allergen but may take up to an hour to develop with some ingested allergens. The more body systems involved, the higher the risk for anaphylactic shock.

Epinephrine may induce vomiting in children. It will also increase the cardiac work load and may precipitate angina or a myocardial infarction in susceptible individuals. See Epi Protocol for more information.

There are two concentrations of epinephrine available. Be sure that you are using the correct one. Epi 1:1,000 can only be given SQ or IM. Epi 1:10,000 can be administered IV, but it must be given very slowly to minimize the effect on the heart.

Epinephrine should not be given without signs as well as symptoms of anaphylaxis.

Lethal edema may be localized to the tongue, uvula or other parts of the upper airway. Be prepared to assist ventilation or intubate if necessary.

Anxiety, tremors, palpitations, tachycardia and headache are not uncommon side effects from administration of epinephrine. These can be very severe when it is given IV.

Not all allergic reactions will progress into anaphylactic shock. A patient having an allergic reaction will exhibit some of the signs and symptoms of anaphylactic shock such as itching, rashes and hives, but will not have the lethal edema of airway, shortness of breath and hypotension.

Subjective information

History: Recent crisis, emotional trauma, bizarre or abrupt changes in behavior, suicidal or homicidal ideas, delusions, hallucinations, alcohol/drug intoxication, or toxic exposure.

Past history: previous psychiatric disorders, medical problems or medications.

Objective Information

Vital signs: Note pupil size, symmetry, and reactivity.

Mental status: orientation to time, person, place, rational and coherent speech.

Odor of alcohol on breath or signs of drug use such as needle marks.

Medical alert tags.

Signs of traumatic or medical crisis.

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Protect airway: suction as needed	x	x	x	x
Monitor vital signs	x	x	x	x
Restrain if necessary (refer to Patient Restraint Protocol)	x	x	x	x
If lethargic or vitals are unstable:				
a) O2: 2-4 l/min by cannula	x	x	x	x
b) IV: medium gauge with normal saline TKO		x	x	x
c) Check blood glucose level	x	x	x	x
d) If blood glucose level is less than 60, administer D50 in 10 g increments followed by a fluid bolus, reassess and repeat if necessary to 25 g.		x	x	x
e) Administer 1 tube oral glucose if IV unavailable, see Hypoglycemia Protocol for more information.	x	x	x	x
f) Narcan: 2 mg IV or IM if narcotic overdose is suspected			x	X
g) Haldol: 5-10 mg for sedation in extreme cases				X

x = standing order DO = direct order only

Specific precautions

It may be necessary to restrain the patient to ensure the safety of the patient and the EMS personnel. The type of restraints used should restrict the movement of the patient without causing injury. However, sometimes injuries will occur when a patient is excessively violent or combative. Do not use excessive force when restraining a patient, but remember, your personal safety is the first priority. Make sure you have enough resources; if not, call for additional help before attempting to take a patient down. Refer to Patient Restraint Protocol.

Section 3-4

Psychiatric patients and/or patients with abnormal behavior may have an organic etiology. Do not overlook the possibility of head injuries, hypoxia, hypoglycemia, drug ingestion, or neurological disorders by assuming that it is just a psychiatric disorder.

If the patient is suicidal, do not leave them alone. Either remove dangerous objects or have someone else remove them. Keep in mind, just about anything can be a weapon, such as jewelry, belt buckles or cowboy boots.

Inquire specifically regarding depression, feelings and thoughts of suicide or homicide. Question specifically about hallucinations or delusions, this will give an assessment of the patient's mental status.

Subjective information

Mechanism of burn: localized, steam, thermal, chemical, radiation, accompanying explosion, or occurrence in a confined or enclosed space.

Chief complaint: pain in the area of the burn, pain in the throat, face or chest indicate that the respiratory tract may be burned, shortness of breath or dyspnea.

Associated symptoms: nausea, chest pain, syncope.

Exposure to toxic gases, such as carbon monoxide.

Objective information

Respiratory: abnormal breath sounds such as wheezing, rhonchi or rales. Hoarseness and stridor, soot in mouth or nose, singed facial hair all indicate a burn to the respiratory tract.

Vital signs: level of consciousness, watch for decreasing blood pressure secondary to hypovolemic shock.

Extent of burns:

- **1st degree: resembles a sun burn, usually very painful.**
- **2nd degree: skin is reddened and blistered, usually very painful. It is important to keep the blisters intact. Any 2nd degree burns involving the face, chest, hands, feet or fractures are considered critical burns.**
- **3rd degree: skin is charred and black or white and area is not painful as the nerves have been destroyed. Any 3rd degree burn is considered critical.**

Edema will occur quickly in burned tissue. This can be lethal in airway burns.

Associated trauma, such as underlying fractures or spinal injuries in the setting of explosions.

- **Critical burns include both life threatening and quality of life burns. Examples include burns to head, palms of hands, genitals, feet, circumferential burns. Treat these patients aggressively and initiate transport as soon as possible.**

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Remove patient from the source of the burn and stop the burning process by removing smoldering clothing or rinsing off chemicals	x	x	x	x
Remove all clothing and constrictive jewelry unless it is adhered to the patient	x	x	x	x
Protect the airway: suction as needed	x	x	x	x

x = standing order DO = direct order only

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
O2: 10-15 l/min by mask	x	x	x	x
Estimate size of burn using "Rule of 9's"	x	x	x	x
Keep patient warm to prevent hypothermia	x	x	x	x
Bandage all burns with a dressing that is moistened with sterile saline (dry dressings only if burn > 15% of BSA)	x	x	x	x
IV: 1 - 2 large bore IVs with normal saline		x	x	x
Fluid bolus of 250-500 cc if symptomatic for hypovolemic shock Assess for internal injury and additional trauma		x	x	x
EKG monitor			x	x
Consider early intubation for any potential respiratory burns			x	x
Fentanyl: 1-2 mcg/kg IV or IM up to 100 mcg initial dose. Contact base physician for orders past 200 mcg total.				x
Morphine: 4 mg initial dose, titrate to pain/pressure. Contact base physician for orders past 20 mg total.				x
Consider Midazolam: 1-2 mg <u>after</u> Fentanyl or Morphine given				x

x = standing order DO = direct order only

Specific Precautions

Burn patients are at great risk for airway obstructions due to edema, and hypothermia. If the burn patient is hypovolemic, consider the presence of internal bleeding and additional trauma.

It is important to stop the burning process either by removing smoldering clothing or removing the patient from a hot environment. If the burn is due to a chemical, rinse the affected area with water for at least 10 minutes after the burning sensation subsides.

With electrical burns, the visible damage is often not indicative of the extent of the burn. It is often referred to as an "ice berg" type injury since most of the damage is hidden from sight. Also, electricity will mimic a gun shot wound in that there will be an entrance and an exit wound. Electrical burns can also cause cardiac dysrhythmias ranging from ectopy to asystole.

Consider carbon dioxide and other poisonous gas inhalation if burns occurred during a fire in a confined space.

Consider MI's in firefighters or patients who have collapsed during a fire.

In patients with burns to the face and airway, consider early intubation even though the patient may still be conscious or not in severe respiratory distress initially. Lethal edema can occur very quickly so be prepared to assist ventilation or intubate.

Consider the use of Fentanyl or Morphine for pain management. You can give both if needed, but the cumulative dose of the drugs cannot exceed the maximum standing order dose for either drug without a direct order from the base physician. Use 1 mg Morphine = 10 mcg Fentanyl as a scale.

Specific Information Needed

History: last time seen, down time, and preceding symptoms.

Past History: diseases, recent illness or medications.

Surroundings: evidence of drug ingestion, electrocution, or crime scene.

CPR: time of initiation, effectiveness of compressions, time down prior to CPR.

Specific Physical Findings

Absence of consciousness.

Agonal or absent respirations.

Absence of carotid pulse.

Signs of trauma.

Pallor, cyanosis or lividity.

Unresponsive and fixed pupils.

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Initiate CPR	x	x	x	x
Control airway with either NPA or OPA	x	x	x	x
Assist ventilation with bag valve device or positive pressure system with 15 l/minute of O ₂	x	x	x	x
Suction airway as needed	x	x	x	x
IV: 1-2 large bore IV with normal saline TKO rate		x	x	x
Monitor cardiac rhythm			x	x
Automatic external defibrillation (see individual protocol)	x	x	x	x
Treat specific cardiac arrest algorithms (see individual protocol)			x	x

x = standing order DO = direct order only

Specific Precautions

All patients in cardiac and/or pulmonary arrest will be resuscitated with the following exceptions:

- Those patients who are obviously dead and beyond any chance of resuscitation, such as patients who have been decapitated, have rigor mortis, tissue decomposition or dependent lividity. The safety of the EMS personnel must also be taken into consideration if the resuscitation attempt might endanger the rescue personnel.
- Those patients in which a nurse or family member can display a valid "Do Not Resuscitate" order in writing from the patient's current attending physician, or the patient has a "No CPR" bracelet or necklace. Should there be any questions to the validity of the order, proceed with resuscitation, until contact with the base physician is made.
- Upon a verbal order from an attending physician who is present at the time. It must be verified that this person is, in fact, the attending physician who knows the patient well. Should there be any question concerning this physician, proceed with resuscitation and ask that person to immediately contact the Emergency Physician at your hospital base.
- Should a verbal DNR order be received via radio or telephone from someone claiming to be the attending physician, have that individual contact the Emergency Physician on duty at your base hospital. If the base hospital physician agrees with the "Do Not Resuscitate", then he or she will make contact by telephone or radio. Proceed with resuscitation attempts in this circumstance until further directed by the base hospital physician.

For information regarding DNR orders and living wills (advance directives), refer to the "Do Not Resuscitate" protocol.

Per AHA standards, CPR needs to be initiated within 4-6 minutes. When CPR is not started within 10 minutes, statistics have shown that the success rate is low. However, CPR should be initiated in all arrests unless there are obvious signs of death.

Cardiac arrest in trauma situations carries a very high mortality rate. Transportation should be prompt with CPR and fluids enroute. However, do not concentrate all efforts and resources on trauma arrest patients, if there are viable patients present in need of medical attention. Remember, in a triage setting, those in the black category are a low priority.

Under no circumstances is the deceased patient to be used for practice procedures, especially invasive techniques such as intubation, NG tube placement and IV lines. Clinicals can be arranged for intubation and IV practice through the EMS department, and are the proper setting for enhancing specific skills. Failure to abide by this policy will result in immediate punitive actions.

Subjective information

Mechanism of injury: blunt vs. penetrating trauma, ejection, caliber of weapon or height of fall.

Time factor: down time, interval between injury and arrest, distance to nearest hospital.

Objective information

Absence of consciousness.

Absence of pulse and respirations.

Signs of trauma.

Pallor, cyanosis or lividity in absence of hypothermia.

Unresponsive and fixed pupils in absence of hypothermia.

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Initiate CPR	x	x	x	x
Control airway with either NPA or OPA	x	x	x	x
Assist ventilation with bag valve device or positive pressure system with O2 15 l/minute	x	x	x	x
Suction airway as needed	x	x	x	x
Spinal immobilization	x	x	x	x
IV: 1-2 large bore IV with normal saline TKO rate		x	x	x
If pulses are not generated with CPR compressions, give a fluid bolus of 1000 cc		x	x	x
Oral intubation with in-line manual traction			x	x
Monitor cardiac rhythm			x	x
If patient is in asystole, PEA, V-fib, or V-tach, follow the appropriate protocol			x	x

x = standing order DO = direct order only

Specific Precautions

Transport should be prompt with CPR and fluids enroute. Do not increase scene times attempting IV lines and advanced airway management. Optimal scene times should be within 10 minutes unless there are extrication problems.

Trauma arrests carry over a 99% mortality. Blunt trauma carries a 100% mortality. If there are multiple patients, these patients should be bypassed in order to treat viable patients. Triage should not be circumvented or delayed by focusing on traumatic arrests.

All patients in cardiac and/or pulmonary arrest will be resuscitated with the following exceptions:

- Those patients who are obviously dead and beyond any chance of resuscitation, i.e., those who are decapitated, have rigor mortis, tissue decomposition or dependent lividity. The safety of the EMS personnel must also be taken into consideration if the resuscitation attempt might endanger the rescue personnel.
- Those patients in which a nurse or family member can display a valid "Do Not Resuscitate" order in writing from the patient's current attending physician, or the patient has a "No CPR" bracelet or necklace. Should there be any questions to the validity of this order, proceed with resuscitation until the base physician can be contacted for further directives.
- Upon a verbal order from an attending physician who is present at the time. It must be possible to verify that this person is, in fact, the attending physician who knows this patient well. Should there be any question concerning this physician, you should proceed with resuscitation and ask that person to immediately contact the Emergency Physician at the base hospital.
- Should a verbal DNR order be received via radio or telephone from someone claiming to be the attending physician, have that person call the Emergency Physician on duty at the base hospital. If the base hospital physician agrees with the "Do Not Resuscitate", then he or she will make contact by telephone or radio. Proceed with resuscitation attempts in this circumstance until the base physician has been contacted.

For information regarding DNR orders and living wills, refer to the "Do Not Resuscitate" protocol.

Per AHA standards, CPR needs to be initiated within 4-6 minutes. When CPR is not started within 10 minutes, statistics have shown that the success rate is low. However, CPR should be initiated in all arrests unless there are obvious signs of death.

Under no circumstances is the deceased patient to be used for practice procedures, especially invasive techniques such as intubation, NG tube placement and IV lines.

If questions regarding resuscitation or transportation arise, consult your base physician. If arrests occur in remote areas or in cases in which there is an extended transport or evacuation time, it may be prudent to pronounce the patient in the field.

Subjective information

Symptoms: headache, nausea, dizziness, confusion, disorientation, loss of memory, aphasia, altered or abnormal sensations, or hemiparesis.

Past history: previous TIA, CVA, or hypertension.

Objective information

Vital signs: possible hypertension and bradycardia if the intracranial pressure increases.

Level of consciousness: disoriented, confused, stuporous, unconscious or unresponsive.

Neurological status: slurred speech, facial drooping, weakness, paralysis, unequal grip strength, numbness or tingling, paresthesia, seizures, or altered pupillary response to light.

Trauma if associated with a fall.

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Control airway. If patient is unable to speak or swallow, they cannot control their airway. Use of an NPA, OPA or intubation is indicated	x	x	x	x
Assist ventilation if necessary with bag valve device	x	x	x	x
O2: 15 l/minute by mask	x	x	x	x
IV: medium bore with normal saline		x	x	x
Check blood glucose level.	x	x	x	x
If blood glucose level < 60, administer D50 IV in 10 g increments followed by a fluid bolus, reassess and repeat 10g as necessary to a total of 25 g IV.		x	x	x
If IV unavailable, administer 1 tube oral glucose if blood glucose level <60. See Hypoglycemia protocol for more information.	x	x	x	x
Monitor cardiac rhythm			x	x

x = standing order DO = direct order only

Specific Precautions

Cerebral vascular accidents occur when the brain is deprived of oxygen. This can occur due to vasospasm, aneurysms or clots. The signs and symptoms will be determined by the area of the brain that is effected. The symptoms can be as subtle as a slight memory loss and uncoordinated movements or as dramatic as unconsciousness and paralysis.

Constant monitoring is essential. These patients can deteriorate very quickly.

Cardiac monitors need to be applied to patients with suspected CVA's. Myocardial infarctions and other cardiac events are often overlooked.

Hypoglycemia is often overlooked in the field, especially in the elderly. Make sure that the patient that you think has had a massive stroke is not just hypoglycemic, a condition which can be reversed with the administration of D50. Consider giving 1/2 amp=12.5 g, then reassess.

If the CVA causes an increase in intracranial pressure, the signs and symptoms will mimic a closed head injury. These patients will present the same as a patient suffering from a traumatically induced injury by displaying posturing and Cushing's triad. Refer to "Head Injury Protocol" in for additional information.

The ultimate goal with a CVA patient is to protect the airway and increase oxygenation. Nasal intubation should be avoided if possible as it may cause trauma that excludes thrombolytics.

The administration of D50 may increase the intracranial pressure due to it's hypertonic qualities. Do not administer it unless there are other signs and symptoms diagnostic of hypoglycemia such as a low blood glucose level as determined by home glucose monitoring device.

A transient ischemic attack (TIA), is a temporary loss of neurological function due to hypoxia of the brain. The signs and symptoms will mimic those of a CVA, but will dissipate within 24 hours. This is determined by a neurologist at a later time. In the field, a patient suspected of suffering from a TIA should be treated as a CVA victim.

Hypertension secondary to a CVA should not be treated in the field.

Many advances have occurred in the treatment of CVA's in the past several years. Time is of the essence when you are treating a CVA patient, they need to get to the hospital as quickly as possible. Treat suspected CVA patients aggressively and urgently. Emergent transports are usually warranted, use good judgment when making this decision.

Thrombolytic agents are a common treatment method for these patients. Below are absolute and relative contraindications to thrombolytic use per the 1997-1999 ACLS guidelines. If possible, EMS providers should check for these in the field so that hospitals can be notified early of potential thrombolytic candidates.

Relative Contraindications

- Recent trauma or surgery in past 2 months
- Initial BP > 180 systolic or 110 diastolic controlled by medical treatments
- Active peptic ulcer or guaiac-positive stools
- Hx of CVA, tumor, injury, or brain surgery
- Known bleeding disorder or warfarin use
- Significant liver dysfunction or renal failure
- Prolonged CPR

Absolute Contraindications

- Active internal bleeding
- Initial BP > 180 systolic or 110 diastolic not controlled by medical treatments
- Known traumatic CPR
- Pregnancy
- Hx of CVA in past six months
- Recent head trauma or known intracranial neoplasm

Exposure to streptokinase or antistreplase during past 12 months

Known cancer or illness with possible thoracic, abdominal, or intracranial abnormalities

Subjective information

Evaluation of the pain or discomfort:

- Onset: often a sudden onset occurring either at rest or with exertion.
- Duration: the pain will not subside with rest or Nitroglycerine.
- Location/radiation: the pain or discomfort can be in the chest, abdomen, arms, jaw, back pain or a vague and non-specific pain or discomfort.
- Severity: how bad the pain is on a 1-10 scale.
- Quality: can be severe or mild, often described as a pressure, indigestion, or nondescript.
- Pain that changes with respirations is often of a non-cardiac origin, but not always.

Associated Symptoms: diaphoresis, nausea, vomiting, respiratory difficulty, indigestion, palpitations, dizziness, feeling of impending doom, weakness, and syncope.

Past History: Previous cardiac or pulmonary problems, cardiac medications, advanced ages or significant family history contribute to a cardiac diagnosis.

Objective information

Vital signs: may be normal or abnormal.

General appearance: evaluate overall mental status, skin color, temperature and tone.

Jugular venous distention, peripheral edema, and "wet lungs" indicate cardiac failure and cardiogenic shock.

Treatment

Procedure	FR	EMT B	EMTB IV	EMT I	EMT P
Position of comfort	x	x	x	x	x
O2: 15 l/minute by mask	x	x	x	x	x
Monitor Vital Signs	x	x	x	x	x
IV: Buff cap if rales are present, normal line if BS are clear			x	x	x
Monitor cardiac rhythm				x	x
Evaluate for R ventricular infarct (V ₄ R)					
Assist patient with prescribed nitroglycerine if SBP > 100		DO			
Do not give if Viagra has been taken within 24 hrs					
Consider fluid bolus if R ventricular infarct suspected				DO	x
Nitroglycerin .4 mg spray repeated q 5 minutes up to 3 doses, as long as blood pressure remains above 100/P. Treat hypotension with a fluid bolus of 250 cc as long as breath sounds are clear.				DO	x
Morphine sulfate: 4 mg IV initial dose, titrate to pain/pressure. Contact base physician for orders past 20 mg total.					x
Aspirin: 4 x 81 mg baby aspirins, chewable PO.		X	x	x	x

x = standing order DO = direct order only

Specific Precautions

Suspicion of an acute myocardial infarction (heart attack) is based entirely on history in the field. Do not be reassured by a "normal" monitor strip. Conversely, "abnormal" strips (particularly ST and T changes) can be due to technical factors or non-acute cardiac disease.

Constant monitoring is essential! Ventricular fibrillation is often not preceded by PVC's.

Treat the patient, not the monitor strip. Some rather ugly looking EKG strips are benign if the patient is not symptomatic.

When treating cardiac chest pain, the goal is to alleviate the pain completely. As long as the chest pain is present, the heart is hypoxic.

It is important to remember that all chest pain is not cardiac related. It can be respiratory based such as pneumonia, pulmonary emboli, or a spontaneous pneumothorax. It can also be secondary to traumas such as broken or bruised ribs, or pulmonary contusions. Cardiac chest pain often will not change with respirations or position. Be sure to assess your patient and do not assume that the patient is having a myocardial infarction just because he or she has chest pain.

Consider a 2nd IV if vitals are unstable and time permits.

Specific emergencies

Type of injury	signs/symptoms	vital signs	special considerations
Angina Pectoris: Temporary lack of O ₂ to the heart which does not cause permanent damage to the heart tissue.	Specific or non-specific pain often located in the chest, jaw, or arm that comes on with exertion and is relieved with Nitro and rest.	Vital signs often vary. Breath sounds can be clear or could have rales.	Signs and symptoms can be identical to those of an acute myocardial infarction.
Myocardial infarction: Lack of O ₂ to the heart causes injury and necrosis of the heart tissue.	Specific or non-specific pain often located in the chest, jaw, or arm that is not relieved with Nitro and rest.	Vital signs often vary. Breath sounds can be clear or could have rales.	Most deaths from MI's will occur within two hours of the onset of symptoms.
Pulmonary emboli: blockage of the pulmonary circulation results in systemic hypoxia.	Shortness of breath, sudden onset, can be asymptomatic or mimic an MI when the hypoxia effects the heart.	Vital signs elevated due to increased respiratory effort.	Breath sounds may be clear or diminished on the effected side. Common in patients with clotting disorders

Subjective information

Mechanism of injury: estimate of force involved, and blunt vs. penetrating trauma.

Chief complaint: location and severity of pain, and changes with respiration.

Respiratory: shortness of breath, difficulty breathing, feeling of suffocation, inability to speak without having to pause to take a breath, hoarseness or change in voice.

Past history: medical problems and medications.

Objective information

Vital Signs.

Movement of chest wall: evaluate during respiration to determine if it is symmetrical, a flail segment present or if chest expansion is full and equal.

Obvious chest wounds: contusions and abrasion are often the only external sign of catastrophic internal damage. Sucking chest wounds indicate that a pneumothorax and possibly, a hemothorax, is present.

Breath sounds: rales may indicate pulmonary contusions, absent or diminished breath sounds may indicate a pneumothorax, tension pneumothorax, or hemothorax.

Subcutaneous emphysema: air in the tissue, feels like Rice Krispies under the skin indicates a tear in the respiratory tract.

Hemoptysis: coughing up blood indicates pulmonary or tracheal trauma.

Tracheal shift indicates tension pneumothorax, but is often a post mortem event.

Jugular venous distention: tension pneumothorax or pericardial tamponade.

Increasing difficulty in ventilation: pneumothorax, tension pneumothorax, or hemothorax.

Level of consciousness: hypoxia that is caused by inadequate ventilation due to chest trauma can cause an altered LOC.

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Protect airway - suction as needed	x	x	X	x
Assist ventilation if patient is apneic or respirations are not adequate	x	x	X	x
O2: 10-15 l/min by mask	x	x	X	x
Assess anterior and posterior breath sounds	x	x	X	x

x = standing order DO = direct order only

BOULDER COUNTY PROTOCOLS

Section 3-17

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Seal all open chest wounds with an occlusive dressing such as Vaseline gauze. This will allow air to escape but prevent air from entering the wound. Remove dressing if patient begins to exhibit signs of a tension pneumothorax	x	x	X	x
Stabilize rib fractures and flail segments with a soft pillow or manual traction. Do not use sandbags	x	x	X	x
Impaled objects should not be removed but stabilized in place with bulky dressings	x	x	X	x
Breath sounds should always be assessed frequently to monitor pulmonary function.	x	x	X	x
Spinal immobilization should be done as the ribs are attached to the spine posteriorly	x	x	X	x
IV: 1-2 large bore IVs with normal saline TKO rate		x	X	x
With signs of shock, give fluid bolus of 3:1 replacement rate for known blood loss, or in 250 - 500 cc increments		x	X	x
Consider early intubation in the setting of respiratory distress			X	x
Monitor cardiac rhythm			X	x
Chest decompression in the setting of a tension pneumothorax				x
If ventricular ectopy (PVC's) are present: a) greater than 6 per minute b) multiformed c) couplets d) R on T Consider amiodarone bolus of 150 mg			DO	DO

x = standing order DO = direct order only

Specific Precautions

Chest trauma is one of the situations where "stabilization in the field" is not the best treatment. Remember to consider how far you are from the nearest facility and how critical the patient is. A patient with a gunshot wound to the chest does not need chest tubes, IV, etc., in the street when you are two blocks from the hospital.

Consider medical causes of respiratory distress which have either caused trauma or been aggravated by chest trauma, such as CHF, asthma or COPD.

Chest injuries sufficient to cause respiratory distress are commonly associated with significant blood loss. Be prepared for hypovolemia. Recent studies have shown that inflation of MAST pants increases intrathoracic pressure and will cause an increase in internal chest and abdominal bleeding. Because of this, MAST pants are not indicated for patients with suspected internal bleeding unless they are the last resort. If there is a question as to whether or not they should be used, consult with the base physician.

Fractured ribs can cause a number of serious injuries and should not be taken lightly.

Specific emergencies

Type of injury	Signs/symptoms	Vital signs/ breath sounds	Special considerations
Rib fractures: fractures can be linear, or comminuted.	Localized pain that increases on respiration and palpation.	Vital signs are often elevated due to the pain, breath sounds shallow.	Hypoventilation is very common due to pain.
Flail segment: 2 or more ribs broken in 2 or more places.	Localized pain that increases on respiration, paradoxical movement.	Vital signs are often elevated due to pain, breath sounds shallow.	Flail segment will move opposite of chest wall during respirations.
Pneumothorax: air from either an internal or external wound fills the pleural space.	Shortness of breath, dyspnea, breath sounds will be diminished on the effected side.	Vital signs elevated due to increased respiratory effort.	Monitor patient closely for signs of a tension pneumothorax.

Type of injury	Signs/symptom	Vital signs/ breath sounds	Special considerations
Tension pneumothorax: One way valve causes tremendous pressure to build up in the pleural space.	Dyspnea, jugular venous distension, tracheal shift.	HR: increased BP: decreased BS: decreased or absent over the effected side.	This injury carries a high mortality, transportation should not be delayed for stabilization in the field.
Hemothorax: Blood in the pleural space causes dyspnea and hypovolemia.	Dyspnea, vitals signs will indicate shock., no JVD will be present	HR: increased BP: decreased BS: diminished over effected side.	Due to the internal hemorrhage, the patient will present in shock.
Pulmonary contusion: bruising to the lung tissue causes it to swell and interferes with gas exchange.	Dyspnea, chest wall pain on respiration, low pulse ox readings.	BS: rales present over injured area.	Associated with blunt trauma.
Cardiac contusion: bruising to the heart tissue.	Chest pain, symptoms similar to MI. signs of chest wall trauma.	HR: varies BP: varies BS: clear	Associated with blunt trauma. PVC's and ectopy are common.
Pericardial tamponade: Sac surrounding the heart fills with blood or fluid.	Dyspnea, jugular venous distention, narrowing of pulse pressure.	HR: rapid and weak BP: decreased, systolic and diastolic approach BS: clear	Often associated with penetrating trauma.
Traumatic asphyxia: Crushing forces prevent respiration.	JVD, bulging eyes and tongue, facial cyanosis.	Usually presents as a cardiac arrest.	Carries a very high mortality.
Sucking chest wound: External wound in chest wall allows air to flow through it during respiration.	Dyspnea, air bubbles or air movement present in wound.	Vital signs are often elevated due to the increased effort of respirations.	Monitor patient closely once wound has been sealed.

Subjective information

History of pregnancy: obtain information regarding due date, vaginal bleeding, previous pregnancies, complications, general health, prenatal care, and number of miscarriages, abortions or live births.

Para=number of births, Gravida=number of pregnancies

Pain: Location, frequency, severity, duration, and urge to push.

Medical history: medications, past medical problems, and patient's age.

Objective information

Vital signs.

Swelling of face or extremities, indicating preeclampsia, eclampsia.

Duration and frequency of contractions of uterus.

Vaginal discharge: blood, fluid, color and odor.

Crowning (check during contraction).

Abnormal presentation (foot, arm, or umbilical cord).

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Position of comfort	x	x	x	x
If delivery is not imminent, transport immediately with patient on her side	x	x	x	x
O2: 2-6 l/minute by nasal cannula	x	x	x	x
IV: 1-2 large bore IV, normal saline		x	x	x
If delivery is imminent, (crowning, feeling of a bowel movement, or urge to push):				
a) Support head as it emerges, using gentle pressure, prevent the infant from an explosive delivery	x	x	x	x
b) Suction nose and mouth with a bulb syringe or Dele suction unit as head emerges. Do not use mechanical suction.	x	x	x	x

x = standing order DO = direct order only

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
c) When infant is delivered, clamp cord in two places approximately 8-10 inches from the infant, and cut the cord in between. Use only sterile materials	x	x	x	x
d) Dry the infant off and keep warm in blankets. Do not let infant become hypothermic	x	x	x	x
e) Place infant on mother's chest and allow it to nurse. This aids uterine contractions and will decrease maternal bleeding	x	x	x	x
f) Placenta normally delivers within 30 minutes. Do not delay transport or attempt to force delivery of the placenta				
g) If infant does not begin to breath spontaneously, stimulate it by rubbing the feet or chest. If still apneic, ventilate at 20 breaths per minutes by mouth or neonate ambu bag. DO NOT use an adult sized bag or positive pressure device!	x	x	x	x
h) If infant does not have a pulse or has a heart rate below 60, begin CPR, compression of 100/minute at a depth of 1/2 - 1 inch	x	x	x	x
i) If meconium staining is present (green, foul smelling fluid), it is imperative that the infant not aspirate this fluid. Suction out mouth repeatedly to remove meconium	x	x	x	x
j) If meconium is in the airway, either suction the airway with a Dele suction trap or intubate infant immediately and suction via the ET tube and re-intubate with a new ET tube until airway is clean			x	x
k) If excessive maternal bleeding occurs, massage the uterus and treat for hypovolemic shock	x	x	x	x

x = standing order DO = direct order only

Specific Precautions

DO NOT pull on the cord; it will cause the placenta to abrupt and may cause catastrophic bleeding.

Ask patient if she feels as though she is going to deliver, has an urge to push, or a feeling of a bowel movement. Particularly with multiple births, labor may be very short.

Babies are slippery. It is considered poor form to drop one.

The outside world is cold! Babies have poor temperature regulation and no clothes. Place the baby on the mother's naked abdomen and cover them both with a blanket keeping baby's head covered.

It is always safe to assume that any medical or trauma condition will be complicated by pregnancy. Conversely, pregnancy will be complicated by any trauma or medical condition. The abdominal pain complained of by a pregnant woman may not be uterine contractions.

Stay calm. Women have been delivering babies for many years. In most cases, you will do nothing more than preside at a natural event.

Specific emergencies

Type of injury	Signs/symptoms	Treatment	Special considerations
Cord prolapse: The umbilical cord precedes the infant, and becomes wedged between infant and the vaginal wall.	The umbilical cord will be protruding from the vagina.	Place the mother in the knee/chest position. If crowning has occurred, push infant's head up and off of the cord, using manual pressure.	The infant's oxygen supply is cut off when the cord is compressed. This is a very serious condition.
Placenta previa: The placenta develops over the cervix and is damaged when the cervix dilates.	This occurs during the first stage of labor. Vaginal bleeding may or may not be present.	Place the mother in knee/chest position and urge her not to bear down. Transport emergent.	Hemorrhage from the damaged placenta can cause maternal and infant mortality.
Abruptio placenta: The placenta is torn off of the uterine wall causing catastrophic bleeding.	Abdominal pain. Vaginal bleeding may or may not be present.	Treat for hypovolemic shock.	Can occur due to blunt trauma or during labor. High mortality for infant and mother.
Nuchal Cord: umbilical is wrapped around the infants neck	Cord will be visibly wrapped around the infant's neck	Either slip cord off, or clamp cord in two places and cut it	Damage to cord and placenta dangerous to mother and infant
Breech presentation: Anything other than a head presentation.	Arm, leg or buttock will be visible in the vaginal opening.	Place the mother in the knee/chest position and urge her not to bear down.	Footling (single foot) or single arm are breech presentations that cannot be a vaginal delivery. C-section will be required. Buttock presentation may deliver by itself, however, most of these deliveries are difficult, prolonged, and most require a C-section

Subjective information

Onset: sudden or gradual, duration of problem.

Chief complaint: dizziness, chest pain, syncope, dyspnea, palpitations, nausea, vomiting, indigestion or diaphoresis.

Medications: particularly cardiac medications, such as digitalis, Nitroglycerine, Lasix, Lanoxin, Procardia, Verapamil, Isoptin, and Calan.

Past Medical History: pacemaker, past heart attacks, or "heart problems."

Objective information

Vital signs: may be normal or abnormal.

Signs of poor perfusion:

- Altered state of consciousness, confusion or anxiety.
- Cool, clammy, diaphoretic skin.
- Pulse weak, thready or erratic, abnormal rate.
- Low blood pressure (systolic <90).

Signs of congestive heart failure:

- Jugular venous distention.
- Pulmonary rales.
- Peripheral edema in ankles and feet.
- Shortness of breath, rales or wet lung sounds.

Treatment

Procedure	FR	EMT B	EMTB IV	EMT I	EMT P
Position of comfort	x	x	x	x	x
O2: 15 l/minute by mask	x	x	x	x	x
IV: microdrip if rales are present, macrodrip if breath sounds are clear			x	x	x
Monitor cardiac rhythm				x	x
Treat any dysrhythmias according to appropriate protocol				x	x

x = standing order DO = direct order only

Procedure	FR	EMTB	EMTB IV	EMT I	EMT P
If chest pain is present: nitroglycerin .4 mg SL up to 3 doses. It is contraindicated if the systolic blood pressure is <100. If blood pressure drops, administer a 250 cc fluid bolus if the breath sounds are clear				DO	x
Aspirin: 4 x 81 mg baby aspirins, chewable PO.		x	x	x	x
Morphine: 4 mg IV initially, titrate to effect. Contact base physician for orders past 20 mg total.					x

x = standing order DO = direct order only

Specific dysrhythmias

Dysrhythmia	Cause	Additional treatment if stable	Additional treatment if unstable
Sinus tachycardia: rate 100-160, upright P waves present in leads I & II.	Normal response to fear, anxiety hypovolemic, shock, or exertion.	Treat the underlying cause. Reassess for shock and treat accordingly.	Treat the underlying cause. Reassess for shock and treat accordingly.
Sinus bradycardia: rate <60, upright P waves present in leads I & II.	Vagal nerve stimulation, hypoxia, MI or normal condition.	Monitor the patient carefully.	Refer to bradycardia protocol under cardiac arrest.
Supraventricular tachycardia (SVT): rate 150+, no visible P waves.	Unknown, in some pts. congenital defect causes aberrant conduction system in the heart.	Consider a Valsalva maneuver, 250 cc fluid bolus, and Adenosine.	Fluid bolus 250 cc, Adenosine, or cardioversion starting at 100 J.
Atrial fibrillation: irregular QRS complex, erratic baseline, no visible P waves present.	Multiple atrial foci cause irregular heart rate.	Monitor patient. Diltiazem is useful for controlling rates in rapid rates > 150/min.	Consider cardioversion at 100 Joules for uncontrolled tachycardia. In symptomatic A-fib and A-flutter with a slow ventricular response, contact base physician regarding the use of Atropine.
Atrial flutter: F waves form saw tooth pattern.	Single abnormal atrial foci repeatedly fires.	Monitor patient. Diltiazem is useful for controlling rates in rapid rates > 150/min.	Consider cardioversion at 50 Joules, increase if needed

Dysrhythmia	Causes	Treatment if stable	Treatment if unstable
2nd Degree AV block: dropped beats will cause an irregular ventricular rhythm.	Defects in the conduction system cause a ventricular beat to be dropped.	Monitor patient.	Externally pace - Refer to bradycardia protocol under cardiac arrest.
3rd Degree AV block: disassociation between atria and ventricles.	Destruction of the conduction system cause AV dissociation.	Monitor patient (rarely asymptomatic).	Externally pace - Refer to bradycardia protocol under cardiac arrest.
PACs and PJC's: premature beats arising from above ventricles.	Usually benign and does not require treatment.	Monitor patient. Treat the underlying cause.	Reassess for hypovolemic shock, and treat accordingly.
PVC's: premature contraction of the ventricles causes wide, bizarre shaped QRS complexes.	Hypoxia, myocardial infarction, ventricular irritability, or a normal occurrence in some individuals.	Oxygen, IV and monitor the patient carefully.	Oxygen, magnesium sulfate. Refer to individual drug protocol regarding doses.
Cardiac arrest rhythms: asystole, EMD, V-tach, and V-fib, and IVR.	Hypoxia, blunt trauma, myocardial infarction, cardiac and atherosclerotic disease.	Control airway, ventilate and begin CPR.	Refer to individual protocol under cardiac arrest protocols.
Wide beat tachycardias of unknown origin: it can be very difficult to diagnosis in the field.	A wide beat tachycardia can be V-tach or an atrial tach with a bundle branch block, aberrancy or WPW.	Oxygen, IV and monitor patient carefully.	Adenosine; if no effect, consider Amiodarone or cardioversion.

Complications and Special Notes:

If in doubt, treat the patient, not the dysrhythmia. A patient who is perfusing adequately, does not need emergency treatment. This is especially true of brady arrhythmias. What is normal for one person, may be fatal to another and vice versa.

Wide beat SVT's and V-tach's can be very difficult to differentiate. If you have serious questions and perfusion is poor, administer Adenosine first. If this is not effective, treat the dysrhythmia as ventricular tachycardia. Contact the base physician for advice.

Before treating any dysrhythmia, it should be documented by a paper tape recording. If possible, always consult with the base physician before administering any drug.

If pulses are not palpable and the patient is unconscious, begin CPR. Treat as an EMD if pulses are not generated with CPR.

Many dysrhythmias are caused by or enhanced by hypoxia. Be sure that the patient is receiving high flow O2 and ventilating adequately, otherwise pharmacological interventions will not be successful.

Subjective information

Location and nature of the pain, feeling of breaking bones or "popping" during the injury.

Mechanism of injury.

Distal sensation.

Objective information

Swelling, discoloration or angulation or deformity in the area.

Lacerations or exposed bone fragments or crepitus (bone ends grating together).

Quality of distal pulses, movement or loss of function, limited range of motion, guarding.

Treatment

Procedure	FR	EMT B	EMTB IV	EMT I	EMT P
Assure ABCs	x	x	x	x	x
Immobilize C-spine if indicated	x	x	x	x	x
Apply sterile dressing to open fractures or open wounds	x	x	x	x	x
Splint injured extremity, immobilizing the joint above and the joint below the injury site. For fractured hips, pelvis and ribs, spinal immobilization should be used.	x	x	x	x	x
For pelvic fractures a sheet splint can be used to stabilize the pelvis.	x	x	x	x	x
Elevate and apply ice packs for extremity fractures	x	x	x	x	x
In the setting of potential shock due to femur or pelvic fractures or exsanguination from open fractures:					
a) O2: 10 - 15 l/minute by mask	x	x	x	x	x
b) IV: 1 - 2 large bore IVs with saline			x	x	x
c) Fluid challenge of 250 - 500 cc if vital signs are unstable			x	x	x
d) Monitor cardiac rhythm				x	x
If pain management is needed, consider:					
Fentanyl: 1-2 mcg/kg IV or IM up to 100 mcg initial dose. Contact base physician for orders past 200 mcg total.					x
Morphine: 4 mg initial dose, titrate to pain/pressure. Contact base physician for orders past 20 mg total.					x
Versed: 2 mg IV or IM initial dose, may give another 2 mg after 5 minutes if needed.					x

x = standing order DO = direct order only

Specific Precautions

Do not apply ice or cold packs directly to skin or use them under bandages as this will cause tissue damage.

Fractures do not necessarily lead to loss of function. For example, impacted fractures may cause pain but little or no loss of function.

Do not allow severely angulated, open, bloody fractures to distract you from a punctured lung with impending respiratory arrest. Extremity injuries benefit from appropriate care, but are of low priority in a multiple-injury patient.

When splinting, evaluate the patient's pulse, movement and sensation before and after applying the splint.

Rib fractures, femur fractures and pelvic fractures can lead to catastrophic bleeding, especially in the elderly. These patients should be treated for possible shock: O2 and at least one IV.

Hip fractures, which is a fracture to the femur or pelvis, are a common result of falls in the elderly. Many of these falls are precipitated by a syncopal episode secondary to a cardiac problem. Others will have a pathological fracture of the bone which causes them to fall. During the assessment, determine the cause of the fall as this may affect your treatment.

Fractures should be splinted in the position they are found unless there is diminished distal circulation or the position prevents transportation. If an angulated fracture is to be realigned, gentle traction should be used to return it to the anatomical position.

Dislocations should not be relocated in the field. If the distal circulation is impaired, contact the base physician for advice. The only exception is lateral patellar dislocations which paramedics may reduce under direct order only. Under no circumstances are shoulder or hip dislocations to be reduced in the field.

There are numerous types of splints available. Choose one which will immobilize the joint above and below the injury site, and will provide maximum support.

A sprain (damage to ligaments) or a strain (damage to tendons), can cause severe swelling and be extremely painful. Treat them the same as a fracture.

For pain management, Fentanyl is the preferred drug for most situations. Consider Morphine for longer transports. Versed can be used safely in combination with these drugs. Versed should only be used if it is needed, not every patient in pain needs Versed.

You can give both Morphine and Fentanyl if needed, but the cumulative dose of the drugs cannot exceed the maximum standing order dose for either drug without a direct order from the base physician. Use 1 mg Morphine = 10 mcg Fentanyl as a scale.

Specific injuries

Type of injury	Signs/symptoms	Treatment	Special considerations
Closed/simple: the skin is intact.	Pain, point tenderness, deformity, swelling, loss of movement.	Splint the extremity in position found.	When in doubt, splint.
Open/compound: the ends of the bone break through the skin.	Open soft tissue wound. Bone may or may not be protruding.	Dress open wounds with a moistened, sterile dressing prior to splinting, control bleeding.	Remove large debris from wound but do not attempt to decontaminate.
Angulated: bone ends are no longer in line.	Gross deformity to bone, usually in an extremity.	See specific precautions #7 on page 102.	Monitor the distal circulation carefully. An absent pulse is a medical emergency.
Colles fracture: fracture of the wrist with deformity in the shape of a fork.	Gross deformity to wrist.	Splint and support the deformity with padding.	Monitor the distal circulation carefully. An absent pulse is a medical emergency.
Hip fracture: break to the femur or pelvis.	Shortening or rotation of the affected leg.	Splint with a scoop. Consider splinting with a sheet.	Watch for hypovolemic shock.
Rib fractures: see chest injury protocol.	Pain on respiration and palpation.	Splint with a scoop and pillows, and spinal precautions.	Can cause serious chest injuries.
Skull fractures: see head injury protocol.	Head pain, brain matter visible, altered LOC.	Spinals, O2 and IV.	A force great enough to break the skull will often cause brain injuries.
Facial fractures	Pain in the area, deformity, asymmetry.	Protect airway, spinals, O2 and IV	The airway is often compromised. Often associated with closed head injuries.

Head Trauma**Section 3-21****Subjective information**

Chief complaint: headache or head pain, nausea, vomiting, amnesia, or loss of sensation.

Mechanism of injury: estimated speed or force involved, use of a helmet or seat belt, distance of ejection, damage to the vehicle (MOI), ambulatory on scene or moved after the accident.

Medical problems that may have preceded the accident such as an MI, seizure, or CVA.

Objective information

Level of consciousness: disoriented, confused, combative, perseveration (repeating the same sentence), stuporous or comatose.

Vital signs (note respiratory pattern and rate). Increased intracranial pressure will cause the heart rate to decrease and the blood pressure to increase.

Glasgow coma exam or other neurological exam, including pupils and response to stimuli.

External evidence of trauma (abrasions, lacerations, contusions).

Posturing: decorticate or decerebrate.

Seizures.

Battle signs (bruising behind the ear), or Raccoon's eyes (bilateral black eyes).

Fluid or bleeding from the ears, nose, or mouth.

Deformity to the skull or face, visible brain tissue.

Abnormal motor responses.

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Control airway with NPA, OPA or manual positioning with a jaw thrust technique.	x	x	x	x
Suction airway as needed.	x	x	x	x
Spinal immobilization with scoop or board, cervical collar, head rolls, tape and body straps.	x	x	x	x
O2: 2-6 l/minute by cannula if mentation is normal, otherwise 10-15 l/min by mask.	x	x	x	x
Control bleeding with direct pressure.	x	x	x	x

x = standing order DO = direct order only

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
IV: 1-2 large bore IVs with normal saline.		x	x	x
Monitor cardiac rhythm.			x	x
Consider Lasix 40 mg IVP for increased ICP				DO
If patient is unconscious or respirations are <12 per minute:				
a) Ventilate with a bag valve mask at 12-20 respirations per minute, ensuring good rise and fall of chest.	x	x	x	x
b) Nasal intubation is preferred over oral intubation if a gag reflex is present. Midazolam 2-4 mg IV may be given to assist in intubating a combative patient.			DO	x
c) If seizures occur, follow Seizure protocol.	x	x	x	x

x = standing order DO = direct order only

Specific Precautions

It is important that you provide the base physician with information on the level of consciousness, especially changes in mentation.

Assume cervical spine injury in all patients with head trauma, even if they are asymptomatic for spinal trauma.

If a patient with a head injury is presenting with signs and symptoms of hypovolemic shock, reassess the patient. Look to the chest and abdomen for the possible causes. The amount of bleeding that can occur inside the cranium is not enough to cause hypovolemia.

If increased intracranial pressure is indicated, (posturing, seizures, etc., intubate and hyperventilate at a rate no greater than 20 respirations per minute. Ventilation at this rate ensures adequate oxygenation with good CO₂ removal which may slow or decrease cerebral edema.

External bleeding may be stopped by direct local pressure. If the underlying skull is unstable, pressure should be applied to the periphery of the laceration over intact bone.

Early signs of head injuries include confusion, restlessness, anxiety, combativeness, headache and nausea. Late signs are changes in vital signs, posturing and changes in pupils. Do not wait until the patient is unconscious before you suspect a head injury; by then it is too late.

Evidence has shown that glucose and D5W are contraindicated in head injury patients as they may increase cerebral edema.

Head injury patients die from respiratory obstructions, cerebral edema, associated injuries, primary brain injury, and secondary brain injury.

To determine if cerebral spinal fluid (CSF) is present in blood coming from the nose or ears, you can do a "target test" or "halo test." Place a drop of blood on a paper towel or tissue. The blood has a heavier density than the clear CSF fluid and will not absorb as far on the paper. If CSF is present, there is a dark spot of blood and a halo of clear fluid around it.

If the patient needs to be intubated, nasal intubation is preferred if there is a gag reflex. If this is not possible due to facial trauma or apnea, oral intubation may be performed. Special care must be taken to use manual traction to keep the head in line during visualization of the vocal cords. Airway management and oxygenation are a priority over C-spine considerations.

Primary brain injuries are concussions and contusions. Secondary brain injuries are epidural and subdural hematomas.

Specific emergencies

Type of injury	Signs/symptoms	Vital signs	Special considerations
Concussion: temporary loss of neurological function, no tissue damage.	Loss of consciousness, amnesia, headache, altered mentation.	Vital signs will not be effected and should be within normal limits.	All signs and symptoms should be resolved within 24 hours.
Contusion: bruising to the brain results in swelling of the tissue.	Loss of consciousness, amnesia, headache, altered mentation.	If ICP* increases: bradycardia, hypertension, abnormal respirations, posturing and pupil changes.	Severe swelling can result in brain damage and death.
Epidural hematoma: arterial bleed occurs in the epidural space. Associated with skull fractures.	Associated with a "lucid interval." Loss of consciousness, amnesia, headache, altered mentation.	If ICP* increases: bradycardia, hypertension, abnormal respirations, posturing and pupil changes.	Associated with skull fractures, especially in the temporal and sphenoid area. Carries a high mortality rate.
Subdural hematoma: venous bleed occurs in the subdural space.	Loss of consciousness, amnesia, headache, altered mentation, dilated pupils, and hemiparesis.	If ICP* increases: bradycardia, hypertension, abnormal respirations, posturing and pupil changes.	Can be acute, or chronic as seen in the elderly and alcoholics.
Subarachnoid hematoma: bleeding occurs in the subarachnoid space.	Loss of consciousness, amnesia, headache, altered mentation, neck or back stiffness or pain.	If ICP* increases: bradycardia, hypertension, abnormal respirations, posturing and pupil changes.	CSF is found in the subarachnoid space. Blood will irritate the meninges causing neck or back pain.
Basilar skull fracture: the base of the skull is broken.	Head pain, raccoon's eyes, battle signs, CSF in ears, nose or mouth.	Vital signs may vary.	See special precautions on testing for CSF.
Open skull fracture: brain matter will be visible in the wound.	Associated with large amounts of bleeding.	Vital signs may vary.	Keep any exposed brain tissue covered with a sterile dressing moistened with saline.
Depressed skull fracture: bone in which fragments are driven into the brain.	Depressed deformity to skull, often a comminuted fracture.	Vital signs may vary.	Do not use direct pressure to control bleeding on these areas.

* intracranial pressure

Hyperglycemia - Diabetic Ketoacidosis (DKA)**Section 3-22****Subjective information**

Onset: usually gradual.

Complaints: confusion, weakness, dizziness, abdominal pain.

History: last meal, illness or fever, presence or absence of hunger and thirst, medical alert tag, last insulin (time and amount), or oral hypoglycemics.

Subjective information

Vital signs: heart rate will be elevated, blood pressure will be depressed, respirations will be rapid and deep.

Level of consciousness: altered, confused, disoriented, combative, lethargic, comatose, unconscious and unresponsive.

Skin: flushed, warm, and dry.

Dextrose stick >300 or Blood glucose level (BGL) > 200 mg/dl by home glucose monitor.

Kussmaul respirations: deep and rapid.

Orthostatic vital sign changes, often dehydrated by 3-4 liters

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Control the airway with manual position, NPA or OPA if needed.	x	x	x	x
O2: 15 l/minute by mask.	x	x	x	x
IV: 1-2 large bore with normal saline.		x	x	x
Check Blood glucose level.	x	x	x	x
Fluid bolus of 250-500 cc if signs of hypovolemia are present.		x	x	x

x = standing order

DO = direct order only

Specific Precautions

Insulin must be present for sugar to leave the blood stream and enter the cells. If insulin is not present, the sugar will begin to build up in the blood stream. The cells, deprived of their normal energy source, will begin to break down fat and muscle. These do not break down the same way sugar does. They leave a byproduct of ketones. The build-up of ketones causes a metabolic acidosis. The body attempts to rid itself of the excess sugar, ketones and acids through Kussmaul respirations and polyuria, which lead to dehydration and hypovolemia.

Hyperglycemia is often a slow onset. It usually develops over a period of days, not hours.

The build up of ketones can sometimes be detected on the patient's breath. There may be an odor of acetone or fruity smell.

Because of the dehydration, DKA patients will have a rapid, weak pulse, decreased blood pressure, orthostatic changes, and dry, flushed, warm skin.

If the diabetic patient is unconscious, it may be difficult to differentiate between diabetic coma and insulin shock. If the precise nature of the patient's condition is in question, sugar should be given if the patient is unconscious or semiconscious. If they are hypoglycemic, (BGL < 70 with signs/symptoms) the administration of sugar will result in rapid improvement and may be life-saving. If the condition is diabetic coma, little harm will be done by giving additional sugar.

Glucometers can be fallible. Treat the patient, not the glucometer reading.

Hyperthermia**Section 3-23****Subjective information**

Onset: sudden vs. gradual.

Induced by exercise or exertion?

Complaint: shortness of breath, dizziness, nausea, muscle cramps, pain or discomfort.

Environmental factors: hot, humid, poor ventilation, or confined area.

Current medical problems, medical history, current medications (some medications given for heart problems interfere with the body's ability to sweat, such as beta blockers).

Objective information

Body temperature >41°C (104°F).

Skin: dry or diaphoretic, pale or flushed, hot or cool.

Seizure activity.

Level of consciousness.

Muscle spasms.

Pupil size and response to light.

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Remove from hot environment and remove clothing. Cool with cool water or cold packs in the groin, neck and armpits. Be careful not to chill the patient.	x	x	x	x
O2: 15 l/minute by mask.	x	x	x	x
Control airway with NPA, OPA or manual positioning if necessary.	x	x	x	x
IV: 1-2 large bore with normal saline.		x	x	x
Fluid challenge of 250-500 cc saline if there are signs of shock.		x	x	x
Monitor cardiac rhythm.			x	x
If seizures occur, follow Seizure protocol.	x	x	x	x

x = standing order DO = direct order only

Specific Precautions

Differentiate between heat cramps, heat exhaustion and heat stroke (see below). The first two are not emergencies.

Placing wet sheets on a patient without good airflow will tend to increase the body temperature.

Definitive cooling will need ice water baths. Do not let cooling in the field delay your transport.

When cooling a patient, be careful not to chill him/her. Shivering will increase the body temperature and exacerbate the problem.

Do not administer salt tablets or salt solutions orally, this will cause serious side effects!

Specific emergencies

Type of injury	signs/symptoms	vital signs	special considerations
Heat Cramps: electrolyte imbalance causes muscle spasms in the legs and abdomen.	Severe pain due to muscle spasms in the legs and abdomen, nausea and vomiting, LOC will usually be normal.	Vital signs often vary, and may be elevated.	Associated with heavy exercise, especially in hot environments or confined spaces.
Heat Exhaustion: depletion of water and salt cause venous pooling resulting in hypovolemic shock.	Skin is pale and diaphoretic, may be cool or normal to touch. Pupils dilated. Head ache and nausea, altered LOC.	Heart rate will be rapid and weak, rapid and shallow respirations, decreased BP.	Associated with heavy exercise and sweating. Treat patient for shock and cool rapidly.
Heat Stroke: the normal cooling mechanisms fail and the body becomes overheated.	Skin is hot, dry and flushed. Altered LOC, nausea and vomiting, muscle tremors and seizures.	Pulse rapid and strong, rapid deep respirations, decreased BP, elevated body temperature (105-110 degree F)	Common in the elderly, pediatrics, alcoholics and chronically ill patients. This is a life threatening emergency!

Subjective information

Onset: Usually a sudden onset rather than a gradual one.

Complaints: confusion, weakness, or dizziness.

History: recent stress, either emotional or physical, absent or late meal, illness or fever, presence of hunger and thirst, medical alert tag, last insulin administration, (time and amount), or use oral hypoglycemics.

Objective information

Vital signs: heart rate and blood pressure will be elevated.

Level of consciousness: altered, confused, disoriented, combative, lethargic, comatose, or unconscious and unresponsive.

Skin: pale, cool and very diaphoretic.

Seizures if sugar levels decrease low enough.

FDA approved Home Glucose Monitor of <60 with associated symptoms or < 40 regardless of presence of symptoms.

Pupils: dilated and responsive to light.

Treatment

Procedure	FR EMT B	EMT B IV	EMT I	EMT P
Control the airway as appropriate.	x	x	x	x
O2: 15 l/minute by mask.	x	x	x	x
Check Blood glucose level.	x	x	x	x
IV: 1 large bore with normal saline in a secure vein.		x	x	x
Administer D50 in 10g increments followed by a fluid bolus and reassess, repeat dose of 10g as necessary based on signs/symptoms.		x	x	x
If unable to start IV, administer oral glucose. See protocol. Can also administer other forms of sugar such as orange juice if necessary.	x	x	x	x
If unable to start IV, administer 1 mg of Glucagon IM. See protocol.				x
Recheck blood glucose level after dextrose administration.	x	x	x	x

x = standing order DO = direct order only

Specific Precautions

Reserve sugar is stored in the liver in the form of glycogen. In order to liberate the glycogen stores, the body must release Adrenaline (or epinephrine) from the adrenal glands. While releasing glycogen, the Adrenaline will also cause the heart rate to increase, the blood pressure to increase, pupils to dilate and the skin to become pale, cool and diaphoretic.

Hypoglycemia is often an acute onset. The patient may have appeared normal within the last few hours as opposed to hyperglycemia which develops over a period of days.

Hypoglycemia can present as: seizures, coma, behavior disorders, alcohol intoxication, confusion or stroke-like with neurological deficits (particularly in elderly patients). Profuse diaphoresis should be a tip-off for hypoglycemia.

Patients who are elderly or who have been hypoglycemic for prolonged periods of time may be slower to awaken.

If D50 is administered IV, the patient's mentation should increase dramatically within 10-15 minutes. If the patient does not "wake up", reassess the patient and contact the base physician before administering a second amp of D50.

If the diabetic patient is unconscious, it may be difficult to decide between diabetic coma and insulin shock. If the precise nature of the patient's condition is in question, sugar should be given if the patient is unconscious or semiconscious. If they are hypoglycemic, the administration of sugar will result in rapid improvement and may be life-saving. If the condition is diabetic coma, little harm will be done by giving additional sugar.

Administration of dextrose in the alcoholic with depleted thiamine stores may precipitate Wernicke's or Korsakoff's syndrome.

D50 can also be administered to comas of unknown origins.

D50 is an extremely hypertonic solution. Infiltration of it will cause severe tissue necrosis. It can only be given IV and in a vein that is secure. If there is a question as to the patency of the IV, start a new IV proximal to the first site and administer the D50 through the new IV.

When patients become hypoglycemic, they often become combative and violent. Be prepared.

Seizures are common in hypoglycemic patients and indicate that the patient has a very low sugar level.

Normal sugar levels should register between 70-100. However, signs/symptoms of hypoglycemia may occur when BG levels fall quickly, regardless of the numerical value. Treat the patient, not the number.

Patients who are on oral hypoglycemic medications cannot be treated and released on scene. They must be transported to the hospital in all situations.

Subjective information

Chief complaint: cold, loss of sensation in affected area, shivering, or sleepiness.
 Length and type of exposure: wind and wetness will increase the cooling process.
 Ingestion of drugs, especially depressants such as alcohol will increase the hypothermia.
 Past medical history.
 History of trauma.

Objective information

Level of consciousness: altered, lethargic, apathy, or coma.
 Vital signs: watch for decreased pulse and respiratory rate with a temperature < 29° C (85° F).
 Temperature: rectal <95° F (35°C) is significant.
 Note also temperature of environment where patient is found.
 Shivering.
 Evidence of trauma.

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Remove from cold or windy environment and remove wet clothing.	x	x	x	x
O2: 15 l/minute by mask, warm and humidified if possible.	x	x	x	x
Control airway with manual positioning, NPA or OPA, and assist ventilation if necessary.	x	x	x	x
Start CPR if carotid pulses are not present.	x	x	x	x
Prevent further heat loss by covering with warm blankets, rewarm patient passively, consider heat packs in the trunk area only. DO NOT ATTEMPT TO REWARM EXTREMITIES!	x	x	x	x
IV: 1-2 large bore with warm saline.		x	x	x
Monitor cardiac rhythm.			x	x
Intubation can be done if indicated.			x	x
If in cardiac arrest, defibrillate three times. If there is no change, the body must be rewarmed for any treatment or drug therapy to become effective. Refer to the specific cardiac arrest protocol.			x	x

x = standing order DO = direct order only

Specific Precautions

Mild hypothermia 90 - 95 F degrees

Moderate hypothermia 82 - 89.9 F degrees

Severe hypothermia < 82 F degrees

Shivering will stop when the body temperature drops below 90 degrees.

It is crucial that the patient be handled gently. The heart becomes very irritable when it is cold and will fibrillate easily. It is most likely to fibrillate between 29 - 31°C and does not convert readily until the patient's temperature is above 30°C (86°F).

Most thermometers, except veterinary ones, don't go below 35°C (96°F).

Hypothermia may be a sign of hypoglycemia.

This protocol was written to assist in those instances of hypothermia involving long evacuation and long transport time. When possible, rewarming should be left for the hospital setting.

Successful resuscitation has been documented in a patient with a core temperature as low as 64.4 degrees F. When in doubt, begin CPR and be prepared for extended resuscitation times.

Hypothermia will be exacerbated by hypoglycemia, alcohol, water, diabetes, massive blood loss, extremes in age, either old or young, and burns.

- 98.6+: Normal
- 96.8: Increased metabolic rate
- 90.0+: Shivering occurs
- 93.2: Vitals and LOC normal
- 91.4: Apathy, sleepiness, mydriasis
- 87.8: Difficult to obtain BP
- 86.0: Decreased LOC, muscle rigidity
- 85.2: Decrease pulse and respirations
- Cardiac irritability and V-fibrillation
- 80.6: No pupillary response to light, no movement, no reflexes, appearance of death
- 78.8: Unconscious/unresponsive
- 77.0: V-fibrillation often spontaneous
- 68.0: Asystole
- 64.4: Lowest recorded temperature of a patient who survived

Hypothermia – Localized**Section 3-26****Subjective information**

Chief complaint: cold, pain, and/or loss of sensation in the effected extremity.
 Length and type of exposure: wind and wetness will increase the cooling process.
 Ingestion of drugs, especially depressants such as alcohol.
 Past medical history, including any history or previous frostbite.
 History of trauma.

Objective information

Vital signs.
 Appearance of frostbitten area: white, waxy, an hard to the touch.
 Note also temperature of environment where found.
 Movement of effected area.
 Evidence of trauma.

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Remove from cold or windy environment and remove wet clothing.	x	x	x	x
Protect areas from pressure, trauma or friction. Do not break any blisters present.	x	x	x	x
Do not allow patient to ambulate.	x	x	x	x
Maintain core temperature, cover with warm blankets, consider heat packs in the trunk area only. DO NOT ATTEMPT TO REWARM EXTREMITIES!	x	x	x	x
Under extenuating circumstances, such as prolonged or complicated transport, rewarm by submersion in warm water (100 degrees) for 20 minutes.	DO	DO	DO	DO
Monitor cardiac rhythm.			x	x

x = standing order DO = direct order only

Specific Precautions

Do not allow a limb to thaw if there is a danger it will refreeze. Partial rewarming or refreezing is worse than none. Thawing should only be done under controlled conditions.

Patients with frostbite will often be hypothermic also.

This protocol was written to assist in those instances of hypothermia injury involving long evacuation and long transport time. When possible, all treatment should be left for hospital setting.

Specific emergencies

Type of injury	Signs/symptoms	Vital signs	Special considerations
Incipient hypothermia or frost nip: affects ears, nose, cheeks, fingers and toes.	Usually painless. Skin will first be red and then turns white.	Vital signs often vary.	Can be rewarmed in the field. Do not rub the skin or rub with snow.
Superficial frostbite: involves the skin and tissue just below the skin.	Skin will be firm, white, waxy and numb. Tissue below skin is soft.	Vital signs often vary.	Rewarming will cause pain, discoloration and swelling. Important that blisters be left intact.
Deep frostbite: the entire depth of tissue is effected.	Skin will be white, solid and numb. Blisters may form.	Vital signs often vary.	Rewarming will cause pain, discoloration and swelling. Important that blisters be left intact.

Subjective information

What type of exposure occurred: ingestion, injection, absorption through the skin or inhalation.

Time of exposure.

Bring the poison, the container, sample of emesis, and everything questionable in the area with the patient to the Emergency Department.

Reason for ingestion: screen for child neglect or suicidal intentions.

Chief complaint: nausea, chest pain, shortness of breath, abdominal pain, headache, dizziness.

Has patient vomited or been given an antidote?

For external exposures, determine that the scene is safe for EMS personnel.

Objective information

Vital signs: will vary depending on the agent.

Level of consciousness: will vary depending on the agent.

Vomiting.

Neurologic status.

Seizures.

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
If necessary, remove contaminated clothing, flush skin and eyes.	x	x	x	x
Protect airway and be prepared to deal with vomiting.	x	x	x	x
O2: 2-4 l/minute by cannula, if patient is symptomatic, 10-15 l/min by mask.	x	x	x	x
IV: 1 large bore IV with normal saline.		x	x	x
Check Blood glucose level.	x	x	x	x
If Dextrostix <60, administer 25 g D50. Administer in 10 g increments. See Hypoglycemia protocol.		x	x	x
Administer 2 mg Narcan q 5 minutes IV if narcotic overdose is suspected.			x	x
Monitor cardiac rhythm.			x	x
In the setting of a known tricyclic overdose: Place patient on ECG monitor and start an IV regardless of presentation. If hypotensive, administer fluid bolus. If the QRS is >.12, consider 1 mEq/kg of sodium bicarbonate IV.			DO	DO
If patient hypotensive in a suspected narcotic overdose, administer 50 mg Diphenhydramine IV or IM.				x

x = standing order

DO = direct order only

Specific Precautions

Narcotic overdoses may result in altered mental status, respiratory depression and pin-point pupils. Cerebral hypoxia may over-ride effects of pin-point pupils, resulting in dilated pupils.

Methamphetamine overdoses may result in Parkinson-like symptoms and paranoia.

There are few specific "antidotes." Product labels and home kits can be misleading and dangerous.

Inhalation poisoning is particularly dangerous to rescuers. Recognize an environment with continuing contamination and extricate rapidly.

If you are unsure of the medications the patient has ingested, contact the base physician for advice.

POISON CONTROL CENTER TELEPHONE NUMBER: 1-800-955-9119

Do not attempt to neutralize acids or alkalis and do not induce vomiting.

Specific emergencies

Type of drug	Effects	Signs/symptoms	Special considerations
Alcohol overdose: beer, whiskey, gin, tequila, Nyquil.	CNS depressant, chronic use causes GI bleeds, liver failure, and cerebral degeneration.	Slurred speech, decreased respirations and altered LOC, nausea and vomiting, coma.	Protect airway and suspect trauma unless strong history indicates otherwise.
Alcohol withdrawal	Occurs 12-24 hours after last ingestion.	Seizures, tremors, coma and hallucinations.	Delirium tremens carries a high mortality.
Aspirin (salicylate acid): Bufferin, Anacin, Bayer, Excedrin.	Over the counter analgesic and anti-inflammatory.	Ringling in the ears, lethargy, nausea, hyperventilation, seizures, coma, and pulmonary edema.	Chronic use can cause GI bleeds. Overdose will cause a metabolic acidosis.
Acetaminophen: Tylenol, Nyquil, Sominex.	Over the counter analgesic and sleep medication.	Nausea, vomiting, diaphoresis, RUQ pain.	Death occurs 72-96 hours after ingestion due to liver damage.
Barbiturates: Phenobarbital, Quaalude, Noludar	CNS depressant, sedation, deep coma, anticonvulsant medication.	Slurred speech, altered LOC, dilated pupils, decreased respirations, pale, cool skin.	Effects will be heightened by other depressants such as alcohol.
Benadryl: Nyquil, Sominex.	Over the counter antihistamine.	Dry mouth, dilated pupils, flushed dry skin, tachycardia.	Will cause anticholinergic effects.

Type of drug	Effects	Signs/symptoms	Special considerations
Benzodiazepine: Valium, Ativan, Clonopin, Librium, Xanax.	CNS depressant, and tranquilizer.	Sedation, coma, anticonvulsant, slurred speech, altered LOC, dilated pupils, decreased respirations, pale, cool skin.	Side effects will be enhanced by the presence of other depressants such as alcohol. Reversed by Flumazenil (Romazicon).
Carbon Monoxide: combustion from fires and engines.	CO binds to the hemoglobin in the blood and causes cellular asphyxia.	Headache, dyspnea, angina, syncope, seizures, coma, cherry red skin.	Patient may need to be taken to a hospital with a hyperbaric chamber.
Cocaine: can be ingested, injected or inhaled.	Potent vasoconstrictor, CNS stimulant. Not a narcotic.	Euphoria, agitation, psychosis, seizures, MI's, CVA's, dyspnea, increased HR and BP, dilated pupils.	Also available in the form of a crystal, (crack). Not affected by Narcan.
Caustics: acids, Drano, detergent, gasoline.	Soft tissue will be burned by the caustics.	1st, 2nd and 3rd degree burns to any tissue contacted.	Severe airway problems if the agent was ingested.
Ecstasy, X, Love Drug, "Mama Come Easy"	Hallucinations, stimulant	Hyperactive, febrile, sweating.	Water intoxication, metabolic problems
GHB, Rohypnol, "Georgia Home Boy"	Respiratory depression, hallucinations.	Lethargy, coma, respiratory depression.	Can be difficult to intubate.
Hallucinogens: LSD, peyote, mescaline, PCP.	Causes auditory and visual hallucination.	Psychosis, dilated pupils, headache, trauma.	Patient can be extremely violent.
Ketamine, "Vit. K", K-hole	Paralytic, hallucinations	Hallucinations, paralysis, dystonic reactions, respiratory depression.	Can create K+ surges. Often cut with other drugs.
Opiates and narcotics: codeine, heroin, Morphine, Darvon, Demerol, Dilaudid	Analgesic that acts as a CNS depressant.	Sedation, pinpoint pupils, respiratory depression, bradycardia, pulmonary edema	The effects can be reversed with Naloxone (Narcan).
Tricyclic anti-depressant: Elavil, Triavil, Amitriptyline, Doxepin, Norpramin.	Prescription antidepressant causes sedation.	Anticholinergic response, tachycardia, dry, flushed skin, dilated pupils, coma, seizures.	Toxicity will cause cardiac dysrhythmias. Sodium bicarbonate can be used to reverse effects.

Anticholinergic effects (antihistamines, TCA, phenothiazine) Cholinergic effects (organophosphate)

Mad as a hatter: toxic psychosis

Salivation

Red as a beet: flushed red skin

Lacrimation

Hot as a hare: increased temperature

Urination

Dry as a bone: dry mucosal membranes

Defecation

Blind as a bat: dilated pupils

Pre-eclampsia and Eclampsia

Section 3-28

Subjective information

Symptoms: headache, nausea, dizziness, blurred vision, and irritability; may include upper R quadrant abdominal pain with nausea and/or vomiting.

Past History: previous problems during pregnancy, stage of gestation (usually begins after 20 weeks), abnormally high weight gain, and water retention.

Objective information

Vital signs: hypertension.

Level of consciousness: disoriented, confused, amnesia, stuporous, or unconscious.

Edema to face, fingers, abdomen and feet.

Seizures, usually status.

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Control airway if seizures occur. Use of an NPA, OPA or intubation as indicated.	x	x	x	X
Assist ventilations if necessary with bag valve device.	x	x	x	X
O2: 15 l/minute by mask.	x	x	x	X
IV: medium bore with normal saline.		x	x	X
If seizures occur, treat with Magnesium Sulfate by one of the following options: a) 4 g very slow IVP, or b) 5 gm in 100 ml over 10 minutes, or c) if IV unavailable, administer 4 g IM in each buttock.				x
If Mag is unavailable, treat seizures with Valium 1-10 mg IVP or Versed 2-4 mg, see Seizure protocol for details.				x

x = standing order DO = direct order only

Specific Precautions

Pre-eclampsia is a pregnancy-induced hypertension. The patient will have a history of a rapid weight gain in the second and third trimester. Hypertension of greater than 140/100 will be present in these patients.

Eclampsia is the onset of seizures. These are often set off by loud noises and bright flashing lights. Be sure to turn off the emergency lights on the ambulance and rescue vehicles.

Always transport pregnant females on their left side. This prevents compression of the aorta and vena cava by the fetus. Constant monitoring is essential. These patients can deteriorate very quickly.

Assess for presence of R upper quadrant abdominal pain, petechiae on abdomen or extremities. Inform receiving hospital immediately if found.

Subjective information

Onset: acute or gradual.

Past history: chronic lung or heart problems, medications, home oxygen, past allergic reactions, or recent surgery.

Associated symptoms: chest pain, paresthesia of mouth or hands, syncope, or a sensation of swelling in throat or mouth.

Objective information

Vital signs: especially tachycardia and tachypnea.

Level of consciousness: will vary based on degree of hypoxia.

Skin tone: pale, dusky, ashen, gray, cyanosis, or diaphoretic.

Level of respiratory distress: retractions, nasal flaring, use of accessory muscles, tracheal tugging, or grunting respirations.

Evidence of upper airway obstruction: hoarseness, drooling, coughing, inspiratory stridor.

Breath sounds: clear, wet, wheezing, symmetrical, labored. Abnormality on inspiration or expiration.

Signs of congestive failure: distended neck veins when upright, wet lung sounds, and peripheral edema in the feet, ankles or legs.

Hives, edema to face, lips, tongue or airway.

Evidence of trauma.

Severity of dyspnea: length of sentence patient can speak before having to pause to take a breath.

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Position of comfort.	x	x	x	x
O2: 15 l/minute by mask if symptomatic.	x	x	x	x
Assist respirations if necessary with bag valve mask.	x	x	x	x
Consider intubation on patients in profound distress or near respiratory failure.			x	x

x = standing order DO = direct order only

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
IV: 1 large bore IV with, normal saline		x	x	x
Monitor cardiac rhythm			x	x
Treat specific etiology according to appropriate protocol (asthma, COPD, or anaphylaxis, FBAO, etc.)			DO	x

x = standing order DO = direct order only

Specific Precautions

The amount of oxygen given to a patient is determined by patient condition. Oxygen should never be withheld from a hypoxic patient because they have a COPD history.

Early signs of hypoxia can be very difficult to determine, especially in geriatrics and pediatrics. Tachycardias, diaphoresis and altered mentation are early indicators.

Pulse oximetry is a very useful tool in determining oxygenation levels. Be aware that incorrect values can be given if the patient is anemic, hypothermic, or is not generating a pulse of high enough amplitude. Also be aware that pulse oximetry can give false readings for patients suffering from CO poisoning or cyanide poisonings.

Do not use oropharyngeal airway in children that are suspected to have croup or epiglottitis. The insertion of the devices can trigger fatal laryngospasms.

Specific emergencies

Type of injury	Signs/symptoms	Breath sounds	Special considerations
Anaphylaxis: severe allergic reactions cause edema to the airway.	Hives, urticaria, edema to lips and face, dyspnea, difficulty swallowing.	Wheezes and stridor, diminished tidal volume.	Refer to specific protocol.
Asthma: Bronchospasms, edema and mucous production obstruct airway.	Dyspnea, coughing, hoarseness.	Wheezes and rhonchi, diminished tidal volume.	Refer to specific protocol.
COPD -Emphysema: Destruction of alveoli.	Dyspnea, pursed lip exhalation, barrel chest, emaciation.	Rales and rhonchi, diminished tidal volume.	Refer to specific protocol.

Type of injury	Signs/symptoms	Breath sounds	Special considerations
COPD - Chronic bronchitis: Productive cough over extended period of time.	Dyspnea, productive cough, greenish mucous.	Rhonchi that will "move" with coughing, diminished tidal volume.	Refer to specific protocol.
Congestive heart failure: Inability of the heart to pump causes fluid to build up in the lungs.	Dyspnea that increases when patient is supine, JVD, peripheral edema, pink frothy sputum.	Rales, diminished tidal volume, fulminating edema.	Refer to specific protocol.
Croup: Viral infection that causes swelling of the larynx and trachea obstructing the airway.	Age range of 3 months to 6 years. Seal-like bark that worsens at night, history of recent cold.	Rhonchi, stridor.	Cough will diminish with cold air. Keep child calm and oxygenate with cool O ₂ as well as possible. Racemic epi may be used.
Epiglottitis: Bacterial infection that causes epiglottitis to swell and obstruct the airway.	Age range >6 years. Child will sit upright, copious salivation, high grade fever.	Diminished, stridor.	Important that child is kept calm. Oxygenate as well as possible.
Hyperventilation syndrome: Rapid respiration causes a CO ₂ depletion.	Numbness and tingling to hands, feet and mouth. Spasms to hands and toes.	Clear.	Hyperventilation can also be the result of metabolic disorder. Be sure of the cause before having the patient breathe in a paper bag.
Pneumothorax: Spontaneous rupture of the pleura causes air to leak into thoracic cavity.	Dyspnea, localized chest pain.	Diminished over the affected side.	Refer to chest injury protocol.
Pneumonia: Infection causes pus and mucous to accumulate in the lungs.	Dyspnea, fever, cough, history of being ill for the last few days.	Diminished over the affected lobe.	Can also cause septic shock.
Pulmonary emboli: Blockage of the pulmonary circulation results in hypoxia.	Shortness of breath, asymptomatic or can mimic a MI when the hypoxia affects the heart.	Breath sounds may be clear or diminished over affected area.	Very difficult to diagnosis in the field; often presents as a myocardial infarction. Usually caused by blood clots from legs.

Breath Sounds in Respiratory Distress

Characteristics	Possible etiology
Clear and symmetrical.	Hyperventilation syndrome, Kussmaul respirations - metabolic acidosis, MI, or pulmonary emboli.
Clear and asymmetrical.	Spontaneous pneumothorax, pulmonary emboli.
Rales (crackles or wet) symmetrical.	Pulmonary edema, CHF, pulmonary contusion, pneumonia.
Rales, (crackles or wet) asymmetrical.	Pneumonia, COPD, pulmonary contusion.
Rhonchi symmetrical or asymmetrical.	Asthma, COPD, pneumonia.
Wheezing and symmetrical.	Asthma, COPD, pulmonary edema.
Wheezing and asymmetrical.	Foreign body obstruction, pulmonary emboli, COPD.
Absent or minimal breath sounds.	Pneumothorax, no air flow, complete obstruction, respiratory failure.

Subjective information

History: onset, duration, association with allergies, exercise, recent cold or upper respiratory infection.

Past history: severity of previous attacks, prior intubation indicate a severe attack.

Medications: home oxygen, inhalers, Theophylline compounds, steroids such as Prednisone.

Objective information

Vital signs: tachycardia, hypertension, tachypnea.

Level of consciousness.

Breath sounds: wheezing, stridor, decreased tidal volume, coughing. Initially it will be an expiratory problem and will become an inspiratory problem as the attack worsens.

Level of respiratory distress: retractions, use of accessory muscles, length of sentence patient can speak before having to pause to take a breath.

Skin: pale, dusky, ashen, cyanotic or diaphoretic.

Observe for concurrent anaphylaxis.

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Position of comfort.	x	x	x	x
O2: 15 l/minute by mask.	x	x	x	x
Assist respirations if necessary with bag valve mask.	x	x	x	x
Consider intubation for patients in profound distress or near respiratory failure.			x	x
IV: 1-2 large bore with normal saline.		x	x	x
Monitor cardiac rhythm.			x	x
If the patient has a prescribed metered dose inhaler (MDI), assist with administration of the MDI	x	x		
Drug interventions in order of preference:				
1 st) Moderate to severe dyspnea/ wheezes: Albuterol and Atrovent updraft. EMT-I's give Albuterol only, follow with continuous albuterol as necessary.			x	x
2 nd) If severe dyspnea: Epinephrine: 0.3 mg SQ, or 0.1 mg IV			DO	x
3 rd) Moderate to severe dyspnea: Mag Sulfate: 2 g very slow IVP (over 10 minutes)				x
4 th) Moderate to severe dyspnea: Solu Medrol: 125 mg IV				x

x = standing order DO = direct order only

Specific Precautions

If the patient has used home inhalers, have them rinse their mouth and spit, not swallow, prior to any further treatment. This helps eliminate the accumulation of medication on the mucous membranes, prevent side effects from absorption, and increase the efficiency of further inhalation treatments.

Asthma is a reversible obstructive airway disease. It consists of three components: spasms of the bronchial smooth muscles, increased mucous secretions and inflammation of the bronchial tissue.

Asthma attacks can be triggered by extrinsic factors such as allergic responses, animal dander, smoke, dust, cold air or pollen. Intrinsic factors that can cause an asthma attack include respiratory infections, emotional stress, exercise or idiopathic.

An asthmatic who has minimal or absent breath sounds and complains of becoming tired or exhausted is in imminent danger of respiratory arrest.

Due to the nature of the disease, asthmatics have difficulty exhaling. The air is trapped in the lungs and they become hyperinflated, which will make assisting ventilation difficult. The ambu bag will be hard to compress, making ventilation difficult.

Status asthma occurs when an asthmatic does not respond to epinephrine. This is a life threatening emergency.

Patients who have a history of severe attacks (prior hospitalizations, previous intubation, and dependence on medication) are predisposed to severe attacks.

Albuterol and Atrovent should be used in the same nebulizer together. These medications have been shown to have synergistic effects. Follow with continuous albuterol nebs.

The following Classification of Severity of Asthma is according to the guidelines published by the NIH, National Heart, Lung, and Blood Institute: Clinical Practice Guidelines for the Diagnosis and Management of Asthma, 1997.

Classifying Severity of Asthma Exacerbations				
Symptoms	Mild	Moderate	Severe	Resp. Arrest Imminent
Breathlessness	While walking Can lie down	While talking, Prefers sitting	While at rest Sits upright	
Talks in	Sentences	3-4 word phrases	Single words or not at all	
Alertness	May be agitated	Agitated	Agitated	Drowsy or confused
Respiratory Rate	Increased	Increased	Often > 30/min	
Accessory Muscle Use	None	Common	Present	Paradoxical chest-abdominal movement
Wheeze	Often only end expiratory	Inspiratory/expiratory	Inspiratory/expiratory	No sound
Pulse/minute	<100	100-120	>120	Bradycardia
Paradoxical pulse	Absent	May be present	Present	Absence suggests respiratory muscle fatigue

Subjective information

History: onset, duration, increase in dyspnea when patient is supine (orthopnea).

Past history: diagnosis of CHF, previous myocardial infarctions.

Medications: Lasix, diuretics, "water pill."

Associated symptoms: chest pain, weakness, syncope.

Objective information

Vital signs: tachycardia, hypertension, tachypnea.

Level of consciousness.

Breath sounds: rales, first heard in the posterior bases and moves upwards and lungs fill with fluid, wheezes, decreased tidal volume.

Level of respiratory distress: retractions, use of accessory muscles, length of sentence patient can speak before having to pause to take a breath.

Skin: pale, dusky, ashen, cyanotic or diaphoretic.

Signs of right-sided heart failure: peripheral edema in feet and ankles, jugular venous distension. Signs of left-sided heart failure: pulmonary edema.

Fulminating edema will present as a white or pink, frothy sputum.

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Position of comfort, sit upright.	x	x	x	x
O2: 15 l/minute by mask.	x	x	x	x
Assist respirations if necessary with bag valve mask.	x	x	x	x
Consider intubation for patients in profound distress or near respiratory failure.			x	x
IV: medium bore with buff cap of normal saline.		x	x	x
Monitor cardiac rhythm.			x	x
Nitroglycerin .4 mg spray repeated q 5 minutes up to 3 doses, as long as blood pressure remains above 100/P.			DO	x
Lasix 20-80 mg slow IV push. If patient on Lasix already, initial dose should be patient's daily dose.				x
Morphine sulfate: 4 mg IV initial dose, titrate to pain/pressure. Contact base physician for orders past 20 mg total.			x	x
If bronchospasms persist <u>after treatment</u> , consider an updraft of albuterol alone (EMT-Is) or combined with atrovent.			DO	X

x = standing order DO = direct order only

Specific Precautions

Due to disease or damage, the heart is unable to pump adequately and the blood begins to back up.

Right-sided heart failure will cause the blood to back up into the body. This will cause jugular venous distension and peripheral edema. The most common site for peripheral edema is in the feet and ankles.

Left-sided heart failure will cause the blood to back up into the pulmonary system. The increasing pressure in the blood vessels forces fluid into the lungs. This is known as pulmonary edema and can be heard when listening to breath sounds. If there is enough pressure, red blood cells will be forced into the lungs. This will present as a white or pink-tinged froth.

Because the pulmonary edema is gravity dependent, sitting the patient upright will often make a significant improvement in their respiratory status.

Be very careful of the amount of fluid given IV to a CHF patient. The heart is already overloaded and a bolus of saline could be enough to overwhelm the system.

If there are persistent bronchospasms following treatment of Nitro, Lasix and Morphine, an updraft of Albuterol alone or combined with Atrovent can be considered by direct order.

Lasix (furosemide) should be a precaution in patients with allergies to sulfa.

Subjective information

History: onset, duration, recent cold or upper respiratory infection.

Past history: previous diagnosis of emphysema, chronic bronchitis or COPD, heavy smoker.

Medications: home oxygen, inhalers, Theophylline compounds.

Objective information

Vital signs: tachycardia, hyper or hypotension, tachypnea.

Level of consciousness.

Breath sounds: wheezing, rhonchi, rales, productive cough and decreased tidal volume.

Level of respiratory distress: retractions, use of accessory muscles, length of sentence patient can speak before having to pause to take a breath.

Skin: pale, dusky, ashen, cyanotic or diaphoretic.

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Position of comfort.	x	x	x	x
O2: 10-15 l/minute by mask if patient is in distress. If not in distress, 2 l/minute by cannula.	x	x	x	x
Assist respirations if necessary with bag valve mask.	x	x	x	x
Consider intubation for patients in profound distress or near respiratory failure.			x	x
IV: 1-2 large bore with normal saline.		x	x	x
Monitor cardiac rhythm (A-fib common).			x	x
Albuterol and Atrovent updraft. EMT-I's give Albuterol only. Follow Albuterol/Atrovent updraft with continuous Albuterol treatments as necessary.			x	x

x = standing order DO = direct order only

Specific Precautions

Emphysema is a condition in which the alveoli are severely damaged. This is often secondary to smoking. Once damaged, the alveoli lose their elasticity and their ability to constrict. Patients with emphysema have difficulty exhaling, rather than inhaling. To prevent the alveoli from collapsing, these patients keep a continuous pressure in the lungs by exhaling through pursed lips. They also tend to be emaciated and have a barrel-like chest in the later stages of the disease.

Chronic bronchitis is characterized by a productive cough that occurs over a period of consecutive months and consecutive years. The airway becomes clogged with mucous. Because the airway is also narrowed due to inflammation, the addition of the mucous obstructs the airway. These patients have difficulty inhaling.

Because of the chronic hypoxia, these patients have a build-up of carbon dioxide in their blood. The carbon dioxide retention overwhelms the normal respiratory drive, and the drive becomes dependent on oxygen levels. Because of this, some care should be taken when administering oxygen to COPD patients. If they receive what their body interprets as too much O₂, they may go into respiratory arrest. However, do not ever withhold oxygen to a patient who is in respiratory distress because of a COPD history. The amount of oxygen given to the patient should be dependent on the patient's condition.

The primary goal in treating a COPD patient is to relieve the hypoxia. If respiratory depression does develop as a side effect of oxygen, assist ventilations with an ambu-bag and consider intubation. If the patient's dyspnea is relieved at high flow oxygen, turn the O₂ down in small increments (2-4 l/minute at a time) to avoid causing respiratory depression. If the patient becomes symptomatic, the amount of oxygen can always be turned up again.

Weak areas of the alveoli can rupture causing a spontaneous pneumothorax. This is often associated with coughing prior to the rupture.

Albuterol and Atrovent should be used in the same nebulizer together. These medications have been shown to have synergistic effects.

Follow with continuous Albuterol nebs.

Subjective information

Seizure history: onset, duration, number of seizures, type of seizure, events preceding seizure.

Medical history: closed head injuries, old head trauma, diabetes, headaches, drugs, alcohol withdrawal, medications, CVA, hypoxia, pregnancy, epilepsy.

Subjective information

Vital signs: often elevated.

Seizure activity: Grand mal, focal motor, petite mal.

Level of consciousness: unconscious, combative, confused, disoriented, (normal mentation should return within 20 minutes following seizure activity).

Head, spinal, mouth and tongue trauma caused by seizure.

Incontinence of urine or feces.

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Protect airway: OPA or NPA if needed and suction airway if blood or vomit present.	x	x	x	x
O2: 15 l/minute by mask until LOC returns to normal LOC.	x	x	x	x
Spinal immobilization unless there is a strong history denying head/spinal trauma.	x	x	x	x
IV: medium bore with normal saline or buff cap.		x	x	x
Check Blood glucose level.	x	x	x	x
If blood glucose level <70, administer 25 g D50 IV through a secure IV line. Administer in 10g increments. See Hypoglycemia protocol.		x	x	x
Monitor cardiac rhythm.			x	x
If grand mal activity persists (status):				
a) 1-10 mg Valium slow IV push q 5 minutes. Total dose not to exceed 0.3 mg/kg.				x
b) Refractory to Valium: Versed 2-4 mg IV, repeat at 1 mg q 3 min as needed.				DO
c) If IV unattainable: Versed 2-4 mg IM				x
c) Nasal or oral intubation.			x	x

x = standing order DO = direct order only

Specific Precautions

Control of the airway can be very difficult during a seizure because the jaws are often closed. Do not attempt to force the teeth open. This can cause oral trauma and bleeding which will obstruct the airway. NPA's and nasal intubation are useful in this situation.

Protect the patient from harm during the seizure. Restrain the patient only if needed to prevent injury.

It is a mistaken belief that seizure patients will swallow their tongue. However, trauma to the tongue is common and can cause bleeding which may interfere with the airway.

Seizures in patients over the age of 50 can be caused by arrhythmias. Be sure to monitor the cardiac rhythm. Also, seizures due to hypoxia are common in the early stages of a cardiac arrest. Be sure to check the ABCs following the seizure, CPR may be needed.

Medical personnel are often called to assist epileptics who seize in public. If the patient clears completely, is taking his medications, has his own physician and is experiencing his usual frequency of seizures, transport may be unnecessary. Consult your base physician in these situations.

All first time seizures must be transported by ambulance. This includes febrile seizures in pediatric patients. If a patient seized once, they may do so again. They need to be in a controlled environment where definitive care can be rendered, rather than in the back seat of a car attended by frightened friends or relatives.

Febrile seizures are seen in pediatric patients. The rapid rise in the core temperature causes a grand mal seizure. It is important to cool the child off rapidly. Be careful not to chill the child and induce shivering as this will increase the core temperature. Ear infections and teething are often common causes of temperatures.

There are dozens of causes of seizures. Try to determine the cause of the seizure as it may effect your treatment. For instance head injuries = spinals, hypoglycemia = dextrose etc.

Causes of seizures include (but are not limited to):

- | | | |
|----------------|--------------------|--------------------------------|
| hypoxia | head injury | CVA |
| hypoglycemia | arrhythmia | fever |
| drug ingestion | cocaine | epilepsy |
| brain tumor | alcohol withdrawal | noncompliance with medications |
| trauma | eclampsia | strokes (CVA) |

Status epilepticus is a condition in which the patient has repeated seizures without a return to consciousness. This is a true medical emergency that carries a very high mortality rate.

Shock**Section 3-34****Subjective information**

Symptoms: thirst, dizziness, headache, weakness, dyspnea.

Past history: prior events, associated trauma, allergies, previous medical conditions.

Objective information

Vital signs in the early stages: tachycardia, normal blood pressure.

Vital signs in the late stages: tachycardia, hypotension.

Level of consciousness: confusion, anxiety, restlessness, apathy, combativeness, stupor, coma.

Orthostatic changes in vital signs indicates hypovolemia.

Skin: pale, dusky, ashen, cyanotic or diaphoretic.

Mechanism of injury.

Duration of symptoms.

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Protect airway.	x	x	x	x
O2: 15 l/minute by mask.	x	x	x	x
Assist respirations if necessary with bag valve mask.	x	x	x	x
Control bleeding if necessary.	x	x	x	x
Spinal immobilization if indicated.	x	x	x	x
Trendelenburg position, (supine with feet elevated) if vital signs are unstable	x	x	x	x
IV: 1-2 large bore with normal saline.		x	x	x
If hypovolemic, 250-500 cc fluid bolus. Repeat as necessary.		x	x	x
Monitor cardiac rhythm.			x	x
Treat for specific type of shock.			x	x

x = standing order DO = direct order only

Specific emergencies

Type of shock	Signs/symptoms	Specific care
Anaphylaxis: severe allergic reaction causes edema to the airway.	Hives, urticaria, edema to lips and face, dyspnea, wheezes, diminished breath sounds.	Refer to specific protocol.
Cardiogenic: weakened heart is unable to pump blood to meet the body's needs. High mortality.	JVD, dyspnea, rales, peripheral edema, frothy sputum. Signs of a myocardial infarction.	Use NS for IV fluid and keep rate at a slow TKO. Do not overload the heart with a fluid bolus. Consider Dopamine drip.
Hypovolemic: loss of fluid due to hemorrhage, 3rd spacing or dehydration.	Orthostatic changes in vital signs will be present, poor skin turgor.	Give fluid challenge of 250-500 cc of saline. Do not infuse more than 2 liters without physician approval.
Neurogenic: disruption of the CNS causes vasodilation below the site of the spinal cord injury.	Spinal or head trauma, paralysis, paresthesia, priapism, diaphragmatic breathing.	Spinal immobilization, assist ventilations if respirations are compromised. Give fluid challenge of 250-500 cc.
Septic shock: systemic bacterial infection causes vasodilation and vessel wall instability.	Skin will be dry and hot, history of current illness such as pneumonia or urinary tract infection.	If breath sounds are clear, consider a fluid bolus of 250-500 cc saline.

Specific Precautions

Changes in vital signs, especially a drop in blood pressure are late signs of shock. Suspect shock in patients that have an altered mentation, such as agitation or restlessness, unexplained tachycardias or mechanisms of injury.

Do not administer a fluid bolus to a patient unless the breath sounds are clear. The presence of rales is a contraindication for fluid administration.

Do not delay transportation attempting to establish multiple IV lines, especially in the setting of a sick patient.

Subjective information

Symptoms: head pain, neck or back pain, point tenderness, altered or abnormal sensations.

Mechanism of injury.

Medical history: osteoporosis, diabetes, and chemotherapy will cause bones to be brittle.

Objective information

Vital signs.

Level of consciousness.

Neurological status: check for movement (flexion/extension with resistance), sensation and capillary refill in all extremities.

Signs of trauma: deformity, contusions, abrasions, swelling.

Presence of any distracting injury: Fractured long bone, etc.

Respirations: diaphragmatic breathing indicates spinal cord damage.

See Spinal Clearance Protocol 3-36

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Protect airway. If manual manipulation is needed to open the airway, use the modified jaw thrust maneuver.	x	x	x	x
Immobilize cervical spine with the correct size cervical collar.	x	x	x	x
Immobilize the thoracic and lumbar spine with a long board or scoop, head rolls, and straps across the torso.	x	x	x	x
O2: 2-4 l/minute by nasal cannula.	x	x	x	x
IV: medium bore with normal saline.		x	x	x
If neurogenic shock develops:				
a) O2: 10-15 l/minute by mask.	x	x	x	x
b) Trendelenburg position (feet elevated at 15 degrees).	x	x	x	x
c) IV: 1-2 large bore with saline.		x	x	x
d) Consider NG tube placement.				x

x = standing order DO = direct order only

Specific Precautions

If spinal immobilization is going to be done, do it correctly. A poorly managed immobilization can do more damage than not spinaling the patient at all. Spinals consist of:

- long board or scoop
- cervical collar of the correct size
- head rolls to immobilize the head
- tape securing head to the board and straps to secure the torso securing to the board

Be prepared to tip the entire board to the side if the patient begins to vomit. The patient must be secured to the board or scoop with straps across the torso. Severe damage could be done if the board is tipped and the patient is not anchored to it anywhere other than the head!

Respiratory problems are common, especially if the patient has sustained a high level cord injury. Use of NPA and nasal intubation is the preferred method of airway control. Try to avoid manipulating the neck. If oral intubation needs to be done, maintain in-line traction to minimize movement of the cervical spine.

Patients can be ambulatory and asymptomatic yet still have an unstable spinal fracture. Your assessment should include the mechanism of injury. If there is a mechanism of injury that suggest a spinal injury, such as starring to the windshield of the vehicle, or the patient fell off his bike and lost consciousness, he should be placed in spinal.

Posterior rib pain is often described as "back pain." Determine if the pain originates from the spine or posterior ribs.

There are some landmarks for vertebra that are useful in assessments:

- C1 - Against base of skull
- T1 - Clavicle level
- T4 - Nipple line
- T10 - Umbilicus
- L1 - Iliac crest (spinal cord ends between L1 and L2)

Spinal Precautions Clearance**Section 3-36**

The purpose of this protocol is to minimize unnecessary application of spinal precautions in trauma patients. This procedure is to be performed by Paramedics only.

Patients who meet the following criteria may be excluded from spinal precautions by a paramedic. All other patients must be placed in spinal precautions.

- There is no neck or back pain elicited while obtaining a history and physical exam.
- The patient is competent
 1. There is no history or appearance of drug or alcohol ingestion.
 2. The patient is mentally competent
 3. The patient is over the age of 12
 4. The history and exam exclude mental retardation, senility, Alzheimer's disease, stroke, significant closed head injury, anoxia or hypovolemia.
- There are no peripheral nervous system deficits such as paralysis, motor weakness, numbness, tingling or other paresthesia.
- There is no potentially distracting injury such as a painful extremity or abdominal injury.
- There is no distracting social or emotional situation in which the patient cannot focus on his/her physical condition.
- The mechanism of injury is considered minor.
 1. MVA with minimal or no damage to the vehicle.
 2. Minor falls such as less than 3 feet.
 3. Low speed or low energy accidents.

Use with extra caution in the elderly. Arthritic spinal rigidity and osteoporosis can result in increased risk of injury even with minor mechanism. There is a high degree of peripheral neuropathy in the elderly.

If the patient does not meet these criteria for exclusion, spinal immobilization should be applied correctly and adequately. It is inappropriate to walk a patient to the ambulance and have them lay down on a board.

A patient may refuse any treatment being rendered. If a patient is refusing spinal precautions, the risks involved must be relayed and the proper documentation of the patient's condition and associated risks must be on a trip report or refusal form that the patient signs.

Syncope**Section 3-37****Subjective information**

History: onset, duration, seizure activity, events occurring prior to the syncopal episode.

Past history: cardiac history, recent illness.

Associated symptoms: nausea, vomiting, abdominal pain, chest pain, palpitations, vaginal bleeding, trauma, headache.

Objective information

Vital signs:

Level of consciousness.

Skin tone: pale, dusky, ashen, cyanotic or diaphoretic.

Signs of trauma to head if patient fell.

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Position of comfort. If unwitnessed or patient fell, consider spinal immobilization.	x	x	x	x
O2: 4-6 l/minute by nasal cannula.	x	x	x	x
IV: medium bore IV of normal saline		x	x	x
Check Blood glucose level.	x	x	x	x
If blood glucose level <70, give 25 g D50, in 10g increments, through a secure IV line. See Hypoglycemia protocol.		x	x	x
250-500 cc fluid bolus.		x	x	x
Monitor cardiac rhythm.			x	x

x = standing order DO = direct order only

Specific Precautions

Syncope by definition is a transient state of unconsciousness from which the patient regains consciousness. If the patient is unconscious, follow the "Unconscious Protocol".

Syncope that occurs when the patient sits up or stands up is often due to hypovolemia such as a GI bleed or dehydration. Syncope at rest or while recumbent is often caused by cardiac arrhythmias.

All patients with syncope should be transported, even though they may appear normal.

ALS services should record a baseline ECG for patients with a cardiac history or syncope occurring at rest.

Subjective information

History: when was patient last seen, events occurring prior to unconsciousness.

Antecedent complaints: headache, seizures, confusion, malaise.

Past medical history: cardiac problems, recent surgery, diabetes, stroke, trauma.

Objective information

Vital signs.

Level of consciousness: response to physical or verbal stimuli.

Signs of trauma.

Scene: pill bottles, medical alert tag, odors, ambient temperature, track marks.

Skin: pale, dusky, ashen, cyanotic, or diaphoretic.

Odor of alcohol.

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Control airway. Use of an OPA or NPA in protecting airway	x	x	x	x
O2: 15 l/minute by mask	x	x	x	x
Assist respirations if necessary with bag valve mask	x	x	x	x
Consider intubation			x	x
Spinal immobilization unless there is no history of trauma.	x	x	x	x
IV: 1-2 large bore with normal saline		x	x	x
Check blood glucose level.	x	x	x	x
If blood glucose level <60, administer 25g D50 IV, in 10g increments, in a secure line. See Hypoglycemia protocol.		x	x	x
Narcan 2 mg IV, repeat as needed.			x	x
Monitor cardiac rhythm			x	x

x = standing order DO = direct order only

Specific Precautions

Be attentive to the airway. Difficulty with vomiting and diminished respirations are common. Use of an NPA or an OPA if the patient will tolerate it are indicated in the unconscious patient. Nasal intubation is the preferred airway control in an unconscious patient with a gag reflex. Oral intubation will stimulate the gag reflex and create a new airway obstruction.

Hypoglycemia is a common cause of unconsciousness and often overlooked, especially in the elderly.

Vaginal Bleeding**Section 3-39****Subjective information**

Symptoms: amount of blood lost, clots or tissues discharged, abdominal pain or cramping, weakness, dizziness.

Past history: last menstrual period, birth control method, possibility of pregnancy, previous medical problems.

Objective information

Vital signs: orthostatic changes indicate hypovolemia.

Level of consciousness.

Amount of blood lost, clots or tissue fragments. Bring all tissue to the hospital.

Abdominal rigidity, guarding or rebound tenderness.

Treatment

Procedure	FR EMT B	EMTB IV	EMT I	EMT P
Position of comfort.	x	x	x	x
O2: 15 l/minute by mask if vital signs unstable, 2-4 l/minute if vital signs stable.	x	x	x	x
IV: 1-2 large bore with normal saline.		x	x	x
If blood pressure <90:				
a) fluid bolus of 250-500 cc saline		x	x	x
b) monitor cardiac rhythm			x	x

x = standing order DO = direct order only

Specific Precautions

The amount of vaginal bleeding can be difficult to estimate.

Always consider pregnancy as a cause of vaginal bleeding. The history may be distorted by inaccuracies, denial or wishful thinking. The only patients who cannot be pregnant are male.

Ectopic pregnancies can be life threatening. If it is located in the fallopian tubes, rupture will usually occur 3-8 weeks after conception.

Authorization: FR, EMT-B, EMT-I, EMT-P

Protocol: Standing Order

Placement of airway adjuncts in the nasopharynx or oropharynx to are used to secure the airway. An oropharyngeal (OPA) airway can be placed in a patient who is unconscious without a gag reflex. Nasopharyngeal airways (NPA) can be performed on patients who are conscious and/or have a gag reflex.

Indications

To secure and protect the airway in a compromised patient who is unable to protect their own airway.

To assist ventilating a patient and deliver high concentrations of oxygen.

To prevent aspiration of gastric contents.

To prevent gastric distention.

Precautions

Airway management should be accomplished first with a pocket mask or bag valve mask as needed, while the intubation equipment is being prepared.

Suction must be ready. Regurgitation is common, especially if the gag reflex is stimulated.

Avoid inducing bilateral nasal hemorrhage by forcing a NPA on multiple attempts.

Techniques

OPA Placement

1. Size the OPA from the corner of the mouth to the corner of the jaw.
2. Place the patient with the head in midline, neutral position. (Cervical collar may be in place.)
3. Introduce the OPA into the mouth upside down. When the tip of the OPA reaches the back of the throat, insert the OPA into the pharynx with a twisting corkscrew motion.
4. If the patient begins to gag, immediately remove the OPA.

NPA Placement

1. Size the NPA from the corner of the nare to the corner of the jaw.
2. Lubricate the NPA with a water soluble gel or Xylocaine gel.
3. With gentle steady pressure, advance the NPA through the nare into the posterior pharynx. The beveled edge should be against the nasal septum, to avoid trauma to the turbinate.
4. If the patient begins to gag, withdraw the NPA a few centimeters.

Complications and Special Notes

Never force the placement of an airway adjunct.

In the setting of facial trauma, use an NPA with caution.

When inserting a NPA, attempt to use the right nare first. It is often slightly larger than the left nare. If the tube will not pass in the right nare, try the left nare.

Glucometer**Section 4-13****Authorization: FR, EMT-B, EMT-I, EMT-P****Protocol: Standing Order****Indications**

In patients with suspected hypoglycemia.
In patients that are unconscious and unresponsive.
In patients with altered LOC of unknown cause.

Precautions

Be careful not to contaminate the blood sample that is being used, it can alter the results of the test.

Technique

Clean off the finger using an alcohol prep and allow alcohol to evaporate.
Assemble the glucometer with the test strip, do not contaminate the test strip.
Using a small needle or lancet, puncture the skin and squeeze the surrounding tissue to draw blood out.
Dispose of the needle or lancet.
Place a blood sample on the test strip.
Allow the glucometer to measure the blood glucose level.
Bandage the puncture sight on the patient.

Complications and Special Notes

The accuracy of the glucometer can vary. Do not rely solely on the glucometer for treatment options. Treat your patient, not the glucometer.

In patients with extremely low or high blood glucose levels the glucometer may not give an accurate number or a number at all, it may simply indicate that the blood glucose level is high or low. Individual models may vary, refer to the instruction manual of your unit.

BOULDER COUNTY PROTOCOLS

Pelvic Sheet or Other Commercial Pelvic Splint (T-POD, or Pelvic Binder) Section 4-15

Authorization: FR, EMT-B, EMT-I, EMT-P

Protocol: Application: Standing Order

A simple sheet, folded on the diagonal, can be used to stabilize the pelvis. When wrapped around the pelvis and tied in front, this device can align the pelvic bones and stabilize the pelvis.

T-POD is the Trauma Pelvic Orthotic Device, the pelvic binder and a sheet used as a pelvic splint all surround the pelvis and bring the iliac crests into a normal alignment without encumbering the legs, the perineal area or the upper abdomen.

Indications

Stabilization of a pelvic fracture (see Special Notes)

Pelvic fracture with hemodynamic compromise

Precautions

Placement of any of these devices under the patient must be done carefully to minimize unnecessary movement of the patient. Unnecessary movement may exacerbate internal bleeding.

Techniques

Sheet:: Fold the sheet on the diagonal and opposite ends to center to create a 20-24in. width.

Place the folded sheet under the patient, on a backboard or pram prior to moving patient.

Place sheet so that the top edge of the sheet is even with the top of the iliac crest.

Tie the sheet in a square knot, pulling both ends simultaneously to minimize movement of the patient.

T-POD or Pelvic Binder: Unwrap the device and disconnect the front connector

Place the device under the patient, on a backboard or pram prior to moving patient

Place the device so that the top edge is even with the top of the iliac crest.

Wrap the edges around the pelvis and secure the edges with the velcro of the front connector

The T-POD requires tightening by use of the strings in the front.

Assess vital signs frequently.

Side Effects and Special Notes

Take care to use two people to apply and tighten the devices. This will help minimize any unnecessary movement of the patient.

Authorization: Refer to individual drug protocol

Protocol: Refer to individual drug protocol

Medication can be administered in a variety of methods: subcutaneous (SQ), intramuscular (IM), intravenous (IV), endotracheal (ET), by mouth (PO), intraosseous (IO), underneath the tongue (SL), metered dose inhaler (MDI), and nebulized. The rate of absorption is determined by the method it is given.

Indications

Illness or injury which requires medication to improve or maintain the patient's condition.

Precautions

Certain medications can be given by only one route, others by several. If you are uncertain about the drug you are giving, check with the physician.

Make certain that the medication you want to give is the one in your hand. Always double check the medication and the concentration before administering.

IM and SQ routes are unpredictable: medications are absorbed erratically via these routes and may not be absorbed at all if the patient is seriously ill and severely vasoconstricted. IV route should be used almost exclusively in the field. If an IV cannot be started, the endotracheal and sublingual routes are the best alternatives.

The autoinject EpiPen™ is designed to inject medication by pressure, through clothing, into the thigh. Care must be taken to hold the device firmly in place for at least 10 seconds after application to the thigh.

Technique For Drawing Up Medication

Use syringe just large enough to hold appropriate quantity of medication, or use a pre-filled syringe.

Attach a needle to the syringe.

Break ampule or cleanse multi-dose vial with an alcohol prep.

Using sterile technique, draw up the appropriate amount of medication into syringe.

Change needles (or retain) as appropriate to each of the following procedures.

Intravenous Technique

Use an 18 gauge needle.

Cleanse the IV tubing injection port with alcohol.

Check the medication: confirm medication, dose and amount.

Eject the air from syringe.

Insert needle into injection site.

Pinch the IV tubing closed between IV bag and the needle.

Inject at a rate slow enough to be safe and stop immediately with any change in the condition of the patient. The only drugs which are injected quickly are adenosine and during a cardiac arrest. All others are by slow push.

Withdraw needle and release tubing to restore flow.

Record the medication given, dose, amount and time.

Sublingual Technique

Check medication: confirm medication, dose and amount.
Have the patient lift their tongue.
Place the medication in the mucosa at base of tongue, where tongue meets floor of mouth.
Have patient lower their tongue and close their mouth.
Record medication given, dose, amount and time.

Intramuscular Technique

Use 21-22 gauge needle which is long enough to reach the muscle (1 to 1.5 inches).
Check medication in hand: confirm medication, dose and amount.
Select injection site (usually deltoid, but may be upper outer quadrant of gluteus if more convenient).
Cleanse the site with an alcohol prep.
Eject the air from the syringe.
Stretch the skin over the injection site.
Insert the needle at a 90-degree angle through the skin into the muscle. Pull back on the syringe to aspirate and, if there is not a blood return, inject the medication.
Remove the needle and put pressure over injection site with sterile swab.
Record the medication given, dose, amount and time.

Subcutaneous Technique

Use 25-gauge needle 5/8 inch length for most subcutaneous injections.
Check medication: confirm medication, dose and amount.
Select the injection site, usually just distal and posterior to deltoid.
Cleanse the site with an alcohol prep.
Eject the air from syringe.
Pull the tissue away from the muscle and insert the needle at a 45-degree angle, just below skin into the subcutaneous tissues.
Pull back on the syringe to aspirate. If there is not a blood return, inject medication.
Remove the needle and put pressure over injection site with sterile swab.
Record the medication given, dose, amount and time.

Endotracheal Technique

Medication administered in the ET tube should have the dosage increased by 2-2.5 times and diluted with 10 ml of saline.
The patient should be hyperventilated after the medication has been administered to facilitate absorption.
Drugs which can be administered via the ET tube are: epinephrine (1-10,000 concentration only), atropine, Narcan, and Lidocaine.
Be careful to check tube placement regularly if the ambu-bag is being removed and replaced for drug administration. Optimally, a 16-gauge angiocath should be placed in the ET tube. Once a buff cap is placed on the end of the catheter, drugs can be administered without risking tubing displacement.
For pediatric patients, high dose epinephrine, 1:1,000 given via the ET tube, should be diluted with 2 ml NS.

Metered Dose Inhaler

Ensure that the MDI is a prescription of the patient, is it not expired, the patient meets the criteria for its use, and the receiving facility has ordered administration of the MDI.

Check to ensure that the inhaler needs to be shaken. If so, shake vigorously.

If a spacer is available, apply the spacer.

Instruct the patient to exhale deeply, place their lips around the spacer and depress while instructing the patient to inhale as deeply as possible.

Instruct the patient to hold their breath as long as possible.

Replace oxygen and repeat VS.

Document time, dose, ordering MD and response to the inhaler.

Repeat as indicated by medical direction.

Complications and Special Notes

Local extravasation during IV medication injection, particularly with calcium or dextrose, may cause tissue necrosis. Watch carefully and be ready to stop injection immediately.

Allergic and anaphylactic reactions occur more rapidly with IV injections, but may occur with medication administration by any route.

Several medications are carried in different concentrations in an emergency medical kit. Be sure that you are using the correct concentration.

BOULDER COUNTY PROTOCOLS

Pulse Oximetry**Section 4-20****Authorization: FR, EMT-B, EMT-I, EMT-P****Protocol: Standing Order**

Pulse oximetry combines the principles of optical plethysmography (light absorption), and spectrophotometry to determine the percentage of arterial hemoglobin oxygen saturation (SaO₂).

Indications

Any patient with known or suspected respiratory compromise.

Any patient with known or suspected hypoxia.

It can be useful on any patient, apply it possible.

Precautions

Do not treat the pulse oximeter alone - treat the entire patient! A patient who is symptomatic, (tachycardia, altered level consciousness, diaphoresis), should be treated with aggressive airway and ventilation management no matter what the pulse ox reads.

Patient motion can produce signals mimicking arterial pulsation which the pulse ox will interpret as a false low reading.

Poor perfusion caused by hypoperfusion, vasoconstriction or the cold may not generate an acceptable wave form. The pulse ox will indicate when the wave forms being sensed are not adequate. Readings taken during this time are not accurate.

Dyshemoglobinemias will give false high readings. This occurs when another molecule such as carbon monoxide binds to the hemoglobin. Carboxyhemoglobin and methemoglobin will both render the pulse ox readings inaccurate.

Anemia is the result of low hemoglobin or RBC levels. The pulse ox will not be able to give accurate readings in patients with hgb levels lower than 5 g/dL.

Technique

The probe from the pulse ox unit must be placed in an area where the red and infrared light emissions can pass through a vascular bed into a light sensor. The most commonly used sites are digits such as fingers or toes, ear lobes or the bridge of the nose.

The pulse oximeter unit must indicate that it is sensing an adequate amplitude of a pulsating wave form, otherwise the readings are inaccurate.

Although most pulse oximeter can transmit light through nail polish and press on nails, some colors such as black, blue, green and various shades of red will interfere with light transmission. Optimally, the polish should be removed prior to application of the probe.

Complications and Special Notes

A probe that is too tight, either too small or taped/strapped on, can impede venous circulation and cause venous pulsations, which will give a false low readings.

Altered skin pigmentation such as jaundice or dark complexion, will not interfere with light transmission and give accurate results.

Normal pulse ox readings are between 94-99%. A reading of 91% indicates moderate respiratory compromise. Low readings, 89% or lower are indicative of potential airway and ventilatory problems and may need management. Remember treat the patient!

Often a patient in respiratory distress will have a normal or elevated oxygen saturation due to the hyperventilation and increased tidal volume. The most important gas level in the patient is the carbon dioxide level, which the pulse ox cannot measure. As always, treat the patient, not the monitor.

SAED/AED (Semi-Automatic External Defibrillator)**Section 4-21****Authorization: FR or EMT-B with current AED/SAED authorization, EMT-I, EMT-P****Protocol: Standing Order**

The SAED and AED analyze the cardiac rhythm for the presence of ventricular fibrillation or rapid ventricular tachycardia, charges to preset energy levels, and allows the user to deliver a defibrillation shock. The user must follow strict patient selection criteria. The user must be currently authorized as an SAED/AED provider, as described under Colorado EMS Division rules.

Indications

A patient found unresponsive, apneic, and pulseless.

Patient must weigh 25 kg (55lbs) or more (approximately 8 y/o) in order to use standard electrodes. **FDA approved pediatric electrodes must be used on patients between the ages of one year old and eight years old provided the SAED/AED has been FDA approved for use on pediatric patients.**

Precautions

Safety to rescuers, bystanders and the patient is paramount. High levels of electrical energy are discharged by the AED and SAED, and everyone must be clear of physical contact with the patient during analysis and defibrillation.

Patients who are wet or are in any form of water must be moved to a dry surface and the chest must be dried prior to application of electrode patches.

All medication patches (such as nitroglycerin) must be removed from the patient's chest prior to defibrillation.

Patients with suspected hypothermia and in cardiopulmonary arrest may be given only one series of three shocks, then must be transported with continuous CPR to a hospital for re-warming before further defibrillation attempts.

If devices such as implanted pacemakers or implanted cardiovertors-defibrillators are visualized, place AED/SAED electrodes so as to avoid shocking through the device.

If the device is used on a pediatric patient, between the ages of 1 and 8 or weighing less than 55 lbs, the device must have FDA approved pediatric capability and FDA approved pediatric defibrillator pads.

Contraindications

Apparent trauma arrest (except electrocution, lightning strike or in the case of pediatric patients, commotio cordis). Commotio cordis is cardiac arrest that results from blunt trauma to the chest in pediatric patients usually from a baseball, hockey puck or other similar object.

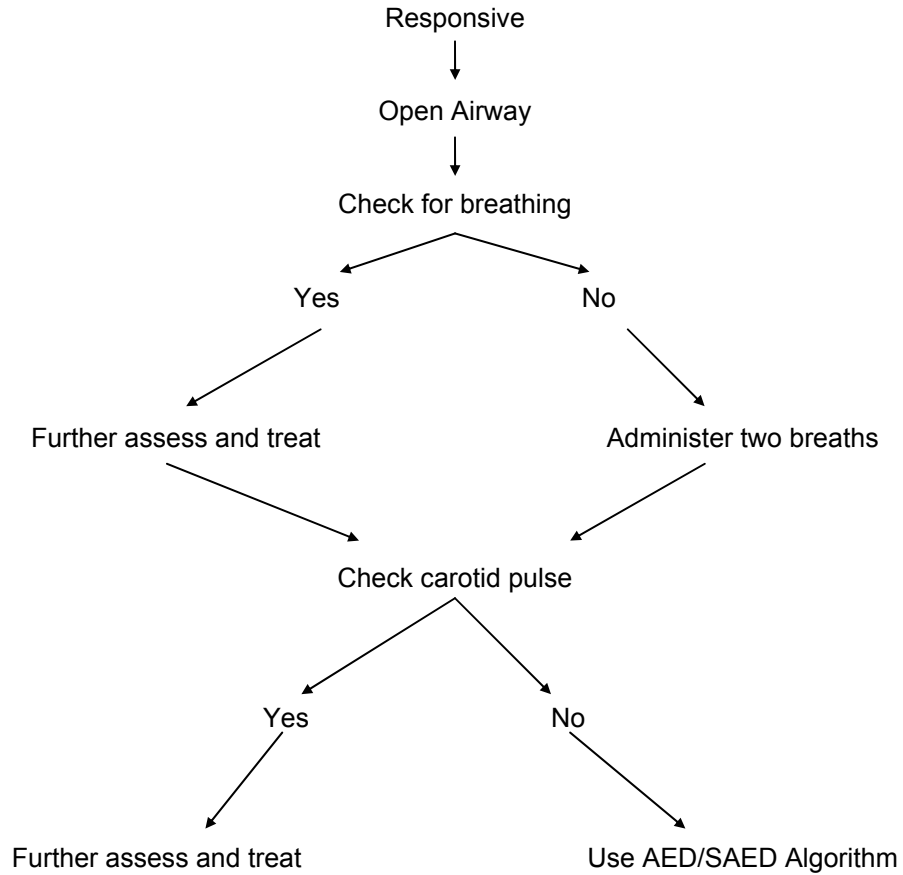
Patients weighing less than 25 kg (55 lbs) unless pediatric electrodes are available.

Limited use in suspected hypothermia, see Hypothermia Protocol.

Procedure

Take SAED or AED in to patient, based on dispatch information (unknown medical, unconscious person, CPR in progress, etc.)

Complete an initial assessment:

**Follow-up**

Upon call completion, immediately generate three copies of the code summary.

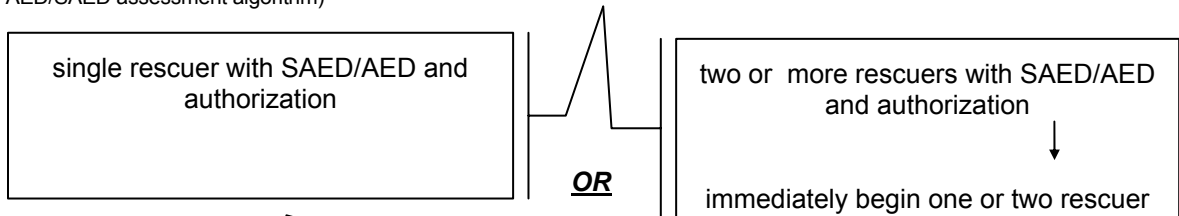
Document assessment and treatment on patient care report and AED use report.

Submit patient care report, AED use report, the original audio tape (if available) and one copy of the code summary to your Physician Advisor.*

Algorithm for SAED/AED Use

Assessment reveals unresponsive, apneic, pulseless patient without trauma mechanism.

(see AED/SAED assessment algorithm)



During self-check of SAED/AED, begin verbalizing the scenario*
(position yourself close to the SAED for clarity on the audio tape).

Place SAED/AED electrode patches.

Verbalize all subsequent actions and patient responses.

FIRST STACK

- stand clear of patient and analyze
 - if shockable rhythm:
 - assure "EVERYBODY CLEAR" and deliver shock at 200J.
- continue stand clear and immediately re-analyze
 - if shockable rhythm:
 - assure "EVERYBODY CLEAR" and deliver shock at 300J.
- continue stand clear and immediately re-analyze
 - shockable rhythm:
 - assure "EVERYBODY CLEAR" and deliver shock at 360J.

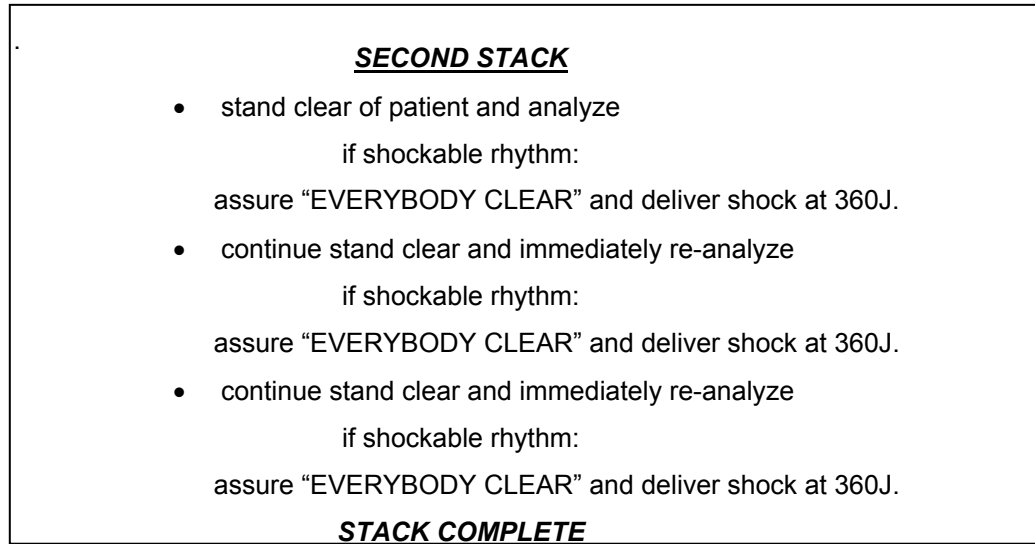
STACK COMPLETE

(stack definition: up to three shocks **OR** when the AED/SAED says "no shock advised")

check for carotid pulse

if absent, perform CPR for one minute

(check for effectiveness of CPR and gather additional history)



check for carotid pulse
perform CPR for one minute

Repeat sequence of second stack until:

- patient converts to a rhythm with pulses **OR**
- AED/SAED advises "no shock advised" (re-assess patient pulses and treat appropriately) **OR**
 - ALS personnel assume patient care with their equipment **OR**
 - patient transport is available (using your AED/SAED or their equipment)

CONTACT BASE PHYSICIAN IF TRANSPORT IS NOT AVAILABLE AFTER INITIAL FIVE STACKS

If the patient converts to an un-shockable rhythm and remains in your care, leave the SAED/AED on; If that patient re-fibrillates, you may start the sequence of stacks again with the current energy level indicated on the SAED/AED.

* The algorithm listed above is specifically for the SAED. The AED operation is essentially the same, although the AED analyzes the patient without operator directing it to. Also AED's and some SAED models do not have audio tapes installed in them. If this is the case, omit any steps pertaining to audio tapes in the algorithm.

Authorization: FR, EMT-B, EMT-I, EMT-P

Protocol: Standing Order

A splint is a device that immobilizes an injury to the musculoskeletal system. A bandage is used to protect and control the bleeding of injuries to the soft tissue.

Indications

Pain, edema or deformity in the skeletal system, which includes the extremities, head, torso and spine. Splinting decreases the pain and protects the blood vessels and soft tissue from further trauma.

Techniques

Bandaging

1. Evaluate the site and expose the area.
2. Choose the appropriate dressing material: sterile 4x4s, trauma dressing etc.
3. Place the dressing over the wound.
4. Secure the dressing with Kerlix and tape.
5. Moisten the dressing for burns, eviscerations and abrasions. This will prevent the tissue from drying and adhering to the wound.

Splinting extremities

1. Expose the fracture site.
2. Check for distal pulse, movement and sensation.
3. Dress and bandage any wounds prior to splinting.
4. Severely angulated fractures may need to be straightened if there are no distal pulses present or if the position prevents extrication or transportation.
5. Joint injuries should be immobilized in the position found.
6. Retraction of bone ends in open fractures may be unavoidable.
7. Immobilize the joint above and below the fracture site.
8. There are a variety of splints that can be used. The type of splint will be dependent on the type and location of the fracture.
9. The splint should be secured with Kerlix and tape. It should be secure enough to immobilize the limb but not impair circulation.
10. After the splint has been applied, the patient should be evaluated for distal pulse, movement and sensation.

Traction splints (HARE or Sager can only be used on midshaft femur fractures without fractures to the pelvis or lower leg).

1. Expose the fracture site.
2. Check for distal pulse, movement and sensation.
3. Dress and bandage any wounds prior to splinting.
4. Place ankle hitch on injured leg and apply gentle manual traction to the leg.
5. Adjust the splint so that it is 6 inches longer than the uninjured leg. Always measure on the uninjured leg!
6. Position the splint under the leg supporting the fracture site. The ischial pad in the Hare traction splint should be placed against the ischial tuberosity.
7. Secure the groin strap.
8. Attach the ankle hitch to the splint and carefully increase the amount of traction. Titrate to the patient's comfort level.
9. Secure the leg straps.

Hare Traction: Avoid placing straps over the fracture site or the knee.

Sager Traction: The straps are wide and designed to be placed over the fracture site, over the knee and mid-lower leg.

10. After the splint has been applied, the patient should be evaluated for distal pulse, movement and sensation.

Spinal immobilization.

Spinal immobilization.**Section 4-21**

1. Spinal immobilization should be taken on any patient afflicted with:
 - head or spinal pain
 - head or spinal trauma
 - rib fractures
 - loss of consciousness
 - unwitnessed seizures
 - unwitnessed falls
 - hip fractures
 - mechanism of injury
2. Apply manual traction to the head and neck as soon as possible.
3. Place a cervical collar of the appropriate size.
4. Extricate the patient onto a long spine board or a scoop. Roll the patient as a unit if necessary.
5. Attach the head and cervical spine to the board with head rolls and tape. Do not use sand bags.
6. Attach the torso to the board with straps. This will allow the patient to be turned as a unit if necessary.
7. Document the neurological findings before and after immobilization.
8. Improperly managed spinal immobilization can cause serious damage. If immobilizations are done, they should be done carefully and conscientiously, not in a careless and haphazard manner. Letting a patient wander around a scene with a C-collar on is not considered spinal immobilization.

Complications and Special Notes

When in doubt, splint. This is especially true for spinal immobilization. It is possible for patients to be relatively pain free and ambulatory on scene and still have an unstable spinal fracture.

A sheet splint or other commercial pelvic binding device, can be used effectively as a splint for pelvic fractures.

Cold packs and elevation will slow the swelling process for fractures. Use care with cold packs so that the soft tissue is not frozen.

Authorization: FR, EMT-B, EMT-I, EMT-P

Protocol: Standing Order

Purpose: To effectively manage major trauma patient, the Trauma Alert Team at the receiving facility, must assemble quickly and mobilize the resources essential to diagnosis and treatment. The Trauma Alert protocol establishes guideline for such early notification on critically injured patients.

Criteria for Trauma Team Activation:

1. Systolic BP < 90 and/or pulse > 120
2. GCS < 10 from trauma
3. Respiratory rate <10 or >29, or requiring endotracheal intubation
4. Flail chest.
5. Multi system blunt trauma associated with suspected pelvic fractures, long bone fractures, or altered mental status.
6. Amputation proximal to wrist or ankle.
7. Traumatic paralysis.
8. Penetrating trauma to the neck, chest, abdomen, or groin.
9. Combination of second or third degree burn > 15% BSA in adults (> 10% in pediatrics) and associated trauma and/or hemodynamic instability.
10. For age <14; at least 2 signs:
 - Tachycardia for age and signs of poor perfusion (Capillary refill time >2 seconds, cool extremities, decreased pulses, altered mental status, poor color, respiratory compromise)
 - BP <lower limits for age (70 + 2 times age)

Criteria for early radio notification

Not necessarily Trauma Team Activation:

Death in the same car as patient
 Extrication time >20 minutes
 Spinal cord injury with neurologic deficits
 Multisystem blunt injuries (2 or more systems injured)
 Two or more proximal long bone fractures
 Pregnant trauma patient
 Patient > 55 years
 Pre-existing cardiac, pulmonary or systemic medical disease
 Falls > 15 feet
 Ejection in a MVA

Acetylsalicylic acid (Aspirin/ASA)**Section 5-1****Authorization: EMT-B, EMT-I, EMT-P****Protocol: Standing Order**

Acetylsalicylic acid, the over the counter medication known as aspirin, has recently gained acceptance for use as an anticoagulant in the setting of myocardial infarctions.

Effects:

ASA inhibits the formation of thromboxane A₂ which is a platelet aggregating and vasoconstricting prostaglandin. It will also inhibit the production of prostacyclin which is an antiaggregating and vasodilating prostaglandin. The overall effect will be to inhibit clot formation and vasoconstriction.

Platelet aggregation has been implicated in the pathogenesis of atherosclerosis, which in turn contributes to acute episodes of transient ischemic attacks, unstable angina and myocardial infarctions.

Studies have shown to be beneficial in decreasing sudden death and myocardial infarctions in patients presenting with unstable angina. The hypothesis for this is based on the theory that unstable angina is precipitated by a sudden fall in coronary blood flow secondary to platelet aggregation.

ASA has been shown to be of additional benefit in maintaining vessel patency after thrombolytic therapy.

Indications:

Unstable angina

Acute myocardial infarctions

Any chest pain with a possible cardiac origin

Precautions:

Contraindicated in patients allergic to ASA or ASA products.

Contraindicated in patients that cannot swallow, or are not controlling their own airway.

ASA is not to be given to patients with known bleeding disorders.

It is not to be given for analgesic purposes such as headaches or orthopedic injuries.

Administration:

324 mg ASA in the form of 4 Bayer's Children's Chewable aspirin PO if the patient is able to swallow voluntarily and has a patent airway. (Each tablet contains 1¼ grains or 81 gm of ASA).

Administration of ASA should be given to patients early in the treatment process. ASA has been shown to be very beneficial to patients.

Side Effects and Special Notes:

Patients who normally take regular doses of ASA or ASA compounds can have gastrointestinal disorders such as GI hemorrhage or impaired gastric emptying.

Side effects include GI irritation, nausea and vomiting, tinnitus, metabolic acidosis, respiratory alkalosis, ARDS and occult GI bleeding.

ASA is metabolized by the liver and excreted by the kidneys. Use with caution in patients with liver dysfunction and impaired renal function.

Some asthmatics are sensitive to ASA and ASA products. Ingestion of ASA can worsen or precipitate an asthma attack in these individuals.

ASA is sold over the counter for a wide variety of maladies. Some of the products that contain ASA are:

Alkaseltzer	Dia-gesic	Percodan
Anacin	Ecotrin	Soma
Axotl	Emprin	Synalgos
Aspirin	Excedrin	Talwin
Bayer aspirin	Fiorinal	Vanquish
Bufferin	Midol	Zorprin
Darvon	Norgesic	

Epinephrine Autoinject**Section 5-13****Authorization: EMT-B, EMT-I, EMT-P****Protocol: Standing Order for EMT-I, EMT-P
Direct Order for EMT-B****Reference: Epinephrine drug protocol**

EMT-Basics may administer a Epinephrine Auto-Injector in situations where the patient is suffering from an anaphylactic reaction. The EpiPen can be the patient's own prescribed EpiPen or another EpiPen available for use. The patient does not have to have been prescribed an EpiPen in the past.

Effects/Precautions:

The beneficial actions of epinephrine in the management of acute anaphylaxis are bronchodilation and vasoconstriction.

Patients with a history of severe allergic reactions may be prescribed epinephrine (Adrenaline, EpiPen) in a preloaded syringe for rapid administration following exposure to an allergen.

The onset of action following administration is rapid, with a peak effect at about 15 minutes.

Epinephrine may have serious side effects including cardiac arrhythmias and hypertension, and should only be used on patients experiencing life threatening implications of a serious allergic reaction.

Airway management, oxygenation and ventilation, circulatory support and rapid transport must never be delayed in favor of epinephrine auto-injector.

Objective Information:

Chief complaint of acute allergic reaction with history of same.

Objective signs of anaphylaxis including:

1. -Hives
2. -Wheezing or stridor
3. -Visible swelling of face, tongue or neck
4. -Respiratory distress
5. -Hypotension

Treatment:

Procedure:

Perform Initial Assessment

Initiate appropriate oxygen therapy

Perform focused history, physical and baseline vitals

Check medication for expiration date and cloudiness

Contact base physician for direct order to administer (if applicable)

Remove safety cap

Place tip of injector firmly against the midlateral thigh until the mechanism activates (up to 10 seconds). Remove the needle from the site.

Inspect injector to insure the medication was delivered

Dispose of needle in appropriate sharps container

Document injection, time delivered, response, and MD ordering (if applicable)

Authorization: EMT-B

Protocol: Direct Order

Reference: Albuterol and Atrovent drug protocols

EMT-Basics may provide assistance in the administration of a patient own physician prescribed Metered Dose Inhalers (MDI) in situations where the patient is unable to self administer the medication due to circumstances including lack of training, poor understanding of prescription use or lack of physical access to the medication.

EMT-Basics may not initiate administration of MDI's, administer medication that is not specifically prescribed for the patient or administer MDI's to patients who do not meet the criteria listed below.

Effects/Precautions:

The action desired by many prescribed inhalers is dilation of the bronchioles.

The most commonly prescribed bronchodilator is Albuterol (Ventolin, Proventil).

This is the only medication that is indicated for acute respiratory distress.

Patients may have prescriptions for other inhaled medications (i.e.: Atrovent, Tormalate, Maxair, Serevent, Beclavent, Azmacort, Alupent).

These medications are not intended for the management of emergencies, and should not be used by EMT-Basics.

Over the counter inhalers (i.e.: Primatene) should never be administered by prehospital personnel.

It is important that the EMT-Basic generally recognize the names of the various medications and realize which one is appropriate for the care of patients with respiratory emergencies.

Side effects are usually minor and include tremors, nervousness and mild tachycardia.

Albuterol is a very safe drug and may be administered repeatedly in most individuals. In fact numerous treatments may ultimately be required to terminate bronchospasm.

Objective Information:

Chief Complaint: Difficulty breathing with signs and symptoms of respiratory emergency.

Patient is alert enough to use inhaler.

High flow oxygen must always precede MDI use in patients with respiratory distress.

If the patient has a spacer (Aerochamber, mouthpiece extension tube) it should be used.

This device ensures more complete inhalation of the metered dose.

Administration Procedure

1. Perform Initial Assessment
2. Initiate appropriate oxygen therapy
3. Perform focused assessment and baseline vital signs
4. Check medication, assure medication is prescribed for the patient, check expiration date.
5. Call receiving facility for order.
6. Shake the inhaler vigorously
7. Remove oxygen mask
8. Instruct the patient to exhale deeply and place their lips around the spacer. If no spacer is available, hold the inhaler approximately 2" from the mouth.
9. Fully depress the inhaler and instruct the patient to breath deeply and hold their breath for 1-2 seconds.
10. Replace oxygen
11. Document time, dose, ordering MD and response to the inhaler.
12. Repeat as instructed by medical direction.

Authorization: EMT-B

Protocol: Direct Order

Reference: Nitroglycerine drug protocol

EMT-Basics may provide assistance in the administration of a patients own physician prescribed sublingual Nitroglycerine in situations where the patient is unable to self administer the medication due to circumstances including lack of training, poor understanding of prescription use or lack of physical access to the medication.

EMT-Basics may not initiate administration of Nitroglycerine, administer medication that is not specifically prescribed for that patient, or administer Nitroglycerine to patients who do not meet the criteria listed below.

Effects/Precautions:

Vasodilation which causes pooling of blood in peripheral veins and decreases the preload (amount of blood returned to the heart).

Decreased peripheral vascular resistance and afterload.

Dilation of the coronary arteries.

Generalized smooth muscle relaxation.

May cause hypotension or orthostatic hypotension.

Objective Information:

Chief complaint: Cardiac type chest pain with history of Angina.

Vital signs: Systolic BP > 100 mmHg

Dosage prior to arrival not to exceed 2 tablets.

Oxygen therapy must always precede medication administration.

Administration Procedure

1. Perform Initial Assessment. Initiate appropriate oxygen therapy.
2. Perform Focused Assessment and Physical
3. Assure Baseline vitals (Syst BP > 100 mmHg)
4. Check medication, assure medication is prescribed
for the patient, check expiration date
5. Call receiving facility for order
6. Place the patient in the supine position.
7. Administer SL NTG .4 mg q 5 min x 3 doses (total) or until pain is relieved, BP decreases or ALS arrives
8. Repeat vital signs q 5 minutes after administration
9. Document indications, ordering MD, all vital signs and response to medication on patient report

Oral Glucose (Glucose and Insta-glucose)

Section 5-28

Authorization: FR, EMT-B, EMT-I, EMT-P**Protocol: Standing Order****Effects:**

Oral glucose acts to increase blood glucose levels.

Indications:

Altered level of consciousness in a patient with a history of diabetes.

Contraindications:

Unconscious patient due to inability to maintain airway
Patients unable to swallow

Administration:

Administer by squeezing a small portion (~1/3 or tube) into the patient's mouth between the cheek and gum or by using a tongue depressor to apply to cheek and gum. Repeat procedure until full tube is given. Continually monitor patient's ability to swallow, potential for aspiration, or rapidly declining level of consciousness.

Side Effects and Special Notes:

There are no side effects when administered properly.
Due to the gel thickness, there is a potential for airway obstruction or aspiration.
It is best to have suction equipment available when administering oral glucose.

Authorization: FR, EMT-B, EMT-I, EMT-P

Protocol: Standing Order

Oxygen is an odorless, colorless and tasteless gas that is present in the atmosphere. It is essential for the production of energy in the cells.

Effects:

Oxygen added to the inspired air raises the amount of oxygen in the blood (pO₂), and therefore the amount delivered to the tissues. Tissue hypoxia causes cell damage and death.

Breathing in most individuals is regulated by small changes in acid/base balance and CO₂ levels. It takes relatively large drops in blood oxygen concentration to stimulate respiration.

Indications:

In the setting of hypoxia, such as cardiac arrest, respiratory distress, chest pain, shock, major trauma, or altered mentation.

Any situation in which hypoxia may ensue but does not exist yet, such as moderate trauma, severe pain, transient loss of consciousness.

Situations in which oxygen demands have increased.

Precautions:

If the patient is not breathing adequately on his/her own, the treatment of choice is assisted ventilation, not just O₂. A nasal cannula without spontaneous respirations is a waste of O₂.

A small percentage of patients with COPD (chronic lung disease) are always slightly hypoxic. Because of the chronic hypoxia, these patients have a build-up of carbon dioxide in their blood. The carbon dioxide retention overwhelms the normal respiratory drive, and their drive becomes dependent on oxygen levels. Because of this, some care should be taken when administering oxygen to COPD patients. If they receive what their body interprets as too much O₂, they may go into respiratory arrest. However, do not ever withhold oxygen from a patient who is in respiratory distress because of a COPD history. The amount of oxygen given to the patient should be dependent on the patient's condition.

Oxygen will dramatically accelerate combustion. Be aware of the environment when using it. Be sure that bystanders extinguish cigarettes and that there are no open flames or embers in the area.

Petroleum products will become ignited by oxygen. Do not ever lubricate an O₂ regulator or cylinder with a petroleum product. Also, if the patient has petroleum products on their lips (such as chapstick) the oxygen can burn the tissue. Be sure to wipe it off prior to O₂ administration.

Administration:

Dosage Indications:

1. Low flow (1-2 L/min) Patients with chronic lung disease who are not by nasal cannula in severe distress, and precautionary measures.
2. Medium flow (4-6 L/min) Precautionary use for trauma and some medical by nasal cannula situations.
3. High flow (10-15 L/min) Chest pain, respiratory distress, shock, medical by non-rebreather mask or traumatic crises.

Side Effects and Special Notes:

Non-humidified O₂ is drying and irritating to mucous membranes.

Restlessness may be an important sign of hypoxia. On the other hand, some persons become more agitated when a nasal cannula is applied, particularly when it is not needed. Acquiesce to your patient if it is reasonable.

Oxygen supports combustion. Be aware of the environment.

Oxygen toxicity (overdose) in infants is not a hazard from acute administration in the prehospital setting.

Ambient oxygen is 21%. For every additional liter/minute of oxygen administered, the percentage increases by 3%. For example, 1 liter/minute will deliver 24%, and 4 liters/minute will deliver 33%.

A nasal cannula should be set at 1-4 liters/minute. Greater amounts will dry the mucosal membranes and cause a headache.

A non-rebreather mask must be set at a minimum of 10 liter/minute. If it is lower, CO₂ will build up in the mask, defeating the initial reason for administering high flow O₂.

BOULDER COUNTY PROTOCOLS