

Western Coos County Emergency Medical Services Standing Orders

Mission Statement

The mission of Western Coos County Emergency Medical Services is to provide compassionate, quality, state-of-the-art pre-hospital care to the residence and visitors of Coos County.

Acknowledgments

We would like to thank the following individuals who met as a committee to discuss protocol changes:

EMT Review Committee

Robin Scholtz	Bay Cities Ambulance
Tami McVey	Bay Cities Ambulance
Debbie Henderson	Bay Cities Ambulance
Dean Martin	Coos Bay Fire Dept.
Steve Takis	Coos Bay Fire Dept.
Randy Noggle	North Bay Fire Dept.
Susan Shindler	Emergency Air Lift

In addition, thanks to all the EMT Reviewers from various agencies that provided valuable feedback.

MEMO REGARDING STANDING ORDER PROTOCOLS

This memorandum provides the authority for the First Responders (FRs), Emergency Medical Technicians (EMTs) and Registered Nurses (RNs) employed by or providing volunteer services for the following organizations to function under their appropriate scope of practice and the written protocols contained herein:

These written protocols operate on the principle that the First Responders, EMTs and RNs assume considerable latitude in the decisions regarding assessment and treatment of patients at the scene and during transport. The success of these protocols depends on the training, continuing education, clinical judgment, and personal integrity of all who provide medical services under this agreement.

These protocols shall be in effect September 1, 2007 until August 31, 2008 unless revised or amended. These new protocols supersede and make void all protocols written and approved prior to this date.

Bay Cities Ambulance
Coos Bay Fire Department
North Bend Fire Department
Charleston Rural Fire Protection District
Hauser Rural Fire Protection District
North Bay Rural Fire Protection District
Green Acres Rural Fire protection District
Sumner Rural Fire Protection District
Millington Rural Fire Protection District
Bandon Fire Department
Mill Casino First Responders
Emergency Air Lift

Barbara Gabert MD
Supervising Physician

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Section 1

Administrative Rules and Operations Protocols

Administrative Rules and Operations Protocols

A. Role and Responsibility of Supervising Physician:

The supervising physician will fulfill his/her responsibilities as described in current Oregon Administrative Rules (OAR 847-35-0001, -0020 and -0025) (http://arcweb.sos.state.or.us/rules/OARS_800/OAR_847/847_035.html).

These responsibilities shall include:

Registered nurses (RNs) operating under these protocols for fixed wing transports must comply with OAR 333-255-080 (2)(3). RNs operating under these protocols for rotary wing aircraft (OAR 333-255-080[4]) or functioning as a paramedic on a ground ambulance (333-255-070[6][d]) shall have (1) current AHA level C or ARC BLS for the Professional, (2) current ACLS, (3) PALS course completion, (4) PHTLS, BTLS TEAM or TNCC course completion (TEAM and TNCC must include training in pre-hospital rapid extrication). RNs must also attend the same yearly-required case reviews and skills performance reviews as EMT-Ps.

B. Standard of Care for Coos County EMS Personnel:

1. A patient is a person who presents with:
 - a.) An injury or illness, with or without chief complaint; or
 - b.) A chief complaint of or have an altered level of consciousness, with or without apparent injury or illness; or
 - c.) A mechanism of injury, which raises the index of suspicion for injury.
2. All Coos County First Responders and EMTs will be expected to conduct themselves in a professional manner.
3. First Responders and EMTs will treat all patients with dignity and respect. Patient's medical information will be treated in a confidential manner.
4. EMS personnel's first priority in the field will be scene safety for themselves, their patients and the public. This may include staging a safe distance away until the scene is safe. This will include the use of appropriate personal protective equipment.
5. Patients with the most severe or life threatening injuries or illnesses will be treated first, except in the event of a multiple patient scene/mass casualty incident where the field resources are overwhelmed. Patient management will begin with the ABCs and CPR if appropriate. Once adequate life support is established; EMS personnel will perform the primary and secondary survey to determine and then treat the patients illness or injury. Treatment and drug standing orders will be followed based on the patient's condition and the First Responder or EMT's level of training and certification. Patient's condition will be monitored frequently including vital signs (pulse, blood pressure, temperature, respirations), pulse oximetry, mental status, etc. EMS personnel are expected to use their knowledge, training, judgment and expertise in pre-hospital care when caring for patients under these standing orders. First Responders and EMTs will not exceed their respective scopes of practice as established by Oregon law. When possible and appropriate, pre-hospital personnel will follow the desires and wishes of the patient and their families.
6. Patient care will include documentation in a professional and timely manner to facilitate further evaluation and treatment.
7. Differences of opinion and criticism of agencies or personnel will not interfere with patient care. If not quickly, quietly and easily resolvable in the field such matters should be referred to the agencies involved or the supervising physician for investigation, discussion and resolution.

C. Scope of Practice:

First Responders and EMTs shall always function within their scope of practice even if requested to do otherwise. First Responders and EMTs operating under these standing orders have the scope of practice as described in current [Oregon Administrative Rules \(OAR 847-035-0030\)](http://arcweb.sos.state.or.us/rules/OARS_800/OAR_847/847_035.html) (http://arcweb.sos.state.or.us/rules/OARS_800/OAR_847/847_035.html) and are expected to provide this level of care.

D. Scene Authority:

1. Medical Decisions:

EMTs on scene shall cooperate in providing the optimum care for the patient. It is important to recognize and utilize the training and expertise of all available personnel. The highest level EMT on the scene shall be responsible for patient care until the transporting EMTs arrive. Upon arrival of the transporting EMTs, the highest-ranking EMT on the transporting ambulance shall direct all patient care. Upon arrival, the EMT with the transporting agency shall be responsible for patient care and transport decisions. First responders may assist with the patient care during transport. Information regarding the injury or illness, as appropriate for continued medical care, shall be communicated to the transporting EMTs.

2. Medical Professionals on the Scene:

Medical professionals at the scene of an emergency may provide assistance to paramedics, and shall be treated with professional courtesy. Medical professionals who offer their assistance at the scene should be asked to identify themselves and their level of training. The EMT should request that the medical professional provide proof of his/her identity if he/she wishes to assist with care given to the patient after the arrival of the paramedic unit. Physicians are the only medical professionals who may assume control of the care of the patient. The EMT should recognize the knowledge and expertise of other medical professionals and use them for the best outcome of the patient. The authority for medical control of paramedic procedures rests with ORS statutes, these written treatment protocols approved by the supervising physician and the receiving hospital's emergency physician when contacted. A physician on the scene who is caring for a patient prior to the arrival of a paramedic unit may retain medical responsibility for the patient if he/she so desires. The EMT should advise the physician who wishes to supervise or direct patient care, that the physician must accompany the patient to the hospital to maintain continuity of patient care. The physician on the scene shall have made available to him/her the services and equipment of the paramedic unit, if requested. There should be full documentation of these events, including the physician's name and address. If a conflict arises about patient care or treatment protocols, the EMT should call the receiving hospital for assistance.

3. Disputes on Scene

- a.) Disagreements about care should be handled in a professional manner so as not to detract from patient care.
- b.) Standing orders should be followed whenever possible, and should be the basis for resolving disputes.
- c.) If there is an unresolved dispute between first responders, EMTs and medical professionals concerning the care of a patient, the receiving hospital may need to be contacted for resolution.
- d.) A written incident report should be prepared concerning any dispute arising at the scene and given to the supervising physician for review.

4. First Responder Transport Policy

First responder rescue agencies, with licensed ambulance capability, may transport patients to local medical facilities under the following conditions:

- a.) Any critical or unstable patient who is packaged and ready for transport, and whose **clinical condition would likely deteriorate** in the judgment of the senior EMT on scene, if there is a significant delay in the arrival of the transporting ambulance. The transporting ambulance service should be notified and ETA requested prior to considering transport by the first responding agency.
- b.) If the patient requires immediate intervention beyond the capabilities of on-scene personnel, the first responder, whether ALS or BLS may transport immediately.
- c.) First responder units may transport if requested to by the ASA provider, or if no provider is responding or are under contractual agreement with the ASA provider.
- d.) In the event of a multiple patient scene or mass casualty incident, any first responder unit may transport, if directed to do so by on-scene medical branch director or incident commander.
- e.) Any BLS responder who transports a patient that might benefit from ALS treatment must request an ALS intercepts.

E. Medical Control:

1. OFF-LINE MEDICAL CONTROL - includes the following:

- a.) Standing orders approved by the supervising physicians.
- b.) Patient orders and protocols pertaining to a specific transport written by a physician.

2. ON-LINE MEDICAL CONTROL –

Refers to direct radio and/or phone communication between pre-hospital care personnel and hospital emergency department physician or the patients personal physician. Emergency physicians should be familiar with ACLS and ATLS recommendations and be familiar with the pre-hospital care protocols and the capabilities of local EMS providers. On-line medical control may override written protocols when appropriate; such as:

- a.) Directing medical care for patients within pre-hospital care provider's scope of practice.
- b.) Routing patients to appropriate hospital destination considering the number of patients, patients needs (pediatric, psychiatric, obstetric, trauma, ect.) or hospital availability of specialty beds, operating rooms or imaging procedures.

3. PROCEDURE FOR OBTAINING ON-LINE MEDICAL CONTROL

- a.) First Responders and EMTs will follow the appropriate standing orders for pre-hospital care. If uncertain of protocol or treatment, contact the emergency physician at the receiving hospital for on-line medical control.
- b.) In situations where the patient's condition is judged critical or serious, and especially when there are multiple critically ill or injured patients, early notification of the receiving hospital is mandatory. This will allow proper allocation of medical resources and timely preparation for definitive care.
- c.) All requests by EMS personnel for medical guidance will be accommodated promptly and reflect an attitude of joint responsibility and cooperation. The on-line emergency physician shall issue treatment and transport instructions based on an objective analysis of the patient's needs and the hospital's capability and proximity. No effort shall be made to obtain institutional or commercial advantage with such transport instructions and hospital assignments. When an emergency department at one hospital is acting as agent for another hospital, information regarding the patients shall be communicated to the receiving hospital in an accurate and timely manner. The transmission of information, regarding patient's identity, condition, and treatment shall otherwise remain strictly confidential.

- d.) All emergency departments and pre-hospital care providers operating under the protocols of these standing orders shall maintain radio communication equipment, which meets the standards of the Oregon State Health Division. All first response units will have Med Net 1 (155.340) frequency and all transport capable vehicles will have both Med Net 1 and Med Net 2 (155.400) frequencies.
- e.) Any difficulties or problems that arise within the medical control system shall be communicated to the supervising physician for clarification or resolution. Medical control should not unnecessarily delay medical or surgical treatment. For patients who fulfill the trauma system criteria, medical control shall rest with Bay Area Hospital's the emergency room physician or receiving surgeon.

4. TRIAGE AND TRANSPORT –

The decision concerning which hospital will be receiving the patient will be determined by a consideration of the following factors:

For medical patients and trauma patients who do not meet the criteria for entry into the "Trauma System", the patient's destination of transport will be determined as follows:

- A. Ask, "Do you want to be transported to a hospital by ambulance?"
 - 1 If the response expressed uncertainty, "Is this necessary? Do you think I should go?" etc. or if the response is -negative, give the patient the information necessary to make an informed decision; adamantly advise the patient to accept transport when indicated.
 - a.) A signed and witnessed release must be obtained and a report must be written which must include quotes of the explanation given to the patient and the response from the patient if the patient is refusing transport or treatment.
 - 2 If the response is affirmative, the patient will be transported without presentation of an opposing opinion. Be sure to confirm destination hospital with the patient to avoid confusion.
 - a.) If no preference is expressed, transport per agency policy.
 - b.) If a direct preference is expressed, transport accordingly. Divert only if ordered to do so during contact with the requested facility or if patient deterioration necessitates. If diversion occurs, advise the requested facility of the alternate destination so arriving family may be informed.

If a patient meets the mandatory entry criteria, traumatic injuries indicate possible need for surgery, or the patient meets two or more of the discretionary criteria, then the patient must be entered into the "Trauma System".

Trauma system entry patients will have Oregon State trauma bands (green) applied.

- B. State to the patient, "Bay Area Hospital" is the designated trauma hospital; we will be transporting you there.

- 1 If the patient refuses transport by ambulance, explain the possible consequences and reassert the need for transport. If the patient persists in refusal, refer to section A. 1 a.). above.)
- 2 If the patient objects to transport to the designated trauma facility;
 - a.) Transport per patient request unless diversion is required for immediate intervention to treat a life threatening condition.
 - b.) Contact Medical Control A.S.A.P. and advise of the situation.
 - c.) Document the refusal per protocol.
 - d.) Have the refusal form signed while en route if feasible.

- 3 If the patient accepts transport without objection, proceed to the designated facility.
 - a.) If the patient is refusing a portion or all of the treatment that is indicated per the protocol, proceed with transport but have the patient sign the refusal of treatment and include the proper documentation in your patient care report.
 - b.) Whenever possible, keep family members together and transport a parent or other responsible family member along with any pediatric patient.
 - c.) If a qualified physician is present with the patient and wishes to assume responsibility for patient care and accompany the patient, transport will be to the facility indicated by the physician.
 - d.) For patients being transferred from one facility to another, medical control shall be assumed by the transferring facility.

NOTE = See Bypassing Southern Coos Hospital and Health Center Protocol

5. EMS COMMUNICATION PROCEDURES:

Radio communication should be short and concise providing enough information so that the hospital's emergency personnel will have a good idea of the patient's condition and type of injury or illness. Trauma System Entry patients should have the receiving facility notified prior to departing the scene as long as it does not delay transport. In any case, the receiving facility should be notified as soon as possible with a "brief description" of the patients condition so that they may prepare and have the appropriate resources available upon the arrival of the patient. Communication for trauma system entry patients will include entry criteria. Communication for MCI patients will include the triage color (red, yellow or green). Communication with the receiving hospital should be established as soon as practical once transport is begun. This report should relay only essential patient care information. Patient identification (name) information is not appropriate to be given on the med net frequency for emergency transports. Patient initials may be used for direct admission and routine transfer patients. Ambulances responding to the scene of a reported "injury" or "unknown if injury" MVC may be cancelled enroute only after dispatch has received a "non-injury" or "unable to locate" MVC report by a law enforcement, ODOT, or fire unit on scene

F. Patient Non-Transport Protocols:

Refusal of Treatment:

A patient may choose to refuse pre-hospital medical care or ambulance transport under the following conditions:

1. The patient is conscious, alert, appropriate and capable of making competent decisions.
2. The patient is of majority age: 18 years or older.
3. The patient's medical condition is stable.
4. The patient has been informed and understands the nature of the medical condition or injury and the risks and benefits of ambulance transport has been explained and are understood.
5. The patient's refusal has been documented and witnessed in the patient care report.
6. If the patient is not capable of making competent decisions and refuses care or transport, then it is appropriate to contact the patient's personal physician, on-line medical control, concerned family members, friends or law enforcement to assist in arranging for proper medical care. The pre-hospital care report should include documentation of all actions taken by the First Responder or EMT in attempting to arrange for medical treatment, as well as the means used for determining the patients competence.

G. PATIENT TREATMENT RIGHTS

1. IMPLIED CONSENT

- a.) All patients with altered mental status including: postictal states, diabetic emergencies, head injuries, Alzheimer's, etc. shall be treated under the principle of implied consent. Patients with bizarre or irrational behavior secondary to chemical intoxication shall likewise be treated, but attachment by law enforcement is preferred before treatment.
- b.) *Impaired or incompetent patients should be accompanied to the hospital by a guardian or care provider whenever possible. This will provide someone authorized to sign consent forms and to provide history and other pertinent medical information. The preceding also applies to nonemancipated minors, particularly if the patient is uncooperative.

**NOTE: In the event that someone thoroughly familiar with the patient's present and past history, meds, allergies, etc. is not available to accompany the patient, obtain this information and a phone number to call for additional information that may be requested by the E.R. physician.*

2. TREATMENT OF MINORS

Mentally competent patients who are less than 18 years old and are not emancipated may refuse non-urgent treatment, but only in the absence of their parent or legal guardian. However, the medic in charge should make every effort to contact that minor's parent or legal guardian, within reason, prior to accepting a refusal. The minor may not override parental or guardian decisions. Once a refusal is obtained on a minor, custody of that minor shall be transferred to a responsible adult either on scene or to law enforcement personnel.

- a.) Consent for treatment and transport should be obtained by a parent or legal guardian before transport whenever feasible. Verbal consent will facilitate the transfer of patient care when a guardian does not accompany an incompetent or minor patient in the ambulance. The guardian should be advised to contact the receiving facility and give a verbal consent for treatment until such time that they are able to provide written consent.

In the event that a parent, legal guardian, or person who has authorization to act on behalf of the patient is not available and cannot be contacted in a reasonable amount of time, treatment of a minor may be rendered under the "emergency doctrine". This doctrine requires a reasonable and prudent determination that immediate treatment must be rendered to preserve life or prevent serious or permanent impairment of health. Both immediacy and severity must be established; that the patient may benefit or be comforted is not sufficient reason to act. Nevertheless, it is preferred to render treatment when in doubt.

Emancipated minors have the same consent/refusal rights as adults. An emancipated minor is one who lives apart from his/her parents and is self-supporting or one who is married.

3. PATIENT REFUSAL

These protocols are intended for use with a conscious, consenting patient or an altered mental status, implied consent patient.

- a.) If a conscious patient who is rational refuses treatment, you should comply with the patient's request and document the refusal.
- b.) If a conscious patient who is rational refuses treatment against medical advice, efforts should be made to contact the patient's private physician or on-call physician. MCH may be helpful and can be consulted if the private physician is unavailable.
- c.) If a conscious patient who is rational refuses transportation post ALS intervention or treatment, consultation with the patient's private physician, on call physician, and/or MCH should strongly be considered

- d.) If a conscious patient who is irrational or may harm him/herself refuses treatment, you should contact the Medical Control physician (and police if necessary).
- e.) A patient has the right to select which hospital to be transported to if he/she is rational and if in your judgment such transport will not cause loss of life.
- f.) When in doubt, contact Medical Control and fully document all of your actions.

H. Evaluate, Treat, and Refer:

1. If the patient has a minor or stable medical condition, and transport to the hospital by ambulance is not indicated, then the following protocol may be used to determine the appropriateness of non-transport.
 - a.) The patient must be of legal age and mentally competent.
 - b.) The EMT attending the patient has conducted a thorough medical examination and documented all pertinent findings and treatment rendered in a prehospital care report.
 - c.) The patient's condition is medically stable.
 - d.) The patient agrees with non-transport.
 - e.) An alternative method of transport to a medical care facility is available to the patient.
2. The following medical and injury conditions mandate consultation with on-line medical control or the patient's personal physician; otherwise EMS transport to a medical facility is indicated:
 - a.) Unstable vital signs, which may include orthostatic hypotension.
 - b.) Altered consciousness or a history of loss of consciousness, or any acute onset neurological deficit. **EXCEPT** in the following instances:
 - 1) *Hypoglycemia in patients with Diabetes Mellitus:* A patient with diabetes mellitus who is taking insulin has a documented episode of hypoglycemia with an altered level of consciousness which improves significantly with the administration of oral glucose or intravenous dextrose.
 - 2) *Seizure in a patient with a Seizure Disorder:* If a patient with a known seizure disorder experiences a seizure that is consistent with his or her normal frequency of seizures, compliance with medications AND the seizure is typical for the patient. In such a case the patient does not necessarily require transport or on-line medical control providing that the patient is left in the care of a competent adult, self or other. The PHCR should contain clear documentation of the event.
 - c.) Respiratory distress or pulse oximetry less than 90% (room air).
 - d.) Patients over 40 years old with a complaint of chest pain consistent with heart or lung disease or abdominal pain.
 - e.) Severe headaches or a high fever (>40 C) in any age group.
 - f.) High risk of traumatic injury including such co-morbid factors as vehicular intrusion, injuries to others on scene, distance of fall or other concerns registered by the responding EMTs.
 - g.) No appropriate, timely, alternative means of transport to a medical facility is available.

I. Documentation and Medical Record Requirements:

All contacts with patients who are ill or injured must be documented on a prehospital care report, whether hand-written or computer-generated

All Pre-Hospital Care Report (PHCR) entries are to be dated and timed appropriately. Times are to be recorded as accurately as possible, however the EMT's primary concern is patient care, which will take precedence over timekeeping. Times should represent the course and duration of events. Times may vary from those of other clocks, which are not regularly and continuously time-synchronized.

The pre-hospital care report provides written documentation of patient condition and treatment for medical and legal purposes. It also adds to the continuity of patient care after arrival to the hospital.

Pre-hospital care reports are to be filled out completely with all pertinent information. The report is a record that reflects on you and our profession as a whole. So be concise, writes legibly, spell correctly and use accepted terminology and abbreviations.

A copy of any 12 lead EKG obtained pre-hospital will be left at the receiving hospital. Any on-line medical control communication will be documented on the pre-hospital care report, regardless of whether or not the patient was transported, and will include instructions, receiving hospital and physician name.

A patient's refusal of care or transport, transfer to another agency or person, on-line medical control communications, deviations from these standing orders or determination of death in the field will be documented on the pre-hospital care report.

In compliance with state regulations a complete pre-hospital care report must be left at the receiving hospital unless the patient's emergency department's nurse or physician receives an appropriate verbal report and gives verbal release, in which case a completed PHCR must be provided to the receiving hospital within 12 hours or the end of your shift, whichever is sooner.

If a non-treating EMT does not agree with the care given, it is that EMT's responsibility to discuss his or her reservations with his or her partner and resolve the problem. If the problem cannot be resolved, the non-treating EMT or paramedic shall write out a report documenting his or her reservations about the call. If there were any problems on the call with personnel or equipment that affected the patient outcome, fill out an incident report and forward to the supervisor.

Pre-Hospital Care Reports may be done in the SOAP format, and include the following:

SUBJECTIVE

Chief Complaint (why 911 was activated)

History of Event or Mechanism of Injury (What happened prior to the call)

Report of treatment prior to arrival of the transporting ambulance and by whom.

Relevant past medical history

 Meds

 Allergies

 Patient's physician

Significant and Pertinent Negatives

OBJECTIVE

General Appearance, including scene description Vital Signs

 Head to Toe Exam

 Skin

 Head, eyes, ears, nose, throat

 Heart

 Chest

 Abdomen

 Extremities

 Spine

Neurological including level of consciousness or Glasgow coma score

ASSESSMENT

What you think the patient's problem is based on your subjective and objective findings.

PLAN

Actions taken and protocols followed, on-line medical communications or deviations from these standing orders. Time of interventions and changes in a patient's condition. Patient refusals and statement of possible consequences. Conditions on arrival at the hospital. To whom report was given and to whom the patient was transferred. Disposition of patient's personal items.

A LIST OF ALL CURRENT MEDICATIONS AND THE DOSEAGE SHOULD BE BROUGHT TO THE EMERGENCY DEPARTMENT WITH THE PATIENT. (Try not to bring the actual medications if possible)

J. Equipment and Supplies:

The minimum equipment and supplies are those required by the Oregon State Health Division, Emergency Medical Services Section for all Basic and Advanced Life Support Ambulances. In addition, the supervising physician may require additional equipment and supplies in accordance with treatment protocols included in the standing orders. It shall be the responsibility of the supervising physician to provide pre-hospital providers with a rationale for requiring equipment that exceeds the minimum standards of the State of Oregon. All transporting vehicles covered by these standing orders shall carry a copy of these standing orders.

K. Time on Scene:

The purpose of this section is to delineate scene time limitations.

1. If at any time an EMT cannot provide or protect a patent airway to a patient, they are required to transport the patient **immediately**.
2. If at any time an EMT has been on the scene for more than thirty (30) minutes after patient encounter, and initiating emergency medical care, he/she is **required** to document the reason why on the pre-hospital care form.
3. For **TRAUMA** cases, time spent on the scene should be ten (10) minutes or less after extrication has been accomplished and the patient can be moved away from the site.
4. When more than 3 patients are involved, the 10-minute scene rule begins when late arriving units receive their patient.
5. Establishing an IV line in the field should not delay transport unless there is an immediate need for parenteral therapy; e.g., hypoglycemia, seizures, narcotic overdose, cardiac arrest or unstable dysrhythmias.

L. Ambulance Response:

Ambulances will be driven in a manner consistent with public safety and the patient's condition as judged by the attending First Responder or EMT. Lights and siren responses or transports may be appropriate if the transport time is significantly reduced and must be carefully balanced by the increased risk to the patient, First Responders, EMTs and general public of motor vehicle crashes associated with such responses.

M. Continuous Quality Improvement Plan:

With the goal of providing a high level of patient care, it is important that all areas of prehospital care be monitored and improved upon where possible. With this in mind, all agencies shall participate in the EMS System Continuous Quality Improvement Plan. This plan provides a mechanism for review of selected pre-hospital care cases; with emphasis on critical care cases with high-risk issues and procedures on a continuous basis. Conducting reviews of focused topics allow for intensive scrutiny of select topics. When a potential issue is identified, it will be brought to the attention of The QI Administrator who will submit this to the supervising physician and appropriate corrective action implemented. Hospital data may also be obtained to provide additional information. Each agency's QI plan will be reviewed at least annually.

1. Quality Assurance (retrospective) Reviews

- a.) Field Delivery
- b.) Needle Decompression
- c.) Intraosseous Infusion
- d.) Cricothyrotomy (needle or percutaneous)
- e.) EMT-B/I combi-tube placement
- f.) Morphine Administration by EMT-I
- g.) Rapid Sequence Intubation (RSI)
- h.) Major MCI – involving more than 2 agencies
- i.) Pre-hospital Death determined in the Field.
- j.) Random Review
- k.) Any cases as designated by the supervising physician.

2. In addition to patient care report reviews; the supervising physician may also utilize several other methods to monitor the EMS system for Quality Assurance.
 - a.) Direct observation of First Responder or EMT field performance.
 - b.) Monitoring and or review radio communications.
 - c.) Conduct post-run interviews.
 - d.) Conduct periodic case conferences.
 - e.) Investigation of all complaints.

3. Quality Improvement (prospective) Review ideas

(As designated by the supervising physician.)

- a.) IV Starts
- b.) Endotracheal intubations & other artificial airways
- c.) RSI
- d.) Spinal Immobilization
- e.) Seizure
- f.) Poisoning/Overdose
- g.) Non-transports/Patient Refusals
- h.) Code 3 (lights & sirens) transport

Issues regarding quality of care that are not resolvable by the supervising physician and the respective EMS agencies may be referred to the Coos County ASA QA Committee for discussion, investigation and resolution.

4. **Case Review Conferences** will be held in the county at 4-week intervals. These will consist of case presentations and discussion, lecture/discussions or guest presentations relevant to EMS fieldwork. Cases and topics for discussion will be selected by the supervising physician with input and suggestions from EMS and hospital personnel. Cases suggested for physician review or presentation at case review should be so designated and left with the QI Administrator. (Tim Novotny or Robin Scholtz.)

N. Continuing Education and Conference Standards:

Continuing educational activities for EMTs shall meet or exceed the minimum requirements of the State of Oregon. Local programs for EMTs shall include:

1. Case Review Conferences.
2. Multi-Disciplinary Trauma Conferences.
3. Special EMS Conferences organized by the Emergency and/or Education Departments of local hospitals, or by local EMS/First response agencies.

O. Standing Order Review and Revision:

There shall be at least an annual review of these standing orders by the supervising physician with input from any concerned parties. A committee composed of the supervising physicians and other interested parties may be formed periodically for recommending revisions to the Standing Orders. Education programs to update EMS providers as to pertinent changes in and additions to the standing orders shall be organized by the supervising physician within a reasonable period after release of any revisions to the standing orders.

P. Interhospital Transfer Protocol:

Policy

A patient is identified for interhospital transfer when an attending physician determines that more appropriate facilities or services are available, and consent for the transfer has been obtained from the patient or the family.

Procedure

1. The patient's attending physician must contact the physician accepting the patient and the receiving hospital.
2. The patient must be stabilized prior to transfer.
 - a.) Patient is assured of an adequate airway and ventilation.
 - b.) Control of hemorrhage has been initiated.
 - c.) Patient's spine and fractures have been appropriately stabilized.
 - d.) An adequate access route for fluid administration is established and appropriate fluid therapy has been initiated.
3. Responsibility for arrangements and details of the transfer, including transportation, are those of the physician at the transferring hospital. The receiving physician will be involved with the details of such a transfer to insure optimum care of the patient.
4. Proper equipment and trained personnel will be utilized to handle the problems specific to the patient's condition.
5. Instructions will be given to the personnel transferring the patient by the transferring physician or nursing staff.
 - a.) It is essential that a written record of the problems, treatment given and status at the time of transfer accompany the patient. Such a record will include:
 - b.) Patient information.
 - c.) History of present injury or illness.
 - d.) Patient condition: vital signs, pertinent physical findings and neurological status.
 - e.) Treatment rendered, including medications and fluids.
 - f.) Diagnostic findings: including laboratory, ECG, CT scan and x-ray films.
6. Medical Control during an interhospital transfer shall rest with the transporting unit's medical control or the sending physician. In the event of a serious deterioration in the patient's condition the nearest appropriate medical facility will be utilized.

Q. Helicopter VS. Ground Transport

Policy

The Coast Guard helicopter should be used when it would significantly reduce the total prehospital time of a trauma patient. Such cases may include:

1. Logging accidents
2. Dunes accidents
3. Cliff or beach rescue when a rappelling team is not available.
4. Mass casualty incidents.

Procedure

The Coast Guard helicopter can be put on standby and/or activated by request through the dispatch center. The dispatcher will contact the Coos County Sheriffs Office for emergency transport by the Coast Guard helicopter.

Section 2

Patient Care Protocols

ABDOMINAL PAIN

SUBJECTIVE:

Pain can be gradual or rapid in onset, sharp, dull, colicky or constant with or without radiation. It may change with time or position. Guarding may be present. Nausea, vomiting, diarrhea, constipation, bloody emesis, bloody stools, urinary problems, abnormal menstrual cycle (late, spotting), fever, and dyspnea can occur. Past medical history, trauma, abnormal ingestions, medications, past surgeries, last menstrual cycle.

OBJECTIVE:

Diaphoresis, dyspnea, pallor, jaundice, hypotension, orthostatic BP changes, tachycardia. Normal, hypoactive, hyperactive or absent bowel sounds. Abdominal inspection can show distention, rigidity, bruising or a pulsatile mass. Emesis: type and amount, if visualized.

ASSESSMENT:

Causes of pain may include peptic ulcers, appendicitis, diverticulitis, kidney stones, pelvic inflammatory disease, ectopic pregnancy, pancreatitis, cholecystitis, pyelonephritis, ovarian cyst, hepatitis, cancer, abdominal aortic aneurysm, peritonitis or bowel obstruction. Abdominal pain may be of cardiac origin.

SPECIFIC PRECAUTIONS:

- A. Abdominal pain may be the first warning of catastrophic internal bleeding (dissecting aneurysm, ectopic pregnancy, perforated viscus, liver, spleen, etc.) Since the blood loss is not visualized, you must think about volume depletion and monitor your patient closely to recognize shock.
- B. Use caution during fluid administration for patients with suspected dissecting abdominal aneurysm. Avoid exceeding systolic BP of 90 mm Hg. History of dissection of aortic abdominal aneurysm is that of terrible “ripping or tearing” pain radiating through to the back.
- C. Acute myocardial infarction sometimes may present with abdominal pain as the only symptom. It is very important to obtain a complete patient history and physical.

TREATMENT:

First Responder, EMT – B:

- Oxygen
- Position of comfort
- Nothing to eat or drink

EMT - I:

- One or two large bore IVs with crystalloid
- In suspected Abdominal Aortic Aneurysm do not increase systolic BP above 90mmHg Cardiac monitor
- Morphine – if agency approved. **Only after on line medical control orders**

EMT - P:

- Fentanyl, **Only after on line medical control orders**

ABDOMINAL TRAUMA

SUBJECTIVE:

History of mechanism of injury: blunt or penetrating. Onset of symptoms from time of event. Abdominal pain, difficulty breathing, vomiting up blood. History of abdominal surgery.

- **Blunt:** speed of motor vehicle crash, steering wheel damage; passenger restraints; type of weapon if used; type of fall or blast.
- **Penetrating:** mechanism; type of weapon; distance from firing, caliber used.

OBJECTIVE:

Examination may be normal. Patient may appear with pale and diaphoretic skin, conscious or unconscious. May have guarding and rigidity. Note injuries associated with traumatic event. Visualize bruising, distention, entrance and exit wounds to the abdomen. Evaluate vital signs frequently. **Remember cyanosis and hypotension are late signs of shock.**

ASSESSMENT:

Diagnosis of abdominal trauma is made on the basis of the traumatic event history, palpation and visual examination.

TREATMENT:

First Responder, EMT - B:

- Oxygen
- Keep patient warm
- Cover any open wound with dressing and moisten with crystalloid solution

EMT - I:

- Cardiac monitor
- One or two large bore IVs with crystalloid

EMT - P:

- Advanced airway management if required

ACUTE DYSTONIC REACTION

SUBJECTIVE:

Involuntary, unpleasant motor movements of the trunk, limbs or face following the administration of antipsychotic medications: perphenazine (Trilafon), trifluoperazine (Stelazine), fluphenazine (Prolixin), thiothixene (Navane), haloperidol (Haldol) or anti-nausea medications: promethazine (Phenergan), droperidol (Inapsine), prochlorperazine (Compazine) or metaclopramide, (Reglan).

OBJECTIVE:

Patient is awake and conscious, with extrapyramidal symptoms, usually distraught or anxious. Extrapyramidal symptoms often consist of small spasmodic movements or tics of the arms, legs, face or neck muscles with lip smacking, grimacing, tongue protrusion, eye movements or neck twisting.

ASSESSMENT:

Acute dystonic reactions are distressing to the patient, but rarely life threatening. Patients may have had similar symptoms previously. Acute dystonic reactions may be mistaken for anaphylaxis or seizures. Patients with seizures, which may look somewhat similar, usually have a loss or alteration of consciousness. Acute dystonic reactions may last for hours to days, whereas seizures usually last minutes.

TREATMENT:

First Responder, EMT-B:

- Oxygen
- Patient comfort

EMT-I:

- IV with crystalloid,
- **Benadryl only after online medical control orders**

EMT-P:

- Diphenhydramine

ALTERED MENTAL STATUS AND PSYCHIATRIC DISORDERS

SUBJECTIVE:

History of recent crisis, emotional trauma, bizarre or abrupt changes in behavior. Suicidal ideas, alcohol or drug intoxication, toxic exposure. Recent head trauma. Past history of psychiatric disorders, medical problems, medications and medication compliance. Inquire specifically regarding depression and thoughts of suicide.

OBJECTIVE:

Level of consciousness and orientation. Signs of trauma, injury, ingestion or injection. Monitor vital signs, note odor on breath. Pill bottles or syringes at scene. Look for medical alert tags.

ASSESSMENT:

Diagnosis may be difficult and should be determined by history, patient assessment and observations noted at the scene of the event.

SPECIFIC PRECAUTIONS:

- A. Psychiatric disorders almost never cause organic brain syndrome. If the patient is disoriented, consider possible medical causes (e.g. hypoxia, hypoglycemia, hypothermia, postictal state, sepsis, CVA, etc.).
- B. If drug overdose or other toxic exposure is suspected, proceed to "Poison and OD Protocol".
- C. If able to confirm that patient has no history of diabetes and CVA or head trauma is strongly suspected, do not give dextrose unless Chem. BG indicates hypoglycemia (<70 mg/dl).
- D. Patients with altered mental status due to Alzheimer's, senile dementia or degenerative diseases may require only emotional support as prehospital treatment and do not warrant invasive procedures.
- E. Psychiatric patients may exhibit a wide range of altered mental status behaviors (e.g. bipolar, hyperactivity/anxiety, paranoia, schizophrenia, irrational or bizarre ideation, major depression, etc.). Usually these conditions are not accompanied by signs of decreased level of consciousness and therefore do not warrant invasive procedures. Care should be patient and self-protection oriented.
- F. If condition is the result of a suicide gesture or illicit substance abuse, scene should be secured by law enforcement before you enter.
- G. Due to the wide range of patient presentation, sometimes it may not be feasible or safe to administer prehospital care to the emotionally deranged patient and supportive measures may be all that is or can be provided.
- H. Again, remember that some serious medical conditions may present with aggressive behavior and these conditions **MUST** be recognized and treated appropriately. Make sure to solicit the required assistance so that you can treat these patients.

TREATMENT: **PROTECT YOURSELF AND OTHERS FIRST**

First Responder:

- Attempt to establish rapport
- Do not leave patient alone
- Remove dangerous objects
- Oxygen
- Restrain, if necessary

EMT - B:

- Check blood sugar
- IF CBG is less than 70mg/dl and patient is able to control their own airway; Give oral glucose

EMT - I:

- IV with crystalloid or saline lock
- IF CBG < 70mg/dl, Dextrose 25gm. SIVP
- Consider Narcan, 2mg IV, IM
- Transport in calm and quiet manner, monitor vitals

EMT - P:

IF Chemical Restraints required

- Diphenhydramine
- Ativan 1-4mg IV or IM
- Inapsine 2.5-5mg IV or IM

AMPUTATION

SUBJECTIVE:

Location and mechanism of injury, medications, past medical history, other injuries, and time injury occurred, bleeding disorders.

OBJECTIVE:

Type of amputation, partial or complete. Circulatory function with partial amputations.

ASSESSMENT:

Quantity of blood loss, active bleeding, presence of shock. Evaluate for other injuries. Amputation may not be life threatening but may be psychologically traumatic for patient or family.

TREATMENT:

First Responder, EMT - B:

- Control bleeding
- Oxygen
- Cover wound with sterile dressing soaked with crystalloid
- Splint partial amputations in position of function
- Wrap severed portion in crystalloid soaked sterile dressing, place in sealed plastic bag, and place bag in ice water

EMT - I:

- One or two large bore IVs with crystalloid
- Morphine – if agency approved

EMT - P:

- Fentanyl. Must contact Medical Control to exceed 100mcg

Note. If prolonged extrication time is expected, you should consider transporting the severed body part ahead of the patient to the receiving facility so that preparations could be made for reattachment.

ANAPHYLAXIS

SUBJECTIVE:

Past history of allergic reactions. Method of exposure: oral, inhaled, dermal, and percutaneous. Itching, throat tightening, shortness of breath, nausea, diarrhea, abdominal cramps, and syncope.

OBJECTIVE:

Level of consciousness, wheezing, respiratory distress, stridor, hypotension. Flushing, hives, edema, vomiting, diarrhea.

ASSESSMENT:

Anaphylaxis or systemic allergic reactions range from mild skin rash to shock. Anaphylactic reactions involve symptoms and at least one sign: diffuse skin reaction (flushing, itching or hives), shock, bronchospasm or angioedema (swelling) about the face, mouth and eyes. Mild systemic reaction may be managed with diphenhydramine alone. Local reactions confined to one extremity are not systemic or anaphylaxis.

SPECIFIC INFORMATION:

- A. History: Exposure during past few hours to antigen, e.g.
 - 1 Drugs (antibiotics, immunizations, desensitization TX, etc.)
 - 2 Insect envenomation.
 - 3 Food (shellfish, nuts, fruits, sulfite preservatives, etc.)
 - 4 Chemicals.
- B. Past history: Known allergies/previous allergic reactions.
- C. Symptoms: Dyspnea, subjective airway constriction, and chest tightness.

SPECIFIC PHYSICAL FINDINGS:

- A. Level of consciousness / mental status.
- B. Respiratory: Hoarseness, stridor, wheezing, accessory muscle use.
- C. Vital signs: Note compensatory indicators.
- D. Skin: Generalized itching, urticaria (hives), erythema.
- E. Edema: Generalized or local; particularly lips, tongue, face, neck.
- F. Vomiting or diarrhea.

SPECIFIC PRECAUTIONS:

- A. Do not underestimate the potential of a generalized allergic reaction to progress to anaphylaxis.
- B. Even if anaphylaxis has been precipitated by injection of medication or insect venom, do not let treatment of the injection sites distract from IV treatment of life-threatening anaphylaxis.
- C. Epinephrine should not be administered without signs as well as symptoms of shock syndrome and/or significant respiratory distress.
- D. Use epinephrine with caution if patient > 50 y/o or with a history of cardiac disease. Epi increases cardiac work and may precipitate angina or AMI in susceptible individuals.
- E. Common side effects of epinephrine include: anxiety, tremor, palpitations, tachycardia and headache, particularly after IV administration.
- F. CAUTION: BE SURE TO USE THE PROPER CONCENTRATION!
- G. Do not inject epinephrine into an end organ. (i.e., finger tip, tongue ECT)
- H. If wheezing is present consider Respiratory Distress Protocol
- I. If hemodynamic compromise is present after epinephrine, and long transport time, consider dopamine per cardiogenic shock protocol.

TREATMENT:

First Responder:

- Oxygen
- Remove allergen if possible

EMT - B:

- Epinephrine SQ
- Dual lumen airway device (Combitube) - if agency approved

EMT - I:

- IV with crystalloid
- Cardiac monitor
- Albuterol/Atrovent
- Diphenhydramine

EMT - P:

- Advanced airway management
- Epinephrine IV, IO (ET if no other route available)
- Dopamine infusion for unresolved hypotension
- Epinephrine infusion by **online medical control only**
- Solu-Medrol (adult 125mg IVP)

BAROTRAUMA – DECOMPRESSION SICKNESS AND ARTERIAL GAS EMBOLISM

SUBJECTIVE:

Scuba diving accidents are not common. Remember to ask whether patient may have taken any type of breath from a scuba device while under water. Patients will complain of chest pain, dyspnea, dizziness, limb paresthesia or paralysis, weakness, itching, blotching rash, visual disturbance or loss, fatigue, joint soreness, abdominal pain or coughing spasms.

OBJECTIVE:

Patient may present with hypothermia, pulmonary edema, rash, crepitus, altered level of consciousness, coma, unequal pupils, wide pulse pressure, dysarthria (pain in the joints), seizures, paralysis, decreased or absent breath sounds, apnea or cardiac arrest.

ASSESSMENT:

It is essential to attempt to obtain a diving history or profile, including: time at which signs and symptoms occurred; type of breathing apparatus used; depth, number and duration of dives; aircraft travel following a dive; rate of ascent; previous decompression illness, use of medications or alcohol.

Transportation to recompression chamber immediately is the optimum treatment; do not delay in field.

TREATMENT:

First Responder:

- Supine if unconscious
- Left lateral Trendelenburg if conscious
- High flow oxygen

EMT - B:

- Dual lumen airway device (Combitube) - if
- Agency approved

EMT - I:

- Cardiac monitor
- IV with crystalloid

EMT - P:

- Advanced airway management
- Chest decompression

BURNS

SUBJECTIVE:

Cause of burn: explosion, fire, radiation, inhalation, electrocution, lightning, chemical. Shortness of breath, airway compromise, loss of consciousness. Past medical history.

OBJECTIVE:

Extent of body surface area (BSA) involved (Rule of Nines) and depth (superficial, partial or full thickness). Inhalation injury: soot or blisters around the mouth, singed nasal or facial hair, hoarseness, cough, carbonaceous sputum or respiratory distress. Associated injury.

ASSESSMENT:

Lethal and hard to detect by-products of combustion include carbon monoxide and cyanide gas. Burns are usually very painful and anxiety provoking. Prevent further burn injury. Based on the mechanism of the burn be alert for other injuries from falls, explosion and inhalation. Suspected upper respiratory burns, consider early intubation.

SPECIFIC PRECAUTIONS:

- A. Suspect airway burns if any facial burns or if incident occurred in an enclosed space.
- B. Consider carbon monoxide poisoning in all enclosed space incidents. If suspected administer oxygen, high flow by non-rebreather mask.
- C. Deaths in the first 24 hrs. After burn injury are usually due to either airway burns or fluid loss. Fluids are calculated based on the extent of significant burns. No further burn classification is necessary in an acute situation.
- D. Consider AML in firefighters who are burned; child abuse in pediatric burns; suicide attempt should also be considered.
- E. Attempt to leave unbroken blisters intact
- F. **Significant/ Critical burns should be entered into the trauma system.**
- G. Remember associated trauma, (i.e. blast injuries) Consider spinal immobilization as indicated.

FLUID ADMINISTRATION GUIDELINES FOR BURN PATIENT:

Also, refer to following tables and diagrams:

Parkland Formula: 4 cc/kg x percentage significant burn over first 24 hours; with first half administered over first 8 hrs.

Calculation:

$$\frac{(4cc) (Kg) (\% \text{ Burn})}{2} = \text{Total first 8 hrs.}$$

$$\frac{\text{Total 1}^{\text{st}} \text{ 8 hrs.}}{8} = \frac{cc/1^{\text{ST}} \text{ hr}}{6} = \text{drip rate / min. (standard 10gtt set)}$$

PARKLAND/BURKE FORMULA

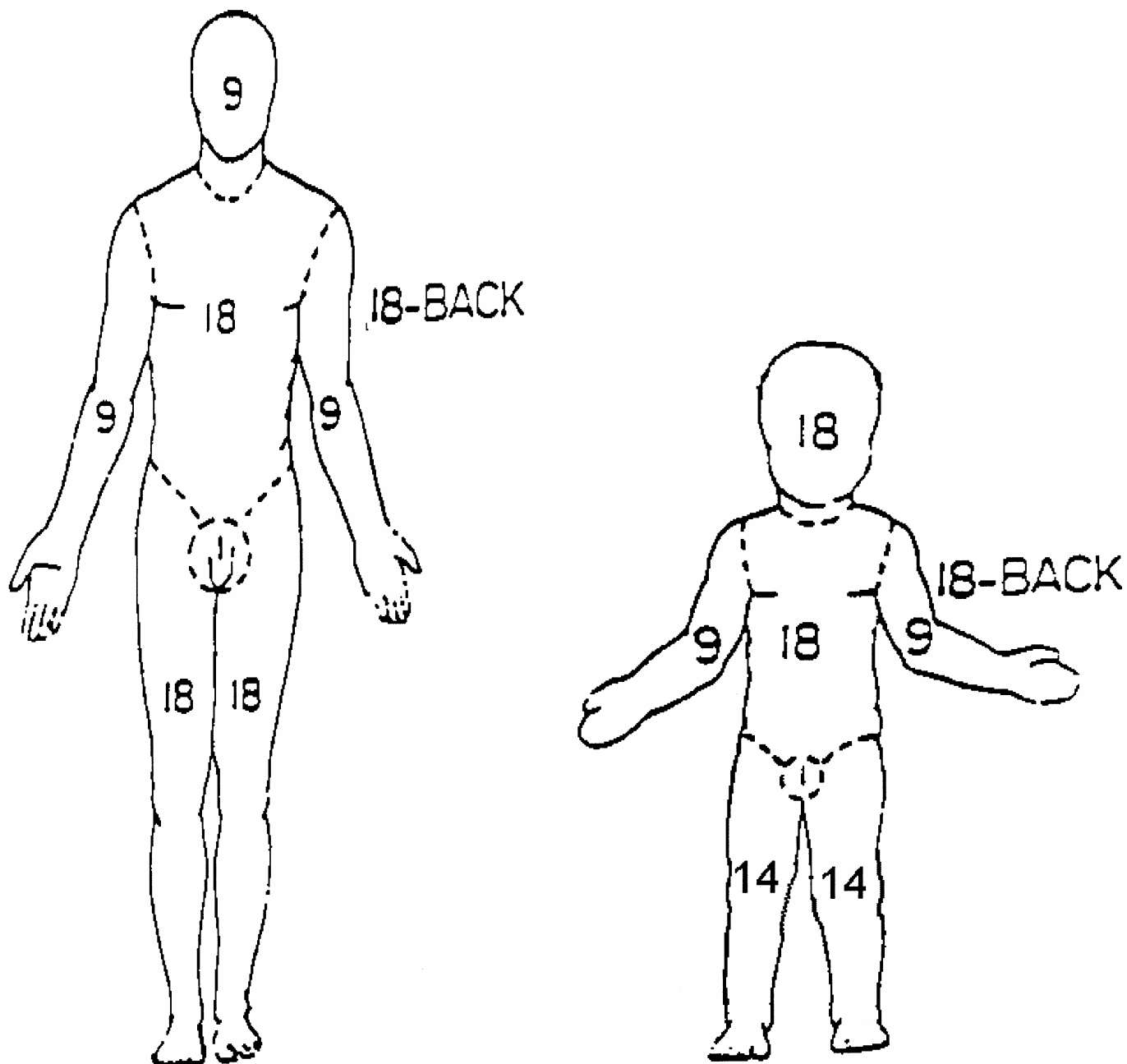
QUICK REFERENCE CHART FOR BURN PATIENT FLUID REPLACEMENT USING BALANCED SALT SOLUTION OR LACTATED RINGERS

- SHOWING CC'S/HR. FOR FIRST 8 HOURS.

% Burn	LBS (KG)	88 (40)	110 (50)	132 (60)	154 (70)	176 (80)	198 (90)	220 (100)	242 (110)
20		200	250	300	350	400	450	500	550
30		300	375	450	525	600	675	750	825
40		400	500	600	700	800	900	1000	1100
50		500	625	750	825	1000	1125	1250	1375
60		600	750	900	1050	1200	1350	1500	1650
70		700	875	1050	1225	1400	1575	1750	1925
80		800	1000	1200	1400	1600	1800	2000	2200
90		900	1125	1350	1575	1800	2025	2250	2475
100		1000	1250	1500	1750	2000	2250	2500	2750

DO NOT DELAY TRANSPORTATION TO START IV'S IN THE FIELD

RULE OF NINES



In the adult, most areas of the body can be divided roughly into portions of 9 percent, or multiples of 9. This division, called the rule of nines, is useful in estimating the percentage of body surface damage an individual has sustained in burn. In the small child, relatively more area is taken up by the head and less by the lower extremities. Accordingly, the rule of nines is modified. In each case, the rule gives a useful approximation of body surface.

TREATMENT: *PROTECT YOURSELF AND OTHERS FIRST*

First Responder:

- Oxygen
- Remove smoldering clothing and restrictive rings, bracelets, belts or straps
- Large burns ($\geq 20\%$ BSA) cover with dry sterile dressing.
- Avoid heat loss
- Small burns ($< 20\%$ BSA) apply cool wet dressings
- Chemical burns flush area with large amounts of water to dilute and remove chemical
- Decontaminate if unknown substance is involved

EMT - B:

- Dual lumen airway device (Combitube) - if agency Approved
- Consider early TSE if critical burns are suspected

EMT - I:

- One or two large bore IVs with crystalloid
- Cardiac monitor
- Morphine - if agency approved

EMT - P:

- Advanced airway management
- Fentanyl

CARDIAC CHEST PAIN

SUBJECTIVE:

Chest or epigastric discomfort lasting minutes to hours – not seconds or days

May radiate to neck, jaw, shoulder, inner arm or elbow

May be associated with diaphoresis, nausea, vomiting, SOB, weakness or lightheadedness

May be brought on by exertion or stress.

May be relieved by rest or nitroglycerine.

May have PMH of bypass surgery, angioplasty, angina, heart attack or myocardial infarction.

Medications commonly include, but not limited to:

Nitrates (Nitroglycerin, Nitro Stat, Isordil, Nitro patches, Imdur), Calcium channel blockers (Norvasc, Nifedipine, Procardia, Adalat, Diltiazem, Dilacor, Cardizem), Beta blockers (Propranolol, Inderal, Metoprolol, Lopressor, Toprolol, Atenolol, Sotalol (Betapace), Coreg) or Statins (Mevacor, Lipitor, Zocor, Pravachol, Lescol, Rosuvastatin, Crestor)

Typical presentation (anterior, lateral or inferior):

Chest pressure, ache, band, heaviness, crush or “elephant on the chest”

Lasting minutes to hours – not seconds or days

May radiate to left arm or jaw

Typical presentation (inferior):

Epigastric distress, pain or “indigestion”

Atypical presentations may include no discomfort.

OBJECTIVE:

Examination may be normal. Patient may appear ashen or sweaty. Patient may be hypotensive, bradycardic or have evidence of pulmonary edema (rales). Cardiac rhythm is monitored to detect the occurrence of ventricular or atrial dysrhythmias.

ASSESSMENT:

Diagnosis of cardiac chest pain or (heart equivalent discomfort) is made based on the patient’s history. Other causes of chest pain include chest wall trauma, esophageal reflux, gastritis, peptic ulcer disease, pneumonia, pericarditis, pleurisy, pancreatitis, costochondritis, gall bladder disease, aortic dissection, aortic aneurysm, pulmonary embolism and anxiety.

SPECIFIC PRECAUTIONS:

- A. Approximately 20% of AMIs are “silent”, that is without pain.
- B. Suspicion of cardiac disease causing chest pain or discomfort is based on the history obtained. Read monitor for rhythm interpretation only; ST segment changes are not reliable.
 1. The probable effectiveness of thrombolytic therapy for reduction of myocardial infarction is enhanced by prompt delivery. Therefore, treatment on scene should be rendered with this in consideration and should be the minimum necessary to allow rapid movement without placing the patient at risk.

TREATMENT:

First Responder:

- Oxygen

EMT - B:

- Aspirin
- May assist patient with self-administration of patient’s own nitroglycerin

EMT - I:

- Cardiac monitor
- IV with crystalloid
- Nitroglycerin
- Morphine – if agency approved (not to exceed 4mg)

EMT - P:

- Fentanyl if intolerant of or allergic to morphine
- 12 lead ECG if available

CARDIAC ARREST

SPECIFIC INFORMATION: DO NOT DELAY MANAGEMENT TO OBTAIN HISTORY

- A. Present History: onset, preceding symptoms.
- B. Past History: diseases, medications.
- C. Evidence of drug ingestion, penetrating or blunt trauma.
- D. Appropriateness of resuscitative efforts:
 - 1. In unexpected or unwitnessed cardiovascular collapse, proceed with protocol unless obvious signs of death are present (rigor, etc.)
 - 2. In all others, begin then request further information of family members.
 - 3. If in doubt, begin resuscitation and contact Medical Control.

SPECIFIC FINDINGS:

- A. Determine presence of arrest.
 - 1. Unresponsive.
 - 2. Absent or agonal respirations.
 - 3. Absent pulses over major arteries.
- B. If cardiopulmonary arrest is secondary to penetrating chest injury or major blunt trauma, and the decision is made to transport (See: Death in the Field Protocol), transport immediately. Apply PASG (MAST) and administer fluids per "Shock Protocol" while enroute. **CLOSED CHEST MASSAGE OR IV ACCESS IS NOT INDICATED UNDER THESE CIRCUMSTANCES IF IT WILL CAUSE A DELAY IN IMMEDIATE TRANSPORT.**

TREATMENT:

- A. Initiate CPR.
- B. Manage airway: After clearing, hyperventilate with a pocket mask and supplemental oxygen or bag-valve-mask with oxygen reservoir at 100% (two persons should be utilized to adequately ventilate a non-intubated patient with a BVM). If airway and/or ventilations are difficult to manage, consider early endotracheal intubation.
- C. Determine cardiac rhythm with "quick look" paddles or monitor electrodes if previously applied. Do not diagnose cardiac arrest solely based on monitor interpretation; check for a pulse.
- D. Intubate, if not already done; ventilate with high flow oxygen (12-15 L/min.).
- E. Initiate IV access; Normal Saline; large bore.
- F. Treat per arrhythmia algorithms. (See Cardiac Arrhythmias)
- G. Immediate post resuscitation treatment.
 - 1. Critical decisions need to be made during the early post resuscitation period. The airway must be supported continuously, and adequate perfusion must be maintained. Supplemental oxygen at concentration of 100% is essential until direct measurement of arterial oxygen (PaO₂) indicates otherwise. The patient may require intubation if not done previously. Steps to prevent aspiration (positioning) in the non-intubated patient are essential. Arterial blood gases should be used to guide proper ventilatory support once the patient is in a hospital environment.
 - 2. When resuscitative efforts are prolonged, hypotension is common following return of spontaneous circulation. Waiting a few minutes to allow blood pressure to rise is frequently the most prudent course of action. Systolic pressure should be maintained as near 90 mmHg as possible without exacerbating ischemia or inducing arrhythmias in order to ensure adequate cerebral perfusion.
 - 3. If lidocaine appeared to be effective during resuscitation, it should be continued. If this drug was administered as a bolus during the arrest, additional bolus doses may be needed to maintain adequate blood levels until a steady-state concentration can be achieved by continuous IV infusion. Generally, this agent is continued for at least 24 hours.

4. Underlying abnormalities that may have led to the arrest should be actively sought and corrected. Common abnormalities that may require correction after the arrest include electrolyte imbalances (especially hypokalemia), hypoxemia, and acidosis. Arterial acidosis may paradoxically worsen in the period immediately after restoration of perfusion due to “wash out” of carbon dioxide and lactate from re-perfused vascular beds. If adequate circulation is reestablished and ventilation is supported, the acidosis will frequently be self-limiting.
5. Additional information concerning the patient may be available which may indicate that interventions other than those included in this sequence are appropriate. Such interventions are not precluded.

SPECIFIC PRECAUTIONS:

- A. If the arrest appears to require in hospital intervention (e.g. surgery or pericardiocentesis) to correcting the underlying cause, transport immediately.
- B. If IV access is not proceeding effectively, transport without further delay with continued attempts enroute.
- C. Generally, it is reasonable to continue resuscitation efforts on the scene until the IV line has been established and first line drugs have been administered several times without change; intubation before departure from the scene is also preferable. This is reasonable since more space and personnel are usually available on the scene than in the ambulance.
- D. If the patient develops a pulse, a reasonable attempt to stabilize the rhythm and blood pressure should be made before preparing for transport.
- E. If transport time will be greater than 20 min. AND the patient hasn't responded to ALS interventions, consider calling for an order to discontinue resuscitation (taking relatives' needs into consideration.)
- F. All patients should have an airway established with appropriate treatment rendered that hasn't improved patients condition, prior to considering termination of efforts.

PEDIATRIC CARDIAC ARREST:

(What follows is how children are different and how we must adjust our therapy.)

- A. Airway obstruction is the most common cause of pediatric arrest. Initial symptoms are noisy breathing, retractions between the ribs, choking, hoarseness, drooling, and inability to speak. Grunting on expiration is often heard in sick children and does not necessarily indicate obstruction. If the child is breathing and awake, let him sit on his parent's lap and apply oxygen, trying not to make him cry, and rapidly transport.
 1. With aspiration of a foreign body, place the infant head down and prone on your thigh and alternate 5 back blows between the shoulder blades with 5 chest compressions or “chest thrusts”. This is a quick thrust and release rather than 50% compression and 50% relaxation as we do in CPR. We do not use abdominal thrusts in children less than 1 year old because of more likely liver injury. Chest thrusts generate higher intrathoracic pressure than abdominal thrusts. Over 1 year old, back blows are not recommended.
 2. Then, attempt ventilation. If still totally obstructed, visualize the airway with a laryngoscope and remove the foreign body with a Magill forceps or suction. If the foreign body is below the vocal cords and is not removed with repeated back blows and chest thrusts, you should try to push the foreign body into the right main stem bronchus with the ET tube or do a needle cricothyrotomy with a Melker cricothyrotomy device.
- B. You should ventilate with a bag valve mask prior to intubation because:
 1. There is less bradycardia associated with intubation if the child has been preoxygenated.
 2. Even children with obstruction from epiglottitis can be ventilated well with a BVM device.
 3. The intubator has time to arrange his equipment and get three ET tubes lined up so he can use the size that exactly fits between the cords since we do not use a cuff on tubes smaller than 6 mm or generally for children

Less than 8 years old:

- a. Pick a tube that is equal in size to the middle portion of the child's little finger or one that just fits inside the nares. Then pick one above and below that size to have ready. Have a stylet and suction ready and then intubate. (A premature newborn may require 2.5 or 3.0 mm tube. A normal newborn will usually take a 3.5 mm tube).
- b. Firm cricoid pressure (Sellick Maneuver) prior to intubation can prevent vomiting by compressing the esophagus (the cricoid cartilage is the only tracheal ring which is complete posteriorly) and can make intubation easier by moving the cords more posteriorly.
- c. Generally, because the child has a larger occiput, you do not need to hyperextend the neck much. With a possible C-spine injury, straight traction on the head with the neck in the neutral position should be done by an assistant during intubation. Using these precautions, intubation and proper airway management always takes priority over a C-spine injury. If they need intubation, do it.
- d. Watch the child's chest and ventilate until it just expands. The chest must rise and fall. (For information: proper tidal volume should be approximately 12-15 cc/kg)

C. Circulation and med routes:

1. Peripheral IV access should be attempted x 1 before intraosseous access is attempted. In addition to the AC site, the greater saphenous vein may be readily accessible due to its large size; either may be rapidly cannulized.
2. Endotracheal intubation will usually provide a med administration route more quickly than IO cannulation. If peripheral IV cannulation is unsuccessful, the ET tube should be considered as the first line route for meds.
3. Accurate determination of a child's weight is necessary because fluids and meds are administered as calculated per kg. When possible, ask a parent what the patient weighs.
4. Proper fluid administration is critical; this is much more important in children than adults. Not giving enough fluid is a common error due to concern for preventing overload. If shock is suspected, administer 20 cc/kg NS (10 cc/kg in neonates).

D. The causes of pediatric arrest are most often related to respiratory, followed by trauma, overwhelming infection (sepsis, meningitis) and poisoning. Primary cardiac causes of arrest are very rare. Initial treatment should focus on airway and breathing (adequate volume and rate). Children almost always die in bradycardia.

E. Consider high dose Epinephrine 0.1mg/kg to 0.2 mg/kg for cardiac arrest

CARDIAC DYSRHYTHMIAS

SUBJECTIVE:

Syncope, loss of consciousness, palpitations, chest pain, dizziness. History of heart disease, current medications.

OBJECTIVE:

Vital signs, level of consciousness, pulmonary rates, peripheral perfusion.

ASSESSMENT:

Treatment protocol is based on the patient's condition and specific rhythm.

TREATMENT:

First Responder:

- Oxygen
- CPR - About 100-chest compressions/minute
30 compressions/2 breaths 5 cycles = about 2 Minutes minimize interruptions of CPR
- Pulse check after 5 cycles CPR
- Automatic External Defibrillation (AED) (before CPR if witnessed arrest)

EMT - B:

- Dual lumen airway device (Combitube) – if agency approved
- After an advanced airway give 1 breath every 5 seconds (\approx 12 breaths/minute)

EMT – I, P:

- Cardiac monitor
- IV with crystalloid
- ACLS protocols
 - Ventricular fibrillation/ Pulseless Ventricular tachycardia (VF/VT)*
 - Asystole or Pulseless Electrical Activity (PEA)*
 - Bradycardia -Symptomatic*
 - Tachycardia - Narrow complex*
 - Tachycardia - Wide complex*

VENTRICULAR FIBRILLATION/ PULSELESS VENTRICULAR TACHYCARDIA (VF/VT)

SUBJECTIVE:

Syncope & loss of consciousness.

OBJECTIVE:

Unconsciousness, unresponsive, pulseless & apneic. AED shows "shockable rhythm". Cardiac monitor shows ventricular fibrillation or ventricular tachycardia.

ASSESSMENT:

Ventricular fibrillation or pulseless ventricular tachycardia (VF/VT).

TREATMENT:

First Responder:

- Automatic External Defibrillation (AED)
- CPR

EMT - B:

- Dual lumen airway device (Combitube) – if agency approved

EMT - I:

- Initial defibrillation with single shock at manufacturer recommended energy (Medtronic Physio Control LIFEPAK 12 at 200 j) (Initial pediatric shock at 2 J/kg)
- IV with crystalloid
- Epinephrine 1 mg IV or IO – repeat every 3-5 minutes
- Subsequent defibrillation with single shock at manufacturer recommended energy (Medtronic Physio Control LIFEPAK 12 at 300j for second shock and 360j for 3rd and subsequent shock) (Subsequent pediatric shocks at 4 J/kg)
- Lidocaine 1.5 mg/kg. IV or IO push. May repeat 0.75 mg/kg every 5-10 minute. Max dose = 3 mg/kg.
- Consider Vasopressin in place of Epinephrine. 40 units IVP.

EMT - P:

- Endotracheal intubation
- Sodium bicarbonate (1 meq/kg IV or IO) if overdose with tricyclic antidepressants
- Magnesium sulfate (1 - 2 grams in 10 ml saline IV or IO push) if torsades de pointes

ASYSTOLE OR PULSELESS ELECTRICAL ACTIVITY (PEA)

SUBJECTIVE:

Syncope & loss of consciousness.

OBJECTIVE:

Unconsciousness, unresponsive, pulseless & apneic.

AED shows "non-shockable rhythm".

Cardiac monitor shows asystole in 2 leads or pulseless electrical activity (PEA).

ASSESSMENT:

Asystole or Pulseless Electrical Activity (PEA)

TREATMENT:

First Responder:

- CPR
- AED

EMT - B:

- Dual lumen airway device (Combitube) – if agency approved

EMT - I:

- IV with crystalloid
- Epinephrine 1 mg IV or IO – repeat every 3-5 minutes
- Consider Vasopressin in place of Epinephrine 40units IVP
- Atropine 1 mg IV or IO – for asystole or slow PEA - repeat twice at 3-5 minutes intervals
- Treatable causes:
 - Hypoxia
 - Hypoglycemia
 - Hypovolemia
 - Hypothermia
 - Preexisting acidosis
 - Drug overdose
 - Hyper-/hypokalemia
- Terminate resuscitation efforts after online medical control consultation
- Consider Vasopressin in place of Epinephrine. 40units IVP may change to epinephrine regimen 1mg q 3-5 minutes.

EMT - P:

- Endotracheal intubation
- Consider transcutaneous pacing
- Sodium bicarbonate (1 meq/kg IV or IO) if overdose with tricyclic antidepressants
- Treatable causes:
 - Chest decompression for tension pneumothorax

BRADYCARDIA - SYMPTOMATIC

SUBJECTIVE:

Decreased level of consciousness.
Cardiac chest pain.
Dyspnea (shortness of breath)

OBJECTIVE:

- Bradycardia (pulse < 60)
- Hypotension
- Diaphoresis
- Syncope

SPECIFIC PHYSICAL FINDINGS:

- A. Pulse rate of less than 60 bpm and signs of cardiac hypoperfusion.
- B. Some of the signs of cardiac hypoperfusion include:
 1. Hypotension.
 2. CHF.
 3. Decreased level of consciousness.
 4. SOB.
 5. Chest pain.

ASSESSMENT:

Symptomatic bradycardia

SPECIFIC INFORMATION NEEDED:

- A. Treat the patient not the monitor.
- B. Beware of "relative" bradycardia.
- C. Look for the cause or causes.

TREATMENT:

First Responder:

- Oxygen

EMT - B:

- CPR

EMT - I:

- Cardiac monitoring
- IV with crystalloid
- Atropine 0.5 mg IV or IO – may repeat 5 times at 3-5 minute intervals – total dose 3 mg

EMT - P:

- Transcutaneous pacing
- Dopamine (5 - 20 mcg/kg/min) IV or IO
- Epinephrine infusion – online medical control only

Transcutaneous pacing. When possible, sedation post initiation of TCP can be administered as follows:

1. Versed 2-5 mg IV; MCH order required to exceed 5mg total dose; OR
2. Valium 5-10 mg IV; MCH order required to exceed 10 mg total dose.

PRECAUTIONS:

- A. May exacerbate ischemia.
- B. May induce V-Tach, V-Fib, or both when treating bradycardias associated with AMI.
- C. Atropine may be harmful in third degree blocks and Mobitz type II.
- D. Denervated or transplanted hearts will not respond to Atropine. Go directly to pacing.

TACHYCARDIA - NARROW COMPLEX

SUBJECTIVE:

Palpitations or rapid heart rate
Decreased level of consciousness.
Cardiac chest pain.
Dyspnea (shortness of breath)

OBJECTIVE:

- Tachycardia with a narrow complex
- Hypotension
- Diaphoresis
- Syncope

ASSESSMENT:

Narrow complex tachycardia

TREATMENT:

First Responder:

- Oxygen

EMT - B:

- Position of comfort

EMT - I:

- Cardiac monitoring
- Vagal maneuvers, if patient stable
- IV with crystalloid

EMT - P:

- Adenosine
- Diltiazem
- Synchronized cardioversion

UNSTABLE TACHYCARDIA

Unstable condition must be related to the tachycardia. Signs and symptoms may include chest pain, shortness of breath, decreased level of consciousness, hypotension, shock, pulmonary edema, and AMI.

IF VENTRICULAR RATE > 150 BPM

Prepare for immediate cardio version.

Consider a brief trial of medications based on the dysrhythmia.

Immediate cardio version is seldom needed for heart rates <150 bpm.

STABLE

A-FIB / A-FLUTTER:

Consider Cardizem 0.25mg/kg over 2 min, May repeat after 15 minutes

PSVT:

Vagal maneuvers.

Adenosine 6 mg rapid IV push. If unsuccessful

Adenosine 12 mg rapid IV push. (May repeat once in 1-2 min.)

NARROW COMPLEX:

Cardizem (a) 0.25 mg/kg IV slowly over 2min. (repeat at 15min.)

Synchronized cardioversion

(a) 10 ml of Calcium Chloride 10% should be given for observed side effects of Cardizem.

TACHYCARDIA - WIDE COMPLEX

SUBJECTIVE:

Palpitations or rapid heart rate
Decreased level of consciousness.
Cardiac chest pain.
Dyspnea (shortness of breath)

OBJECTIVE:

- Tachycardia with a wide complex
- Hypotension
- Diaphoresis
- Syncope

ASSESSMENT:

Wide complex tachycardia

TREATMENT:

First Responder:

- Oxygen

EMT - B:

- Position of comfort

EMT - I:

- Cardiac monitoring
- IV with crystalloid
- Lidocaine – **online medical control only**

EMT - P:

- Synchronized cardioversion if unstable Consider premedicating with versed
- Magnesium

WIDE COMPLEX:

Lidocaine 1-1.5 mg/kg IV over 2 min.

Synchronized cardioversion.

WIDE COMPLEX TACHYCARDIA OF UNCERTAIN TYPE:

Lidocaine 1-1.5 mg/kg over 2 min. If unresolved. Then

Lidocaine 0.5-0.75 mg/kg over 2 min. If unresolved

Adenosine 6 mg rapid IV push. If unresolved

Adenosine 12 mg rapid IV push. (may repeat in 1-2 min. once)

Synchronized cardioversion.

VENTRICULAR TACHYCARDIA

Lidocaine 1-1.5 mg/kg over 2 min.

Lidocaine 0.5-0.75 mg/kg. (May repeat x 1 to a max of 3 mg/kg)

Consider trial of Magnesium 1-2 grams (diluted to a minimum of 10 ml of saline or D5W) IV over 1-2 minutes.

Synchronized cardioversion.

** Double the dose of drugs when given down the ET tube.

SYNCHRONIZED CARディオVERSION

SUBJECTIVE:

Decreased level of consciousness.
Chest pain, Shortness of breath

OBJECTIVE:

Serious signs or symptoms, including:

- Tachycardia with ventricular rate > 150
- Altered level of consciousness
- Hypotension
- Respiratory distress
- Tachycardia (narrow or wide complex)

ASSESSMENT:

Tachycardia with serious signs or symptoms

TREATMENT:

First Responder:

- Oxygen

EMT - B:

- Dual lumen airway device (Combitube) – if agency approved

EMT - I:

- IV with crystalloid

EMT - P:

- Sedation with midazolam or diazepam
- Analgesia with morphine or fentanyl
- Synchronized cardioversion 100, 200, 300, 360 joules or the equivalent biphasic PSVT or atrial flutter may respond to 50 joules
- Unsynchronized cardioversion if the defibrillator fails to deliver a shock

CARDIOGENIC SHOCK

TREATMENT:

EMT-I:

- Correct hypoxia: Administer high flow oxygen via NRB mask. If pulmonary edema present, assist ventilation aggressively and treat per “Respiratory Distress Protocol” (CHF section).
- Monitor EKG.
- Obtain vitals; assess breath sounds.
- Consider and treat other correctable causes of shock.
- IV: Large bore; TKO (consider 300-500 cc fluid challenge if hypovolemia due to dehydration, vomiting or diarrhea is a possible contributing factor).
- If heart rate is less than 60 bpm:
 - Atropine: 0.5 mg / IV; may repeat every 5 min., if indicated, to a total dose of 3 mg.

EMT-P:

- External (transcutaneous) pacing.
- Dopamine 2-20mcg/kg/min. See administration chart below.
- Consider PASG (MAST) if BP unobtainable by palpation or auscultation.
 - CONTRAINDICATED IF PULMONARY EDEMA PRESENT.
 - Do not inflate abdominal section.
 - Slowly inflate both legs only while continuously assessing effects.
 - Deflate if untoward effects (e.g. pulmonary edema, increased chest pain, decreased BP) develop.
- Transport as soon as feasible; cardiogenic shock secondary to AMI is associated with > 80% mortality. Definitive treatment requires invasive hemodynamic monitoring.
- Patients experiencing a first time A-fib event may present with chest pain and profound shock out of proportion to ventricular response rate due to loss of atrial ejection (kick), particularly if exacerbated by underlying mitral valve disease. These patients may benefit from prompt cardioversion.

DOPAMINE ADMINISTRATION CHART

ug/kg/min	Weight											
	In				Kg							
	30	40	50	60	70	80	90	100	110	120	130	140
2ug	2	3	4	5	5	6	7	8	8	9	10	11
5ug	6	8	9	11	13	15	17	19	21	23	24	26
10ug	11	15	19	23	26	30	34	38	41	45	49	53
15ug	17	23	28	34	39	45	51	56	62	68	73	79
20ug	23	30	38	45	53	60	68	75	83	90	98	105

Microdrops per minute (or ml/hr)

*** 80 mg of Dopamine in a 50 ml bag of D5W to equal a concentration of 1600ug/ml ***

CEREBRAL VASCULAR ACCIDENT (CVA OR STROKE)

SUBJECTIVE:

May be taking medication for hypertension or a host of medications for other medical conditions.

OBJECTIVE:

Pupils may be unequal and reactivity to light may vary. Patient assessment should include the evaluation of speech, language, motor responses and sensations. Limbs should be evaluated for equal strength and motion. Nuchal rigidity can be checked, but this is a late sign. Monitor blood pressure, pulse, respirations, cardiac rhythm and blood sugar.

ASSESSMENT:

Diagnosis of a stroke (CVA) is made based on the patient's history and physical exam. Other causes of an altered mental status can be trauma, hypoglycemia, seizure disorder, psychiatric disorder and drug ingestion.

Neurological Conditions:

Any patient that is, in the opinion of the EMT, suffering from a suspected CVA, and or any other type of intracranial condition, will be transported as follows:

A. Stable patients:

1. With a time of onset that is less than **2** hours, Patient did not have a **seizure** with onset of symptoms, has had no **major surgeries** in the past two weeks, CBG is between **50-400mg/dl**, Systolic B/P is not higher than **185** or Diastolic is not higher than **110**, not currently taking any **anticoagulants** and no history of **recent GI hemorrhage** will be transported code **3** to Bay Area Hospital. If you are unsure or unable to obtain a detailed history, you should contact BAH and ask for direction prior to transport.
2. Bay Area Hospital will be notified as soon as possible to prepare their CT scan and have neurology standing by.

- B. **Unstable patients, patients who don't meet the criteria as above, and all patients with unknown time of onset** will be transported to the closest facility at an appropriate response code justified by the patient's condition.

TREATMENT:

First Responder:

- Oxygen

EMT - B:

- Check blood sugar
- Oral glucose if airway is protected
- Dual lumen airway device (Combitube) - if agency approved

EMT - I:

- Cardiac monitor
- IV with crystalloid or saline lock
- IV dextrose

EMT - P:

- Advanced airway management

CHEST TRAUMA

SUBJECTIVE:

History and mechanism of injury: blunt or penetrating. Onset of symptoms from time of event. Chest pain, difficulty breathing, coughing up blood. History of chest surgery. Last oral intake.

- **Blunt:** speed of motor vehicle crash; steering wheel damage; passenger restraints; type of weapon if used; type of fall or blast.
- **Penetrating:** mechanism; type of weapon; distance from firing; caliber.

OBJECTIVE:

Patient may appear cyanotic, pale, with cool and clammy skin. Respiratory distress. Paradoxical chest movement, subcutaneous air, decreased or absent breath sounds, obvious open or closed chest injuries. Distended neck veins, tracheal shift or hemoptysis. Tachycardia, narrow pulse pressures or hypotension.

ASSESSMENT:

Diagnosis of chest trauma will be based on patient history, mechanism of injury and physical findings. Do not overlook other potential injuries; head, spine, abdomen or extremities.

TREATMENT:

First Responder:

- High flow oxygen
- Cover open chest wounds with occlusive dressing
- Spinal immobilization

EMT - B:

- Dual lumen airway device (Combitube) - if agency approved

EMT - I:

- One or two large bore IVs with crystalloid
- Cardiac monitor

EMT - P:

- Advanced airway management
- Chest decompression

CHILDBIRTH - CARE OF THE NEWBORN

SUBJECTIVE:

Presentation at birth, time of delivery, precipitous or home delivery, complications with pregnancy, due date, multiple births, past medical history, medications, drug or alcohol usage.

SPECIFIC INFORMATION NEEDED:

- A. History of Pregnancy: due date, bleeding (recent, within 1 week), swelling of face or extremities, prior problems with pregnancy; known multiple pregnancy?
- B. Current Problems: if pain, where? Regular? Timing? Ruptured membranes? Urge to push?
- C. Medical History: medications, medical problems, patient's age, number of prior pregnancies.

OBJECTIVE:

Respiratory rate and effort, grunting, use of accessory muscles, meconium, skin color, heart rate, muscle tone, multiple births.

ASSESSMENT:

Most newborns will quickly respond to stimulation through gently drying and placement upon mother's chest or abdomen and encouragement to nurse.

TREATMENT: (APPLIES TO ALL)

First Responder, EMT – B, EMT – I, EMT - P :

Remove wet blankets or towels and dry infant. Cover infant, including head, with dry blanket or towel to maintain body temperature. Suction mouth, then nose with bulb syringe for copious secretions. Blow-by oxygen for respiratory difficulty or cyanosis. Assess one and five minute APGAR.

APGAR SCORING SYSTEM FOR NEWBORNS:

Sign	0	1	2	1 min	5 min
Appearance (Skin Color)	Blue, Pale	Body pink Extremities blue	Completely Pink		
Pulse Rate (Heart Rate)	Absent	Below 100	Above 100		
Grimace (Irritability)	No Response	Grimaces	Cries		
Activity (Muscle Tone)	Limp	Some flexion of extremities	Active motion		
Respiratory (Effort)	Absent	Slow and irregular	Strong cry		
			Total Score =		

CHILDBIRTH - UNCOMPLICATED

SUBJECTIVE:

Gravida, parity, due date, recent vaginal bleeding, problems with this or prior pregnancies, known multiple births, drug or ETOH abuse, past medical history. Contractions - onset, frequency, ruptured membranes, urge to push, pain location, type. Ask mother what her BP has been.

OBJECTIVE:

Vital signs, fetal heart tones (LLQ, RLQ, over bladder), frequency of contractions. Respecting privacy, inspect perineum for crowning or bulging, vaginal fluid, bleeding, meconium, abnormal presentation.

ASSESSMENT:

Childbirth is a natural event and usually is uncomplicated. If you suspect a complicated delivery, refer to the appropriate protocol and request additional resources. If you suspect an uncomplicated delivery and imminent birth is not present, transport mother on left side. If impending birth, follow below protocol.

TREATMENT:

First Responder, EMT-B:

- Oxygen
- Position of comfort
- OB pack
- Assist with delivery of head applying gentle pressure and continue to support head
- Feel around neck for nuchal cord, if present gently slip around head
- Suction mouth, then nose with bulb syringe
- Supporting head, assist delivery of anterior shoulder and then the rest of the body
- Keep baby level with placenta until the cord is clamped
- Clamp cord using 2 clamps spaced 6-8 inches from baby's body and cut cord between clamps
- Inspect perineum for tears. Apply direct pressure with gauze pad to any bleeding. Do not pack inside of vagina
- Let placenta deliver normally and take to hospital
- After placenta delivers, massage uterus by rubbing abdomen firmly

EMT – I, P:

- IV with crystalloid
- Cardiac monitor

CHILDBIRTH - POST PARTUM HEMORRHAGE

SUBJECTIVE:

Gravida, parity, delivery time and date, quantity of vaginal bleeding, prior problems with pregnancy, drug or ethanol use, past medical history, medications.

OBJECTIVE:

Hypotension, tachycardia, estimated blood loss at scene, active bleeding, tears in perineum, delivery of intact placenta.

ASSESSMENT:

Immediate (first 24 hours) post partum hemorrhage is usually due to poor uterine muscle tone, cervical, or perineal tears. Late post partum hemorrhage (7-10 days) is usually from presence of retained placental parts. If immediately post partum, the first priority is delivery of the placenta.

TREATMENT:

First Responder, EMT - B:

- High flow oxygen
- External uterine massage
- Allow infant to nurse to stimulate uterine contractions or have patient stimulate her own nipples
- Apply direct pressure to active external perineal bleeding

EMT – I, EMT - P:

- One or two large bore IVs with crystalloid
- Cardiac monitor

CHILDBIRTH - BREECH DELIVERY

SUBJECTIVE:

Known breech position, gravida, parity, history of breech delivery, due date, complications during pregnancy, drug or alcohol use, past medical history.

OBJECTIVE:

Presenting part, frequency of contractions, meconium.

ASSESSMENT:

Transport without delay to the closest hospital; be prepared to assist in delivery.

TREATMENT:

First Responder, EMT – B:

- Place mother on high flow oxygen
- Place mother supine or in Trendelenburg position
- If birth is imminent, allow mom to push, do not pull baby
- Support delivered baby and extremities on your hand and arm
- If head does not deliver place a gloved hand into the vagina and form a V around the baby's head and mouth to create an air passage. Maintain this position until birth
- Consider Mauriceau maneuver to help deliver head

EMT-I, EMT-P:

- IV with crystalloid
- Cardiac monitor

CHILDBIRTH - PRE-ECLAMPSIA/ECLAMPSIA

SUBJECTIVE:

Headache, decreased urinary output, weight gain, increased edema, visual disturbances, abdominal pain, currently may be on bed rest, seizures, hypertension.

SPECIFIC INFORMATION NEEDED:

- A. Status of Pregnancy: Gestation, prenatal care, single or multiple fetus, due date, recent hospitalization.
- B. Past Medical History: Hypertension, problems with prior pregnancies, number of prior pregnancies, seizure disorder, and medications.
- C. Differential indicators:
 1. Pregnancy.
 - a. Usually after 24th week.
 - b. May occur postpartum, usually within 4 days.
 2. History of pre-eclampsia.
 3. Excessive weight gain / edema; noticeable puffiness of face and hands.

OBJECTIVE:

Hypertension, pulmonary edema, cyanosis, hyperreflexia, seizures, coma, usually past 24 weeks gestation.

SPECIFIC PHYSICAL FINDINGS

- A. Hypertension
 1. BP - 150/110 or an increase of 30 mmHg systolic during pregnancy.
 2. Hypertension verified and unrelieved 2-5 minutes post placement of patient in left lateral recumbent position.
- B. Associated signs and symptoms.
 1. Weakness
 2. Nausea and/or vomiting.
 3. Edema.
 4. Altered Mental Status or Coma.
 5. Seizure.

ASSESSMENT:

Pre-eclampsia is a pregnancy related condition involving hypertension, proteinuria and edema. When seizures occur it is eclampsia. Pre-eclampsia and eclampsia used to be called toxemia. Suspect eclampsia in third trimester pregnant patients who are seizing. These patients will need magnesium sulfate to help reverse the eclampsia and diazepam (Valium) to control seizures.

TREATMENT: *The definitive treatment for Pre-eclampsia/ Eclampsia is Delivery* First Responder, EMT-B:

- High flow oxygen
- Lay mother on left side
- Keep environmental stimulation at a minimum

EMT-I:

- IV with crystalloid
- Cardiac monitor

EMT-P:

- Advanced airway management
- Magnesium Sulfate
- Valium/Versed

Magnesium Sulfate:

- A. 2gm / IV; slowly over 10 min. (4 ml of 50% solution mixed into 50 ml bag of D5W)
- B. **MCH consults:** (without seizures)
 - 1. For unresolved hypertension after initial magnesium therapy.
 - 2. Prior to IM administration of magnesium if unable to establish IV access.

Eclamptic Seizures:

No MCH consult is required to continue therapy below.

- 1. If B/P >130/90 and seizure not resolved, repeat 2 gm magnesium sulfate IV as indicated above.
 - 2. If B/P < 130/90 and seizure not resolved, titrate 5 mg Valium.
 - 3. If unable to establish IV access, administer magnesium sulfate 2 grams (undiluted) in each buttock.
- C. If seizure not resolved after 4 gm magnesium sulfate, administer 5 mg Valium slow IV or deep IM. May repeat valium dose if seizure reoccurs or continues more than 3 minutes after initial dose.
 - D. Transport immediately, accomplishing as much treatment enroute as possible.
 - E. Administer 10 ml of Calcium Chloride 10% for Magnesium Sulfate overdose.
 - F. Versed may be used in place of valium. The dose should not exceed 5mg IV.

Precautions:

- A. Magnesium sulfate may cause respiratory depression; be prepared to assist ventilation.
- B. BP < 130/90 in eclamptic patient may reduce uterine blood flow sufficiently to cause devastating fetal distress.
- C. Unresolved eclampsia may be fatal to the patient. Transport promptly; induced delivery of fetus may be necessary.
- D. Monitor deep tendon reflexes. (DTR)

COMA

SUBJECTIVE:

Headache, seizures, confusion, trauma. Prior medical or psychiatric problems, such as diabetes, epilepsy, CVA.

SPECIFIC INFORMATION NEEDED:

- A. Present history: Onset and progression of present condition; prior symptoms such as headaches, confusion, seizures, etc.; recent trauma.
- B. Past history: Previous medical or psychiatric illnesses.
- C. Environmental indicators: Note odor, temperature, bizarre arrangements. Be observant for med bottles (bring with), syringes, drug paraphernalia, notes. Check refrigerator for "Vial of Life" if personnel available.

OBJECTIVE:

Patient will be unconscious and unresponsive. Vital signs may be normal. Check for signs of trauma, injury, ingestion or injection. Check for medical alert tag. Evidence at scene, pill bottles, syringes or odor within the house. If multiple patients, consider poisoning.

SPECIFIC PHYSICAL FINDINGS:

- A. Level of consciousness and neurological status. Describe deficits and Glasgow Coma Score.
- B. Signs of trauma.
- C. Vital signs.
- D. Medical alert tags.
- E. Abnormal body temperature.
- F. Blood glucose level.
- G. Odor on breath.
- H. Needle tracks.

ASSESSMENT:

Diagnosis of coma will be made by the patient's level of consciousness. There may be no obvious cause, injury or reason for the patient's condition.

TREATMENT:

First Responder:

- High flow oxygen

EMT - B:

- Check blood sugar
- Dual lumen airway device (Combitube) – if agency approved
- EMT - I:
- One or two large bore IVs with crystalloid
- IV dextrose
- Cardiac monitor
- Naloxone

EMT - P:

- Advanced airway management
- Ensure medical personnel safety.
- If trauma or CVA is strongly suspected as a cause, transport STAT and continue treatment enroute; do not administer D50 prior to Chem. BG.
- Be particularly attentive to airway and respiration. Difficulty with secretions, vomiting or inadequate tidal volume or rate may occur.
- If unable to establish an IV line with 2 attempts in < 10 min., administer meds IM and transport without further delay.
- Hypoglycemia may present as focal neurologic deficits (stroke-like signs) or as coma. Decreased LOC may be prolonged with gradual recovery in elderly or profound cases. Monitor BG level as treatment continues.
- Be observant for rebound deterioration; repeated administration of meds may be needed.
- *THIS PROTOCOL IS INTENDED AS AN ALGORITHM WHEN A STRONG HISTORY IS NOT OBTAINABLE FROM PERSONS AT THE SCENE AND ETIOLOGY IS NOT OBVIOUSLY DEDUCIBLE FROM EVIDENCE.*

DIABETIC EMERGENCIES

SUBJECTIVE:

Altered level of consciousness, rapid or slow onset, confusion, weakness, dizziness, abdominal pain, vomiting, frequent urination, presence or absence of hunger and thirst, or recent weight loss. History of diabetes, recent illness, last meal, last insulin administration, oral hypoglycemic medication: glyburide (Diabeta, Micronase), glipizide (Glucotrol), tolbutamide (Orinase), metformin (Glucophage), chlorpropamide (Diabinese).

OBJECTIVE:

Level of consciousness: confusion, disoriented, combative, comatose, or unresponsive.

Skin: pale, moist or warm, dry and pink, or signs of dehydration.

Breathing: normal, rapid and deep (Kussmaul), or fruity odor (Ketones).

Pulse: normal or elevated.

Blood pressure: hypotensive or normal. Chemstrip less than 80 mg/dl or more than 300 mg/dl.

Medical alert tag.

ASSESSMENT:

Diabetic emergencies are usually due to a blood sugar that is too high (hyperglycemia or ketoacidosis) or too low (hypoglycemia or insulin shock or reaction).

Patients with hyperglycemia (blood sugar more than 300-400, often have 600-800) often have been sick for several days with vomiting and may have rapid, deep breathing (Kussmaul respirations), warm, dry, pink skin and are usually dehydrated. Initial treatment is with crystalloid, not insulin.

Patients with hypoglycemia (blood sugar less than 80 and symptomatic) have usually been sick for a short period, minutes to hours. They are often confused or unconscious and their skin is usually cool and clammy. The immediate treatment is with glucose, which should provide a significant improvement within minutes.

TREATMENT:

First Responder:

- Oxygen
- Oral glucose if no airway risk and suspected hypoglycemia

EMT - B:

- Check blood sugar

EMT – I, P:

- IV with crystalloid
- IV dextrose
- Glucagon, if unable to establish an IV.
- Cardiac monitor

D50: 25-50 ml / IV; may repeat if BG low and patient does not respond to first bolus.

If unable to establish IV:

Glucagon: 1 unit / IM; may repeat while enroute once at a 15 minute interval if BG remains confirmed low and patient does not improve adequately for administration of oral glucose.

Consider Thiamine: 100 mg / IV or IM.

Repeat Chem. BG from finger or toe stick after 10-15 minutes and whenever neurodeficits increase.

SPECIFIC PRECAUTIONS:

- A. This protocol is intended for use when the patient is a known diabetic and the history is suggestive of a diabetic emergency or when the available history is inadequate to indicate another etiology; i.e. cardiac, GI hemorrhage, etc.
- B. Administration of D50 may be detrimental to a patient with cerebral hemorrhage. Loss of consciousness due to CVA is often sudden and may be preceded by headache or focal neurodeficits.
- C. If the history is strongly suggestive of possible recent head trauma or CVA, do not administer dextrose unless Chem. BG confirms hypoglycemia (< 60 mg/dl). Consider Glucagon.
- D. Diabetics who respond after administration of glucose often refuse transport. After orientation to person, place and time is confirmed, the patient must be advised of the potential for rebound deterioration. A witnessed refusal form must be signed by the patient.

DO NOT RESUSCITATE

SUBJECTIVE:

The patient's wishes in terms of heroic life saving measures are to not be resuscitated. This information may be obtained from the patient, family/caretakers or Advanced Directives (POLST form, etc.).

OBJECTIVE:

Patient is unresponsive, apneic and pulseless or patient has decreasing consciousness, impending respiratory or cardiac failure with death being imminent.

ASSESSMENT:

For some patients with certain medical conditions he or she may decide in advance that life-prolonging or resuscitative efforts would not be beneficial or desirable. This is a decision that is made in consultation with the patient's physician or nurse practitioner ahead of time. The decision for a DNR (Do Not Resuscitate) order will be transmitted to EMS field personnel in Oregon via the POLST (Physician Orders for Life-Sustaining Treatment) form, the other method used include "DO NOT RESUSCITATE" written on a physicians prescription pad that must be signed and dated by the patients primary care physician.

TREATMENT:

FIRST RESPONDER, EMT-B, I, P:

- All patients who are unresponsive, apneic and pulseless or who have impending cardiac or respiratory failure will receive full resuscitation efforts within the First Responder or EMT's abilities and knowledge, EXCEPT
 - A. Patient has a valid POLST form with corresponding name and date of birth. To be valid, a POLST form must have the patient's name and date of birth and be signed and dated by a physician or nurse practitioner or have a signed and dated Hospice stamp. First Responders or EMT's will follow the instructions checked in Section A or B only. Section A instructs whether to initiate resuscitation for a patient who is pulseless or apneic. Section B refers to EMS treatment (comfort measures only, limited interventions, advanced interventions or full treatment) in the case of a patient who is not apneic and pulseless. If there is any confusion or discrepancy about the POLST form from the patient, family or caretakers, begin care or resuscitation measures and contact the patient's physician, nurse practitioner, the emergency room physician or transport the patient to the hospital. Document your actions and include the POLST form or a copy as part of your pre-hospital care report.
 - B. Obvious death with decapitation, rigor mortis in a warm environment, decomposition or dependent lividity (venous pooling in dependent body parts);
 - C. Victim of blunt trauma or a penetrating head wound with fixed and dilated pupils;
 - D. Any other patient who presents with a verbal DNR (Do Not Resuscitate) order will have CPR initiated while identification and verification of the DNR request are confirmed by the patient's physician, nurse practitioner or an emergency physician at the appropriate hospital.
- You should provide for patient and family comfort, including first aid measures and clearing of airway.
- If patient is pronounced dead, notify law enforcement or DME.
- Do not move patient or remove medical treatment devices.
- Remember comfort measures may include the administration of certain medications. If you're questioning what you should do, contact on-line medical control for direction. (Pt. PCP preferably)

EPISTAXIS (NOSEBLEED)

SUBJECTIVE:

Amount of blood loss, trauma, recent upper respiratory tract infection, intranasal drug use, current medications (aspirin, coumadin), self-treatment, history of nosebleeds, nausea hypertension.

OBJECTIVE:

Check for bloody or clear fluid from ears to indicate skull injury. Evaluate for airway compromise, hypotension, hypertension and trauma.

ASSESSMENT:

Most nosebleeds occur on the anterior septum from one side only and will stop spontaneously or with direct pressure if applied appropriately. Patients may be very anxious, particularly if the bleeding is persistent. The risk of significant blood loss is generally small. Bleeding from the posterior nose is often much more serious, but also very unusual. Medical intervention is usually required for posterior bleeds. Patients that ingest blood usually experience nausea and vomiting.

TREATMENT:

First Responder, EMT – B

- Calm patient
- Have patient blow nose to expel clots and apply direct pressure: pinch soft part of nose, distal nasal septum, for ten minutes or until bleeding stops Apply nose clamps if you or the patient isn't able to maintain direct pressure manually.

EMT - I:

- IV with crystalloid

EMT - P:

- Promethazine

FRACTURES & DISLOCATIONS

SUBJECTIVE:

History of trauma and mechanism of injury. Localized pain, swelling, deformity or angulation, loss of sensation or motion.

OBJECTIVE:

Tenderness, swelling, deformity, angulation, discoloration, crepitus, loss of motion or guarding. Open wound or exposed bones. Arterial compromise demonstrated by cool extremity, loss of pulses or loss of sensation.

ASSESSMENT:

Diagnosis of a suspected fracture or dislocation is based on the patient's history, mechanism of injury and physical findings. Other causes may be a strain or sprain. Evaluate for other trauma.

TREATMENT:

First Responder, EMT - B:

- Oxygen
- Dressing to open wounds
- Immobilize, splint, elevate, and apply ice

• **EMT - I:**

- IV with crystalloid
- Cardiac monitor
- Morphine – if agency approved

EMT - P:

- Fentanyl

HEAD TRAUMA

SUBJECTIVE:

History of trauma and the mechanism of injury. Changes in consciousness. Protective devices worn, such as safety belts or helmets. Headache, nausea, vomiting, visual changes, numbness, tingling or paralysis. Medical history.

OBJECTIVE:

Level of consciousness. Clear or bloody discharge from ears or nose. Cushing's triad: bradycardia, hypertension and abnormal respirations. Pupil size and reactivity to light. Skull or facial lacerations or fractures. Assess for further injuries.

ASSESSMENT:

Head trauma may produce lacerations, fractures or brain injury. Alterations in the level of consciousness may be due to other medical conditions. Hypotension is usually the result from internal injuries such as those found in the chest or abdomen. If the patient is hypotensive, you should look for other causes.

TREATMENT:

First Responder:

- Oxygen
- Spinal immobilization

EMT - B:

- Dual lumen airway device (Combitube) - if agency approved

EMT - I:

- IV with crystalloid
- Cardiac monitor

EMT - P:

- Advanced airway management
- Patient restraints
- Consider treatment for nausea/vomiting

HYPERTHERMIA

SUBJECTIVE:

Hot environment, exercise, rate of onset, underlying medical conditions, current medications, illicit drugs, Headache, nausea, cramps, dizziness, generalized weakness.

OBJECTIVE:

Core temperature normal or elevated. Skin normal, cool and wet, or hot and dry.
Blood pressure normal or low. Altered level of consciousness or seizures.

ASSESSMENT:

Heat illness may range from heat cramps, treated with removal from heat, to heat exhaustion, treated with hydration, to heat stroke where the body's ability to maintain normal temperature fails. Heat stroke is diagnosed based on a hot environment, body temperature greater than 104°F and neurological abnormalities including an altered mental status or seizures. Patients with heat stroke need to have active cooling measures begun immediately.

TREATMENT:

First Responder, EMT - B:

- Remove patient from heat
- Oxygen
- Active cooling if heat stroke

EMT – I, EMT - P:

- Cardiac monitor
- IV with crystalloids

SPECIFIC PRECAUTIONS:

- A. Heat stroke is a medical emergency. Differentiate from heat cramps (abdominal or leg) or heat exhaustion (hypovolemia of gradual loss) but be aware that heat exhaustion can progress to heat stroke. No progressions through these stages are necessary for the diagnosis.
- B. Wet sheets over patient without good airflow will tend to increase temperature.
- C. Definitive cooling will require a cool water bath (a cool stream could be used). **DO NOT LET SPONGING DELAY YOUR TRANSPORT.** Cool patient enroute.

D. ACETAMINOPHEN CHART

Age	1-3 mo	4-11 mo	1-2 yrs	2-3 yrs	4-5 yrs	6-8 yrs	9-10 yrs	11-12 yrs	adult
Weight in LBS	6-11	12-17	18-23	24-35	36-47	48-59	60-71	72-95	> 96
MG Acetaminophen	60 ½ tab	120	120	120	240	325	325	650	650

HYPERTENSIVE EMERGENCIES

SUBJECTIVE:

Asymptomatic or headache, blurred vision, nausea or vomiting, confusion, chest pain or dyspnea. Patient may have a history of hypertension and may be on medication to control blood pressure (diuretics, beta blockers, calcium channel blockers, ACE inhibitors). If patient is pregnant, think pre-eclampsia.

OBJECTIVE:

Hypertensive emergencies may demonstrate confusion, coma, nuchal rigidity, pupillary changes, irregular respirations (Cheyne-Stokes), pulmonary edema, chest pain, seizures, nosebleeds.

ASSESSMENT:

Hypertension itself is rarely a medical emergency. Blood pressure must always be measured on several occasions before treating hypertension. Persistent blood pressures greater than 230/120 and altered mental status, pulmonary edema or chest pain may warrant treatment of the blood pressure. Elevated blood pressure is often the body's response to maintain adequate blood flow to the brain; lowering the patient's blood pressure may worsen the patient's mental status or result in a stroke.

TREATMENT:

First Responder, EMT - B:

- Oxygen

EMT - I:

- Cardiac monitor
- IV with crystalloid

EMT - P:

- Nitroglycerin
- Furosemide (Lasix) **Medical Control Orders**
- The following medications may be considered to reduce blood pressure above 230/120 with associated signs and symptoms:
 - Labetalol 20mg IV over 2 minutes and may repeat every 10 minutes up to a max of 300 mg.
 - Nitroglycerine 0.4 mg SL; may repeat at 5 min intervals to a total of 3 times if pulmonary edema is present.
- Frequent reevaluation of GCS and vital signs.

SPECIFIC PRECAUTIONS:

- A. Hypotension.
- B. Remember to include treatment for altered mental status if appropriate.
- C. Remember to hyperventilate patients with head trauma.
- D. Hypertensive encephalopathy often takes a few hours, or even a day or two to develop. There is no nuchal rigidity. Focal neurological deficits, if present, are often transient and migratory.
- E. Nuchal rigidity should cause one to suspect intracerebral or sub-arachnoid hemorrhaging. Hypertension in this setting is often compensatory and should not be treated unless the BP is 230/120 or more.
- F. Rapid onset of symptoms (coma or hemi paresis) often indicates intracranial hemorrhage or cerebral infarction.
- G. Subdural hematoma may take several hours or days to develop, but hypertension is usually not severe and focal neurological deficits are often present.
- H. Toxemia of pregnancy is best treated by delivering the infant. Transport the patient to a hospital with OB facilities. See Eclampsia/PIH protocol.
- I. Hypoglycemia may present with symptoms mimicking a stroke.

HYPOTHERMIA

SUBJECTIVE:

Body heat loss to environmentally cool or wet conditions. Underlying medical illnesses. Current medications. Alcohol consumption.

OBJECTIVE:

MILD

(> 34°C, > 93.2°F)

Shivering

Lethargy

Staggering gait

MODERATE

(30 - 34°C, 86 - 93.2°F)

Shivering lessens

Confusion

Loss of balance

SEVERE

(< 30°C, < 86°F)

Stupor

Coma

Dysrhythmias

Cardiac arrest

ASSESSMENT:

Patients who are hypothermic are unable to maintain adequate internal heat production. Treatment is based on the patient's clinical condition and body temperature. Treatment may range from merely removing wet clothes and drying to active rewarming and ACLS measures. The very young, the very old, and those with chronic medical or debilitating conditions are at increased risk of hypothermia. Core temperatures above 30°C (86°F) usually have good prognosis of survival after recovery. Core temperatures below 30°C (86°F) have poorer prognosis; their myocardium is more irritable and they are usually unconscious, with stiff and rigid muscles. If severely hypothermic, (temperature less than 30°C /86°F), for ventricular fibrillation or wide complex tachycardia; perform CPR, defibrillate once, and give no medications until core temperature is > 30°C /86°F. If it is known that the patient had an extended exposure to wet or cold environment and the patient is comatose or in cardiac arrest, treat for severe hypothermia. **No patient is dead until warm and dead.**

TREATMENT:

First Responder:

- Eliminate environmental heat loss (remove wet clothes)
- Avoid rough movement and excess activity
- Oxygen, warmed if possible at 42°C to 46°C (108°F to 115°F)
- Heat to head, neck, chest, groin, armpits (only if core temperature is > 34°C /93°F)
- Rapid transport to the nearest facility for active internal rewarming if severely hypothermic

EMT - B:

- Check blood sugar
- Oral dextrose if hypoglycemic and airway is protected
- Dual lumen airway device (Combitube) - if agency approved

EMT - I:

- IV with crystalloid, warmed if possible to 43°C (109°F)
- Cardiac monitor

EMT - P:

- Advanced airway management
- Treat per ACLS guidelines

SPECIFIC PRECAUTIONS:

- A. Many hypothermic patients are found inside and often unsuspected. Consider other medical problems: metabolic disorders, GI bleed strokes, drug ingestions, and hypoglycemia.
- B. Shivering occurs around 90-98° F (32-37° C), but not below this.
- C. The heart is most likely to fibrillate around 85-88° F (29-31° C). It may not convert readily until the patient's temperature is above 88° F (31° C), and acidosis is corrected, but defibrillation should be attempted x 3 only. Lidocaine is ineffective in the hypothermic, fibrillating patient.
- D. IF NOT SHIVERING, don't ambulate patient; avoid unnecessary external stimuli (jarring of stretchers, loud noises). These activities can cause fibrillation.
- E. Avoid stimulating the airway unnecessarily. This may produce ventricular fibrillation.
- F. Atropine is contraindicated in moderate and severe hypothermia (patient is cold and not shivering).
- G. Hyperventilation will lead to hypocapnia (low CO₂) and subsequent increased ventricular irritability. Ventilate at rate of 6-8 times per minute with 100% O₂ during CPR. If patient is breathing, administer oxygen as indicated by patient condition.
- H. Avoid manipulation of areas of suspected frostbite as much as possible. Protect the injured area and transport.
- I. "NOBODY IS CONSIDERED DEAD UNTIL WARM AND DEAD."
- J. Watch out for Osborn waves that indicate that fibrillation is imminent.
- K. Call ahead whenever possible so that the receiving hospital has the opportunity to prepare for the patients arrival.

INHALATION INJURIES

SUBJECTIVE:

Environment: poorly ventilated spaces, fire, explosion, exhaust, furnaces, gases present (i.e., methane, CO, cyanide), barbecues, and charcoal fires. Length of exposure. Type of exposure: steam, dry heat, gases, and fire victim.

Symptoms: dyspnea, headache, sore throat, sore mouth, cough, nausea, vomiting and poor coordination.

OBJECTIVE:

Sooty or blistered airway, singed facial hairs, stridor, hoarseness, cough, shortness of breath, labored breathing, changes in mentation, coma.

ASSESSMENT:

Inhalation is the most rapid route of toxins into body. Onset of symptoms can take up to 12-36 hours. Patients may rapidly deteriorate; airway management may need to be aggressive. Multiple patients with similar symptoms suggest toxic inhalation.

TREATMENT: *PROTECT YOURSELF AND OTHERS FIRST*

First Responder:

- High flow oxygen
- Removal from toxic environment

EMT - B:

- Dual lumen airway device (Combitube) - if agency approved

EMT - I:

- IV with crystalloid
- Cardiac monitor

EMT - P:

- Advanced airway management (early intubation if stridor)
- Consider nebulized medication if wheezing.

INSECT STINGS AND ANIMAL/SPIDER BITES

SUBJECTIVE:

Localized pain, burning sensation and itching at the site. Anxiety, restlessness, weakness, dizziness, headache or syncope. Numbness in affected limb or body part, joint pain or muscle cramps. Chest tightening, shortness of breath, abdominal pain, nausea or chills. Animal or insect identification. Allergies. Multiple bites or stings.

OBJECTIVE:

Stings or puncture marks on skin. Redness, swelling, discoloration or blistering at site. Anaphylaxis.

Black Widow Spider Bite: progressive muscle spasm of back, abdomen and large muscle groups, vomiting, seizures, paralysis, hypertension, headache, tingling and burning sensation.

Brown Recluse or Hobo Spider Bite: reddened area with underlying blister formation and surrounding area of necrosis. Over several days area turns dark and becomes ulcerated.

Tick Bites: Lyme Disease may present with distinctive bull's eye rash surrounding the bite developing over a month and accompanied by flu like symptoms.

Animal Bites: contusions or superficial abrasions to severe crush injuries, deep puncture wounds and tissue loss may develop.

ASSESSMENT:

Insect stings, spider bites, scorpion stings, and marine life stings are typical sources of injected poisons or toxins. Gather information from the patient, bystanders and the scene and determine whatever you can about the insect, spider or other possible source of the poisoning.

TREATMENT:

First Responder

- Scene safety
- Oxygen
- Wound care
- Remove constricting items (clothing, jewelry)
- **Insect stings:** gently remove stinger
- **Tick:** do not remove; refer to hospital
- **Animal bites:** if patient not transported, contact law enforcement

EMT - B:

- Epinephrine for anaphylaxis
- Dual lumen airway device (Combitube) - if agency approved

EMT - I:

- IV with crystalloid
- Cardiac monitor
- Morphine – if agency approved

EMT - P:

- Advanced airway management
- Epinephrine
- Fentanyl

NAUSEA & VOMITING

SUBJECTIVE:

Nausea – unpleasant sensation of feeling the urge to vomit.

Retching – spasmodic esophagus and stomach contractions against a closed glottis, often resulting in emesis.

Emesis (vomiting) – forceful abdominal contractions emptying the stomach through the mouth.

OBJECTIVE:

Patient may appear with pale and diaphoretic skin.

Emesis may contain partly digested food particles, be yellow from bile, black from partly digested blood or red from active upper gastrointestinal bleeding.

ASSESSMENT:

Nausea and vomiting are unpleasant sensations and actions with many possible causes.

TREATMENT:

First Responder:

- Keep patient comfortable

EMT - B:

- Oxygen

EMT - I:

- IV with crystalloid
- Cardiac monitor

EMT - P:

- Promethazine

SPECIFIC PRECAUTIONS:

- A. Phenergan is a vasoactive drug. Blood pressure should be carefully monitored.
- B. Nausea and vomiting should only be treated when the severity and/or frequency of vomiting episodes prevent effective patient care from being rendered. Patient comfort should only be considered for long transport times or vomiting specifically brought on by movement

NEAR DROWNING

SUBJECTIVE:

Length of exposure, fresh or salt water, temperature, dyspnea, cough, chest pain, headache, nausea, vomiting, neck pain, traumatic injury, bystander treatment.

OBJECTIVE:

Level of consciousness, rales, respiratory rate, cyanosis, pallor, internal temperature, hypotension.

ASSESSMENT:

Assess for other injuries: shallow water dives and scuba diving.

TREATMENT:

First Responder:

- Suction airway
- Spinal immobilization
- Oxygen
- Remove wet clothing and warm patient

EMT - B:

- Dual lumen airway device (Combitube) - if agency approved

EMT - I:

- Cardiac monitor
- IV with crystalloid

EMT - P:

- Advanced airway management
- Nasal or oral gastric tube

SPECIFIC PRECAUTIONS:

- A. Be prepared for vomiting.
- B. All near drownings should be transported. Any patient refusal should be considered and handled as a Refusal Against Medical Advice (AMA). Even if patients initially appear fine, they often deteriorate. Monitor closely. Pulmonary edema is likely.
- C. Hypothermia may be a problem. Remove clothes and obtain patients temperature.
- D. It is a common error to underestimate associated injuries in near drownings from jumping, MVA's, etc.

PAIN MANAGEMENT

SUBJECTIVE:

Patient complaint of pain as a part of an acute illness or injury. Patient's pain may be rated as uncomfortable to intolerable.

OBJECTIVE:

Patient in pain may appear pale, diaphoretic, anxious, restless or irritable. Patient may be tachypneic or tachycardiac. Exam may or may not reveal a source of the pain. Patient's exam may be normal.

ASSESSMENT:

Patient management should be initiated to control pain to a comfortable level as appropriate and possible. Examples of processes causing pain include, but are not limited to: back spasms, migraine headache, cardiac chest pain, orthopedic injury, abdominal pain, burns, cancer, pancreatitis, diverticulitis or kidney stones.

TREATMENT:

First Responder:

- Make patient comfortable

EMT - B:

- Oxygen

EMT - I:

- Morphine – if agency approved

EMT - P:

- Fentanyl
- Sedation with midazolam (**medical control orders required**)

POISONS & OVERDOSES

SUBJECTIVE:

Determine route of exposure: ingestion, inhalation, injection or surface absorption. Description of exposure: type of poison, quantity, time elapsed since exposure or ingestion. Reason for exposure or ingestion: accidental, abuse, neglect, assault or suicidal gesture. Past medical history: medication, diseases, psychiatric history, drug abuse. Actions taken by bystanders: induced vomiting, antidotes given.

OBJECTIVE:

C.N.S. - altered level of consciousness, headache, seizures, hallucinations, coma.

Pupils - constricted (narcotics) or dilated (barbiturates, CO).

Respiratory - abnormal breathing, tachypnea or shallow respirations.

Cardiovascular - tachydysrhythmias (methamphetamine, cocaine, ASA) or brady dysrhythmias (digitalis, organophosphates). Hypotension or hypertension.

Skin - cyanosis, pallor, diaphoretic, evidence of needle tracks.

Gastrointestinal - burns or stains around patient mouth, odor on breath, gag reflex, nausea & vomiting, abdominal pain or tenderness.

ASSESSMENT:

Accidental or intentional exposure of the body to toxic substances in an amount sufficient to have a damaging or destructive effect.

SLUDS BAM - salivation, lacrimation, urination, defecation, sweating, bronchospasm, arrhythmia, and miosis suggests organophosphate poisoning. Bring all medicine containers. If suspected hazardous material, leave container but obtain correct spelling and UN or NFPA704 number.

TREATMENT: **PROTECT YOURSELF AND OTHERS FIRST**

First Responder:

- Oxygen

EMT - B:

- Check blood sugar
- Oral glucose
- Activated charcoal in conscious and awake patients
 - **Only after approval by on-line medical control**
- Dual lumen airway device (Combitube) - if agency approved

EMT - I:

- IV with crystalloid
- IV dextrose
- Cardiac monitor
- Narcan if narcotic overdose suspected
- OG tube
- Activated charcoal in conscious and awake patients
 - **Only after approval by on-line medical control**

EMT - P:

- Advanced airway management
- Nasal or oral gastric tube if no esophageal injury
- Activated charcoal via NG/OG for significant poisonings
 - **Only after approval by on-line medical control**
- Atropine for organophosphate poisoning
- Sodium bicarbonate for symptomatic tricyclic anti depressant poisoning
- Calcium chloride for calcium channel blocker or magnesium poisoning
- Glucagon for beta-blocker poisoning

SPECIFIC PRECAUTIONS:

- A. DO NOT induce vomiting in patients who:
 - 1 Have ingested strong acids, strong bases, iodides, silver nitrate, strychnine or phenothiazines.
 - 2 Are unconscious, have altered mentation, seizing, or have no gag reflex.
 - 3 In general OD's of: cyclic antidepressants, PCP, cocaine, lithium, and short-acting sedatives should not be given ipecac in the field.
- B. Do not try to neutralize acids with strong alkalis. Do not try to neutralize alkalis with acids.
- C. C. If incident is the result of a suicide gesture or illicit substance abuse, scene should be secured by law enforcement personnel before you enter.

SPECIFIC PHYSICAL FINDINGS:

- A. Vital signs.
- B. Odor on breath or clothing, e.g. fruity-alcohol / diabetes; rotten eggs-hydrogen sulfide, stove gas; almonds-cyanide; mothballs-camphor; garlic-arsenic, parathion; wintergreen-methylsalicylate.
- C. Neurologic status: level of consciousness.
- D. Vomitus: Amount and description; are pill fragments visible?
 - 1 Assess and support ABC's.
 - 2 Oxygen: as indicated by patient condition. Monitor SAO₂.
 - 3 Obtain vitals.
 - 4 Monitor cardiac rhythm; if arrhythmias or conduction abnormalities present during or persist after treatment, treat per arrhythmia protocols.
 - 5 Treat shock syndrome per "Shock Protocol".
 - 6 Advise dispatch and MCH if patient is unstable or has had a significant exposure.
- E. Ingestion of toxic substances:
 - 1 If patient is poorly responsive or has depressed respiration, assist ventilation as needed and:
 - a. Administer Narcan: 0.4 - 2 mg / IV; if vital signs indicate significant CNS depression. Administer 2 mg IM if unable to establish IV. May repeat IV or IM doses at 3-5 min. intervals as indicated by continued respiratory or cardiac depression up to a total dose of 8 mg. Reversal of decreased level of consciousness or intoxication is not indicated as patient may become combative or withdrawal syndrome may be precipitated.
 - b. If hypoglycemia is confirmed by Chem BG, administer thiamine and glucose per "Diabetic Emergency Protocol".
 - c. If transport time is > 20 min. Attempt to contact Poison Control or MCH, NG tube and administration of activated charcoal, ten times the amount ingested if known or 1 gm/kg if quantity ingested is unknown.
 - d. If transport time is less than 20 min., activated charcoal administration is left to Paramedic discretion
 - 2 Cyclic Antidepressants or Flexeril
 - a. Signs of cyclic antidepressant ingestion:
 - 1. CNS depression
 - 2. Hypotension
 - 3. Tachycardia >120
 - 4. Widening of QRS >.08
 - 5. Dilated pupils
 - b. If cyclic antidepressant ingestion is confirmed and symptomatic
 - 1. Administer 50 mEq bicarb / IV; slowly over 5 min.
 - c. If organophosphate poisoning has occurred and patient is critical with cholinergic "SLUDGE" symptoms:
Administer atropine; 2 mg slow IV; then, repeat at 2 mg. every 5 minutes until secretions have substantially decreased.
 - S= Secretions, salivation, sweating
 - L= Lacrimation
 - U= Urination
 - D= Defecation
 - G= Gastrointestinal cramps
 - E= Emesis

F. External exposure to toxic substances:

- 1 Protect medical personnel. Consider need for HAZMAT team. Recognize environments with potential
- 2 continuing contamination. Inhalation poisoning is particularly dangerous to rescuers. Some chemicals may be absorbed transdermally.
- 3 Remove contaminated clothing.
- 4 Flush contaminated skin and eyes with copious amounts of running tap water (shower, hose, etc.).

RESPIRATORY DISTRESS

SUBJECTIVE:

Onset and duration of dyspnea, pain (quality, region, severity, provocation), hemoptysis, cough (sputum, color), hoarseness, dysphagia, time of onset of symptoms, change with position, fatigue, history of injury to area, previous history of similar episodes, exposure to toxic substances, overdose, history of recent surgeries. Prior heart or lung problems and medications.

OBJECTIVE:

Rales, rhonchi, wheezing, stridor, hives, cyanosis, tachycardia, tachypnea, tripod sitting, pursed lip breathing, level of consciousness, temperature, diaphoresis, trauma, subcutaneous emphysema, bruising, paradoxical movement, jugular venous distention, tracheal position, retractions, edema.

ASSESSMENT:

Respiratory distress has a multitude of causes. Differential diagnosis will be made both on subjective and objective findings. Many things may lead to respiratory distress: CHF, COPD, asthma, trauma, pulmonary embolism, respiratory infections, croup, epiglottitis, anaphylaxis, foreign bodies, poisonings, inhalation injuries and neurological problems.

TREATMENT:

First Responder:

- Position of comfort
- Oxygen

EMT - B:

- Dual lumen airway device (Combitube) - if agency approved

EMT - I:

- IV with crystalloid
- Cardiac monitor
- Refer to CHF, COPD or Asthma protocols as needed

EMT - P:

- Advanced airway management / CPAP

SPECIFIC INFORMATION:

- A. History: Acute insult or injury; slow deterioration. Obtain careful history of fever and chills, purulent sputum production or recent pneumonia.
- B. Past history: Chronic lung disease or cardiac disease; past allergic reaction; medications; home oxygen; recent surgery.
- C. Associated symptoms: Chest pain; paresthesia of mouth or hands.

SPECIFIC PHYSICAL FINDINGS:

- A. Level of consciousness.
- B. Indicators of hypoxia: Irrational behavior, poor cooperation, cyanosis.
- C. Vital signs.
- D. Breath sounds: Clear, wet (rales), wheezes, rhonchi; symmetry. Is the abnormality on inspiration or expiration? Note respiratory effort.
- E. Signs of upper airway obstruction: Inspiratory stridor, hoarseness, coughing, no sound, drooling.
- F. Signs of congestive failure: Wet lung sounds, distended neck veins when sitting up, peripheral edema.
- G. Hives, airway edema.
- H. Evidence of trauma.

GENERAL:

- A. Basic Life Support (ABC's).
- B. Position patient for comfort.
- C. Medical history and current medications.
- D. Oxygen: As indicated by patient condition and history.

NOTE: If a history of COPD is obtained, low flow (1-2 L/min) by NC is adequate in most situations, O₂ flows of 6 L/min. may depress respiration in COPD patients. However, if the patient presents with signs of hypoxia and severe compromise, O₂ should be delivered at a flow rate and via the appropriate adjunct indicated by the patient's signs/symptoms. **READ YOUR PATIENT, DO NOT WITHHOLD O₂!**

- E. Assist ventilation as indicated.
- F. Assess breath sounds/ obtain vitals.
- G. Treat your patient; reassess frequently and proceed accordingly.

EXAMPLES OF BREATH SOUNDS IN RESPIRATORY DISTRESS

Characteristics	Possible Diagnosis
Clear, symmetric	Hyperventilation, MI, pulmonary embolism
Wet, symmetric	Pulmonary edema, extensive pneumonia
Wheezing, symmetric	Asthma, pulmonary edema, COPD
Clear, asymmetric or absent	Pneumothorax, pulmonary embolism, COPD
Wet, asymmetric	Pneumonia, pulmonary edema
Wheezing, asymmetric	Foreign body, pulmonary embolism, COPD

RESPIRATORY DISTRESS - ASTHMA

SUBJECTIVE:

Known exposure to allergens, symptoms of respiratory infection, increased emotional stress, environmental changes, time of onset of symptoms, history of asthma, tightness in chest, cough. Past medical history, recent hospitalizations, medications, frequency of respiratory medication use.

OBJECTIVE:

Wheezing, decreased or absent breath sounds, prolonged expiratory phase, tachycardia, tachypnea, use of accessory muscles, retraction, cyanosis, decreased level of consciousness, diaphoresis, exhaustion, tripod sitting, one to three word sentences, decreased SaO₂.

ASSESSMENT:

Due to the narrowing airway passages, inflammation and increased mucus production, coughing, chest tightness and wheezing usually develop. The patient's level of respiratory distress will dictate how aggressive your treatment should be. Patients may be using inhalers: Azmacort, Vancril, albuterol (Ventolin or Proventil), Ipratropium (Atrovent), Maxaire or be taking theophylline or prednisone. Also consider CHF, COPD, pneumonia, and cardiac problems.

TREATMENT:

First Responder:

- Position of comfort
- High flow oxygen

EMT - B:

- May assist with self-administration of patient's own metered dose inhaler
- Dual lumen airway device (Combitube) - if agency approved

EMT - I:

- Cardiac monitor
- IV with crystalloid
- Albuterol
- Ipratropium (Atrovent)

EMT - P:

- Advanced airway management
- Epinephrine - use caution in patients over 50 with cardiac history
- Solu-Medrol - 125mg IVP (do not use in mild cases that respond to nebulizer treatment)
- Consider use of CPAP if available

ASTHMA refractory to updraft:

- A. Epinephrine 1:1000: 0.3 mg / SQ (patient < 50 y/o without known coronary artery disease and HR < 150 bpm). Alternatively, if intubated 0.5 mg / ET is preferred.
- B. O₂ at high flow by mask or positive pressure device.
- C. Pediatric dose for Solu-Medrol is 1.0mg/kg IVP by MCH orders only.

RESPIRATORY DISTRESS - CHF/PULMONARY EDEMA

SUBJECTIVE:

Duration of symptoms, dyspnea on exertion or at rest, fatigue, orthopnea, paroxysmal nocturnal dyspnea, ankle swelling, chest pain or pressure, cough, sputum color, recent weight gain, past medical history, medications and recent hospitalizations.

OBJECTIVE:

Rales, rhonchi, wheezing, tachypnea, tachycardia, cyanosis, inability to speak full sentences, need to sit upright, hypertension (early) or hypotension (late), dysrhythmias, jugular vein distention, peripheral edema.

ASSESSMENT:

Left sided failure leads to pulmonary edema, increased preload and afterload. This has a short onset (2-24 hours). Patients are afebrile, have bilateral abnormal breath sounds and clear or pink sputum, cardiac history and may currently be on cardiac medications: digoxin (Lanoxin), furosemide (Lasix), HCTZ, metoprolol (Lopressor), atenolol (Tenormin), nitro patches or ACE inhibitors.

TREATMENT:

First Responder:

- Position of comfort
- Oxygen

EMT - B:

- Dual lumen airway device (Combitube) - if agency approved

EMT - I:

- Cardiac monitor
- IV with crystalloid – TKO
- Nitroglycerin
- Albuterol if wheezing
- **Furosemide** – 5-10 minutes after nitroglycerin
 - **Only after approval by on-line medical control**
- **Morphine Sulphate By on-line medical control**
- Bag-valve-mask for PEEP if tolerated

EMT - P:

- Morphine or Diazepam for anxiety
- Consider Diltiazem rate control if atrial fibrillation
- Advanced airway management
- CPAP if available
- Dopamine for cardiogenic shock

RESPIRATORY DISTRESS - COPD EXACERBATION (CHRONIC OBSTRUCTIVE PULMONARY DISEASE)

SUBJECTIVE:

Duration and onset of symptoms, dyspnea on exertion, fatigue, chest pain or pressure, fever, cough, sputum, color, increased amount of sputum, smoking history, recent illness (especially upper respiratory infection), medications, past medical history, home oxygen, exposure to allergens or irritants.

OBJECTIVE:

Rhonchi, wheezing, decreased air movement, tachypnea, tachycardia, cyanosis, prolonged expiratory phase, pursed lip breathing, barrel chest, confusion, speaking one to three word sentences.

ASSESSMENT:

COPD is a chronic disease, which people live with every day. During exacerbations, patients develop respiratory distress, which leads to hypoxia. Onset is often over a couple of days. These patients frequently are on home oxygen and use nebulizers: albuterol (Ventolin or Proventil), ipratropium (Atrovent), corticosteroids (Vanceril, Azmacort) and take respiratory medications (theophylline or prednisone).

TREATMENT:

First Responder:

- Position of comfort
- Oxygen

EMT - B:

- May assist with self-administration of patient's own metered dose inhaler
- Dual lumen airway device (Combitube) - if agency approved

EMT - I:

- Cardiac monitor
- IV with crystalloid
- Albuterol
- Ipratropium (Atrovent)

EMT - P:

- Advanced airway management
- Solu-Medrol- 125mg IVP (do not use in mild cases that respond to nebulizer treatment)
- Consider use CPAP if available

SPECIFIC PRECAUTIONS:

- A. If you are unable to differentiate the cause of the respiratory distress, the proper course is to administer oxygen as indicated by the patient's condition and transport. When in doubt and the patient is in severe distress, discuss your alternatives with Medical Control.
- B. Protect yourself from coughing patients; wear a mask and visor. The close proximity in the patient compartment of an ambulance requires preventive measures. The incidence of tuberculosis is increasing.
- C. Use caution when using CPAP on CO₂ retainers, high O₂ delivered by the CPAP device may render pt apneic, resulting in the ventilator dependence you are trying to avoid.

RESPIRATORY DISTRESS: PEDIATRIC

GENERAL INFORMATION:

- A. Respiratory distress is among the most common pediatric medical emergencies, and is a far more common cause of death or permanent disability than primary cardiac disease. Many of the most essential therapeutic maneuvers are within the scope of BLS providers.
- B. Respiratory distress may result from various factors:
 - 1 Upper airway disease (croup, epiglottitis, foreign body, trauma).
 - 2 Lower airway disease (asthma, bronchiolitis).
 - 3 Lung parenchymal disease (pneumonia, pulmonary edema).
 - 4 Extrapulmonary causes (pneumo/hemothorax).
 - 5 Nerve or muscle disorders that cause the child to be too weak to breathe.

SPECIFIC PHYSICAL FINDINGS:

- A. Tachypnea - (some causes of tachypnea, not related to respiratory distress are activity, fear, pain and fever).

PEDIATRIC RESPIRATORY RATE CHART

AGE	NORMAL RATE PER MINUTE
Premature or Term Newborn	<60
6mo.	24-36
1 yr.	22-30
3 yrs.	20-26
5 yrs.	20-24
8 yrs.	18-22
12 yrs.	16-22
16 yrs.	14-20

- B. Dyspnea (labored breathing)
 - 1 Retractions-sternal and intercostal.
 - 2 Use of accessory muscles (neck and abdomen) to help breathe.
 - 3 Nasal flaring-widening of nostrils as child inhales.
 - 4 Expiratory grunting.
- C. Abnormal Breath Sounds
 - 1 Cough.
 - 2 Stridor-coarse, high pitched noise produced by obstruction in the upper airway, usually loudest during inhalation.
 - 3 Wheeze-high pitched, "squeaky" noise which results from obstruction of the bronchioles.
 - 4 Rales-crackling sounds in the lungs produced by fluid in the airspaces.
 - 5 Rhonchi-coarse rattling sound of secretions in larger airways often clears with cough.
 - 6 Absent breath sounds-obstruction, severe asthma or bronchial spasms.
- D. Preferred position-usually sitting up unless patient is a small infant or has a depressed level of consciousness.
- E. Initial tachycardia can progress to bradycardia as hypoxia and acidosis worsens, leading to cardiac arrest.
- F. Initial anxiety and irritability deteriorate to lethargy and coma as hypoxia and hypercarbia/acidosis worsen.
- G. Cyanosis reflects the presence of deoxygenated hemoglobin, It tells nothing about degree of hypercarbia or PCO₂. Cyanosis can be masked by severe anemia or shock, or by fetal hemoglobin in the neonate.

SEIZURES

SUBJECTIVE:

Known seizure disorder, onset, length, frequency, type, and presence of aura. Head trauma, drug or alcohol use, diabetes, heart disease, CVA, pregnancy, fever, headache or stiff neck. Anticonvulsant medications might include phenytoin (Dilantin), phenobarbital, carbamazepine (Tegretol) and valproic acid (Depakote). Compliance with medications.

OBJECTIVE:

Head trauma or mouth injury. Level of consciousness. Incontinence of urine or stool. Observed seizure activity. Temperature. Rashes, petechiae or purpura.

ASSESSMENT:

With injury, infection or disease the electrical activity of the brain becomes irregular which brings about sudden changes in sensation, behavior, or movement called seizures.

Grand Mal - generalized major motor seizure. Alternating tonic (contractions) or clonic (successive contractions and relaxations) movements of extremities.

Focal Motor - simple partial seizure. Characterized by dysfunction of one area of the body including, tingling, stiffening or jerking.

Psychomotor - complex partial seizure. Characterized by abnormal behavior such as confusion, glassy stare, aimless movements, lip smacking or fidgeting with clothing.

Petit Mal - seizure is brief, usually 1-10 seconds, with a temporary loss of concentration.

TREATMENT:

First Responder:

- Place patient on floor or ground; remove objects that might cause harm
- Oxygen
- Place patient into recovery position when seizure has stopped.

EMT - B:

- Check blood sugar
- Oral glucose if no airway risk

EMT - I:

- IV with crystalloid
- Dextrose IV
- Cardiac monitor

EMT - P:

- Advanced airway management
- Acetaminophen (if pediatric febrile seizure)
- Diazepam
- Midazolam
- Ativan/lorazepam

GENERAL PRECAUTIONS:

- A. Move hazardous material away from patient. Lightly restrain the patient only if needed to prevent injury. Protect the patient's head.
- B. Trauma to the tongue is unlikely to cause serious problems but trauma to the teeth caused by trying to force the mouth open might. Attempts to force an airway adjunct into the patient's mouth could result in airway obstruction.
- C. Seizures in patients over the age of 50 are frequently caused by cardiac arrhythmias.
- D. Check for a pulse after a seizure terminates. Seizure activity may be the first sign of cerebral hypoxia secondary to cardiac arrest.
- E. Medical personnel are often called to assist epileptics if a seizure occurs in public. If the patient clears (A&O x3), has a physician, is taking meds and is experiencing usual frequency of seizures transport may be unnecessary.
 - 1 Always advise the patient they should follow up with their physician.
 - 2 A patient cannot refuse transport until the postictal state has resolved and the patient can demonstrate competency, which must be documented.

DOSAGE CHART FOR CHILDREN'S ACETAMINOPHEN

AGE	0-3 mo	4-11mo	12-23 mo	2-3 yrs	4-5 yrs	6-8 yrs	9-10 yrs	11-12 yrs
Weight (lbs)	6-11	12-17	18-23	24-35	36-47	48-59	60-71	72-95
Dosage (mg)	60	120	120	120	240	325	325	650

SHOCK

SUBJECTIVE:

Mechanism of injury: trauma, infection, allergic reaction, toxic exposures, and disease. A feeling of impending doom or signs of fear, dizziness, weakness, feeling cold, thirst, shortness of breath, chest pain, vomiting or diarrhea, bloody stools or emesis, abdominal pain. Prior medical illnesses.

OBJECTIVE:

Confusion, restlessness, agitation. Pale, cool, clammy skin. Shallow or rapid breathing. Rapid or weak pulse, hypotension. Delayed capillary refill. Abdominal tenderness, rigidity, distention or mass. Obvious external trauma: amputations, deformities, bruising.

ASSESSMENT:

Shock is the failure of the cardiovascular system to provide sufficient oxygenated blood to vital tissues of the body.

SHOCK SYNDROME: For the purpose of these protocols is defined as severe inadequate tissue perfusion with the following signs and symptoms, including but not limited to:

- A. Vitals: pulse over 120 with a systolic BP less than 90 mmHg.
- B. Orthostatic changes: pulse increase of more than 20 and/or decrease of systolic pressure of 20 mmHg or more when comparing supine measurement to sitting (legs dependent) measurement.
- C. Skin: pale or cyanotic, cool, and diaphoretic (in septic or neurogenic shock skin may be warm and pink).

The following may also be present but are not necessary for the diagnosis of the shock syndrome.

- A. Neurologic changes: anxiety, restlessness, confusion, apathy, and coma.
- B. Sensation of SOB, with or without abnormal breath sounds; tachypnea.
- C. Marked thirst.

CLASSIFICATIONS OF SHOCK:

- A. Hypovolemic shock: Shock characterized by the loss of circulating blood volume. This may be due to direct hemorrhage or through loss of fluids from severe vomiting, diarrhea, burns or peritonitis.
- B. Cardiogenic shock: Pump failure.
- C. Distributive shock: Characterized by abnormal vascular tone. Includes anaphylaxis, early sepsis, and neurogenic shock.
- D. Obstructive shock: Mechanical obstruction of blood flow to or from the heart. Includes cardiac tamponade, tension pneumothorax, dissecting aneurysm and massive pulmonary embolism

TREATMENT:

First Responder:

- Oxygen
- Shock position
- Prevent loss of body heat

EMT - B:

- Dual lumen airway device (Combitube) - if agency approved

EMT - I:

- One or two large bore IVs with crystalloid; fluid challenge
- Cardiac monitor

EMT - P:

- Advanced airway management
- Dopamine after aggressive fluid resuscitation

SPECIFIC PRECAUTIONS:

- A. This protocol is intended for use in patients with life threatening shock. Patients with signs of mild shock do not warrant drastic measures. The symptoms of mild shock can generally be resolved by supine positioning with leg elevation and moderate fluid infusion. One large bore IV and standard drip set are usually adequate except in multisystem trauma patients where the potential always warrants two lines.
- B. Do not delay transport. Patients in profound shock must be transported immediately with as many of the preceding procedures accomplished enroute.
- C. Definitive treatment of shock requires correction of the underlying cause. The objective of prehospital treatment is to maintain vital functions while enroute to the hospital; a BP > 80 mmHg is usually adequate to maintain renal and cerebral functions. Achieving blood pressures > 100 mmHg may exacerbate hemorrhage or myocardial ischemia.
- D. Shock syndrome may be evident in patients with preexisting hypertension at BP's > 90 mm Hg; a drop to 70 mmHg systolic may not be tolerable. Conversely, young patients and physically fit patients may tolerate BP's <90 mmHg. Adjust treatment accordingly; treat if symptomatic.
- E. A dissecting aortic aneurysm may cause obstructive shock. Inflation of the abdominal section of the PASG (MAST) may be detrimental in such cases.
- F. GI bleeding may occur very gradually and the patient may therefore compensate until blood loss is > 2 liters. Such patients sometimes present with cardiac chest pain due to ischemia rather than GI complaints.

SNAKE BITES

SUBJECTIVE:

Localized pain at site of bite. Time of bite. Snake identification. Metallic or rubber taste in mouth and lips. Thirst. Blurry or dim vision. Weakness, dizziness or lightheadedness, numbness or tingling around face and head. Treatment rendered prior to your arrival.

OBJECTIVE:

One or more fang marks with redness, swelling, ecchymosis or oozing from site, followed later by hemorrhagic blisters. Respiratory distress, tachycardia, hypotension, vomiting or diarrhea, bloody urine or gastrointestinal hemorrhage.

ASSESSMENT:

The seriousness of a snakebite is related to amount of venom injected, the location of the bite, and the type of snake and pre-existing medical conditions. The vast majority of snake bites are non-fatal.

TREATMENT: *PROTECT YOURSELF AND OTHERS FIRST*

First Responder, EMT – B:

- Assure scene safety
- Calm and reassure patient
- Minimize victim's physical activity
- Oxygen
- Splint bitten extremity in dependent position, below the level of their heart
- Remove constricting clothing or jewelry
- **Apply constricting band to decrease venous blood flow above and below site if directed by medical control.**

EMT – I:

- IV with crystalloid
- Cardiac monitor
- Morphine – if agency approved

EMT - P:

- Fentanyl

SPINE TRAUMA

SUBJECTIVE:

Mechanism of injury and force used. High-energy transfer; ejection, helmet damage, starred windshield, steering column bent, surface diving accident. Back or neck pain. Tingling, paresthesia, numbness or paralysis.

OBJECTIVE:

Diaphragmatic or impaired breathing. Head injury. Open injury, spinal deformity or tenderness. Hypotension. Loss of bladder or bowel control. Priapism. Paralysis or numbness. Mechanism of injury with high index of suspicion.

ASSESSMENT:

The presence of spine trauma and the need to immobilize the patient can be indicated by mechanism of injury, the presence of other injuries or by specific signs or symptoms of spinal cord injury. Spinal cord injury may mask signs and symptoms of other significant injuries.

TREATMENT:

First Responder:

- Oxygen
- Full spinal immobilization
- Check motor and sensory exam frequently
- Evaluate and treat for other injuries
- Prevent loss of body heat

EMT - B:

- Dual lumen airway device (Combitube) - if agency approved

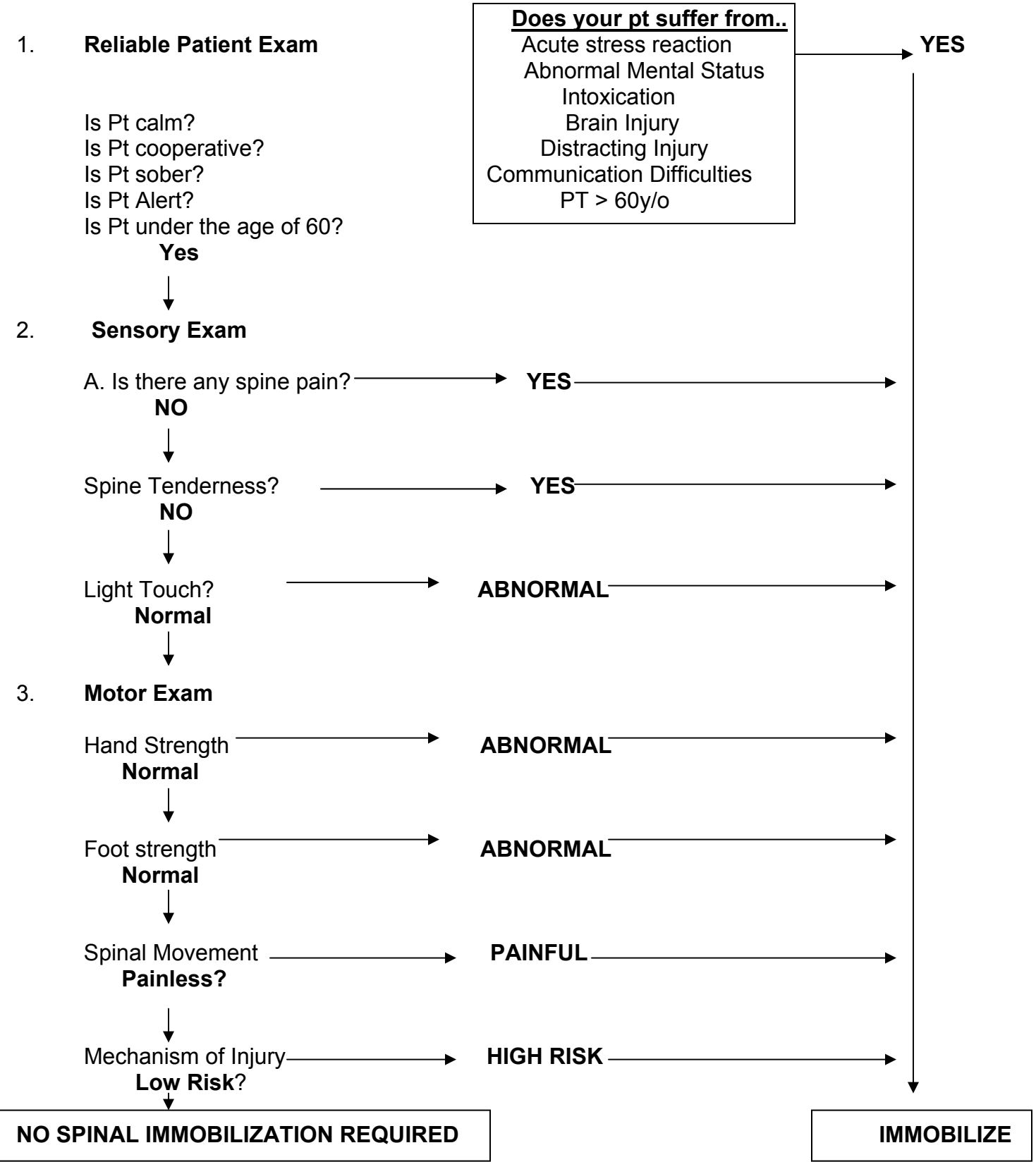
EMT - I:

- IV with crystalloid
- Cardiac monitor

EMT - P:

- **Complete: Clearing C-spine in the Prehospital Environment Worksheet**
- Advanced airway management
- Dopamine after aggressive fluid resuscitation
- Atropine if bradycardic and hypotensive

CLEARING C-SPINE IN THE PRE-HOSPITAL ENVIROMENT. (Performed by Paramedic Only)



SYNCOPE

SUBJECTIVE:

Onset, frequency, stressful or anxiety provoking factors, position of patient, seizure activity, vertigo, nausea, chest or abdominal pain, diaphoresis, past medical history, medications, previous syncope, recent illness, dietary changes, pregnancy.

OBJECTIVE:

Orthostatic blood pressure and pulse changes. Level of consciousness, cardiac dysrhythmias, pulsating abdominal mass, other injury or bleeding.

ASSESSMENT:

Syncope implies a brief loss and rapid return of consciousness. The most common causes are vasovagal reactions and idiopathic (unknown). Other common causes include GI bleed, abdominal aortic aneurysm, cardiac dysrhythmia and cerebrovascular accident.

TREATMENT:

First Responder:

- Oxygen
- Shock position

EMT - B:

- Check blood sugar
- Oral glucose if no airway risk

EMT - I, EMT - P:

- IV with crystalloid
- IV dextrose
- Cardiac monitor

SPECIFIC PRECAUTIONS:

- A. Syncope by definition is a transient state of unconsciousness from which the patient has recovered. If the patient is still unconscious, treatment should be as per the appropriate protocol as indicated by the underlying cause.
- B. Syncope while in a recumbent position is usually cardiac in nature. Syncope of recent onset in middle-aged or elderly patients is often cardiac in nature and deserves special concern.
- C. Most syncope is vasovagal. Recumbent position will usually restore vital signs and level of consciousness to normal. Nevertheless, patients under age 30, even if apparently normal, should at least be referred for immediate medical evaluation. All other patients should be transported.
- D. Orthostatic changes indicative of significant cardiovascular compromise are an increase of pulse by 20 bpm and/or a decrease of BP by 20 mmHg when comparing vitals taken in the supine then sitting positions

TRAUMA SYSTEM ENTRY

SUBJECTIVE:

History of mechanism of injury. Environmental conditions. Co-existing medical illnesses or conditions.

OBJECTIVE:

Some injuries may be obvious. Examine the patient fully to find the hidden injuries. Undress the patient appropriately.

ASSESSMENT:

Entry of a patient into the trauma system speeds care for those who need resuscitation or emergency surgical procedures during the first hour or two after trauma.

SPECIFIC PHYSICAL FINDINGS:

- A. Primary survey, immediate life-threatening problems.
- B. Neurological status.
- C. Vital signs.
- D. Glasgow Coma Score.
- E. Secondary survey, isolated injuries.

MANDATORY ENTRY CRITERIA

VITAL SIGNS/LOC

- Systolic BP < 90 mm Hg; or
- Respiratory distress, R < 10 or > 29; or
- Airway management required; or
- GCS ≤ 12

ANATOMY OF INJURY

- Death of a same car occupant; or

- Ejection of patient from an enclosed vehicle; or
- Heavy extrication time > 20 minutes

MECHANISM OF INJURY

- Penetrating injury of the head, neck, torso or groin; or
- Amputation above the wrist or ankle; or

- Spinal cord injury with limb paralysis or;
- Flail chest or
- Two or more obvious long bone (humerus/femur) fractures.

Any Burns defined as critical

DISCRETIONARY ENTRY CRITERIA

HI-ENERGY TRANSFER

- Falls >20 feet; or
- Pedestrian hit at 20 mph or thrown 15 feet; or
- Rollover; or
- Motorcycle, ATV or bicycle crash; or
- Significant impact or intrusion into occupant space of vehicle.

COMORBID FACTORS

- Extremes of age <5 or >55 years; or
- Medical illness: cardiac or respiratory disease, insulin dependent diabetes, cirrhosis, or morbid obesity; or
- Patient with bleeding disorder or patient on anticoagulants; or
- Pregnancy; or

- Immuno suppressed patients; or
 - Presence of intoxicants
- These criteria shall cause a high index of suspicion that a patient may have sustained a severe injury.
- Trauma system entry for patients meeting two or more of these criteria is strongly encouraged

TREATMENT:

First Responder:

- High flow oxygen
- Cover open wounds with occlusive dressing
- Maintain body heat
- Spinal immobilization
- Notify trauma hospital of entry criteria
- Apply trauma band

EMT - B:

- Dual lumen airway device (Combitube) - if agency approved

EMT - I:

- Two large bore IVs with crystalloid
- Cardiac monitor

EMT - P:

- Advanced airway management
- Chest decompression

- A brief radio call to the Designated Trauma Hospital should include:
- "Trauma System Entry" and the entry criteria
- Estimated time of arrival (ETA)
- Patient age & gender
- Chief complaint and mechanism of trauma
- Vital signs – BP, P, R, LOC
- Brief report of pertinent physical findings
- Treatment rendered and patient response

SPECIFIC INFORMATION NEEDED:

- A. Present or potential hazards to EMS personnel and/or victim.
- B. Mechanism of injury.
- C. Needs for additional emergency medical and/or support services.
- D. Number of patients.
- E. Extrication requirements.
- F. Other complicating factors: cardiac problems, age, environment; other medical problems, medications.
- G. Multiple patients requiring triage.

Pain Relief

- A. Pain management can be administered for isolated fractures.
- B. Morphine 2 mg IV prn to a total dose of 10 mg. MCH consult is required to exceed 10 mg.
- C. Fentanyl is the preferred medication for acute pain. Dosage is 25-100mcg over 1-2 min. for adult. Contact MCH to exceed 100mcg.
- D. Must monitor Spo2 continuously and have narcan immediately available
- E. Pediatric fentanyl age 2-12years 2-3mcg/kg may not repeat. May not use in patients under 2yr of age.

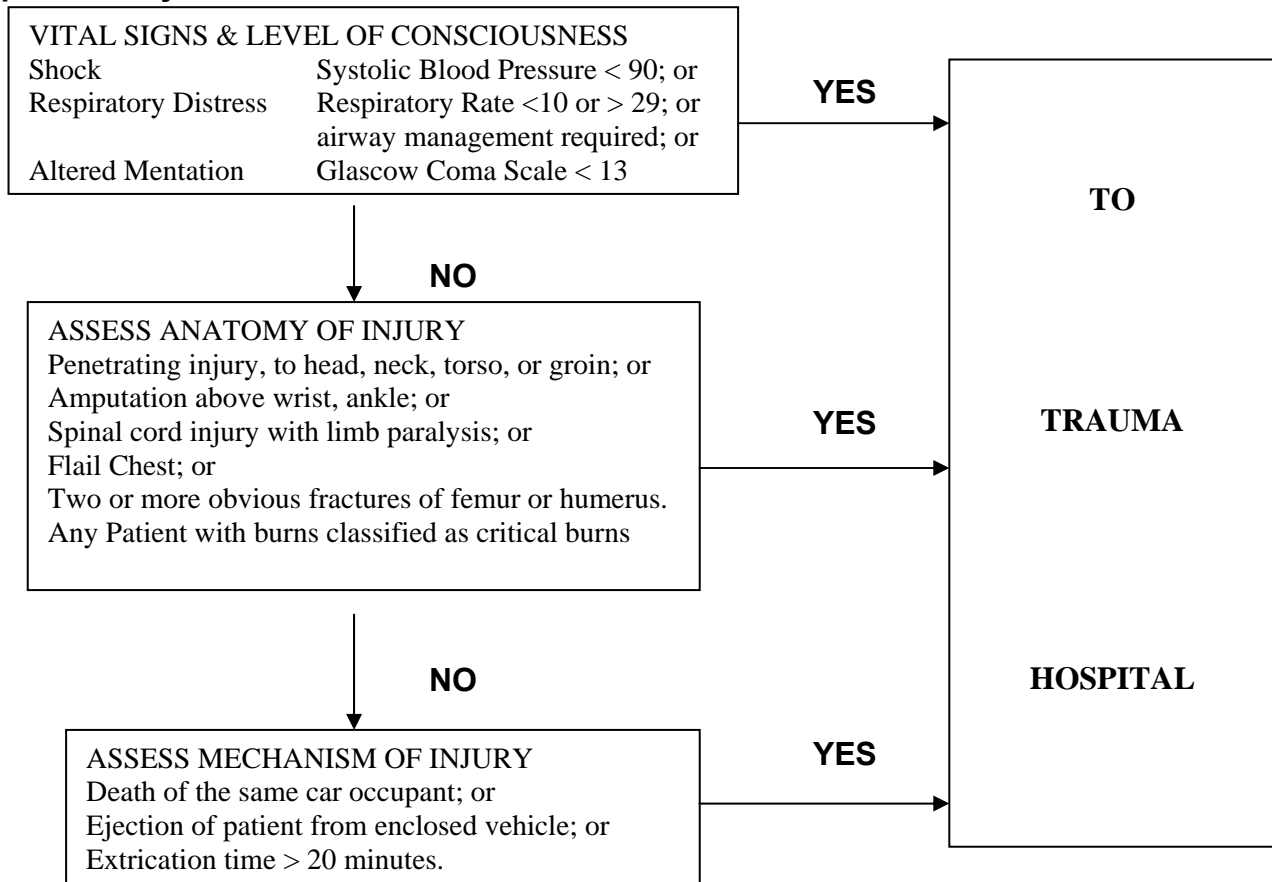
SPECIFIC PRECAUTIONS

- A. Stabilization in the field is not a valid concept for the management of severe trauma. Expedient transport to definitive care is essential for optimal care.
- B. During the initial survey and assessment, the highest-ranking EMT should make a determination as to whether the patient(s) will enter the Trauma System in accordance with the triage criteria.
- C. Early communication with Medical Control is essential in order to provide the hospital adequate preparation time. Medical Control may also be able to provide assistance in situations not clear on treatment and/or triage protocols and should be used. Every trauma patient must be assigned a Glasgow Coma Score
- D. Excluding prolonged extrication or other unforeseen complications, time spent on the scene should not exceed 10 minutes if the patient meets criteria for Trauma System entry.
- E. **Treatment on the scene should be limited to only those measures required to correct life-threatening problems found in the primary assessment and proper immobilization. Further treatments, when indicated, such as PASG (MAST) inflation or IV therapy, should be performed en route.**

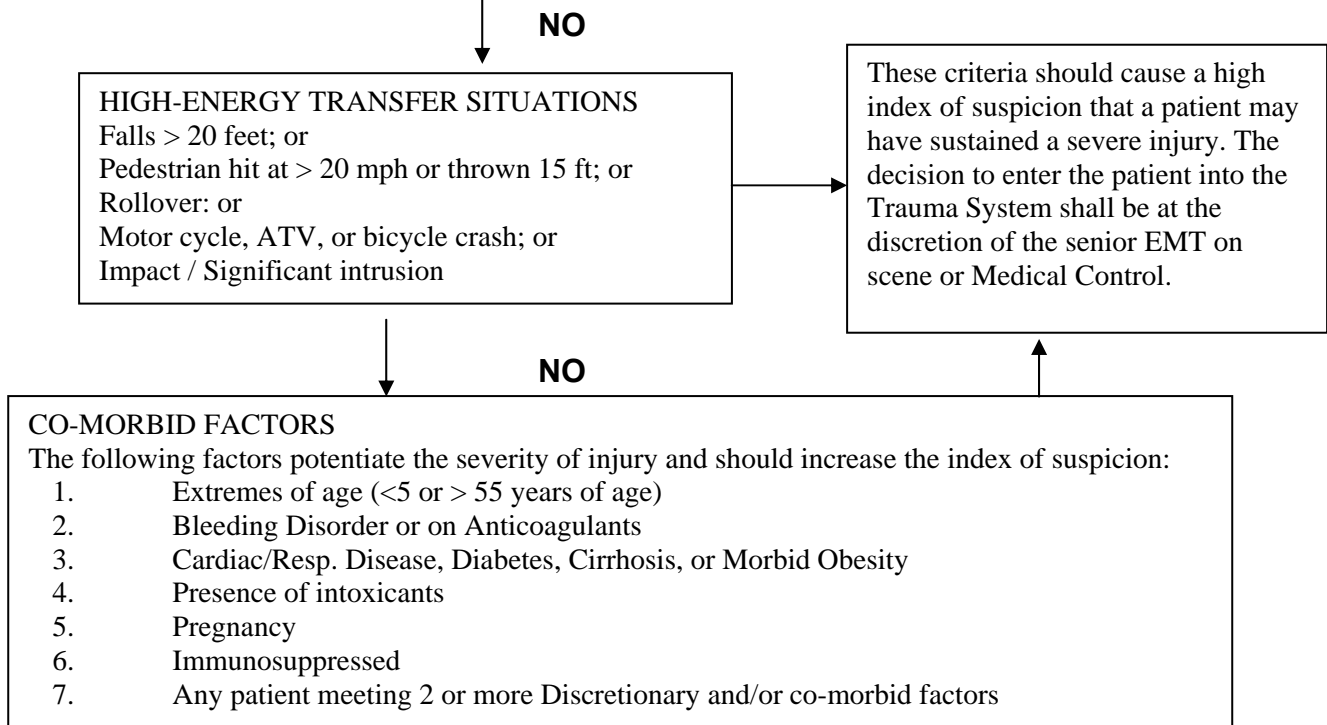
Trauma Triage Criteria

TRAUMA CRITERIA AND DECISION SCHEME

Required Entry Criteria 1-3



DISCRETIONARY CRITERIA 4-5



ILLUSTRATED GLASGOW COMA SCORE

Activity Examined	Stimulus	Patient's Response	Score
Eye Opening	None Necessary	Opens eyes spontaneously	4
	Speech	Opens eyes when asked to in a loud voice	3
	Pain	Opens eyes when stimulated by pain	2
	Pain	Does not open eyes	1
Verbal Response	Speech	Carries on conversation correctly; oriented to person, place, time and may or may not remember event, but is aware of current surroundings	5
	Speech	Seems confused or disoriented	4
	Speech	Talks but makes no sense	3
	Pain	Makes sounds examiner cannot understand	2
	Pain	Makes no noise	1
Motor Response	Speech	Follows simple commands	6
	Pain	Pulls examiner hand away when pinched	5
	Pain	Pulls body part away when pinched	4
	Pain	Inappropriate flexion of arms (decorticate posturing)	3
	Pain	Body becomes rigid in an extended position (decerebrate posturing)	2
	Pain	Flaccid; no motor response to pain	1

UNCONSCIOUSNESS (UNKNOWN)

SUBJECTIVE:

- A. Present history: Onset and progression of present condition; prior symptoms such as headaches, confusion, seizures, etc; recent trauma.
- B. Past history: Previous medical or psychiatric illnesses.
- C. Environmental indicators: Note odor, temperature, and bizarre arrangements. Be observant for med bottles (bring with), syringes, drug paraphernalia, and notes. Check refrigerator for "Vial of Life" if personnel available.

OBJECTIVE:

- A. Level of consciousness and neurological status. Describe deficits and Glasgow Coma Score.
- B. Signs of trauma.
- C. Vital signs.
- D. Medical alert tags.
- E. Abnormal body temperature.
- F. Blood glucose level.
- G. Odor on breath.
- H. Needle tracks.

TREATMENT:

First Responder/EMT-B

- Maintain airway exercising appropriate C-spine precautions.
- Be prepared to suction airway.
- Position patient supine.
- Oxygen: High flow, assist ventilation if respiratory status indicates.
- Obtain GCS; repeat at 15 min. intervals and whenever noticeable improvement or deterioration of neurostatus occurs.
- Obtain vitals; if shock syndrome presents, treat per "Shock Protocol".

EMT-I

- Monitor EKG; treat per appropriate "ACLS Protocol" if lethal arrhythmias present.
- Obtain temperature if grossly abnormal to touch or high index of suspicion. Treat if significant per "Hypothermia or Hyperthermia Protocol".
- IV: large bore; normal saline; standard drip set; titrate to normotensive BP.
- Determine blood glucose level.
- D50: 25gm / IV may repeat if BG low and patient does not respond to first bolus. If unable to establish IV, or no response after IV D50 administration, and BG confirmed low:
- Glucagon: 1 unit / IM; may repeat while enroute once in 15 minutes if BG remains confirmed low and patient does not improve adequately for administration of oral glucose.
- Narcan: 0.4-2 mg / IV; if vital signs indicate significant CNS depression. Administer 2 mg IM or SQ if unable to establish IV. May repeat 0.4-2 mg doses at 3-5 min intervals as indicated by continued respiratory or cardiac depression up to a total of 8 mg. Reversal of unconsciousness is not indicated as patient may become combative.

EMT-P

- Consider Thiamine: 100 mg / IV or IM.
- Intubate as needed if patient remains unconscious.
- Consider external toxic exposure. (See "Poison and Overdose Protocol")

SPECIFIC PRECAUTIONS:

- A. Ensure medical personnel safety.
- B. If trauma or CVA is strongly suspected as a cause, transport STAT and continue treatment enroute; do not administer D50 prior to Chem. BG.
- C. Be particularly attentive to airway and respiration. Difficulty with secretions, vomiting or inadequate tidal volume or rate may occur.
- D. If unable to establish an IV/IO line with 2 attempts in < 10 min., administer meds IM and transport without further delay.
- E. Hypoglycemia may present as focal neurologic deficits (stroke-like signs) or as coma. Decreased LOC may be prolonged with gradual recovery in elderly or profound cases. Monitor BG level as treatment continues.
- F. Be observant for rebound deterioration; repeated administration of meds may be needed.
- G. *THIS PROTOCOL IS INTENDED AS AN ALGORITHM WHEN A STRONG HISTORY IS NOT OBTAINABLE FROM PERSONS AT THE SCENE AND ETIOLOGY IS NOT OBVIOUSLY DEDUCIBLE FROM EVIDENCE.***

VAGINAL BLEEDING

SUBJECTIVE:

Cramping or pain, onset of bleeding, clots or tissue, last normal menstrual period, method of birth control, due date if pregnant, history of vaginal trauma, number of pads or tampons per hour, past medical history, medications, referred shoulder pain.

OBJECTIVE:

Estimated blood loss, hypotension, abdominal tenderness or guarding.

ASSESSMENT:

Vaginal bleeding can occur for a variety of reasons: pregnancy, trauma, hormonal imbalance and cancer. Patients may be miscarrying and unaware that they were pregnant. Tissue fragments or clots should be brought to the hospital. Emotional support may need to be provided to the patient and family. In cases of assault, preserve evidence.

TREATMENT:

First Responder:

- Oxygen

EMT - B:

- Shock position

EMT – I, EMT - P:

- One or two large bore IVs with crystalloid
- Cardiac monitor

SPECIFIC PRECAUTIONS:

- A. Amount of vaginal bleeding is difficult to estimate. Try to get an estimate of number of saturated pads in the previous 6 hours. Discreet inspection of the perineum may be useful to determine if clots or tissues are being passed.
- B. Patients in shock from vaginal bleedings should be treated as with any patient with hypovolemic shock.
- C. Always consider pregnancy, particularly ectopic pregnancy, as a cause of vaginal bleeding.
- D. In massaging the uterus in a bleeding post-partum patient, place one hand just above the pubic symphysis for support and massage with the other hand to prevent inversion of the uterus. Do not massage the uterus unless the placenta has been delivered.

Bypassing Southern Coos Hospital and Health Center

Policy & Procedure:

Certain patients may require procedures or services that are not immediately available at Southern Coos Hospital and Health Center. These patients would benefit by diverting to a more appropriate facility with the available resources.

Purpose:

To ensure the most expeditious use of transportation and patient care services in special medical situations.

Policy:

Orthopedic Injuries:

- A. Stable Patients:** When Bay Cities Ambulance crew evaluates a patient and finds:
 - 1. The patient's medical condition to include an obvious or strongly suspected fracture of the legs, ankle/foot, arms or hip, that will require orthopedic services
 - 2. They deem the patient sufficiently stable to endure a longer transport time; shall be transported to Bay Area Hospital
- B. Unstable Patients:** If the patient is deemed unstable, i.e.:
 - 1. Without good pulses distal to the injury, or
 - 2. With signs of actual/impending circulatory compromise or shock, they will consult with Southern Coos Hospital and transport the patient as directed. If unable to receive direction, they should transport to the closest facility.

Neurological Conditions:

Any patient that is, in the opinion of the EMT, suffering from a suspected CVA, and or any other type of intracranial condition, will be transported as follows:

A. Stable patients:

- 1. With a time of onset that is less than 2 hours, Patient did not have a seizure with onset of symptoms, has had no major surgeries in the past two weeks, CBG between 50-400mg/dl, Systolic B/P is not higher than 185 or Diastolic is not higher than 110, not currently taking any anticoagulants and no history of recent GI hemorrhage will be transported code 3 to Bay Area Hospital. If you are unsure or unable to obtain a detailed history, you should contact BAH and ask for direction prior to transport.
- 2. Bay Area Hospital will be notified as soon as possible to prepare for CT scan and neurology stand by.

- B. Unstable patients, patients with time of onset greater than 2 hours, or who don't meet the criteria as above, and all patients with unknown time of onset will be transported to Southern Coos Hospital and Health Center at an appropriate response code justified by the patient's condition.**

Obstetrical Patients:

- A.** If a patient is believed to be in active labor, but the Bay Cities Ambulance crew believes they have time to safely transport the patient code 1 to BAH, they should do so, since Obstetrical and neo-natal services are not immediately available at Southern Coos.
- B.** If delivery is imminent, and there is insufficient time to transfer to BAH, the patient will go to the nearest facility.

Psychiatric Patients:

- A.** Whenever possible, Southern Coos Hospital should be notified of patient condition. If requested and appropriate resources available, all psychiatric emergency patients should be transported to Bay Area Hospital.
- B.** If resources to deal with the patient while ensuring the safety of all personnel are not available, these patients should be transported to the closest facility.

Trauma System Entries:

- 1. **As before, all trauma system entries will go directly to Bay Area Hospital.**

Section 3

Pre-Hospital Medications

ACETAMINOPHEN

TRADE NAME:

Tylenol, APAP, Panadol

ACTION:

Antipyretic, analgesic.

INDICATIONS:

Fever greater than 39°C (102.2°F) in children less than 12 years old:

- who are conscious, awake and appear toxic or have a prolonged transport time; OR
- who have had a seizure.

CONTRAINDICATIONS:

- Known sensitivity to acetaminophen.
- Hyperthermia from environmental causes.

SIDE EFFECTS & PRECAUTIONS:

Significant overdose may cause liver failure. Do not give if patient has had appropriate dosage within two hours.

ROUTE & DOSAGE:

EMT - P:

Pediatric: 15 mg/kg: oral if conscious and awake, otherwise rectal suppository

ACETAMINOPHEN DOSING

AGE	WEIGHT (LB)	WEIGHT (KG)	DOSE (TSP)
Under 2 years	<24 lbs	<11 kg	15 mg/kg
2 - 3 years	24 - 35 lbs	11 - 16 kg	1 tsp = 5 ml = 160 mg
4 - 5 years	36 - 47 lbs	16 - 21 kg	1½ tsp = 7.5 ml = 240 mg
6 - 8 years	48 - 59 lbs	22 - 27 kg	2 tsp = 10 ml = 320 mg
9 - 10 years	60 - 71 lbs	27 - 32 kg	2½ tsp = 12.5 ml = 400 mg
11 years	72 - 95 lbs	33 - 43 kg	3 tsp = 15 ml = 480 mg

ACETYLSALICYLIC ACID (ASA, ASPIRIN)

TRADE NAME:

Ecotrin and others

ACTION:

Inhibits platelet aggregation.

INDICATIONS:

- Cardiac chest pain.
- Barotrauma.

CONTRAINDICATIONS:

- Known sensitivity to aspirin.
- Active GI bleeding.

SIDE EFFECTS & PRECAUTIONS:

Do not administer if is unconscious or unable to protect airway.

HOW SUPPLIED:

81 mg chewable tablet

ROUTE & DOSAGE:

EMT – B, EMT – I:

Cardiac chest pain: 4 tablets (324mg) orally

EMT - P:

Barotrauma: 4 tablets (324mg) orally

ACTIVATED CHARCOAL

TRADE NAME:

Actidose

ACTION:

Absorbs ingested toxic substances and inhibits gastrointestinal absorption by forming a barrier between remaining particulate material and gastrointestinal mucosa.

INDICATIONS:

- Oral toxic ingestion, poisoning or overdose in conscious and awake patients within 1 hour of ingestion and after consultation with on-line medical control.

CONTRAINDICATIONS:

- Known sensitivity to activated charcoal.
- Unconscious patient or diminishing level of consciousness.
- Ingestions of mineral acids or alkalis, petroleum products or cyanide.

SIDE EFFECTS & PRECAUTIONS:

Relatively contraindicated in tricyclic overdoses. Administration can result in aspiration or significant particulate obstruction of the airway. Do not administer activated charcoal in the presence of Ipecac.

ROUTE & DOSAGE:

ACTIVATED CHARCOAL may be used only after approval by on-line medical control

EMT - B:

Adult: 25- 50 grams orally

EMT - I:

EMT - P:

Pediatric: 0.5 gm/kg orally

ADENOSINE

TRADE NAME:

Adenocard

ACTION:

Slows conduction time through the A-V node and can interrupt the re-entry pathways through the A-V node and can restore normal sinus rhythm in patients with paroxysmal supraventricular tachycardia (PSVT). Half-life is less than 10 seconds.

INDICATIONS:

- Supraventricular tachycardia.

CONTRAINDICATIONS:

- Known sensitivity to adenosine.
- Known Wolff-Parkinson-White syndrome.
- Sick sinus syndrome or second or third degree heart block without functioning pacemaker.

SIDE EFFECTS & PRECAUTIONS:

Transient asystole may occur. Facial flushing, headache, shortness of breath, dizziness, nausea or chest pain. Dysrhythmias may develop including PVCs, PACs, sinus bradycardia, sinus tachycardia, A-V blocks and asystole. Not initial treatment for wide complex tachycardia. Larger doses may be required in the presence of methylxanthines (caffeine, theophylline). Will probably not convert atrial fibrillation or flutter, but may slow the rate transiently. If given to patients who have Wolff-Parkinson-White syndrome may cause paradoxical increase in ventricular rate.

ROUTE & DOSAGE:

EMT - P:

Adult: 6 mg rapid IV push over 1- 2 seconds followed by 20 ml saline rapid IV push at next most proximal IV port, preferably through a large bore antecubital site. If no conversion, 12 mg rapid IV push over 1-2 seconds followed by 20 ml saline rapid IV push at next most proximal IV port in 1-2 minutes. May repeat 12 mg dose once in 1-2 minutes.

Pediatric: 0.1 mg/ kg rapid IV or IO push over 1- 2 seconds with 10 ml saline rapid IV push at proximal IV port. May repeat with 0.2 mg/kg in 1-2 minutes.

ALBUTEROL

TRADE NAME:

Proventil, Ventolin

ACTION:

Potent, relatively selective beta 2-adrenergic bronchodilator. Onset of action is 2- 15 minutes, duration of action is 4-6 hours.

INDICATIONS:

- Bronchospasm due to asthma, COPD, CHF or anaphylaxis.

CONTRAINDICATIONS:

- Known sensitivity to albuterol.

SIDE EFFECTS & PRECAUTIONS:

Palpitations, anxiety, nausea and dizziness. Stop treatment if frequent PVCs or tachyarrhythmias other than sinus tachycardia develop.

ROUTE & DOSAGE:

EMT - I:

2.5-3 mg via nebulizer with oxygen set at 6 - 10 L/min. May mix with Atrovent 2.5mg for PT > 12y/o

Repeat dosage only after approval by on-line medical control

EMT - P:

May repeat twice.

AMIODARONE (Optional)

TRADE NAME:

Cordarone
Pacerone

ACTION:

Antiarrhythmic agent.

INDICATIONS:

- Ventricular fibrillation or pulseless ventricular tachycardia.
- Ventricular tachycardia with a pulse in a stable patient.

CONTRAINDICATIONS:

- Known sensitivity to amiodarone.

SIDE EFFECTS & PRECAUTIONS:

If severe signs or symptoms develop use immediate cardioversion.

May cause hypotension.

May cause or worsen bradycardia or conduction defects.

May worsen congestive heart failure.

Rarely may precipitate cardiac dysrhythmias - torsades de pointes.

ROUTE & DOSAGE:

EMT – I, P:

Ventricular fibrillation/Pulseless ventricular tachycardia:

300 mg IV bolus or pre-filled syringe in 20 - 30 ml D5W.

If no perfusing rhythm- an additional 150 mg IV bolus in 3 - 5 minutes.

Ventricular tachycardia with a pulse:

150 mg in 10ml D5W in a Soluset over 10 minutes

Rate: 15 mg/min = 60 drops/min

Repeat once if no change in rhythm.

ATROPINE SULFATE

TRADE NAME:

Atropine

ACTION:

Parasympatholytic agent with the following effects: increases heart rate, increases conduction through A-V node, reduces motility and tone of GI tract, reduces tone of the urinary bladder, dilates pupils, dilates bronchi.

INDICATIONS:

- Asystole, PEA or symptomatic bradycardia.
- Antidote for symptomatic organophosphate poisoning.
- Pretreatment for RSI.

CONTRAINDICATIONS:

- Known sensitivity to atropine sulfate.

SIDE EFFECTS & PRECAUTIONS:

Less likely to be effective in second degree type 2 A-V block and third degree block with wide QRS complexes in the presence of an acute MI. Bradycardia in the setting of an acute MI is common; do not treat rhythm unless the patient is symptomatic or there are signs of poor perfusion.

ROUTE & DOSAGE:

EMT - I:

Symptomatic bradycardia:

0.5 mg IV or IO push, every 3-5 minutes, maximum 3 mg.

Asystole or slow PEA:

1 mg IV or IO, every 3-5 minutes, maximum 3 mg.

EMT - P:

(Double the dose for ET administration.)

Organophosphate poisoning:

Adult: 0.5 mg - 1 mg IV push.

Pediatric: 0.02 mg/kg, IV or IO, ET. Minimum single dose: 0.1 mg.

Maximum single dose: 0.5 mg in child, 1.0 mg in adolescent.

Double dose every 5 minutes until symptoms controlled.

CALCIUM GLUCONATE / CALCIUM CHLORIDE

TRADE NAME:

Calcium Gluconate

ACTION:

Electrolyte essential for muscle contraction.

INDICATIONS:

- Antidote for overdoses of calcium channel blockers or magnesium.
- Topical treatment for hydrogen fluoride or hydrofluoric acid exposure.

CONTRAINDICATIONS:

- Known sensitivity to calcium gluconate.

SIDE EFFECTS & PRECAUTIONS:

Will precipitate if infused in same line with sodium bicarbonate. Use with caution in patients taking digoxin.

ROUTE & DOSAGE:

EMT - P:

Calcium Channel Blocker

or

Magnesium Sulfate overdose:

Adult: 10 ml IV over 5-10 minutes.

Pediatric: 0.6 - 0.75 ml/kg.

Hydrogen fluoride or hydrofluoric acid exposure :

Apply topically - (mix 1 ampule in 1 ounce (30cc) K-Y jelly)

CRYSTALLOID

TRADE NAME:

Normal Saline, 0.9% Saline, NormoSol R, Lactated Ringer's

ACTION:

Sterile isotonic fluid for intravenous use.

INDICATIONS:

Intravascular volume expansion, fluid challenge, medication administration or catheter flush.

CONTRAINDICATIONS:

None.

SIDE EFFECTS & PRECAUTIONS:

Administer with caution to patients with fluid overload such as pulmonary edema, brain injury, heart disease or kidney disease. In pediatric patients use a pump, volutrol or syringe to avoid excessive administration.

HOW SUPPLIED:

Multidose vials

Prefilled syringes

50, 250, 500 and 1000 ml bags

ROUTE & DOSAGE:

EMT - I:

EMT - P

Catheter flush: 2-5 ml IV or IO

Medication flush: 10-20 ml IV or IO

Volume expansion:

Adult: 200-1000 ml IV, repeat to desired effect.

Pediatric: 10-20 ml/kg IV or IO, repeat to desired effect.

Note;

Lactated Ringers is the preferred fluid for the treatment shock, burns and all major trauma. Whenever available consider it's use in place of normal saline.

CYANIDE ANTIDOTE KIT (OPTIONAL)

TRADE NAME:

Cyanide antidote kit (Amyl Nitrite)

ACTION:

Speeds breakdown and degradation of cyanide, a potent cellular toxin.

INDICATIONS:

- Known or highly suspected significant cyanide ingestion or poisoning.

CONTRAINDICATIONS:

- Significant allergy to thiosulfate or nitrite.

SIDE EFFECTS & PRECAUTIONS:

Nitrites may cause hypotension and converts hemoglobin to methemoglobin, which does not carry oxygen.

HOW SUPPLIED:

Kit containing:

amyl nitrite ampules (0.3 ml),
sodium nitrite ampules (3% = 300 mg in 10 ml) and
sodium thiosulfate vials (25% = 12.5 g in 50 ml).

ROUTE & DOSAGE:

PROTECT YOURSELF AND OTHERS

EMT - P:

Administer 100% oxygen.

Amyl nitrite ampules by inhalation. 30 seconds of amyl nitrate alternating with 30 seconds of 100% oxygen.

Sodium nitrite IV over 3 minutes:

Adult: 10 ml

Pediatric: 0.2 ml/kg.

Sodium thiosulfate IV over 10 minutes:

Adult: 50 ml

Pediatric: 0.8 ml/kg.

DIAZEPAM (OPTIONAL)

TRADE NAME:

Valium

ACTION:

Benzodiazepine with anticonvulsant, skeletal muscle relaxant, anxiety reducing, amnesic and sedative effects.

INDICATIONS:

- Sedation for painful procedures (such as transcutaneous pacing or cardioversion), amputations or combative patients.
- Muscle relaxation for patients with dislocations or significant fractures.
- Post RSI sedation.
- Seizures.

CONTRAINDICATIONS:

- Known sensitivity to diazepam.

SIDE EFFECTS & PRECAUTIONS:

Respiratory depression, hypotension or sedation are common, particularly in the elderly, in those with chronic disease or in the presence of other sedating agents: alcohol, barbiturates, benzodiazepines or opiates.

Paradoxical excitement or agitation may occur.

ROUTE & DOSAGE:

EMT - P:

Adult: 2-10 mg IV or IM every 3-5 mins

Max of 10 mg for sedation.

Max of 20mg for seizures.

May be given rectally for seizures.

Pediatric: 0.1-0.3 mg/kg IV, IO or IM (maximum dose 5 mg). May repeat once.

0.5 mg/kg rectal (maximum dose 5 mg).

DILTIAZEM HYDROCHLORIDE

TRADE NAME:

Cardizem

ACTION:

Calcium channel blocker which decreases intranodal AV conduction and decreases smooth muscle tone causing arterial dilatation.

INDICATIONS:

- Treatment of narrow complex tachycardias.
- Slowing of atrial fibrillation or flutter with rapid ventricular response.
- Rapid conversion of paroxysmal supraventricular tachycardias unresponsive to adenosine.

CONTRAINDICATIONS:

- Known sensitivity to diltiazem hydrochloride.
- Narrow complex tachycardia with severe signs or symptoms – use cardioversion.
- Wolff-Parkinson-White syndrome with narrow complex tachycardia.

SIDE EFFECTS & PRECAUTIONS:

Likely to cause hypotension. May precipitate cardiac dysrhythmias. May worsen congestive heart failure.

ROUTE & DOSAGE:

EMT - P:

Adult: 0.25 mg/kg (typically 20-25 mg, max 35 mg) IV slowly over 2 minutes.

DIPHENHYDRAMINE

TRADE NAME:

Benadryl

ACTION:

Blocks histamine release. Anticholinergic agent.

INDICATIONS:

- Less effective and longer acting than epinephrine for use in mild to moderate
- anaphylactic or allergic reactions.
- Dystonic reactions.

CONTRAINDICATIONS:

- Known sensitivity to diphenhydramine.

SIDE EFFECTS & PRECAUTIONS:

Usually sedating but may occasionally cause hyperexcitability, most often in children. Anticholinergic and antiparkinsonian effect.

ROUTE & DOSAGE:

EMT – I, P:

Adult: 25-50 mg IV, IO, IM or orally

Pediatric: 1-2 mg/kg IV, IO, IM or orally

DOPAMINE

TRADE NAME:

Intropin

ACTION:

Dilates renal and mesenteric arteries, increases cardiac output and causes systemic vasoconstriction.

INDICATIONS:

- Hypotension not responding to volume replacement.
- Symptomatic bradycardia unresponsive to atropine and pacing.

CONTRAINDICATIONS:

- Known sensitivity to dopamine.
- Hypotension without adequate volume replacement.

SIDE EFFECTS & PRECAUTIONS:

- Vasoconstriction and myocardial workload increase as dose increases which may result in cardiac dysrhythmia, angina or headache.
- Inactivated in alkaline solutions such as sodium bicarbonate.
- Causes tissue necrosis if IV infiltrates.

ROUTE & DOSAGE:

EMT - P:

- **Dose:** 2-20 mcg/kg/min IV or IO infusion titrated to desired effect.

Dopamine (Intropin) 400 mg in 250 (1600 mcg/ml) Microdrops per minute (or ml/hr)

For 800 mcg/ml concentration double the number of microdrops above.

(Dopamine 400 mg in 500 ml saline)

DROPERIDOL

TRADE NAME:

Inapsine

ACTION:

- Droperidol is a neuroleptic (tranquilizing) agent with marked tranquilization and sedation activity. It allays apprehension and provides a state of mental detachment and indifference while maintaining a state of reflex alertness.
- Droperidol has potent antiemetic effects through CNS action and lowers the incidence of nausea and vomiting from almost all causes except obstruction.
- It produces mild alpha-adrenergic blockade and peripheral vascular dilation and reduces the pressor effect of epinephrine.
- It potentiates other CNS depressants.

INDICATIONS:

- Sedation or tranquilization.
- Potentiation of opiate analgesia.

CONTRAINDICATIONS:

- Allergy to droperidol.
- Hypotension.
- Obtunded or comatose patients.
- Any patient with known or suspected heart disease or are currently known to be taking cardiac medications.
- Pediatric patients, any patient > 50yrs old.

SIDE EFFECTS & PRECAUTIONS:

- Can cause hypotension and compensatory tachycardia.
- Has additive sedative effect on opiate drugs, and other sedatives / tranquilizers.
- Can cause extrapyramidal reactions.
- Rarely causes bronchospasm or hallucinations.
- **Droperidol may cause potentially fatal prolongation of the QT interval, Torsades de Pointes, cardiac arrest and ventricular tachycardia.**
- When used with opiate analgesics such as Fentanyl or Morphine, respiratory depression and apnea may occur.
- **Use caution when administering Droperidol to patients who have taken other CNS depressant drugs (barbiturates, tranquilizers, alcohol, etc). On these patients the dosage should be reduced.**
- Observe for hypotension; treat with fluid and Trendelenburg position.
- Patients are not competent to give informed consent after Droperidol.
- You **must** be prepared to establish an IV on any patient that has received Inapsine.
- These patients **require** constant EKG monitoring due to the risk of prolonged QT intervals.

ROUTE & DOSAGE:

EMT-P

- 2.5 mg – 5 mg IVP or IM

EPINEPHRINE

TRADE NAME:

Adrenaline

ACTION:

Naturally occurring catecholamine with both alpha and beta adrenergic effects: increases heart rate, myocardial contractility, myocardial oxygen consumption, systemic vascular resistance and causes arterial vasoconstriction and bronchodilation.

INDICATIONS:

- Ventricular fibrillation, pulseless ventricular tachycardia, asystole, PEA.
- Symptomatic bradycardia.
- Anaphylaxis.
- Asthma.

CONTRAINDICATIONS:

- Known sensitivity to epinephrine.
- Cardiac chest pain.

SIDE EFFECTS & PRECAUTIONS:

Commonly causes anxiety, tremor, palpitations and increases blood pressure. May cause angina or myocardial infarction. Use cautiously in patients over 50 years of age or with a history of coronary artery disease. May be inactivated if mixed with alkaline solutions, such as bicarbonate.

ROUTE & DOSAGE:

EMT - B:

Anaphylaxis (hypotension, bronchospasm, angioedema, itching, hives):

Adult: 0.3 - 0.5 mg = 0.3 - 0.5 ml of 1:1,000 SQ.

Pediatric: 0.01 mg/kg = 0.01 ml/kg of 1:1,000 SQ. Maximum 0.5 mg/dose.

May repeat in 15 min **after Medical Control**.

EMT - I:

Anaphylaxis May give epinephrine 1:1,000 IM.

Cardiac arrest (ventricular fibrillation, pulseless ventricular tachycardia, pulseless electrical activity or asystole):

Adult: 1 mg of 1:10,000 IV or IO repeated every 3-5 minutes as needed.

EMT - P:

Asthma or anaphylaxis with B/P < 90mmHg

Adult: 0.1 mg = 1 mL of 1:10,000 IV or IO. May repeat in 3-5 minutes.

Pediatric: 0.01 mg/kg = 0.1 ml/kg of 1:10,000 IV or IO. Maximum 0.5 mg/dose

May repeat in 3-5 minutes.

Cardiac Arrest

Adult: Initial dose: 1 mg of 1:10,000 IV or IO. (May give 2 mg of 1:10,000 via ET tube if know other route is available.) May repeat every 3-5 minutes.

Pediatric: Initial dose: 0.01 mg/kg (0.1 ml/kg of 1:10,000) IV or IO or 0.1 mg/kg (0.1 ml/kg of 1:1,000) ET then 3 ml NS flush. May repeat every 3-5 minutes.

Neonates: 0.01 - 0.03 mg/kg (0.1 - 0.3 ml/kg of 1:10,000) IV, IO, ET or UV.

May repeat every 3-5 minutes.

Anaphylactic shock or severe bradycardia by online medical control only

Infusion: mix 1 mg (1:1,000) in 250 ml (4 mcg/ml) or 500 ml (2 mcg/ml) normal saline.

2 - 10 mcg/minute IV titrated to desired effect.

ESMOLOL

ACTION:

Intravenous adrenergic beta blocker

INDICATIONS:

By physician order only

ST Elevation MI with Hypertension and Tachycardia

Malignant Hypertension

Aortic Aneurysm

CONTRAINDICATIONS:

- Hypotension
- Bradycardia or Heart block
- Cardiogenic Shock

SIDE EFFECTS & PRECAUTIONS:

Use with caution in asthmatics

HOW SUPPLIED:

2500 mg in 10ml or 100mg in 10ml

ROUTE & DOSAGE:

EMT – P or RN: 500 mcg/kg/min IV bolus over 1 minute. Titrate upwards at

50 mcg/kg/min IV increments every 3-4 minutes.

Maximum 300 mcg/kg/min.

ETOMIDATE: (Optional)

TRADE NAME:

Amidate

ACTION:

A short acting sedative hypnotic agent.

INDICATIONS:

- Sedation for rapid sequence intubation.

CONTRAINDICATIONS:

- Known sensitivity to etomidate.

SIDE EFFECTS & PRECAUTIONS:

Administer in a large bore, free flowing IV.

Respiratory depression, hypotension and cardiopulmonary arrest are more likely in the elderly, those with COPD, renal, heart or liver disease. Use with caution in the presence of alcohol, barbiturates, narcotics or benzodiazopines. Skeletal muscle jerking or movements occur commonly. Duration is 4-10 minutes.

ROUTE & DOSAGE:

EMT - P: *Adult:* 0.3 mg/kg IV over 30 - 60 seconds. Typical adult dose is 20 mg.
 Pediatric: 0.3 mg/kg IV over 30 - 60 seconds.

FENTANYL

TRADE NAME:

Sublimaze

ACTION:

Potent narcotic analgesic

INDICATIONS:

- By physician order only
- Extremity fractures, crush or amputation injuries in the absence of head, chest and abdominal injuries.
- Abdominal pain.
- Severe burns.

CONTRAINDICATIONS:

- Known sensitivity to fentanyl.
- Patients who have received MAO inhibitors within the prior 21 days.

SIDE EFFECTS & PRECAUTIONS:

Central nervous system depressant, which can cause respiratory depression, peripheral vasodilation, decreased cardiac output or pupillary constriction. Use cautiously if patient is hypotensive. Naloxone (Narcan) will reverse the effects of this opioid.

HOW SUPPLIED:

50 mcg/ml in 2 ml ampules

ROUTE & DOSAGE:

EMT – P or RN:

Adult: 50 – 100 mcg slow IV or IM every 1 - 4 hours or 0.5 - 4 mcg/kg/hour IV infusion. Titrate to desired effect.

Pediatric: 2-3 mcg/kg slow IV or IM every 1 - 4 hours or 0.5 - 4 mcg/kg/hour IV infusion. Titrate to desired effect.

FOSPHENYTOIN

TRADE NAME:

Cerebryx

ACTION:

Anticonvulsant

INDICATIONS:

- By physician order only
- Seizures.
- Severe head injury.

CONTRAINDICATIONS:

- Known sensitivity to fosphenytoin.
- Sinus bradycardia, sinoatrial block, 2° or 3° degree AV block.

SIDE EFFECTS & PRECAUTIONS:

Use cautiously if patient is hypotensive or bradycardic.

ROUTE & DOSAGE:

EMT-P or RN: 20 mg phenytoin equivalent mg/kg IV infusion.
Maximum 150 phenytoin equivalent mg/minute IV infusion.

FUROSEMIDE

TRADE NAME:

Lasix

ACTION:

Potent diuretic and mild vasodilator.

INDICATIONS:

- Acute pulmonary edema.
- Hypertensive emergency.

CONTRAINDICATIONS:

- Known sensitivity to furosemide.
- Hypovolemia.

SIDE EFFECTS & PRECAUTIONS:

Have a urinal available as diuresis may occur in 10-15 minutes. Can lead to dehydration with hypotension and electrolyte depletion. ***Do not use in children or pregnant women without on-line medical control.***

ROUTE & DOSAGE:

EMT – I, P: 40 - 80 mg IV. May repeat in 5 - 10 minutes.

EMT-I may use FUROSEMIDE only after approval by on-line medical control

GLUCAGON HYDROCHLORIDE

TRADE NAME:

Glucagon

ACTION:

A pancreatic hormone, which increases blood glucose levels by converting glycogen that is stored in the liver to glucose.

INDICATIONS:

- Documented hypoglycemic reaction in an unconscious or semi-conscious patient where an IV or IO cannot be established.
- Significant beta-blocker poisoning/overdose.

CONTRAINDICATIONS:

- Known sensitivity to glucagon hydrochloride.

SIDE EFFECTS & PRECAUTIONS:

Use only the dilution supplied by the manufacturer. Common side effects include nausea and vomiting. The patient will usually awaken in 15-20 minutes. Give supplemental carbohydrate as soon as possible. Glucagon may be available at a patient's home.

ROUTE & DOSAGE:

EMT - I:

For Hypoglycemia:

Adult: 1 mg (1 unit) IM or SQ (May be repeated twice if needed)

Pediatric: <20 KG: 0.5 mg (0.5 unit) IM or SQ >20 KG: 1 mg (1 unit) IM or SQ

EMT - P:

Beta Blocker Overdose:

Adult: 3-5 mg IV every 5 minutes, maximum 15 mg.

Pediatric: 50-150 mcg/kg IV or IO.

GLUCOSE - DEXTROSE

TRADE NAME:

D50, Glucose

ACTION:

Dextrose is d-glucose, a six-carbon sugar, and the body's basic energy source.

INDICATIONS:

Symptomatic hypoglycemia, blood sugar less than:

- 80 mg/dl in an adult and children.
- 60 mg/dl in an infant (8 weeks to 1 year).
- 40 mg/dl in a newborn (birth to 8 weeks).

CONTRAINDICATIONS:

- None.

SIDE EFFECTS & PRECAUTIONS:

Avoid if patient has an acute cerebral vascular accident.

Administer through a free flowing IV as dextrose infiltration causes tissue necrosis and is a vein irritant.

ROUTE & DOSAGE:

FR: Pediatric: 0.5 mg/kg orally if patient can protect airway.

EMT – B: Adult: 12-48 g orally if patient can protect airway.

EMT – I, EMT - P:

- **Birth to 8 weeks:** Dilute with 4 volumes saline (= D10) Give 5ml/kg.
- **8 weeks to 1 year:** Dilute with equal volume saline (= D25). Give 2ml/kg.
 - **1 year:** (= D50) Give 1ml/kg.
- **Adult:** 50 ml (=25g) IV.

HALOPERIDOL (Optional)

TRADE NAME:

Haldol

ACTION:

Haloperidol is a potent neuroleptic and antipsychotic agent.

INDICATIONS:

- Sedation and restraint of patients who have a head injury, are combative or are intubated.

CONTRAINDICATIONS:

- Known sensitivity to haloperidol.
- Prolonged QT interval.
- Pregnancy.

SIDE EFFECTS & PRECAUTIONS:

Hypotension.

Acute dystonic reactions - best treated with diphenhydramine.

ROUTE & DOSAGE:

EMT - P:

Adult: Administer 2.5 mg to 5 mg IV push or IM. May repeat up to 10 mg maximum.

Pediatric: 0.03-0.07 mg/kg slow IV or IO. Maximum 2.5 mg.

HEPARIN

ACTION:

Intravenous anticoagulant

INDICATIONS:

- By physician order only
- ST Elevation MI
- Invasive Pressure Monitoring System Flush

CONTRAINDICATIONS:

- Known sensitivity to heparin.
- Active bleeding.
- Recent major surgery, CVA or major trauma (within 1 week)
- Recent CPR (within 24 hours)

SIDE EFFECTS & PRECAUTIONS:

May cause CVA or severe bleeding.

HOW SUPPLIED:

5,000 unit/ml

1,000 unit/ml

ROUTE & DOSAGE:

EMT – P or RN:

ST Elevation MI: 5,000 unit IV bolus

Pressure line flush: 1,000 units mixed in 1000 ml crystalloid equipped with a pressure bag.

HYDRALAZINE

ACTION:

Direct vasodilator

INDICATIONS:

- By physician order only
- Hypertension.

CONTRAINDICATIONS:

- Known sensitivity to hydralazine.

SIDE EFFECTS & PRECAUTIONS:

May cause reflex tachycardia

ROUTE & DOSAGE:

EMT – P or RN:

Adult: 10 - 20 mg slow IV push every 30 minutes. *Maximum 40 mg*

Peds: 0.1 – 0.5 mg/kg slow IV push every 30 minutes. *Maximum 20 mg/dose or 40 mg total.*

IPRATROPIUM BROMIDE

TRADE NAME:

Atrovent

ACTION:

Atrovent is an anticholinergic (parasympatholytic) bronchodilator.

INDICATIONS:

- COPD, bronchospasm or asthma.

CONTRAINDICATIONS:

- Known sensitivity to ipratropium bromide or atropine.

SIDE EFFECTS & PRECAUTIONS:

Use with caution in patients with narrow angle glaucoma, prostate hypertrophy or bladder neck obstruction.

ROUTE & DOSAGE:

EMT – I, P:

- 1 unit dose (0.5mg) via nebulizer. Mix with albuterol. May repeat twice.

LABETALOL

TRADE NAME:

Trandate

ACTION:

Intravenous adrenergic alpha and beta blocker

INDICATIONS:

- By physician order only
- Malignant Hypertension
- Pregnancy Induced Hypertension
- Aortic Aneurysm

CONTRAINDICATIONS:

- Known sensitivity to labetalol
- Hypotension
- Cardiogenic or Hypovolemic Shock
- Bradycardia or Heart block
- Congestive Heart Failure

SIDE EFFECTS & PRECAUTIONS:

Use with caution in asthmatics.

HOW SUPPLIED:

200mg/40ml

ROUTE & DOSAGE:

EMT – P: 20 mg q 10 min slow IV push over 2 minutes.
Maximum 300 mg.

LIDOCAINE

TRADE NAME:

Xylocaine

ACTION:

Antiarrhythmic and local anaesthetic.

INDICATIONS:

- Ventricular fibrillation/tachycardia - online medical control only
- To reduce intracranial pressure during rapid sequence intubation.

CONTRAINDICATIONS:

- Known sensitivity to lidocaine.

SIDE EFFECTS & PRECAUTIONS:

Toxicity can produce altered mental status, myocardial depression, and seizures.

ROUTE & DOSAGE:

EMT – I:

Ventricular fibrillation/pulseless ventricular tachycardia

Adult: 1- 1.5 mg/kg IV or IO push. Repeat 0.75 mg/kg every 5-10 minutes up to 3 mg/kg maximum.

Wide complex tachycardia

Adult: 1.0 mg/kg IV or IO push. Repeat 0.5 mg/kg every 5-10 minutes up to 3 mg/kg maximum.

EMT - P:

RSI – 1.5 mg/kg IV or IO before paralysis

Lidocaine Drip

- If patient converted after 1mg/kg bolus then start drip at 2mg/min.
- If patient converted after 2mg/kg bolus then start drip at 3mg/min.
- If patient converted after 3mg/kg bolus then start drip at 4mg/kg.

LORAZEPAM

TRADE NAME:

Ativan

ACTION:

Benzodiazepine with anticonvulsant, skeletal muscle relaxant, anxiety reducing, amnesic and sedative effects.

INDICATIONS:

- Seizure
- Sedation for painful procedures or injuries or combative patients
- Post RSI sedation

CONTRAINDICATIONS:

- Known sensitivity to lorazepam.

SIDE EFFECTS & PRECAUTIONS:

- Respiratory depression. Hypotension. Sedation. Paradoxical excitement or agitation may occur.
- Use with caution in the presence of other sedating agents: alcohol, barbiturates, benzodiazepines or opiates.
- Needs to be refrigerated.

HOW SUPPLIED:

2 mg/ml vial

ROUTE & DOSAGE:

Adult: 1 - 4 mg IV. May repeat twice.

Pediatric: 0.05-0.1 mg/kg IV or IO (maximum dose 4 mg).

MAGNESIUM SULFATE (OPTIONAL)

TRADE NAME:

Magnesium Sulfate

ACTION:

Antiarrhythmic, anticonvulsant, bronchial smooth muscle relaxant, central nervous system depressant.

INDICATIONS:

- Torsades de Pointes. Refractory ventricular fibrillation or tachycardia.
- Eclampsia.
- Alcohol withdrawal seizures or delirium tremens (DTs).

CONTRAINDICATIONS:

- None.

SIDE EFFECTS & PRECAUTIONS:

Toxicity may produce decreased level of consciousness, decreased reflexes, hypotension or respiratory depression. Rapid administration may result in flushing, sweating, mild bradycardia or hypotension.

HOW SUPPLIED:

5 gm/10 ml vial or 1 gm/2 ml vial (50% solution)

ROUTE & DOSAGE:

EMT - P:

Cardiac arrest: 1 - 2 grams in 10 ml saline IV push.

Non-cardiac arrest: 1 - 2 grams in 10 ml saline over 1-3 minutes IV.

MANNITOL

TRADE NAME:

Osmitrol

ACTION:

Osmotic diuretic

INDICATIONS:

- By physician order only
- Head injury with increasing neurological abnormalities.

CONTRAINDICATIONS:

- Known sensitivity to mannitol.
- Renal failure.
-

SIDE EFFECTS & PRECAUTIONS:

May cause volume depletion.

ROUTE & DOSAGE:

EMT – P or RN: 0.5 gms – 2 gms/kg IV over 30-60 minutes.

MARK 1 AUTOINJECTOR (Atropine & Pralidoxime Chloride)

Specific HazMat training required

ACTION:

Atropine - parasympatholytic agent with the following effects: increases heart rate, increases conduction through A-V node, reduces motility and tone of GI tract, reduces tone of the urinary bladder, dilates pupils, dilates bronchi. Pralidoxime (2-PAM) chloride - reactivates cellular acetylcholinesterase molecules preventing organophosphate cholinesterase poisoning if given soon enough (before "aging" occurs).

INDICATIONS:

- Antidote for nerve gas organophosphate nerve gas exposure or poisoning.

CONTRAINDICATIONS:

- None.

SIDE EFFECTS & PRECAUTIONS:

Organophosphate nerve gases - VX, GF, GD (Soman), GB (Sarin), GA (Tabun) - are very rapidly toxic and lethal. Protect yourself and others from exposure.

HOW SUPPLIED:

Atropine 2 mg/0.7 ml and Pralidoxime 600 mg/2 ml autoinjectors

ROUTE & DOSAGE:

EMT - B: 1-3 Atropine autoinjectors IM into the lateral thigh or upper outer

EMT - I: buttocks followed by the same number of pralidoxime autoinjectors

EMT - P: IM in a similar location. Seek immediate ALS care.

MEPERIDINE HYDROCHLORIDE (OPTIONAL)

TRADE NAME:

Demerol

ACTION:

Narcotic analgesic

INDICATIONS:

- Severe cardiac chest pain in a patient intolerant of or allergic to morphine.
- Extremity fractures, crush or amputation injuries in the absence of head, chest and abdominal injuries.
- Abdominal pain.
- Severe burns.
- Musculoskeletal pain.

CONTRAINDICATIONS:

- Known sensitivity to Meperidine
- Patients on MAO inhibitors.

SIDE EFFECTS & PRECAUTIONS:

Central nervous system depressant, which can cause respiratory depression. Nausea and vomiting. Hypotension. Tachy or Brady arrhythmias. Use cautiously if patient is hypotensive. Phenothiazines potentiate effect.

HOW SUPPLIED:

100 mg/1 ml pre-filled syringe, vial or Tubex

ROUTE & DOSAGE

EMT - P:

Adult: 10-25 mg IV every 5 minutes as needed to a total dose of 100 mg.

50 mg IM if IV unavailable for non-cardiac pain.

Pediatric: 0.5-0.7 mg/kg IV or IO every 5 minutes to a total dose of 50 mg.

1-1.5 mg/kg IM if IV unavailable. Maximum 50 mg.

METHYLPREDNISOLONE

TRADE NAME:

Solu-Medrol

ACTION:

- Methylprednisolone is a synthetic corticoid that is used as an anti-inflammatory and immunosuppressant drug.
- Onset of action is 1-6 hours; Peak effect is in 8 hours with the duration of action in 18-36 hours.

INDICATIONS:

- Strongly consider the use of Solu-Medrol under the following circumstances:
 1. Severe respiratory distress with hypoxia after the administration of a nebulized treatment of bronchial dilator. (To rule out pulmonary edema)
 2. Patients not responding to multiple nebulizer treatments either at home nor enroute
 3. Recent history of steroid use.
- Allergic reaction/Anaphylaxis
- COPD

CONTRAINDICATIONS:

- Allergy to steroids
- Pulmonary Edema

SIDE EFFECTS & PRECAUTIONS:

- Do not delay other interventions that will have more immediate effects.
- Do not use in mild cases that respond to nebulized treatments.
- Do not use steroids on patients with congestive heart failure.

ROUTE & DOSAGE:

EMT-P

- 125 mg IVP

METOPROLOL

ACTION:

Intravenous adrenergic beta blocker

INDICATIONS:

- By physician order only
- ST Elevation MI

CONTRAINDICATIONS:

- Hypotension
- Heart block
- Bradycardia
- Cardiogenic Shock
- Congestive Heart Failure
-

SIDE EFFECTS & PRECAUTIONS:

Use with caution in patients with asthma.

HOW SUPPLIED:

1 mg/ml

ROUTE & DOSAGE:

EMT – P or RN: 5mg slow IV push q 5 min x 3, maximum of 15mg.

MIDAZOLAM (OPTIONAL)

TRADE NAME:

Versed

ACTION:

A short acting benzodiazepine, causing central nervous system depression, respiratory depression, skeletal muscle relaxation and amnesia.

INDICATIONS:

- Sedation for painful procedures (such as transcutaneous pacing or cardioversion), amputations or combative patients.
- Seizures resistant to diazepam.
- Post RSI sedation.

CONTRAINDICATIONS:

- Known sensitivity to midazolam.

SIDE EFFECTS & PRECAUTIONS:

Administer in a large bore, free flowing IV.

Respiratory depression, hypotension or sedation are common, particularly in the elderly, in those with chronic disease or in the presence of other sedating agents: alcohol, barbiturates, benzodiazepines or opiates. Paradoxical excitement or agitation may occur.

ROUTE & DOSAGE:

EMT - P:

Adult: 1-5 mg IV over 1 - 2 minutes.

May repeat to a maximum total dose of 5 mg.

Pediatric: 0.02 - 0.08 mg/kg IV over - 2 minutes.

May repeat to a maximum total dose of 0.15 mg/kg.

MORPHINE (OPTIONAL)

TRADE NAME:

Morphine Sulfate

ACTION:

Narcotic analgesic and vasodilator.

INDICATIONS:

- Severe cardiac chest pain.
- Extremity fractures, crush or amputation injuries in the absence of head, chest and abdominal injuries.
- Abdominal pain.
- Severe burns.
- Pulmonary edema.
- **EMT-I Must call on-line medical control for MS administration for everything other than Isolated extremity fractures and burns.**

CONTRAINDICATIONS:

- Known sensitivity to morphine.

SIDE EFFECTS & PRECAUTIONS:

Central nervous system depressant, which can cause respiratory depression, peripheral vasodilation, decreased cardiac output or pupillary constriction. Use cautiously if patient is hypotensive.

ROUTE & DOSAGE:

EMT - I: Adult: 2 - 5 mg IV every 5 minutes as needed to a total dose of 20 mg. 10 mg IM, if IV unavailable. Maximum 10mg.

EMT- P: Pediatric: 0.05 - 0.2 mg/kg IV or IO every 5 minutes to a total dose of 10 mg. 0.1 - 0.2 mg/kg IM, if IV unavailable. Maximum 10 mg.

NALOXONE

TRADE NAME:

Narcan

ACTION:

Narcotic antagonist.

INDICATIONS:

- Reverse suspected or known narcotic induced respiratory depression due to: morphine, heroin, fentanyl, hydromorphone (Dilaudid), oxycodone (Percodan), meperidine (Demerol), methadone (Dolophine), hydrocodone (Vicodin), codeine, diphenoxylate (Lomotil), propoxyphene (Darvon), pentazocine (Talwin), nalbuphine (Nubain).

CONTRAINDICATIONS:

- Known sensitivity to naloxone.

SIDE EFFECTS & PRECAUTIONS:

The narcotic dependent patient may experience frank withdrawal after administration. Be prepared to restrain these patients as they may become angry or violent. The goal is to keep the patient out of respiratory depression but not fully conscious. Rapid administration may cause nausea. Repeated and large doses may be needed.

ROUTE & DOSAGE:

EMT- I, P:

Adult: 0.4 - 2 mg titrated to reverse respiratory depression IV, IO, IM or SQ.
Repeat every 1-3 minutes as needed. Maximum 10 mg.

Pediatric: 0.1 mg/kg (max 0.4 mg/dose) titrated to reverse respiratory depression IV, IO, IM or SQ.
Repeat every 1-3 minutes. Maximum 10 mg.

NITROGLYCERIN

TRADE NAME:

Sublingual: Nitrostat, Nitrolingual Spray

IV: Tridil, NITRO-BID IV (aeromedical or inter-facility transport only)

ACTION:

Arterial and venous smooth muscle relaxant.

INDICATIONS:

- Chest pain of cardiac origin.
- Hypertensive emergency.
- Pulmonary edema.
- Unstable angina during aeromedical or inter-facility transport only.

CONTRAINDICATIONS:

- Known sensitivity to nitroglycerin.
- Sildenafil (Viagra) or vardenafil (Levitra) use within the preceding 24 hours.
- Tadalafil (Cialis) use within the preceding 48 hours.

SIDE EFFECTS & PRECAUTIONS:

May cause hypotension or reflex tachycardia. Use caution in patients with blood pressure <100 systolic. Nitroglycerin loses its potency with time. Do not shake nitroglycerin spray prior to administration. Warn patients of throbbing headache, flushing, dizziness and burning under the tongue.

ROUTE & DOSAGE:

EMT - B:

Cardiac chest pain: May assist a patient with patient's own nitroglycerin for chest pain.

EMT - I:

Cardiac chest pain: 0.4 mg SL if blood pressure >100 systolic. May repeat twice at 3-5 minute intervals as long as blood pressure is >100 systolic.

Pulmonary Edema: 0.4 mg SL. May repeat up to 4 times at 3-5 minute intervals if blood pressure remains adequate.

EMT - P: *Angina or cardiac chest pain or hypertensive emergency*

0.4 mg SL. May repeat twice at 3-5 minute intervals.

Unstable Angina (during aeromedical or inter-facility transport only)

Titrate IV infusion by 5-10 mcg/min until desired effect. To wean off IV infusion, decrease by 5 mcg every 5-10 minutes until desired response.

NITROPRUSSIDE

ACTION:

Intravenous Vasodilator

INDICATIONS:

- By physician order only
- Malignant Hypertension
- Pregnancy Induced Hypertension
- Aortic Aneurysm

CONTRAINDICATIONS:

- Hypotension

SIDE EFFECTS & PRECAUTIONS:

Long term use leads to elevated cyanide levels.

Must be protected from light. Use included foil cover.

HOW SUPPLIED:

25mg/ml

ROUTE & DOSAGE:

EMT – P or RN: 0.3 - 10mcg/kg/min. Titrate to desired effect.

NITROUS OXIDE (OPTIONAL)

TRADE NAME:

Nitronox, N₂O₂

ACTION:

Inhalation analgesic.

INDICATIONS:

- Acute musculoskeletal pain.

CONTRAINDICATIONS:

- Known sensitivity to nitrous oxide.
- Inability of patient to self-administer.
- Pregnancy in patient, medic or bystanders.
- Head injury.
- Airway burn or respiratory distress.

SIDE EFFECTS & PRECAUTIONS:

Respiratory depression, drowsiness. Use with caution in patients with chest trauma or lung disease.

ROUTE & DOSAGE:

EMT - P: Patient self administered by inhalation.

ONDANSETRON

TRADE NAME:

Zofran

ACTION:

Potent anti-emetic agent, a selective 5-HT₃ receptor antagonist.

INDICATIONS:

- By physician order only
- Nausea or vomiting

CONTRAINDICATIONS:

- Known sensitivity to ondansetron.

SIDE EFFECTS & PRECAUTIONS:

May cause minor headache, constipation or diarrhea.

ROUTE & DOSAGE:

EMT – P or RN: 4 mg IV. May repeat one.

OXYGEN (O₂)

TRADE NAME:

None

ACTION:

Essential for normal cellular metabolism and life. Tissue hypoxia causes cell damage and death.

INDICATIONS:

- Suspected hypoxemia, respiratory distress, acute chest pain, shock, trauma, cardiopulmonary arrest, inhalation injury, altered level of consciousness.

CONTRAINDICATIONS:

- Acute paraquat poisoning.

SIDE EFFECTS & PRECAUTIONS:

Supports combustion. Possible respiratory arrest in patients with chronic lung disease, but do not withhold oxygen if patient is in respiratory distress.

HOW SUPPLIED:

Gas.

ROUTE & DOSAGE:

First Responder, EMT – B, EMT – I, EMT - P:

- 1 - 15 liters/minute as needed.

OXYMETAZOLINE (Optional)

TRADE NAME:

Afrin

ACTION:

Potent sympathomimetic arterial constrictor.

INDICATIONS:

- Epistaxis.
- Pretreatment for nasotracheal intubation.

CONTRAINDICATIONS:

- Known sensitivity to oxymetazoline.
- Persistent blood pressure greater than 190/110.

SIDE EFFECTS & PRECAUTIONS:

Tachycardia, myocardial ischemia or cardiac dysrhythmia.

HOW SUPPLIED:

Spray bottle

ROUTE & DOSAGE:

EMT - P: Two sprays into the affected nostril(s). Repeat as needed.

OXYTOCIN (Optional)

TRADE NAME:

Pitocin

ACTION:

Polypeptide hormone which stimulates uterine contraction.

INDICATIONS:

- Control of postpartum hemorrhage following delivery of the placenta.

CONTRAINDICATIONS:

- Known sensitivity to oxytocin.
- Pregnancy.

SIDE EFFECTS & PRECAUTIONS:

Nausea and vomiting. Severe uterine cramps.

HOW SUPPLIED:

10 units/1 ml

ROUTE & DOSAGE:

EMT - P: 10-20 units added to 1000 ml of normal saline and run wide open or as needed to control bleeding.

PACKED O-NEG RED BLOOD CELLS

ACTION:

Red blood cell replacement

INDICATIONS:

- By physician order only
- Red blood cell replacement for significant blood loss

CONTRAINDICATIONS:

- Any misidentification or inconsistency in labeling of patient or blood
- Religious Objection - Jehovah's Witness

SIDE EFFECTS & PRECAUTIONS:

All patients are at risk for transfusion reactions/anaphylactoid reactions. Transfusion reactions can occur with most blood products but are most common with whole blood. Transfusion reactions can occur with O-neg blood due to the presence of "minor factors". Transfusion reactions often begin with anxiety, fever, shortness of breath or urticaria (hives). If untreated hemolysis, anaphylaxis and kidney failure can result. In case of suspected transfusion reaction **immediately** stop the transfusion and remove the entire infusion set from the IV catheter. Bag and save the blood and infusion set for later analysis. Connect a new infusion set with normal saline and infuse at 100cc/hr or more to maintain blood pressure. Diphenhydramine 50 mg IV will help control the reaction. Use epinephrine 1:1000 0.3mg SQ to maintain blood pressure if necessary. In case of severe reaction use Furosemide 40mg IV and on going saline infusion to maintain adequate urine output.

HOW SUPPLIED:

Packed Cells 250ml//bag

ROUTE & DOSAGE:

EMT – P or RN: Simultaneous intravenous saline infusion.

- Use appropriate tubing.
- Watch for signs of transfusion reaction.
- Take pre-transfusion temperature then record temperature 15 min into the transfusion. Repeat this procedure for each unit transfused.
- Maintain and complete paperwork for each unit that was transfused.
- Keep one copy with the patient care record.

PROMETHAZINE

TRADE NAME:

Phenergan

ACTION:

Phenothiazine antiemetic.

INDICATIONS:

- To reduce nausea or vomiting

CONTRAINDICATIONS:

- Known sensitivity to promethazine.
- Age 2 years or less.

SIDE EFFECTS & PRECAUTIONS:

Sedation. Acute dystonic reaction (best treated with diphenhydramine). Caution in liver disease.

ROUTE & DOSAGE:

EMT - P:

Adult: 6.25 -12.5 mg slow IVP

12.5 - 25 IM if IV unavailable

May repeat once

Pediatric – only if age > 2 years:

0.25 - 0.5 mg/kg slow IVP (max 6.25 mg)

0.5 - 1.0 mg/kg IM if IV unavailable (max 12.5 mg)

May repeat once

PROPOFOL

TRADE NAME:

Diprivan

ACTION:

Sedation

INDICATIONS:

- By physician order only
- Maintenance of sedation in ventilated patients

CONTRAINDICATIONS:

- Known sensitivity to propofol
- Allergy to soybean oil
- Allergy to egg lecithin
- Allergy to glycerol
- Use in a non-intubated patient
- Age less than 3 years

SIDE EFFECTS & PRECAUTIONS:

Ensure total asepsis when preparing drip.

Will cause profound decrease in CNS activity, hypotension and respiratory depression particularly if used with sedatives or narcotics.

Rarely causes increase in ICP. Use with caution in head injured patients or those with acute CVA.

Decrease dose 20-50% if age greater than 55 years or debilitated.

HOW SUPPLIED:

10 mg/ml in a white soybean oil and egg protein emulsion.

ROUTE & DOSAGE:

EMT – P or RN: 5 - 50 mcg/kg/min.

Start at 5 mcg/kg/min for 5 minutes then increase 5 - 10 mcg/kg/min every 5 - 10 minutes until desired level of sedation is achieved.

SODIUM BICARBONATE

TRADE NAME:

Sodium bicarbonate

ACTION:

Alkalinizing agent. Raises blood pH.

INDICATIONS:

- Tricyclic antidepressants overdoses with hypotension, dysrhythmias, seizures or QRS > 0.12.
- Hyperkalemia.
- Severe acidosis refractory to hyperventilation.

CONTRAINDICATIONS:

- Alkalosis.

SIDE EFFECTS & PRECAUTIONS:

May deactivate catecholamines. Precipitates with calcium in IV tubing.
Decreases chance of brain viability in cardiac arrest.

HOW SUPPLIED:

8.4%: 50 mEq/50 ml prefilled syringe

4.2%: 5 mEq/10 ml prefilled syringe

ROUTE & DOSAGE:

EMT - P:

Adult: 1 mEq/kg of 8.4% IV. Repeat 0.5 mEq/Kg every 10 minutes.

Pediatric: 1 mEq/kg of 4.2% IV or IO. Repeat 0.5 mEq/kg every 10 minutes.

SUCCINYLBCHOLINE CHLORIDE (OPTIONAL)

TRADE NAME:

Anectine

ACTION:

Depolarizing skeletal muscle relaxant.

INDICATIONS:

- Rapid sequence intubation.

CONTRAINDICATIONS:

- Known sensitivity to succinylcholine chloride.
- Long-standing quadriplegia, paraplegia or other neuromuscular disorder.
- Known hyperkalemia
- History of malignant hyperthermia.
- History of masseter spasm.

SIDE EFFECTS & PRECAUTIONS:

Use with caution in patients with renal failure on dialysis who may have hyperkalemia.

Succinylcholine chloride causes paralysis, not analgesia or amnesia; conscious patients must receive sedation. Patient will require airway management and ventilation.

ROUTE & DOSAGE:

EMT - P: 1-1.5 mg/kg IV or IO.

TIROFIBAN (AGGRASTAT®)

TRADE NAME:

Aggrastat

ACTION:

Intravenous glycoprotein IIB/IIIB platelet inhibitor

INDICATIONS:

- By physician order only
- Acute coronary syndrome
- Acute myocardial infarction

CONTRAINDICATIONS:

- Known sensitivity to tirofiban
- Active bleeding.
- Recent major surgery, CVA or major trauma (within 1 week)
- Recent CPR (within 24 hours)

SIDE EFFECTS & PRECAUTIONS:

May cause CVA or severe bleeding.

Often used in conjunction with Heparin and Aspirin

HOW SUPPLIED:

50 mcg/ml in 100 ml or 250 ml bottles

ROUTE & DOSAGE:

EMT – P or RN: Loading dose: 0.4 mcg/kg/min for 30 minutes.

Maintenance dose: 0.1 mcg/kg/min for 12 hours.

VASOPRESSIN

TRADE NAME:

Pitressin

ACTION:

- Vasopressin is a Posterior pituitary hormone.
- Acting primarily at the renal tubular level increasing water permeability at the renal tubule and collecting duct, resulting in increased urine osmolality and decreasing urinary flow rate as well as vascular smooth muscle contractions.
- Increases coronary artery flow.

INDICATIONS:

- Pulseless Ventricular Tachycardia and Ventricular Fibrillation arrest states.
- Asystole and PEA.

CONTRAINDICATIONS:

- Known hypersensitivity to Vasopressin

SIDE EFFECTS & PRECAUTIONS:

- Vasopressin may cause Malignant Hyperthermia
- Vasopressin during CPR increases coronary perfusion pressure, vital organ blood flow, Ventricular Fibrillation median frequency and cerebral oxygen delivery.
- For the arrest states of: Pulseless Ventricular Tachycardia, Ventricular Fibrillation, Asystole or PEA, Vasopressin may be used instead of Epinephrine.
- After a single dose of Vasopressin, if no clinical response in 3-5 minutes it is acceptable to return to 1mg of epinephrine every 3-5 minutes.
- Vasopressin is not recommended with pediatric patients

ROUTE & DOSAGE:

EMT-I & EMT-P

- 40.0 units IVP, which may be repeated once after 20 minutes

VECURONIUM (OPTIONAL)

TRADE NAME:

Norcuron

ACTION:

Non-depolarizing skeletal muscle relaxant.

INDICATIONS:

- To prevent fasciculations (defasciculating dose) associated with the use of succinylcholine for rapid sequence intubation.
- To provide paralysis (paralyzing dose) for rapid sequence intubation if succinylcholine is contraindicated.
- To maintain paralysis (maintenance dose) after intubation.
- To relieve isolated masseter muscle spasm due by succinylcholine.

CONTRAINDICATIONS:

- Known sensitivity to vecuronium.

SIDE EFFECTS & PRECAUTIONS:

Vecuronium causes paralysis, not analgesia or amnesia; conscious patients must receive sedation. Patient will require airway management and ventilation.

ROUTE & DOSAGE:

EMT - P:

Defasciculating dose: 0.01 mg/kg IV or IO. Usual adult dose is 1 mg.

Paralyzing Dose: 0.05-0.1 mg/kg IV or IO. Usual adult dose is 5-10 mg.

Maintenance Dose: 0.01-0.015 mg/kg IV 25-40 minutes after initial paralysis, then every 12-15 minutes as needed OR 1 mcg/kg/min IV infusion.

Section 4

Procedures

12 Lead EKG Monitoring

EMT-P, RN

Purpose:

The 12-lead EKG is used to:

Evaluate patients for the possibility of acute myocardial infarction (AMI)
Improve the evaluation of arrhythmias.

Indications:

12-Lead EKG monitoring should be considered:

- For the stable patient with suspected MI, with or without chest pain.
- Determination of SVT vs. Rapid Atrial Fibrillation.
- Confirmation of arrhythmias that can indicate electrolyte abnormalities (i.e. hyperkalemia)

Procedure:

Acquiring the 12 lead:

- Place patient in supine or semi-inclined position with limbs supported.
- Place 4-Lead limb electrodes on extremities, use shoulders or wrists for LA/RA leads, chest, ankles, or thighs for LL/RL leads. (see figure A.)
- Connect 6-Lead attachment to 4-Lead cable.
- Place 6-Lead chest lead (pre-cordial) electrodes on patient (see figures B and C).
- When all electrodes are in proper position press the 12-Lead button. Enter patient's age if prompted.
- Ask the patient to remain still to enable successful completion of the 12-Lead. The machine will acquire and printout the results automatically.

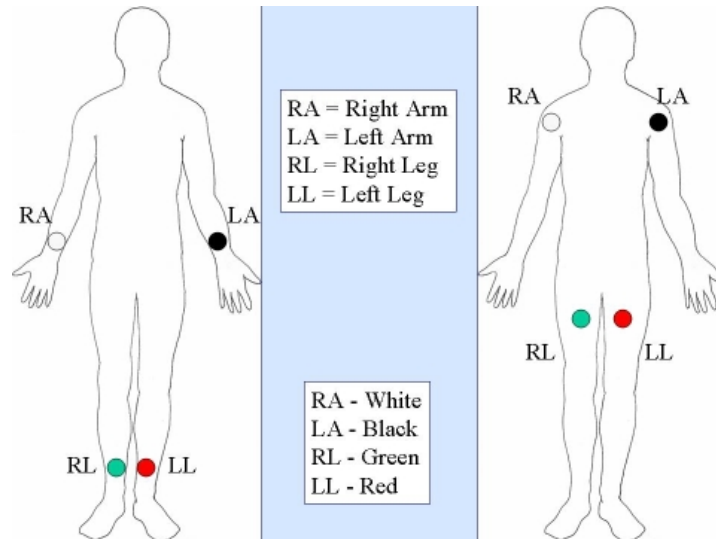
Lead Placement:

1. *Limb placement*

The limb Leads record activity from a vertical plane of reference.

Lead	Placement
RA/White	Right shoulder at clavicular line, or above anterior right wrist
LA/Black	Left shoulder at clavicular line, or above anterior left wrist
LL/Red	Between 6 th & 7 th intercostal space/left MCL, or ankle or thigh
RL/Green	Between 6 th & 7 th intercostal space/right MCL, or ankle or thigh

Figure A



2. Precordial Leads

Certain Landmarks help with the location of electrode placement (see figures B and C)

- i. Angle of Louis- this structure is a ridge on the sternum directly below the manubrial notch at the top of the sternum. Directly below and to the sides of the Angle of Louis is the second intercostals space. Use this to count down two or more spaces for placement of V1 and V2
- ii. Mid-Clavicular Line (MCL) imaginary line from middle clavicle down.
- iii. Axilla- armpit area. The point where axilla meets the chest determines the Anterior Axillary line. V5 is positioned in the horizontal alignment with V4 on the left Anterior Axillary line. Midway down the axilla is the Mid-Axillary Line. V6 is placed in horizontal alignment with V5 on the Mid-Axillary line.

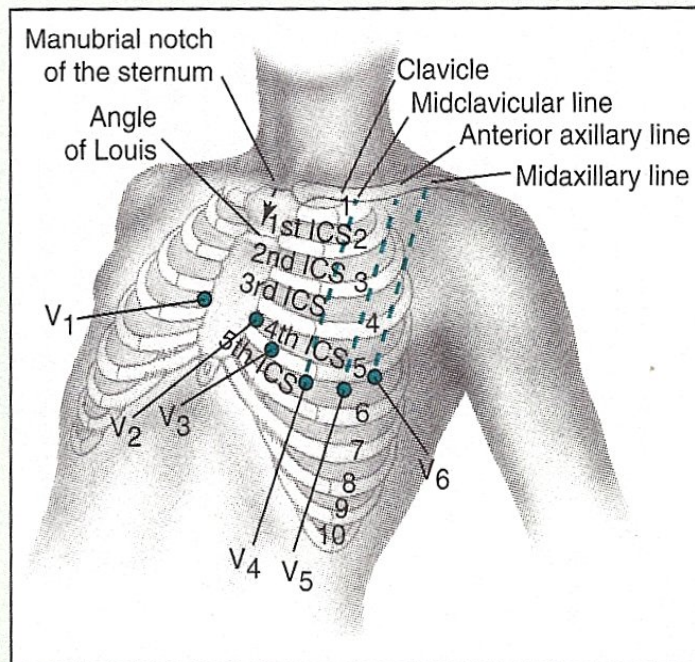
General information- Precordial Leads:

The correct placement of precordial leads is very important in performing the 12-Lead EKG. The remaining 6 leads of the standard EKG are those created by the placement of six electrodes in a semicircular pattern on the patient's chest. These 6 leads are unipolar in nature and serve to record the heart's electrical activity from a different plane than the Limb Leads. The precordial leads record the activity from a horizontal or transverse orientation. With the heart's electrical center as a reference point, each electrode receives information that moves in an outward direction along a horizontal plane. By using limb and precordial leads we are able to get a two-dimensional picture of the heart's electrical activity on the EKG paper.

Figure B.

Lead	Placement
V1	4 th intercostal space to the right of the sternum
V2	4 th intercostal space to the left of the sternum
V3	Midway between V2 and V4
V4	On the mid-clavicular line, at the 5 th intercostal level
V5	On the anterior axillary line at the 5 th intercostal level
V6	On the mid-axillary line, at the 5 th intercostal level

Figure C.



IV. AMI Recognition

A.

Common abnormal findings:

- ST Elevation (presumptive evidence of AMI)
- ST Elevation with Q waves
- ST Depression (ischemia)
- T wave inversion (Subendocardial infarct or ischemia)
- Peaked T wave (Hyperacute Infarction)
- The presence of Q waves with ST elevation usually indicates an old infarction

B.

Basic Lead Groupings

<u>Leads</u>	<u>Areas of the Heart Muscle seen</u>
II, III, aVF	Inferior leads- lower portion of the heart
V1 & V2	Septal leads- muscle between right and left ventricles
V2, V3, & V4	Anterior leads- front of heart
V4, V5, & V6	Lateral pre-cordial leads- lateral aspects of the heart
I & aVL	High lateral leads- lateral aspect from above

C.

Location:

AMI RECOGNITION

I Lateral	aVR	V1 Septal	V4 Anterior
II Inferior	aVL Lateral	V2 Septal	V5 Lateral
III Inferior	aVF Inferior	V3 Anterior	V6 Lateral

Special Information:

- **While monitoring 12_lead EKG, look for ST segment elevation of 0.4mv (1 mm or more in standard lead or 2mm or more in a precordial lead). Monitor in lead with greatest ST elevation.**
- **Do not delay transport of the critical or unstable patient to perform a 12-Lead tracing.**
- When entering patient information, push 'Options' button, and select 'Patient'. Scroll through to select and input desired information.
- NOTE: It is essential that all electrodes are in the proper place and that skin preparation has been performed to ensure a clean tracing. Wipe electrode sites briskly with a dry 4X4. Oily, dirty or diaphoretic skin should be quickly cleaned with alcohol prep. Allow skin to dry before placing electrodes.
- Electromagnetic interference may also cause 12-Lead artifact. Examples of electromagnetic interference include: radios, cell phones, electric blankets, power cords and fluorescent lights.
- 12-lead artifact can be caused by patient or electrode cable movement.
- REMEMBER to leave your chest electrodes on the patient's so the hospital will know the position of your leads on the patient.
- Document "12-Lead" in the procedures box portion of the PCRF.

AUTOMATIC EXTERNAL DEFIBRILLATOR (AED)

FIRST RESPONDERS, EMT - B, I, P, RN

INDICATIONS:

Unconscious, unresponsive, pulseless, apneic patient with possible cardiac arrest.

PRECAUTIONS:

Patient must be 1 year of age or older. For children 1 to 8 years of age or < 80 lbs the rescuer should use a pediatric dose-attenuator system.

PROCEDURE:

- 1 Begin CPR
- 2 Prepare Equipment
 - a AED.
 - b Oxygen via bag valve mask or airway.
- 3 Attach AED to leads and to patient, turn on machine, and explain your situation on the tape recorder (if your machine is so equipped).
- 4 Stop CPR and any other patient movement and allow the AED to determine the underlying cardiac rhythm according to manufacturer's instruction. Resume CPR while the AED is charging if instructed.
- 5 If the AED determines that a shock is necessary, the AED must be programmed to deliver a single shock. When the AED is prepared for a shock, make absolutely certain that NO ONE is in contact with the patient or the equipment.
- 6 After the single shock has been delivered, immediately begin CPR for 5 cycles (~ 2 minutes), then check the patient's pulse and allow the AED to determine if a shockable rhythm is present, and deliver single shock if recommended.
- 7 If patient remains pulseless, and AED does not recommend a shock, continue CPR for 5 cycles (~ 2 minutes) followed by a pulse and AED rhythm check.
- 8 AT NO TIME, except for the pulse and AED rhythm check, and delivery of shock, should CPR cease for more than 15 seconds.
- 9 If pulse returns, support patient airway and ventilation, continuously monitor patient, and get a set of vital signs.

Reminder:

Current 2005 American Heart Association guidelines recommend that all AEDs be programmed to check for a shockable rhythm every 2 minutes, and to deliver only one shock if shockable rhythm detected. For agencies using older AEDs that cannot be brought up to current standards, it is recommended that these older AEDs should be turned off during the 2 minute CPR cycles, then tuned back on to allow for rhythm check and delivery of single shock only.

BLOOD SPECIMEN COLLECTION

SOUTHERN COOS HOSPITAL ONLY

EMT-I, EMT-P

INDICATIONS:

- A. To obtain blood specimens on patients receiving intravenous access in the field.
- B. At the medic's discretion, any patient who requires the initiation of an I.V. in the field.

PROCEDURE:

- 1 Obtain an unused collection kit.
- 2 Remove tubes and vacutainer collection device from the collection kit.
- 3 The draw kit contains: a disposable vacutainer collection device and four pre-labeled collection tubes consisting of one red top, one blue top, one green top, and one lavender top tube.
- 4 Initiate peripheral IV site. Collect specimen by connecting the vacutainer device to the IV catheter.
- 5 Collect specimens in the following order:
 - a Draw red tube first. This is your waste tube for clearing the line. Dispose red tube in sharps container.
 - b Blue top
 - c Green top
 - d Lavender top
- 6 Discard vacutainer device into a sharps container.
- 7 Once the collection is complete all specimens collected must be placed in the proper collection kit. If time permits label each vial with patients name. If time does not allow label bag with patients name and date.
- 8 Give bag to RN in charge of patient.
- 9 ***The collection of a blood specimen should not delay the delivery of appropriate care to the patient.***
- 10 The minimum size IV catheter that can be used to collect a blood specimen is a size 20 gauge. 18 gauge will allow for faster fill time of tubes.

PRECAUTIONS:

- A. It is understood there will be occasions in which the patient's critical condition will necessitate the omission of obtaining a blood specimen in the field
- B. Use of a syringe to withdraw blood from the catheter hub is allowable but not recommended, due to the potential to hemolyze the specimen.

CHEST DECOMPRESSION (NEEDLE THORACENTESIS)

EMT – P, RN

INDICATIONS:

Rapid decompression of tension pneumothorax, which may result from trauma, chest compressions or positive pressure ventilation. Signs include unilaterally absent breath sounds, hypotension, progressive respiratory distress, distended neck veins, asymmetrical breathing, hyperexpanded chest, tracheal shift and increased resistance to ventilation.

PRECAUTIONS:

Pneumothorax or lacerations of the lung or blood vessels may occur. Chest decompression may need to be performed at more than one site or on the other side. Relief of a tension pneumothorax should result in a rapid and significant improvement in the patient's condition.

PROCEDURE:

- 1 Prepare Equipment
 - a High flow oxygen.
 - b 16 ga (5 – 8 cm long) IV catheters.
 - c ml syringe.
 - d Disinfectant solution.
 - e Tape.
 - f One way valve (*optional*).
- 2 With the patient supine and the chest exposed, clean the second or third intercostal space in the mid-clavicular line. Insert the IV catheter over the top of the third or fourth rib – see diagram below. Slide over the top of the rib, advance the catheter until a “pop” is felt and air released. Advance the catheter and remove the needle and syringe. For prolonged transport attach the one way valve(3-way extension may be used) to the hub of the catheter and secure with tape. Auscultate the chest and administer 100% oxygen.

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

EMT-P, RN (If available)

Continuous Positive Airway Pressure has been shown to rapidly improve vital signs, gas exchange, the work of breathing, decrease the sense of dyspnea, and decrease the need for endotracheal intubation in the patients who suffer from shortness of breath from asthma, COPD, pulmonary edema, CHF, and pneumonia. In patients with CHF, CPAP improves hemodynamics by reducing preload and afterload.

INDICATIONS:

Any patient who is complaining of shortness of breath for reasons other than pneumothorax and:

- A. Is awake and oriented
- B. Is over 12 years old and is able to fit the CPAP mask
- C. Has the ability to maintain an open airway (GCS>10)
- D. A respiratory rate greater than 25 breaths per minute
- E. Has a systolic blood pressure above 90 mmHg
- F. Uses accessory muscles during respirations
- G. Sign and Symptoms consistent with asthma, COPD, pulmonary edema, CHF, or pneumonia

PRECAUTIONS:

1. Use care if patient:
 - A. Has impaired mental status and is not able to cooperate with the procedure
 - B. Had failed at past attempts at noninvasive ventilation
 - C. Has active upper GI bleeding or history of recent gastric surgery
 - D. Complains of nausea or vomiting
 - E. Has inadequate respiratory effort
 - F. Has excessive secretions
 - G. Has a facial deformity that prevents the use of CPAP

CONTRAINDICATIONS:

- Need for immediate intubation and or BVM ventilation.
- Untreated pneumothorax
- Uncontrolled vomiting.
- Upper airway abnormalities or trauma.
- Respiratory failure.
- Patient is suspected of having a pneumothorax
- Patient has a tracheostomy

PROCEDURE: (Boussignac CPAP System)

1. Make sure patient does not have a pneumothorax!
2. EXPLAIN THE PROCEDURE TO THE PATIENT
3. Ensure adequate oxygen supply to ventilate device (100% when starting and until SaO₂ is >95%)
4. Place the patient on continuous pulse oximetry
5. Adjust Oxygen Flow: 15 L/min = 5 cmH₂O, 20 L/min = 7.5 cmH₂O, 25 L/min = 10 cmH₂O.
6. Place the Boussignac CPAP over the mouth and nose
7. Secure the mask with provided straps or the other provided devices
8. Check for air leaks
9. Monitor and document the patient's respiratory response to the treatment
10. Continue to coach patient to keep mask in place and readjust as needed
11. If respiratory status deteriorates, remove device and consider bag valve mask ventilation and/or endotracheal intubation.

PROCEDURE: (PORTO₂Vent™ CPAP_{OS})

1. Make sure patient does not have a pneumothorax!
2. EXPLAIN THE PROCEDURE TO THE PATIENT
3. Ensure adequate oxygen supply to ventilate device (100% when starting and until SaO₂ is >95%)
4. Place the patient on continuous pulse oximetry
5. Hook O₂ hose to Oxygen outlet and the corrugated mask tubing to the port on front of device.
6. Turn flow control button to adjust pressure from 5cmH₂O to 10+ cmH₂O and confirm reading on pressure gauge.
7. Secure the mask with provided straps or the other provided devices
8. Check for air leaks
9. Monitor and document the patient's respiratory response to the treatment
10. Continue to coach patient to keep mask in place and readjust as needed
11. If respiratory status deteriorates, remove device and consider bag valve mask ventilation and/or endotracheal intubation.

DUAL LUMEN AIRWAY DEVICE (COMBITUBE)

EMT – B (if agency approved)

EMT – I or P

INDICATIONS:

Advanced airway management in the unconscious/apneic patient by EMT Basics and Intermediates or when endotracheal intubation cannot be accomplished.

PRECAUTIONS:

Do not use in patients less than 5 feet tall, over 6 feet 8 inches tall, age less than 16 years, Patients with an intact gag reflex, with esophageal disease, who have ingested caustic substances, who have a known or suspected foreign body obstruction of the larynx or trachea, or who have a tracheostomy. EMT-Bs must have received agency specific training and certification before use.

PROCEDURE:

- 1 Prepare equipment.
 - a High flow oxygen.
 - b Bag valve mask.
 - c Combitube kit.
 - d Suction.
 - e Lubricant.
- 2 Hyperventilate with bag valve mask or demand valve for 1-2 minutes with supplemental oxygen while preparing equipment.
- 3 Remove dentures, loose or broken teeth to prevent puncture of balloons.
- 4 With the patient's head in a neutral position, by lifting the tongue and lower jaw upward with one hand, insert the combitube blindly until the two printed black rings are located between the patient's teeth or alveolar ridges. **Do not force the combitube.**
- 5 Inflate the No. 1 blue pilot balloon with 100 ml of air from the blue tipped syringe.
- 6 Inflate the No. 2 white pilot balloon with 15 ml of air.
- 7 Place the ventilation device on blue tube #1 and ventilate while listening for lung sounds and watching for chest rise. If the chest rises, breath sounds are auscultated and no abdominal insufflation occurs, the tube is located in the esophagus. Continue ventilating. The clear tube #2 may be used for removal of gastric air or fluids with a suction catheter.
- 8 If no chest rise occurs and there are absent breath sounds and gastric insufflation is present, leave the tube in place and ventilate the clear tube #2. Confirm ventilations by listening for breath sounds and watching for chest rise.

Steps 7 and 8 are critical to insure that you are ventilating the patient.

- 9 End tidal CO₂ capnometry.
- 10 Reconfirm tube location frequently, during transport and whenever patient is moved.
- 11 Endotracheal intubation may be performed by deflating the No. 1 blue balloon and pushing the combitube to the left of the oral cavity while intubating from the right.
- 12 To remove combitube, place the patient on their side and deflate both balloons and slowly remove the combitube; have suction ready.

END TIDAL CO₂ DETECTOR

EMT - B, I, P, RN:

INDICATIONS:

Any patient receiving ventilation through an advanced airway (endotracheal tube or a dual lumen airway device (COMBITUBE®)).

PRECAUTIONS:

- Use the pediatric detector on patients weighing less than 15 kg.
- After administering medications through advanced airway wait for 6 ventilation cycles before re-attaching detector.
- CO₂ detector is to be used to confirm advanced airway in addition to direct laryngoscopic airway visualization, observation of chest rise and skin color, or auscultation of bilateral breath sounds.

PROCEDURE:

Manual Colorimetric Detector:

- 1 Attach the CO₂ detector between the bag-valve device and the end of the advanced airway.
- 2 When ventilating properly and the advanced airway is in the proper location, the indicator area on the detector will change color at time of expiration depending on the manufacture, typically yellow (~5% CO₂) during expiration and purple (0% CO₂) during inspiration.

Electronic Detector:

- 1 Attach the 15mm adapter between the bag-valve device and the advanced airway.
- 2 Attach the small tubing to the electronic detector.
- 3 To confirm proper placement during ventilation the output reading during expiration should measure between 35mm and 45mm Hg (5% CO₂) during expiration in conjunction with the regular rise and fall of the CO₂ waveform.

ENDOTRACHEAL INTUBATION (ORAL, NASAL AND DIGITAL)

EMT - P

INDICATIONS:

To establish an emergency airway for the patient who can not provide or protect their own airway.

PRECAUTIONS:

Lacerations, dental injury, laryngospasm, right or left mainstem or esophageal intubation.

Oral: Rapid Sequence Intubation may facilitate procedure.

Nasal: Not to be attempted on an apneic patient, one with facial trauma or with suspected airway obstruction.

Digital: May be successful when other methods have failed. Use bite block to protect EMT's fingers.

PROCEDURE:

- 1 Prepare Equipment
 - a Laryngoscope and blades
 - b Endotracheal tube with stylet, average sizes are:
 - Adult female: 6.5 to 8.0
 - Adult male: 7.0 to 8.5
 - Child: 4.0 to 6.0
 - Infant: 3.5 to 4.0
 - Newborn: 2.5 to 3.5
 - c Suction unit.
 - d Magill forceps.
 - e Lubricant.
 - f Bite block.
 - g Tube securing device and tape.
 - h Syringe for cuffed tubes.
- 2 Hyperoxygenate patient.
- 3 Sellick maneuver if indicated.
- 4 **Oral Intubation:**
 - a Open patients airway, protecting the cervical spine.
 - b Insert endotracheal tube into trachea.
- 5 **Nasal Intubation:**
 - a Select the appropriate tube size, which is generally ½ size smaller than the one selected for oral intubation.
 - b With the head in a neutral position insert the well lubricated tube into the larger nostril and gently guide the tube posteriorly in an arc until the pharynx is reached.
 - c While listening to the patient's breath, advance the tube into the trachea during inhalation.
- 6 **Digital Intubation:**
 - a Place a bite block device into the patient's mouth.
 - b Insert the middle and index finger into the mouth following the curve of the tongue.
 - c Lift the epiglottis and tongue anteriorly.
 - d Insert the endotracheal tube between the index and middle fingers and into the trachea.
- 7 **All Endotracheal Intubations:**
 - a Inflate cuff if present.
 - b Verify tube location by auscultation and observation.
 - c Secure tube.
 - d Ventilate patient.
 - e Reconfirm tube location frequently, during transport and whenever patient is moved.
 - f End tidal CO₂ capnometry.

EXTERNAL TRANSCUTANEOUS PACING

EMT – P, RN

INDICATIONS:

Symptomatic bradycardia refractory to atropine, symptomatic heart block and asystole.

CONTRAINDICATIONS:

Patients with penetrating or blunt trauma.

PRECAUTIONS:

This is a painful procedure. Consider pain medication and sedation.

PROCEDURE:

- 1 Prepare Equipment
 - a High flow oxygen.
 - b Pacemaker, cable and pacing electrodes.
 - c Diazepam, midazolam (Versed) or morphine.
- 2 Administer oxygen and monitor cardiac rhythm. Three lead cardiac monitor must be attached for pacing.
- 3 Medicate patient.
- 4 Apply pacer pads to the left anterior chest and left posterior chest (preferred), or right anterior chest and left lateral chest.
- 5 Adjust cardiac monitor gain to sense intrinsic QRS complexes.
- 6 Set mA at 0, attach pacer pads to monitor cable.
- 7 Set pace rate at 70-80 bpm.
- 8 Increase current by 20 mA to obtain capture.
- 9 Insure mechanical capture by obtaining pulse and blood pressure.
- 10 If unable to obtain mechanical capture, discontinue pacemaker.

INTRAOSSEROUS INFUSION (lower extremity)

EMT - I and P, RN

INDICATIONS:

When IV access is unattainable in a critically ill or injured patient.

PRECAUTIONS:

Only one attempt per limb. Avoid growth plate, infection at insertion site and fractured limbs.

PROCEDURE:

- 1 Prepare Equipment
 - a Intraosseus needle:
 - ◆ 18 ga for patients 18 months and younger.
 - ◆ 15 ga for patients older than 18 months.
 - b Disinfectant solution.
 - c Two 5 ml syringes.
 - d Crystalloid.
 - e Sterile gauze pads.
 - f Tape.
 - g Three way stopcock.
 - h 60 ml syringe.
 - i Extension tubing.
- 2 The preferred insertion site is the proximal tibia; the anteromedial flat surface 1-3 cm distal to the tibial tuberosity.
- 3 Alternate sites are the medial malleolus of the tibia or the anterior aspect of the distal femur.
- 4 Prepare surface with disinfectant solution.
- 5 Penetrate the soft tissue and with a twisting motion penetrate the cortex of the bone until a pop or loss of resistance is felt.
- 6 Remove the stylet. While holding the needle firmly, attempt to aspirate marrow or blood – you may not be able to aspirate anything even if the needle is in the marrow.
- 7 If you think that the needle is in the marrow, infuse 5 to 10 ml of crystalloid while palpating for infiltration.
- 8 Secure needle.
- 9 Attach extension tubing.
- 10 Attach stopcock to extension tubing.
- 11 Attach IV solution to stopcock.
- 12 Use 60 ml syringe to administer fluid bolus.
- 13 Flush frequently with 5-10 ml to maintain patency.

INTRAVENOUS ADMINISTRATION

EMT - I and P, RN

INDICATIONS:

To access venous circulation.

PRECAUTIONS:

Do not attempt at areas of injury or infection. Splinting devices may be needed to limit motion. Monitor the IV site for signs of infiltration. Do not attempt external jugular catheterization unless the vein is visualized.

PROCEDURE:

- 1 Prepare equipment.
 - a Disinfectant solution.
 - b Tourniquet.
 - c Crystalloid solution and infusion set OR saline lock.
 - d Intravenous catheter.
 - e Sterile dressing.
 - f Syringe.
- 2 **Extremity Vein**
 - a Disinfect the largest, most appropriate site.
 - b Apply the tourniquet.
 - c Insert catheter at an angle until blood returns.
 - d Advance the catheter into the vein while removing the needle.
 - e Attach and irrigate with crystalloid or saline lock.
 - f Secure catheter and monitor for infiltration.
- 3 **External Jugular Vein**
 - a Position patient with head turned to side opposite vein.
 - b Disinfect site.
 - c Apply finger pressure above clavicle to occlude vein.
 - d Insert catheter caudally at an angle until blood returns.
 - e Confirm intravascular location, attach infusion set and secure catheter.

NASOGASTRIC/OROGASTRIC TUBE PLACEMENT

Orogastric: EMT - I and P, RN

Nasogastric: EMT – P, RN

INDICATIONS:

Any pediatric patient who has received assisted ventilation. Any patient receiving a Combitube with confirmed esophageal placement. To prevent or alleviate abdominal distention in an intubated patient. Significant poisoning.

CONTRAINDICATIONS:

Nasogastric intubation in a patient with obvious skull fracture or severe facial injuries. Any gastric intubation in a patient with ingestion of caustic substances or known esophageal varices.

PROCEDURE:

- 1 Prepare equipment.
 - a Gastric tubes:
 - ◆ Less than 1 year 5-8 Fr
 - ◆ Pediatric 10-14 Fr
 - ◆ Adult 16-18 Fr
 - b Lubricant.
 - c Large syringe.
- 2 **Orogastric - EMT - Intermediate**
 - a An EMT-I may only place an orogastric tube after the placement of a Combitube.
 - b The Combitube **MUST** be confirmed to be an esophageal placement.
 - c With the BVM on Tube #1, insert the orogastric tube down Tube #2.
 - d Confirm stomach placement by instilling air and listening to the epigastrium.
 - e Secure tube.
 - f Connect to suction at 80 - 120 mm Hg.
- 3 **Orogastric - EMT - P**
 - a Measure tube from tip of nose to xiphoid process.
 - b Insert tube into mouth and advance into stomach.
 - c Confirm location by instilling air and listening to the epigastrium.
 - d Secure tube.
 - e Connect to suction at 80 - 120 mm Hg.
- 4 **Nasogastric - EMT- P**
 - a Measure tube length from earlobe to tip of nose and then to xiphoid process.
 - b Select the most open nostril for placement.
 - c Insert the lubricated tube directing it posteriorly and slide it along the nasal pharynx into the esophagus and into the stomach.
 - d Confirm location by instilling air and listening to the epigastrium.
 - e Secure tube.
 - f Connect to suction at 80 - 120 mm Hg.

NEBULIZER SETUP

EMT - I and P, RN

INDICATIONS:

Bronchospasm due to COPD exacerbation, CHF, asthma or anaphylaxis.

PRECAUTIONS:

Patients may not tolerate a specific administration method, face mask, mouth piece or blow-by.

PROCEDURE:

- 1 Prepare equipment.
 - a Oxygen source.
 - b Nebulizer system.
 - c Medication.
- 2 Assemble nebulizer T-piece device and attach to oxygen source.
- 3 Add desired medication to nebulizer.
- 4 Run oxygen at 6-10 liters/minute.
- 5 Attach nebulizer T-piece to mouthpiece, face mask or endotracheal tube.

NEEDLE CRICOTHYROTOMY

EMT – P

INDICATIONS:

To establish an emergency airway when other methods have been unsuccessful.

PRECAUTIONS:

Punctures or lacerations of the blood vessels, vocal cords or esophagus may occur. Subcutaneous emphysema. Needle cricothyrotomy is a temporizing measure only; ventilation will be poor with a slight rise in oxygenation in the alveoli.

PROCEDURE:

- 1 Prepare Equipment
 - a High flow oxygen with bag-valve-mask.
 - b Suction.
 - c 50 PSI (greater than or equal to 15 liters/minute) oxygen supply.
 - d Attached to a 10 ml syringe:
 - ◆ Adult: 10 - 14 ga IV catheter.
 - ◆ Pediatric: 14 -16 ga IV catheter.
 - e 3 mm endotracheal tube adapter.
 - f Disinfectant solution.
 - g Tape.
 - h Stethoscope.
- 2 Place the patient supine with support under the shoulders and mild hyperextension of the neck. Palpate the neck over the trachea and locate the cricothyroid membrane just below the notch of the thyroid cartilage. Clean and prep the site over the membrane. With the IV catheter puncture the membrane aiming caudally at a 45° angle. While entering, apply negative pressure to the syringe. When air is met, remove the syringe and stylet, advance the catheter to the hub, connect the 3 mm adapter and ventilate the patient (one second inflation to four seconds exhalation). Observe and auscultate the chest for bilateral breath sounds. Secure the device and continue to ventilate.

PERCUTANEOUS CRICOTHYROTOMY

(MELKER EMERGENCY CRICOTHYROTOMY CATHETER SET)

EMT – P

INDICATIONS:

The recommended method to establish an airway when other methods have been unsuccessful.

PRECAUTIONS:

Punctures or lacerations of the blood vessels, vocal cords, or esophagus may occur.

Subcutaneous emphysema. The Melker Emergency Cricothyrotomy Catheter Set © is to be used for the adult patient.

PROCEDURE:

- 1 Prepare Equipment – requires 2 EMTs.
 - a Bag-valve-mask and oxygen.
 - b Suction.
 - c Melker Emergency Cricothyrotomy Catheter Set ©.
 - d Disinfectant solution.
 - e Tape.
 - f Stethoscope.
- 2 Emergency Access Airway Device placement: Vertical skin nick over cricothyroid membrane. Insert catheter over needle through cricothyroid membrane at a 45° caudally and aspirate air as trachea is entered. Advance and rotate Emergency Access Airway Assembly over guidewire into trachea. Remove needle from catheter, insert guidewire through catheter several centimeters into trachea, then remove catheter. Remove guidewire, inflate cuff (if present), secure Emergency Access Airway Assembly and ventilate patient.

PATIENT RESTRAINT

Physical: First Responders, EMT- B, I, P and RN

Chemical: EMT- P, RN

INDICATIONS:

To restrain a physically combative patient to facilitate proper medical care and transport. Patient restraint (physical or chemical) should be used when a patient is exhibiting combative behavior or is a danger to self or others. Physical or chemical restraint is only to be used to transport a patient under the Implied Consent law, a police arrest or hold, or a physician hold, in which the patient requires ambulance transport for medical treatment or evaluation.

PRECAUTIONS:

Positional asphyxia can occur when a patient's body positioning causes an inability to breathe or an airway obstruction. This is especially true in the prone position. This may cause apnea, especially in the drugged, physically exerted patient.

Restraints that are too tight may cause permanent vascular or nerve damage. Handcuffs or flexcuffs applied by law enforcement personnel prior to EMS arrival may be left on providing EMS personnel have the keys, but should be replaced with softer restraints if possible. Use caution with sedative agents on patients who have had a chemical irritant sprayed in their face as airway irritation or laryngospasm may occur.

PROCEDURE:

- 1 Sufficient manpower should be present to control patient without injuring the medical personnel. Assess the need for using physical restraints prior to administering a chemical restraint.
- 2 Restrain the patient on the stretcher in either a supine or lateral recumbent position to keep airway open and accessible. Immobilize patient on a backboard with cervical spine precautions if indicated for possible cervical injury.
- 3 Document circulatory status of physically restrained extremities frequently.
- 4 Have Ativan, midazolam, droperidol and Benadryl prepared for injection.
- 5 All four extremities should be secured even if chemical restraint has been effective, to protect the EMS personnel and the patient from harm.
- 6 Monitor vital signs frequently.

PELVIC SLING

First Responder, EMT - B, I, P, RN

INDICATIONS:

Stabilization of suspected unstable pelvis fractures.

PRECAUTIONS:

Once applied, the pelvic sling is to be removed only under the supervision of a physician.

PROCEDURE:

- 1 Remove patient's clothes that will be covered by the pelvic sling.
- 2 After visual examination, the pelvic sling is wrapped around the patient's pelvis – hips & buttocks - (not abdomen). The pelvic sling is then tightened and securely fastened anteriorly over the pubic symphysis to reduce motion and internal hemorrhage of the unstable pelvis fracture during transport to the hospital. Provide further immobilization by placing the patient on a backboard and strapping the patient's knees and the ankles together.
- 3 Specific directions and training will depend on the type of pelvic sling used by the agency.

Acceptable methods include:

Bedsheet

MAST/PASG – abdominal component only

Commercial devices, such as the SAM Sling®

PUBLIC USE AUTOMATIC EXTERNAL DEFIBRILLATOR (AED)

INDICATIONS:

Unconscious, unresponsive, pulseless, apneic patient in cardiac arrest.

CONTRAINDICATIONS

Patient must be 1 year of age or older.

PRECAUTIONS:

If there is no child setting available for AED, PT must be 8 years old or weigh 80 lbs.

PROCEDURE:

- 1 Public Use AED will be acquired and maintained, according to the manufacturer's instructions
- 2 The following information will be provided at the location of the Public Use AED:

Public Use AED (Automatic External Defibrillator)

- 1 This public use AED, located at :
- 2 Is to be used only by a person who has received instruction through a course approved by the Health Division of the Department of Human Resources,
- 3 Is to be used only on an unconscious person who is not breathing and does not have a pulse,
- 4 Any time the Public Use AED is used, the "Public Use AED Event Information" page (on the reverse side of the page) must be completed and the data card information sent immediately to the receiving hospital and for QA process by the participating EMS agency, if available,
- 5 Was acquired and is maintained, according to the manufacturer's instructions, by the Agency Name Phone Supervising Physician

Public Use AED Event Information

Event Date: // Time:

Patient Name:

Rescuer Name:

Rescuer Address:

Rescuer Phone:

Bystander CPR? Yes No Unknown

Witnessed Arrest? Yes No Unknown

Was shock indicated? Yes No Unknown

Was shock administered? Yes No Unknown # of Shocks

Transporting Agency: Run #:

AED Manufacturer and Model:

Public Use AED Agency:

By:

Date: //

RAPID SEQUENCE INTUBATION

EMT – P

INDICATIONS:

To provide an airway when it cannot be accomplished because of trismus, combativeness or difficult airway problems in head injury, overdose, respiratory difficulty, status epilepticus and other situations where airway protection is required and cannot be accomplished by normal airway management procedures.

PRECAUTIONS:

Must have an alternate method of airway management available. May cause or potentiate bradycardia. Succinylcholine chloride may cause malignant hyperthermia. Paralysis does not stop the brain's seizure activity.

PROCEDURE:

- 1 Prepare Equipment
 - a High flow oxygen, non-rebreather mask and bag-valve-mask.
 - b Suction.
 - c Laryngoscope, ET tubes (2 sizes), stylet.
 - d Alternate airways.
- 2 Two person procedure.
- 3 Pre-oxygenate with 100% oxygen with non-rebreather mask if breathing spontaneously or bag-valve-mask if not breathing adequately.
- 4 Cardiac monitor and oximetry.
- 5 Assure free flowing IV.
- 6 Premedicate IV – prepare ahead of time for rapid use:
 - a Lidocaine (1.5 mg/kg IV) – if risk of increased intracranial pressure or bronchospasms.
 - b Atropine 0.02 mg/kg (minimum dose 0.1 mg) for all children \leq 8 years.
- 7 Induce paralysis with either succinylcholine (preferred) or vecuronium.

Succinylcholine 1-1.5 mg/kg (Preferred)

- Apply sellick maneuver as paralysis develops. Avoid positive pressure ventilation if possible. Do not attempt intubation until paralysis has occurred, usually in 30-60 seconds.

Vecuronium 0.1 mg/kg (2nd line if succinylcholine contraindicated)

- Apply sellick maneuver as paralysis develops. Avoid positive pressure ventilation if possible. Do not attempt intubation until paralysis has occurred, usually 75-90 seconds.

Midazolam 2-4mg slow IV push.

- 1 Apply capnometry or end tidal CO₂ device.
- 2 Use alternate airway if unable to intubate.
- 3 Administer vecuronium to maintain paralysis for prolonged transports. Additional sedation may be administered as needed.
- 4 Monitor patient's temperature.

RECTAL DIAZEPAM (VALIUM) ADMINISTRATION

EMT – P, RN

INDICATIONS:

Used to administer diazepam in patients when IV access is unavailable.

CONTRAINDICATIONS:

Known sensitivity to diazepam.

PRECAUTIONS:

Causes respiratory depression. Provides for rapid administration, but requires higher dose to compensate for diminished absorption.

PROCEDURE:

- 1 Prepare Equipment
 - a Airway control devices.
 - b High flow oxygen.
 - c Diazepam.
 - a 8 Fr feeding tube or long IV catheter.
 - d KY jelly.
 - e Syringe with 3 ml crystalloid or air flush.
- 2 Draw up diazepam dosage.
- 3 Remove needle from syringe.
- 4 Cut feeding tube to approximately 2.5 inches in length or use IV catheter and remove needle from catheter.
- 5 Apply KY jelly to tube or catheter.
- 6 Spread buttocks and gently insert feeding tube or catheter into rectum (1" for infants, 1½ - 2" for older children). Catheter or feeding tube should advance easily into rectum.
- 7 Attach syringe with diazepam to end of feeding tube or catheter and inject diazepam with a steady push.
- 8 Clamp feeding tube or catheter while drawing 2-3 ml of air for flush.
- 9 Remove feeding tube or catheter.

Pediatric dose should be 0.5mg/kg not to exceed 5mg for first dose.

SPINAL IMMOBILIZATION

EMT-B, I, P and RN

Patients with a high risk of cervical, thoracic, or lumbar spine injury based on neck/back tenderness, neurological abnormality (weakness, numbness or paralysis) or mechanism of injury.

PROCEDURE

FIRST RESPONDER, EMT-BASIC, EMT INTERMEDIATE:

Complete spinal immobilization per Policy and Procedure manual.

EMT- PARAMEDIC, RN:

Complete spinal Immobilization unless all of the following are met:

- 1 Age 5 years or greater
- 2 No alteration in patient's level of consciousness. The patient should be awake, alert and cooperative with no evidence of intoxicants or mental impairment.
- 3 Normal neurological exam
- 4 No significant traumatic mechanism (fall from a great height, ejection, rollover, significant intrusion, dash deformity or starred windshield, ECT).
- 5 No evidence of other injuries that may distract patient's awareness of pain.
- 6 No tenderness to the spinous processes of the cervical, thoracic or lumbar-sacral spine.
- 7 No pain with active range of motion by the patient.
- 8 Complete "clearing C-spine in the field" worksheet.

Note:

This protocol is in effect so that you may have a means to clear the need for spinal immobilization on certain patients, IE: patients who were involved in a minor motor vehicle accident and are walking around on scene under their own power denying any neck or back pain and requesting transport to the hospital.

TRACHEOSTOMY CARE

EMT – P, RN

INDICATIONS:

Tracheostomies must be open and unobstructed in order for a patient to breathe. Tracheostomy crises will develop for a variety of reasons: occlusion from mucus plug, accidental removal of tracheostomy or placement of tracheostomy into a false passage. Family members usually have extra supplies at the house.

PRECAUTIONS:

When placing a whole tracheostomy tube into the stoma you may inadvertently insert into the soft tissue and create a false passage. Patients may require intubation through the stoma in order to secure their airway.

PROCEDURE:

- 1 Prepare Equipment
 - a Bag-valve-mask.
 - b Oxygen.
 - c Tracheal suction catheter.
 - d Brand new tracheostomy tube.
 - e Endotracheal tube.

- 2 Assess patients breathing.
 - a Apneic patient.**
 - 1) Attach bag valve mask to tracheostomy tube and attempt to ventilate; continue this way if adequate.
 - 2) If inadequate, attempt to suction tracheostomy with sterile technique.
 - 3) Re-ventilate.
 - 4) If no improvement, remove inner cannula and suction tracheostomy tube.
 - 5) Re-ventilate.
 - 6) If no improvement, remove the whole tracheostomy tube.
 - 7) Cover stoma and attempt to ventilate with bag-valve-mask over mouth.
 - 8) If this works, place a brand new tracheostomy tube, if available, and attempt to ventilate. If this works, continue.
 - 9) If does not work, intubate orally. Cover stoma and continue to ventilate.

 - b Breathing but ventilating poorly.**
 - 1) Suction tracheostomy tube with sterile technique.
 - 2) If no improvement, remove inner cannula.
 - 3) Reassess.
 - 4) If no improvement, remove the whole tracheostomy tube and insert a brand new tracheostomy tube. If no tracheostomy tube is available, cut an ET tube to same length as patient's tracheostomy tube and pass through stoma.
 - 5) Reassess.
 - 6) Ventilate or oxygenate as needed.

TRANSPORT VENTILATOR

EMT- P, RN

INDICATIONS:

Any patient requiring short-term ventilatory support while being monitored by a Paramedic/RN trained in the use of the ventilator.

CONTRAINDICATIONS:

Auto Vent 3000

Patients under 20 Kg.

Patients requiring greater than 50 cmH₂O

PRECAUTIONS:

- Do not leave patients unattended.
- Transport ventilators are for resuscitation management and should not be used as an unattended automatic ventilator.
- Recognize changes in atmospheric pressure and altitude as it effects tidal volume.
- Trauma patients with a possible pneumothorax.

PROCEDURE:

- 1 Intubate patient and confirm placement.
- 2 Continue with manual ventilations.
- 3 Prepare equipment. (Use the same setting is the patient is already on a hospital ventilator)
High flow oxygen.
Prepare ventilator.
Check peak pressure.
- 4 Set Breaths per minute (BPM). 12 for an Adult; 20 for a Child
- 5 Set inspiratory time (if equipped).
- 6 Set tidal volume 8-10 ml/kg
Auto Vent 3000 -- 8-10 ml/kg
Cross-vent 2 -7-10 ml/kg
- 7 Occlude the outlet port (check peak pressure)
- 8 Connect to patient.
- 9 Assess patient, Chest rise and fall, Lung sounds, Oximetry (O₂ saturation),
End tidal CO₂ capnometry.
- 10 Change in the patient's lung compliance may result in ventilatory changes. In such an event, reassess and make the appropriate clinical adjustments.

UMBILICAL VEIN CATHETERIZATION

EMT – P/ RN

INDICATIONS:

Preferred site of vascular access during neonatal resuscitation.

PRECAUTIONS:

Sterile procedure. Cannulate the umbilical vein, not the umbilical arteries. Do not insert the cannula more than 6 cm.

PROCEDURE:

- 1 Prepare Equipment
 - a 5 Fr umbilical catheter or 2" 16 ga IV catheter without needle.
 - b Three-way stopcock.
 - c Syringe.
 - d Scalpel.
 - e Disinfectant solution.
 - f Crystalloid.
 - g Sterile gauze pad.
 - h Tape.
 - i Umbilical tape or ligature.
 - j Sterile drape.
- 2 Attach crystalloid filled syringe and three-way stopcock to umbilical catheter and flush.
- 3 Sterile prep and drape the cord area.
- 4 Apply mild ligature pressure to umbilical cord near skin to prevent bleeding.
- 5 Cut the cord approximately 2 cm from the skin, leaving a clean, smooth end.
- 6 Insert catheter in the large, thin-walled, single vessel for 2 cm then check for blood return. If no blood returns, keep advancing in 1 cm increments until blood return or catheter has been inserted 6 cm. Do not use catheter if no blood return.
- 7 If blood return, secure catheter with tape, cover with gauze pad.
- 8 Frequently flush with 1-2 ml crystalloid.

VAGAL MANEUVERS

EMT I, P and RN

INDICATIONS:

Narrow complex tachycardias in stable patients.

CONTRAINDICATIONS:

An unstable patient, patient refusal, altered mental status, or any cardiac dysrhythmia except for a narrow complex tachycardia.

PROCEDURE:

- 1 Trendelenburg position
 - a Raise patient's feet 6-18 inches relative to his or her head.
- 2 Increased intra-abdominal pressure
 - a Ask the patient to cough.
 - b Ask the patient to close his or her mouth and bear down – “like having a bowel movement”, “like having a baby”, “like blowing up a balloon” or “tighten up your stomach muscles and push”.
- 3 Vagal stimulation
 - a Ask the patient to swallow water.
 - b Ask the patient to splash ice water on his or her face.

Section 5

WESTERN COOS COUNTY MASS CASUALTY INCIDENT (MCI) PROTOCOL

WESTERN COOS COUNTY MASS CASUALTY INCIDENT (MCI) PROTOCOL

INTRODUCTION

This plan has been prepared to provide a coordinated response to a disaster which could overwhelm normal EMS or hospital resources. Mass Casualty Incidents (MCI) involve five (5) or more patients transported for treatment. The first unit on scene at MCI incidents should declare over the radio to Dispatch that an MCI is in progress so that other dispatch centers and potential receiving hospitals will be notified. The Incident Command System (ICS) shall be used to manage MCI scenes in Western Coos County. The positions of Incident Command, Medical Branch Director and Triage, Treatment and Transportation Group Leaders will be delegated to manage an MCI scene. When an MCI incident occurs in a small department or rural area with long response times, one individual may be required to fill several roles.

The following is an example of how the MCI system should work:

1. The first BLS/ALS unit on scene declares MCI scene.
2. The highest level EMT or highest ranking officer with the responding fire agency on scene initially becomes Incident Command, including Medical Branch Director, and assigns Triage, Treatment and Transportation Group Leaders. If Incident Command has already been established, it will assign Medical Branch Director. Identification vests should be worn. Establish a staging area as needed.
3. Responding ambulances and fire department apparatus assigned to medical duties will report to staging on the EMS tactical frequency assigned by the Incident Commander.
4. The appropriate dispatch center will notify other dispatch centers and area hospitals with MEDNET activation alert.

WESTERN COOS COUNTY MASS CASUALTY INCIDENT PROTOCOL

- A. A triage tag system (black, red, yellow, green categories) and START program will be used by all agencies in Western Coos County functioning under these standing orders.
- B. When the MCI plan is put into effect, all responding ambulances and fire department apparatus assigned to medical duties will report to staging on the EMS tactical frequency assigned by the Incident Commander.
- C. EMS/medical radio traffic will be restricted during MCI incidents. The preferred radio frequency will be MEDNET 1. The Transportation Group Leader will direct transporting units to specific hospitals after discussing available hospital resources with the Medical Branch Director. Transporting units will notify dispatch as they leave the scene with the MCI name, unit ID, destination, and patient age, gender and triage color, i.e. "Control 1 – Medic 6 from Main Street MCI in route to BAH with 1 Red female teenager and 1 Yellow male about 50 years old.
- D. Transporting units will then notify the destination hospital while in route with the MCI name, the unit ID, patient age, gender and triage color, and ETA, i.e. "Bay Area Hospital – Medic 6 inbound from Main Street MCI with 2 Red, female teenager age about 16 years and a 50 year old male, ETA of 15 minutes." MCI patients will not be treated as trauma system patients – no trauma criteria will be reported over the radio. Transporting units will notify Dispatch when they arrive at their destination with their unit ID and location, i.e. "Medic 6 is out at BAH." Ambulances transporting non-MCI patients will report to the hospital as usual on MEDNET Primary.

FIRST UNIT ON SCENE

SIZE UP!

IDENTIFY YOUR UNIT AND ADVISE DISPATCH OF THE FOLLOWING:

1. Mass Casualty Incident (MCI): 5 or more patients transported for treatment.
2. The type of incident (traffic crash, fire, plane crash, explosion, hazmat, etc.).
3. Number of patients, estimated if need be.
4. The location of the incident and staging area.
5. Best access to and from scene and staging area.
6. Any obvious hazardous conditions (hazmat, weather, etc.).
7. Number, type and response code of additional units needed.
8. Establish Incident Command. *Identify the incident to Dispatch with site name, ICS position, declaration of an MCI, the nature of the event, and an estimate of the number and type of patients, i.e. "Medic 6 on scene. We have an explosion and hazmat MCI at the Phillips plant with about 15 patients including 5 or 6 critical. This is Phillips command."*
9. Establish Medical Branch Director.
10. Continue to "re-size up" scene throughout incident.

SIZE-UP CARD

DECLARE MCI

ESTABLISH COMMAND

ADVISE DISPATCH OF:

NAME OF INCIDENT

TYPE OF INCIDENT

LOCATION AND ACCESS

APPROXIMATE NUMBER OF PATIENTS

STAGING AREA

HAZARDS

ADDITIONAL RESOURCES NEEDED

MEDICAL BRANCH DIRECTOR - DUTY CHECKLIST

(YOU MAY HAVE TO FILL MULTIPLE ROLES UNTIL ADEQUATE PERSONNEL ARRIVE)

- RADIO CALL SIGN: "MEDICAL".
- WEAR "MEDICAL" IDENTIFICATION VEST.
- APPOINT TRIAGE GROUP LEADER - PROVIDE TRIAGE PACKET.
- REPORT ACCURATE TRIAGE COUNT TO DISPATCH AND TO INCIDENT

- *COMMAND. Inform Dispatch of the complete triage count with site name, ICS position, total patients and the number of red, yellow, green and black patients (make sure that the sum of the red, yellow, green and black patients is the same as the total patient count), i.e. "Control 1 – 7-Devils MCI Medical with 14 patients; 3 Red, 2 Yellow, 8 Green, and 1 Black."*

- APPOINT TREATMENT GROUP LEADER - PROVIDE TREATMENT PACKET.
- APPOINT TRANSPORTATION GROUP LEADER – PROVIDE TRANSPORTATION PACKET.
- ADVISE TRANSPORTATION GROUP LEADER OF HOSPITAL RESOURCES AFTER DISCUSSING WITH DISPATCH.
- COORDINATE LOCATION OF TRIAGE, TREATMENT AND TRANSPORTATION AREAS.
- ANTICIPATE AND REQUEST SUPPLIES AND EQUIPMENT NEEDED.
- INSURE ALL WORK AREAS ARE OUT OF HAZARDOUS ZONES.
- COORDINATE FUNCTIONING OF TRIAGE, TREATMENT AND TRANSPORTATION GROUP LEADERS.
- MAINTAIN RECORD OF ACTIVITIES AND FORWARD TO OPERATIONS.

TRIAGE GROUP LEADER - DUTY CHECKLIST

- OBTAIN BRIEFING FROM MEDICAL BRANCH DIRECTOR.
- RADIO CALL SIGN: "TRIAGE".
- WEAR "TRIAGE" IDENTIFICATION VEST.
- APPOINT AND BRIEF STAFF AS NEEDED.
- DIRECT S.T.A.R.T. SORTING AND TAGGING OF VICTIMS.
- INFORM MEDICAL BRANCH DIRECTOR OF THE COMPLETE TRIAGE COUNT. *(make sure that the sum of the red, yellow, green and black patients is the same as the total patient count)*
- EXPEDITE MOVEMENT OF VICTIMS TO TREATMENT AREAS.
- REQUEST ADDITIONAL RESOURCES VIA MEDICAL BRANCH DIRECTOR.
- CONFIRM WITH MEDICAL BRANCH DIRECTOR FINAL PATIENT COUNT.

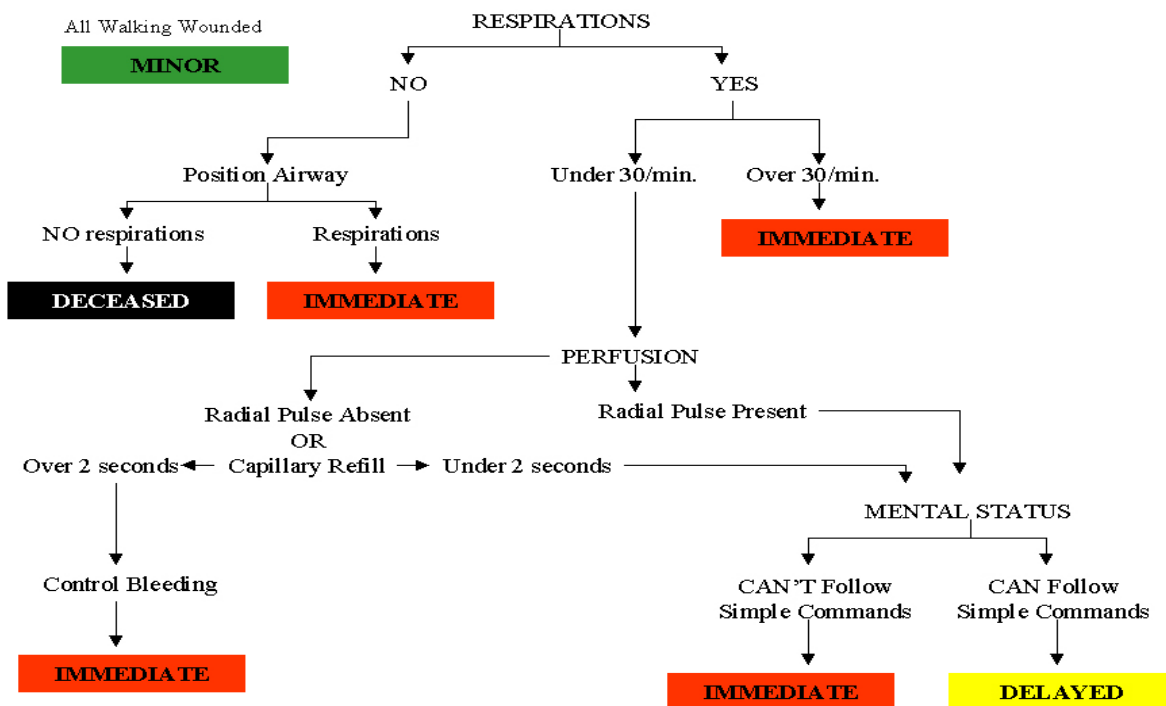
SIMPLE TRIAGE AND RAPID TREATMENT

(S.T.A.R.T.)

- 1 USE S.T.A.R.T SYSTEM TO PRIORITIZE PATIENTS.
- 2 ATTACH TAG SECURELY AROUND PATIENT'S NECK SO TO BE CLEARLY VISIBLE.
- 3 TEAR OFF ALL COLORED TABS BELOW DETERMINED PRIORITY AND RETAIN.
- 4 INDICATE INJURIES ON BODY DIAGRAMS IF TIME PERMITS.
- 5 ENTER TIME, BP, PULSE AND RESPIRATIONS IN BLANK SPACES.
- 6 DOCUMENT IV START AND TIME IF APPLICABLE.

*IF AIRPORT TRIAGE TAG USED:

- EACH "AIRPORT OPTION" TRIAGE TAG HAS A GROMMET AND SHORT LOOSE-END TIE IN ONE UPPER CORNER.
- THE UPPER CORNER WITH GROMMET AND TIE IS TO BE TORN OFF AND SECURED TO WHATEVER IS CLOSE TO THE PATIENT'S LOCATION.
- THIS TAG ALLOWS AIRPORT PERSONNEL TO PLOT FATALITY PATTERNS IN ACCIDENTS.



Triage tag

No. 239352 **TRIAGE TAG** No. 239352

PART I

No. 239352

CALIFORNIA FIRE CHIEFS ASSOCIATION®

Leave the correct Triage Category ON the end of the Triage Tag

Move the Walking Wounded	MINOR
No respirations after head tilt	DECEASED
<input type="checkbox"/> Respirations - Over 30	IMMEDIATE
<input type="checkbox"/> Perfusion - Capillary refill Over 2 seconds	IMMEDIATE
<input type="checkbox"/> Mental Status - Unable to follow simple commands	IMMEDIATE
Otherwise-	DELAYED

MAJOR INJURIES: _____

HOSPITAL DESTINATION: _____

ORIENTED DISORIENTED UNCONSCIOUS

TIME	PULSE	B/P	RESPIRATION

DECEASED

IMMEDIATE No. 239352

DELAYED No. 239352

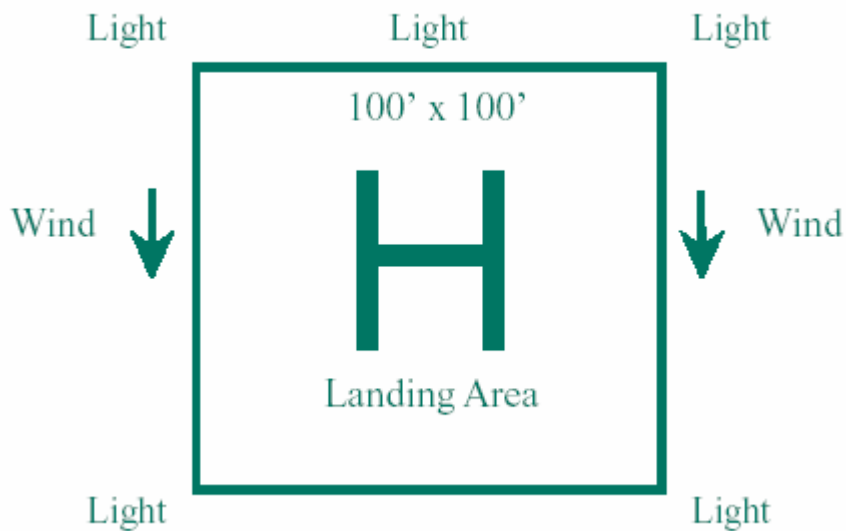
MINOR No. 239352

TREATMENT GROUP LEADER - DUTY CHECKLIST

- OBTAIN BRIEFING FROM MEDICAL BRANCH DIRECTOR.
- RADIO CALL SIGN: "TREATMENT".
- WEAR "TREATMENT" IDENTIFICATION VEST.
- APPOINT AND BRIEF STAFF AS NEEDED: EMTS, LITTER BEARERS.
- ESTABLISH RED, YELLOW AND GREEN TREATMENT AREAS.
- REQUEST ADDITIONAL RESOURCES FROM MEDICAL BRANCH DIRECTOR.
- COORDINATE AND OVERSEE PATIENT TREATMENT ACCORDING TO THEIR RED, YELLOW OR GREEN PRIORITIZATION.
- "TRANSPORTATION" WILL ASK FOR SPECIFIC PATIENT NUMBERS AND TYPES, i.e., "GIVE ME 2 REDS AND 3 YELLOWS." BE PREPARED TO PROVIDE TRANSPORTATION GROUP LEADER WITH SPECIFIC PATIENT NUMBERS AND TYPES (RED, YELLOW, GREEN).

HELICOPTER LANDING ZONE (LZ) - DUTY CHECKLIST

- (MUST BE FAMILIAR WITH HELICOPTER OPERATIONS)
- LANDING AREA MUST BE FAIRLY LEVEL. (8 DEGREE SLOPE MAX).
- MINIMUM OF 60 X 60 FOOT AREA FREE OF OBSTRUCTIONS.
- CHECK CAREFULLY FOR OVERHEAD WIRES, ETC.
- CONSIDER NOISE INTERFERENCE AND ROTOR WASH. ESTABLISH
- LANDING ZONE FAR ENOUGH FROM THE SCENE SO THESE WILL NOT BE A PROBLEM.
- NOTIFY MEDICAL BRANCH DIRECTOR AND TRANSPORTATION GROUP LEADER OF LANDING ZONE LOCATION.
- MAINTAIN CLOSE SECURITY OF THE LANDING ZONE.



Section 6

AEROMEDICAL TRANSPORT PROTOCOLS

AEROMEDICAL TRANSPORT PROTOCOL

Interhospital transfer protocol applies to aeromedical transports

During interhospital aeromedical transports medication not included in these protocols may be ordered by the patient's physician. These medications should be given as ordered unless specific medical contraindications exist. It is the responsibility of the medical flight crews to be familiar with the effects, dosages, indications, contraindications, and adverse reactions associated with drugs used in the treatment of critically ill and injured patients. Drugs likely to be ordered during aeromedical transport: Narcotics: meperidine (Demerol), fentanyl Cardiovascular agents: nitroprusside (Nipride), dobutamine (Dobutrex), amrinone (Incor) Paralytics: pancuronium (Pavulon), rocuronium (Zemuron) Gastrointestinal agents: hydroxyzine (Vistaril), famotidine (Pepcid), ranitidine (Zantac), cimetidine (Tagamet)

Preflight Assessment

- A. Altitude can cause detrimental effects to the patient transported by air. Prevention is the key. To provide good patient care during air transport it is essential that all medical personnel understand the effects of altitude on patients.
- B. The patient should be evaluated for potential altitude problems during the primary and secondary survey.
- C. Prophylactically treat altitude problems (i.e., NG tube placement, needle thoracentesis or placement of chest tube).

Altitude Of Our Region

- A. At the beginning of a patient assessment, evaluate the potential altitude of the flight and use this as a frame of reference when preparing the patient for flight.
- B. Service Areas:
 - Coastal range: 2,000 - 4,000 feet
 - Medford; 1,330 feet
 - Cascade range: 5,000 - 10,000 feet (passes through the range vary around 5,000 feet)
 - Bend: 3,450 feet
 - Willamette Valley and Eugene: sea level to 500 feet
 - Route up to Portland if bad weather: 8,000 - 18,000 feet
 - Aeromedical Transport Protocol
- C. Points to consider:
 - The patient's needs should determine the altitude.
 - Weather conditions will affect this decision.
 - Good communications with the pilot is essential in order to make the best mutual decision regarding the flight.

Altitude Effect On Body Systems

- A. **General Symptoms or Signs:** Fatigue, insomnia, anorexia, thirst, drowsiness, altered mental status, dehydration.
- B. **Cardiac/Respiratory Symptoms or Signs:** Chest pain, breathlessness, Cheyne Stokes respirations, cyanosis, hypoxia, arrhythmias, pulmonary edema, blood pressure alterations, increase in heart or respiratory rate.
- C. **Musculoskeletal Symptoms or Signs:** Weakness, stiffness or poor coordination.
- D. **GI Symptoms or Signs:** Nausea, vomiting, diarrhea, abdominal cramps, indigestion or bloating.
- E. **Neurologic Symptoms or Signs:** Headache, visual changes, confusion, psychosis, hallucinations, dizziness or memory loss.

The Ten Stresses Of Flight

A. Decrease in partial pressure of the gases

Definition: The barometric pressure is the total pressure (P_T) of all of the gases in the air which decreases with increased altitude.

- The pressures and effects of a particular altitude on a patient are estimated by the following equation:

$$P_i O_2 = \text{Barometric Pressure} - H_2O \text{ vapor} \times 0.2 \quad [P_i = \text{partial pressure of inspired gas}]$$

$$P_a O_2 = P_i O_2 - (P_a CO_2 - R \times 0.8) \quad [R = \text{respiratory exchange ratio, slightly} < 1]$$

$$[P_a = \text{partial pressure of gas in arterial blood}]$$

ALTITUDE EFFECTS ON PRESSURES IN HEALTHY PERSONS

<u>Altitude (Feet)</u>	<u>P_T (mmHg)</u>	<u>$P_a O_2$</u>	<u>$P_a CO_2$</u>
Sea Level	760	103	40
5,000	632	81	37
11,000	523	61	35
15,000	475	45	32
18,000	380	38	31
20,000	349	35	30

B. IV Bottles:

With glass bottles air expansion will affect the drip rate, therefore, plastic bags are usually preferred. Always keep the drip chamber half full if volutrols are used or regulate with an IV pump.

C. Chest Tubes:

Observe for obstruction, and transport in an airplane with Pleurevac drainage with an RN in attendance.

D. Dental Work:

Due to the possibility of trapped air, for example a root canal, crew members should not fly for 24 hours after receiving dental work.

E. Humidity:

As the temperature or atmospheric pressure decreases, the air becomes dryer. ET tubes will plug easier, especially in pediatric patients with small diameter tubes. Keep these moist with saline. Corneas will dry out, contacts should be removed, and on long flights the use of isotonic or artificial tears may be helpful.

F. Drug Potentiation:

CNS depressants, antihistamines and narcotics are potentiated at altitude and may depress respirations and increase hypoxia. Analgesics and benzodiazepines should be given in smaller doses at more frequent intervals.

G. Noise:

Ear protection may be needed for the patient and crew. Breath sounds may be difficult or impossible to hear. Doppler may facilitate blood pressure determinations. Accelerate the use of your vision and touch in order to assess your patient.

H. Nausea:

Flying may cause your patient to develop air sickness with symptoms of headache, stomach awareness, pallor, perspiration, nausea or vomiting.

I. Thermal Effects:

Temperature decreases with altitude; usually a 2°C drop for every 1000 foot elevation gain. Consider the chill factors during the winter. Keep the patient warm; mummy wrap them, use hot packs, etc. Children will cool faster due to their larger body surface area to weight ratio.

J. "G" Forces:

In fixed wing transport G forces will affect the patient more. Load the patient facing the tail with the head of the bed up 30 degrees, if possible. This will put most of the force towards the abdomen and hip area. Adequate restraints are needed to ensure stabilization in flight.

K. Vibration in the aircraft:

Overall, the aircraft offers a very smooth ride, but there is a low vibration level. Traction devices cannot have free hanging weights. Equipment settings should be rechecked. Screws and bolts loosen over long periods of time and need regular tightening.

L. Fatigue:

This is the sum total of all the above. Fatigue increases in illness, not enough rest and with poor nutrition. This is a very important factor for the flight crew to keep in mind and to keep in good physical shape.

Special Considerations

1 Intubated and Ventilated Patients

Intubated patients requiring interfacility transport have special requirements for care to ensure their safety and stability. For many transports patient may need to be intubated, paralyzed and ventilated mechanically. This offers much greater control and consistency of volumes, rate and pressures. ET tube placement should always be confirmed pre-transport by auscultation and after each stage of movement (i.e. into ambulance, into aircraft, etc.) with documentation of tube position. Conscious, non-paralyzed patients should be restrained with soft restraints to prevent accidental tube displacement. Sedation should be considered for any intubated patient and administered per standing order. Paralysis should be considered in the combative intubated patient or the ventilated patient who is unable to maintain adequate saturations on 100% O₂ as this will reduce the oxygen demand from the work of breathing. Remember that paralysis MUST be accompanied by sedation, and that pain control must also be continued if injuries exist. SaO₂ monitoring is mandatory on all patients. It is recommended that all ventilated patients be transported on maximum concentration of O₂. If specific transport orders call for lower concentrations, titration may be necessary to keep saturation >90%.

2 Chest Tubes

Patients with chest tubes require special attention to prevent obstruction or disconnection during transport. Patients being transported with chest tubes for pleural drainage of air or fluids must be protected from accidental disconnection of tubes from the drainage/suction device. Prior to transport ensure that the chest tubes are well secured to the patient with sutures and tape, that all connections are well secured, and that the drainage/suction device is operating correctly. It is important to maintain the drainage/suction device below the level of the chest tubes at all times to prevent reflux of drainage into the chest. It is important to maintain the device in an upright position to ensure delivery of appropriate suction or maintenance of water seal. If suction is ordered to be maintained for transport, ensure that the water level in the suction device is at the appropriate level for the ordered suction pressure, and that the suction chamber is having continuous vacuum, indicated by light bubbling. Portable battery powered suction devices are not designed to provide continuous high pressure suction and will tend to overheat if run continuously. They should be used for chest tube suction only as bridging devices between connection to the main suction in the ambulance or aircraft. Ensure that the suction unit is functioning properly in the transporting unit prior to transport. Suction devices will require release of internal pressure during ascent and descent in flight. A pressure equalization release button is provided on the device for this purpose and should be used frequently during periods of altitude change.

3 Blood Pressure Monitor

Non-invasive Blood Pressure Monitoring (NIBP) may be utilized in situations in which manual BPs are not practical or when auscultation is impossible. Remember to treat the patient, not the machine! NIBP readings should always be correlated to the clinical presentation of the patient. Baseline comparison between manual and machine readings should be obtained prior to transport. If the machine reading does not correlate with the manual readings and cannot be corrected by repositioning the cuff or changing arms, the NIBP should not be used to guide patient care. Frequency of readings should be guided by patient condition. As with all BP measurements, be sure to use an appropriately sized cuff to obtain accurate readings.

4 Transvenous Pacemakers

Patients with transvenous pacemakers require special attention to ensure proper function and to prevent dislodgement of the pacing leads. Check equipment for proper function prior to transport. A spare fully charged battery should be available. Check that the device is properly functioning by observing appropriate sensing and capture. Avoid turning the patient to the right side, as this places tension on the cardiac leads and may result in dislodgement.

Medical Control During Transport

Medical control for aeromedical interfacility transports shall initially rest with the transferring physician for establishment of transport orders, and during transport with the receiving physician or the transporting unit's medical control.

Procedure:

- A. In the absence of specific transport orders, care shall be delivered as per standing orders regarding IV rates and solutions, oxygen delivery, ventilator and other equipment settings, and medications needed for sedation, pain and anxiety control.
- B. Routine medications such as antibiotics, or breathing treatments which are indicated during the transport and have been provided by the transferring facility, may be administered as ordered.
- C. Treatments not otherwise specified shall be delivered in accordance with these Coos County EMS Standing Orders.
- D. In the event the transport orders conflict with the standing orders or the medical opinion of the transporting crews, care shall be delivered under standing orders. Every effort should be made to discuss changes with the transferring physician prior to transporting the patient. If the transferring physician is unavailable or unwilling to alter his orders, on-line medical control may be sought from the receiving physician or the transporting unit's medical control if the destination facility is outside this system.
- E. In the event of a serious deterioration of the patient's condition en route, diversion to the nearest hospital may be needed. Ground transportation arrangements and alerting of the local facility to the situation are essential so that they may be prepared. If no communication with dispatch is available due to location, the pilot may be able to accomplish this using the aircraft's radios.

CHEST TUBE PLACEMENT (AEROMEDICAL RN ONLY, IF AGENCY APPROVED)

INDICATIONS:

Chest trauma where ventilation ability is compromised even after needle thoracentesis.

Chest trauma where a hemodynamic compromising hemothorax is suspected

PRECAUTIONS:

- 1 A needle thoracentesis should be performed prior to chest tube placement to rule out a life threatening pneumothorax.
- 2 A patient's hemodynamic status may deteriorate rapidly following the evacuation of a massive hemothorax (larger than 1000-2000 ml). Initiate fluid resuscitation before performing chest decompression. Anticipate the need for high volume resuscitation. Autotransfusion maybe indicated if available.
 1. A large left hemothorax may signal an aortic or great vessel injury.

PROCEDURE:

- 1 Patient Preparation:
 - a Place the patient in a supine position on the involved side with the arm over the head. If the patient's injuries permit, elevate the trunk to a 30-60 degree angle.
- 2 Tube size:
 - a Large adult: 40 FR
 - b Child >12 to small adult: 36 Fr
 - c Child 5 to 12: 32 Fr
 - d Child 1-4: 20 Fr
 - e Child < 1 yr: 14 Fr
 - f Small infants: 8-12 Fr.
- 3 Site selection:
 - a Adult:
 - ◆ Usual site: 4th or 5th intercostals space in the anterior or midaxillary line.
 - ◆ Alternative: Level of the nipple line anterior or midaxillary line. In women with pendulous breasts, the lateral crease of the breast is a more stable landmark.
 - b Children:
 - ◆ Third intercostals space at the midaxillary line.
 - ◆ Alternative: 4th or 5th intercostals space midaxillary line.

4 Prepare the chest drainage device.

Procedure:

- a Cleanse the insertion site with an antiseptic solution.
- b Drape the chest with sterile drapes.
- c Make a 2-3 cm incision at the insertion site (over the 5th rib).
- d Bluntly dissect over the superior surface of the rib with a curved hemostat. (Figure 2)
- e Puncture the pleura with the tip of the hemostat.
- f Widen the pleural opening and the skin incision by pulling the opened hemostat back out of the chest wall.
- g With a gloved finger, palpate through the incision to verify entry into the pleural space. (Figure 3)
- h Grasp the proximal end of the chest tube with a clamp and guide it into the pleural space and upward. Advance the tube until all of the holes plus 2-3 cm are within the chest.
- i Connect the chest tube to the chest drainage device.
- j Suture the chest tube in place with silk suture.
- k Dress the wound with occlusive gauze, sterile gauze, and tape.

DANGEROUS PATIENT: REFUSAL TO TRANSPORT

EMT - P and RN - AEROMEDICAL ONLY

SUBJECTIVE:

Any bizarre behavior or change in behavior, including but not limited to: suicidal ideas, alcohol or drug intoxication, toxic exposure, head trauma, psychiatric disorders or unusual patient history.

OBJECTIVE:

Assess level of consciousness and orientation.
Assess the patient's level of cooperation.

ASSESSMENT:

Any behavior that the flight crew deems potentially dangerous.

TREATMENT:

SAFETY OF THE FLIGHT MUST NEVER BE COMPROMISED

EMT – P or RN:

- Discuss case and hazards involved with referring and receiving MD.
- If patient can be chemically or physically restrained to the **satisfaction of the crew** the transport can continue. Monitor patient closely.
- If patient cannot be chemically or physically restrained then the aeromedical crew should cancel the flight.
- Assist referring MD with alternative forms of transport.
- It would be rare, yet acceptable, for the air medical crew to accompany ground transport to the nearest hospital if medical treatment had been initiated by the aeromedical crew.

ESCHAROTOMY

RN - AEROMEDICAL ONLY (IF AGENCY APPROVED)

INDICATIONS:

Severe circumferential burns causing significant respiratory or circulatory compromise.

Significant findings include: numbness/tingling distal to injury, pain (deep, aching, throbbing), Loss of motor function or sensation, cyanosis of extremity, decrease or absence of distal pulses.

ASSESSMENT:

Diagnosis of the need for escharotomy is made by assessment of distal circulation and respiratory status. Indications include: full thickness, circumferential burns of extremities and/or torso where distal circulation or respiratory effort (chest involvement) is impaired. Indicators of adequate release include: improvement in color, Doppler flow signal strength, adequate oximetry values.

PROCEDURE:

RN ONLY:

- Incision is carried through the full thickness of the skin only and exposes subcutaneous fat.
- Limbs: Incise the lateral and medial aspect of the involved extremity with a scalpel, 1 cm proximal to and past the length of the circumferential burn. Avoid vital structures such as the radial nerve at the wrist and the superficial peroneal nerve at the fibular head.
- Chest: Incision should extend from the midclavicular line to the costal margin in the anterior axillary line bilaterally. The incisions may be joined by a transverse incision below the xiphoid process.
- Neck: Incise laterally, posterior to the carotid and jugular vessels.
- Pack the wounds loosely with sterile gauze impregnated with normal saline or with an appropriate antibiotic.

FEMORAL VEIN CANNULATION

EMT - P and RN – (IF AGENCY APPROVED)

INDICATIONS:

To access venous circulation. May attempt after extremity vein and external jugular vein cannulation has been unsuccessful and other intravenous access is not available.

PRECAUTIONS:

Do not attempt at areas of injury or infection. Monitor site for signs of infiltration.

PROCEDURE:

- 1 Prepare equipment
 - a Disinfectant solution.
 - b Crystalloid solution and infusion set with tubing primed.
 - c Intravenous catheter (10 -14 gauge 5 – 8 cm).
 - d Sterile dressing.
 - e Syringe.

- 2 Femoral Vein Cannulation
 - a Disinfect site.
 - b Palpate femoral artery with non-dominant finger. If an imaginary line is drawn between the anterior, superior iliac spine and the symphysis pubis, the femoral artery runs directly across the mid-point. The femoral vein lies medial to this point.
 - c Insert needle & catheter with attached syringe cephalad at a 45 degree angle, aspirating while advancing.
 - d Continue to advance until blood is freely aspirated. If the needle & catheter is advanced fully without aspiration of blood slowly withdraw needle & catheter while applying suction per syringe.
 - e When blood is freely aspirated lower the needle & catheter parallel to the frontal plane and advance the catheter.
 - f If attempt is not successful consider making a second attempt slightly inferior to your first site.
 - g Attach IV tubing. Be certain air is not introduced into the vein.
 - h Tape in place.
 - i Cover site with sterile dressing.

FOLEY CATHETER

EMT - P (Optional), RN

INDICATIONS:

EMT - P: Initiate placement of a urinary catheter for trauma patients in a prehospital setting who have received diuretics and where transport time is greater than 30 minutes.

RN: Aeromedical transports.

PRECAUTIONS:

This is a sterile technique. Insertion of foley catheter into a male with an enlarged prostate may be impossible. Use extreme caution with suspected pelvic fractures; do not insert if blood at urethral meatus.

PROCEDURE:

- 1 Prepare Equipment
 - a 16 Fr catheter tray.
- 2 Open outer wrapper of kit with sterile technique.
- 3 Remove sterile towel and place under patient.
- 4 Put on gloves with sterile technique - everything else is sterile.
- 5 Open disinfectant solution and pour over cotton balls. Fill balloon with 6-10 cc saline to check patency, then remove saline. Lubricate foley with water soluble jelly.
- 6 Remove catheter from wrapper; place catheter back in sterile box.
- 7 Place foley catheter box within reach.

- 8 **Female patients.**
 - a Have patient bend knees and let legs fall open (as if having a baby).
 - b Use non-dominant hand to spread labia apart - this hand is no longer sterile.
 - c Wipe from top to bottom with one cotton ball at a time, noting location of urethra.
- 9 **Male patients.**
 - a Hold penis with non-dominant hand - this hand is no longer sterile.
 - b Pull back foreskin and clean head of penis with one cotton ball at a time.
 - c Clean in circular motion.
- 10 **All patients.**
 - a Insert catheter into urethra and advance until urine flows, then advance another 1-2 inches.
 - b Inflate balloon with 6-10 cc sterile water or saline and secure tubing to patient's leg.
 - c Monitor urinary output.

HEIMLICH VALVE - (AIR MEDICAL ONLY)

Changing an intrapleural maintenance device (Pleurevac) to a Heimlich valve EMT - P, RN

INDICATIONS:

The Heimlich valve is an optional chest drainage system used primarily for treating a pneumothorax and helps maintain the integrity of the intrapleural space. Indicated for inter-facility helicopter or fixed wing transport of patients with chest tube(s) when available space for equipment, or position of patient on the aircraft needs to be considered.

PRECAUTIONS:

Use of the valve and benefit to the patient should be carefully considered; requires a “break” in the chest tube system. Do not use the valve for flight team convenience. Two chest tube clamps must be with the patient at all times. Be sure the chest tube is secured by tape or dressing. There is potential for occlusion of the valve by drainage or clots; never occlude the distal end with tape or dressing as this can lead to tension pneumothorax. Monitor valve for fluttering, which corresponds to closure of the valve before inhalation. Absence of fluttering could indicate that the lung has fully expanded or the valve has become obstructed. Other considerations to have:

- Inability to detect air leak.
- Absence of suction.
- Do not discontinue valve and leave chest tube open to air.
- Remember pain control.

PROCEDURE:

- 1 Prepare Equipment
 - a Heimlich valve.
 - b Two padded chest tube clamps.
 - c Drainage collection device (gauze dressing, or vented urine leg bag or foley bag, cut slit in top of bag to vent).
 - d Tape.
 - e Sterile scissors.
- 2 Double clamp chest tube.
- 3 Trim rubber tubing connected to chest tube to desired length for patient comfort and accessibility (about 2-3 inches).
- 4 Remove chest drainage device (Pleurevac).
- 5 Insert proximal (blue) end of Heimlich valve into rubber tubing, with arrow on valve pointing away from the patient (towards the feet).

Steps 2 through 5 should be completed within 30 seconds - the patient is at risk for tension pneumothorax with chest tube clamped.

- 6 Remove clamps (do not leave clamps on longer than 30 seconds to 1 minutes).
- 7 Attach vented drainage collection device, if needed, to distal (clear) end of Heimlich valve.

The Heimlich valve can be re-attached to a chest tube drainage system (Pleurevac) on arrival to the receiving facility, or the valve can be discontinued and the chest tube drainage system attached. This can be accomplished by the receiving staff according to their protocols.

LARYNGEAL MASK AIRWAY (LMA)

(AEROMEDICAL ONLY)

EMT-P, RN

INDICATIONS

Inability to intubate or adequately ventilate a patient.

CONTRAINDICATIONS

Intact gag reflex

PRECAUTIONS

- Incomplete protection of the airway; the device is only partially suitable for positive pressure ventilation.
- Patients at high risk for aspiration:
 1. After extended bag-valve ventilation
 2. Pregnant patient
 3. Morbid obesity
 4. Upper GI hemorrhage

PROCEDURE

- 1 Preoxygenate for 2 minutes and suction patient prior to LMA insertion.
- 2 Select appropriate size:
 - Size 1– infants up to 5 kg
 - Size 1.5 – infants 5-10 kg
 - Size 2 – infants and children 10-20 kg
 - Size 2.5 – children 20-30 kg
 - Size 3 – children 30-50 kg
 - Size 4 – adults 50-70 kg
 - Size 5 – adults 70-100 kg
- 3 Check cuff of LMA for leakage.
- 4 Carefully deflate cuff of LMA, avoiding wrinkles.
- 5 Place patient in sniffing position.
- 6 Open patient's airway.
- 7 Use index finger to press LMA against palate.
- 8 Advance LMA into the pharynx ensuring tip remains flattened.
- 9 Avoid pushing the patient's tongue backwards.
- 10 Use index finger to press LMA into posterior wall.
- 11 Guide LMA into position.
- 12 Secure position of LMA with opposite hand and remove index finger from airway.
- 13 Gently press the LMA posteriorly to ensure full insertion.
- 14 Carefully inflate LMA with appropriate amount of air.
- 15 Confirm placement.

STERNAL INTRAOSSEOUS INFUSION

(F.A.S.T.1™ SYSTEM) (EZ-IO)

EMT - I and P - AEROMEDICAL ONLY

INDICATIONS

- For use on adult patients with internal/external hemorrhage, cardiac arrest, dehydration, hypotension, where there is an unacceptable delay or inability to obtain vascular access.
- This access can be used to administer volume replacement fluids, blood products and resuscitative drugs where there is urgent need.

CONTRAINDICATIONS

- Small patient size, tissue damage over the manubrium, fractures of the manubrium or sternum, flail chest involving the sternum, severe osteoporosis, previous sternotomy for cardiovascular surgery.
- Fracture to extremity,
- Excessive tissue and/or absence of adequate anatomical landmarks
- Infection at the area of insertion
- Previous, significant orthopedic procedure at the site (IO in past 24 hours, prosthetic limb or joint)

PRECAUTIONS

Conscious patients may require sedation or local anesthesia with lidocaine.

PROCEDURE (F.A.S.T.1)

- 1 Expose the sternum, identify the sternal notch
- 2 Use aseptic technique to prep insertion site with iodine and alcohol wipes.
- 3 Place the target patch aligned with the sternal notch.
- 4 Place the Introducer in the target zone, firmly push the Introducer perpendicular to the skin, pull the Introducer back exposing the Infusion Tube.
- 5 Attach the Infusion Tube to the right angle female connector. Aspirate marrow with a syringe attached to the straight female connector. If no marrow is aspirated, infuse 10 cc crystalloid to assess patency and flow. When patency and flow is established connect the infusion crystalloid solution to the straight female connector.
- 6 Apply the Protector Dome.
- 7 Attach the Remover Device to the patient and transport to the hospital.

EZ-IO

PROCEDURE

- 1 Prepare Equipment
 - a Intraosseus needle, Driver.
 - ◆ 18 ga for patients 18 months and younger.
 - ◆ 15 ga for patients older than 18 months.
 - b Disinfectant solution.
 - c Two 5 ml syringes.
 - d Crystalloid.
 - e Sterile gauze pads.
 - f Tape.
 - g Three way stopcock.
 - h 10 ml syringe.
 - i Extension tubing.
- 2 The preferred insertion site is the proximal tibia; the anteromedial flat surface 1-3 cm distal to the tibial tuberosity.
- 3 Alternate sites are the medial malleolus of the tibia or the anterior aspect of the distal femur.
- 4 Prepare surface with disinfectant solution.
- 5 Penetrate the soft tissue by activating the driver and applying gentle pressure until the tip of the stylette touches the bone. Check to ensure that 5mm of the catheter is visible as indicated by the proximal depth indicator. (If less than 5mm of the catheter is showing, the patient may have excessive soft tissue over the insertion site and the needle set may not reach the medullary space. The site you have selected may not be appropriate and an alternative site may be needed.)
- 6 Penetrate the selected bone cortex by squeezing the driver's trigger and applying gentle, steady downward pressure.
- 7 Release the driver's trigger and stop the insertion process when a sudden "give" or "pop" is felt upon entry into the medullary space or a desired depth is obtained.
- 8 Remove the power driver and stylet.
- 9 Confirm the catheter is stable.
- 10 Attach EZ-Connect extension set to the catheter hub's luer lock.
- 11 Flush the EZ-IO catheter with 10ml of Normal Saline.
- 12 Stabilize the catheter with a dressing.
- 13 Connect your desired fluid and ensure patency. (A pressure bag may be required to maintain a continuous flow rate. Continue to check for infiltration around the insertion site.)

W. Coos County EMS Approved Abbreviations

A-fib atrial fibrillation	FHT fetal heart tones
AAA abdominal aortic aneurysm	fib fibrillation
ABD abdomen	Fr French
AMA against medical advice	Fx fracture
ASA aspirin	ga gauge
BBB bundle branch block	GCS Glasgow coma score
BAH Bay Area Hospital	G_P_ gravida/parity
bm bowel movement	GI gastrointestinal
BP blood pressure	gm gram
BS breath sounds	grav pregnancies/gravida
BT bowel tones	GSW gunshot wound
BVM bag valve mask	GU genitourinary
°C Celsius/centigrade	GYN gynecological
CA carcinoma	HEENT Head, Eyes, Ears, Nose, Throat
CABG coronary artery bypass graft	H2O water
cc cubic centimeter	H&P history & physical
C/C chief complaint	HTN hypertension
CHF congestive heart failure	Hx history
CHI closed head injury	IDDM insulin dependent diabetes mellitus
cm centimeter	IM intramuscular
cms circulation, movement & sensation	IO intraosseous
CO carbon monoxide	irreg irregular
C/O complains of	IV intravenous
CO2 carbon dioxide	J joules
COA conscious, oriented, alert	JVD jugular venous distention
CBG capillary blood glucose	kg kilogram
COPD chronic obstructive pulmonary disease	lb pound
CP chest pain or cerebral palsy	LLQ lower left quadrant
CSF cerebral spinal fluid	L/min liters per minute
CPR cardiopulmonary resuscitation	LMP last menstrual period
CT computerized tomography	LOC level or loss of consciousness
CVA cerebral vascular accident	LUQ left upper quadrant
CVH Coquille Valley Hospital	m, ♂ male
D/C discontinue	MAE moves all extremities
dig digoxin	mcg microgram
DM diabetes mellitus	meq milliequivalent
DOA dead on arrival	mg milligram
DOE dyspnea on exertion	MgSO4 magnesium sulfate
DTs delirium tremens	MI myocardial infarction
Dx diagnosis	min minute(s)
EBL estimated blood loss	misc miscellaneous
ECG electrocardiogram	ml milliliter
EJ external jugular	mm millimeter
ET endotracheal	MS multiple sclerosis
ETOH ethyl alcohol	MVC motor vehicle crash
f, ♀ female	N/A not applicable
°F Fahrenheit	N&V nausea and vomiting
FB foreign body	Na sodium
Fe iron	NaCl sodium chloride

NG nasogastric
N/V/D nausea, vomiting, diarrhea
neg negative
NIDDM non-insulin dependent diabetes mellitus
NPA nasopharyngeal airway
NPO nothing by mouth
NS normal saline
NSR normal sinus rhythm
NTG nitroglycerin
N₂O nitrous oxide
OG orogastric tube
OPA oropharyngeal airway
oz ounce
O₂ oxygen
P pulse or heart rate
PAC premature atrial contraction
para number of deliveries
PAT paroxysmal atrial tachycardia
PE physical exam
peds pediatrics
PERL pupils equal & reactive to light
PHCR pre-hospital care report
PMH past medical history
po by mouth
pr per rectal
prn as needed
prox proximal
PSVT paroxysmal supraventricular tachycardia
pt patient
PTA prior to arrival
pulm pulmonary
PVC premature ventricular contractions
PVD peripheral vascular disease
R respirations
RLQ right lower quadrant
R/O rule out
RSI rapid sequence intubation
RUQ right upper quadrant
RX prescription or treatment
rxn reaction
SaO₂ oxygen saturation
SCH Southern Coos Hospital
SHMC Sacred Heart Medical Center
SL sublingual
S.O.A.P. subjective, objective, assessment, plan
SOB shortness of breath
SQ subcutaneous
ST sinus tachycardia
stat at once, immediately

SVT supraventricular tachycardia
T temperature
tsp teaspoon
Tx traction or treatment
URI upper respiratory infection
UTI urinary tract infection
vag vaginal
vo verbal order
V/S vital signs
WNL within normal limits
WPW Wolff-Parkinson-White
x multiplied by
y/o years old
Δ change
@ at
↑ increase
↓ decrease
1° primary
2° secondary
Ψ psych