Houston Fire Department
Patient Care Guidelines and Standing Orders
For BLS and ALS Units

GEOGRAPHICAL AREA / DUTY STATUS / NON-EMS CERTIFIED LICENSED MEDICAL PERSONNEL

GEOGRAPHICAL AREA

The guidelines shall only be utilized under my medical direction within the Houston city limits, mutual aid areas, when operating in regional deployments and when transferring patients.

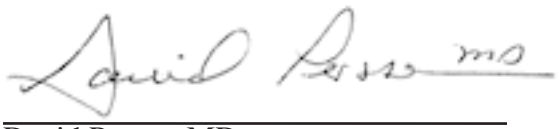
DUTY STATUS

Houston Fire Department EMS personnel are authorized to utilize these guidelines under my medical direction only when acting in their official capacity (i.e. on-duty) when representing the Houston Fire Department as defined in the *BLS and ALS Guidelines, Patient Care Guidelines and Standing Orders, HFD Rules and Regulations* and other written directives and guidelines.

NON-EMS CERTIFIED LICENSED MEDICAL PERSONNEL

Includes RN's and other allied healthcare personnel (other than licensed physicians authorized to function within the City of Houston EMS system). Currently, the EMS Physician Director does not recognize nor utilize persons in this category. All personnel performing direct patient care within the City of Houston EMS system possess valid TDSHS EMS certification and function under the appropriate guidelines as EMT's or paramedics.

Effective Date : November 10, 2025
Expiration Date : September 30, 2026



David Persse, MD
EMS Physician Director

Nov. 10, 2025
Date

Link to Full Patient Care Guidelines PDF

Link to Quick Protocols Website

Link to iOS Protocol App.

Link to Android Protocol App.

HOUSTON FIRE DEPARTMENT

PATIENT CARE GUIDELINES AND STANDING ORDERS FOR BLS AND ALS UNITS

REFERENCE NO. III-01

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This document may be downloaded at www.hfdmd.org

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1.00 PURPOSE

1.01 To effectively manage, in a uniform manner, the patient care rendered in the field by the members of the Houston Fire Department (HFD).

1.02 To provide excellent service to residents of and visitors to the City of Houston.

1.03 To offer emergency medical care and transportation, with limited exceptions, for all persons for whom EMS is requested.

2.00 OBJECTIVES

2.01 To provide an effective and structured means of delivering patient care to the citizens and visitors of Houston via Basic Life Support (BLS) and Advanced Life Support (ALS) personnel.

2.02 To maintain continuity and consistency of patient care given by all members of the HFD.

2.03 To provide the HFD Basic Life Support and Advanced Life Support Providers with a reference for review of all BLS and ALS skills, medications and treatments.

2.04 To provide guidelines and standing orders to guide HFD personnel as they assist patients in making a decision regarding ambulance transportation.

2.05 To provide procedures for situations when it appears to be necessary to transport patients to a medical facility, but patients are unable to decide for themselves.

2.06 To transport patients to the most accessible medical facility, which is staffed, equipped, and prepared to administer emergency care appropriate to the needs of the patient.

2.07 To provide procedures to accommodate a hospital's request to divert patients from their emergency departments that are temporarily not able to care for additional patients.

2.08 To ensure that ambulances are not unreasonably removed from their area of primary response when transporting a patient to a medical facility.

3.00 DEFINITIONS

3.01 **Acute**: Having a rapid and recent onset and a short course.

3.02 **Acute emergency medical problem**: An injury or symptom of a medical problem (pain, difficulty breathing, rash, etc.), which is recent or has never been evaluated/treated by a medical professional.

3.03 **Adolescent**: Patient aged 8 up to 16 years of age.

3.04 **Adult**: Patient age 16 or older. For medical consent/legal issues, patient must be 18 unless emancipated.

3.05 **Advanced Life Support (ALS) Unit**: A medic or squad unit staffed with at least one credentialed paramedic and one credentialed EMT which provides advanced levels of patient care such as invasive techniques in addition to the basic measures provided by BLS personnel. For the purposes of these guidelines, ALS unit shall also refer to EMS Supervisors.

3.06 **Appropriate Facility**: A hospital facility with staffing, equipment and services to care for the patient (e.g. pediatric patients with severe respiratory distress should be transported to a facility with a pediatric department and pediatric intensive care unit).

3.07 **Base Station**: The paramedic staffed office which coordinates on-line medical direction and emergency ambulance routing between field EMT's, paramedics and physicians. This office is staffed 24 hours a day and can relay current hospital requests for ambulance diversion status.

3.08 **Baseline Assessment**: Scene safety, rapid assessment of emergency scene and determination of need for more resources, Airway (with C-Spine protection, if indicated), Breathing, Circulation, and Disability (Neurological Status), identification of chief complaint and initial vital signs.

3.09 **Basic Life Support (BLS) Unit**: An apparatus capable of providing patient transport and basic life support such as airway, oxygen, CPR, bandaging, spinal precautions, etc. in which the staffing standard, in all cases possible, will be two credentialed EMT's. For BLS Ambulances, Texas State EMS Rules require two credentialed EMT's as staffing.

3.10 **Capacity to Refuse Care**: A patient (at least 18 years of age or an emancipated minor) who is capable of making an informed decision will be considered to have capacity to refuse care only if they demonstrate they are oriented to person, place and time; AND can recite back the nature of their medical condition, the risks and benefits of the proposed care/transportation AND the risks of refusing the proposed care/transportation AND is making a reasoned health care decision.

3.11 **Child**: Patient 1 year of age up to age 8 years.

3.12 **Chronic medical problem**: A medical condition of any duration, for which the patient is receiving care from a medical professional or is appropriately self-treating.

3.13 **Controlled Substance**: a DEA scheduled medication which has been declared by federal or state law to be used or distributed only under a physician's order. The basis for control and regulation is the danger of addiction, abuse, physical and mental harm (including death), the trafficking by illegal

means, and the dangers from actions of those who have used the substances. Controlled substances are subject to daily accountability regulations.

3.14 **Credentialed**: A Houston Firefighter certified or licensed by the State of Texas as an EMT or EMT-Paramedic who is also specifically authorized by the City of Houston EMS Physician Director to provide a specified level of care in accordance with the delegated practice of medicine authority of the Texas Medical Practice Act and HFD guidelines.

3.15 **Emancipated Minor**: A legal term for a person age 16 through 17 who is married, a member of the armed services, or living apart from their parents and who is entitled to make their own medical care decisions.

3.16 **EMS Apparatus**: An apparatus, not utilized for patient transport, in which the minimum staffing standard, in all cases possible, will be two credentialed EMT's (i.e. engine, ladder). An EMS apparatus is considered a Basic Life Support unit even if staffed with a credentialed paramedic.

3.17 **EMS Apparatus Paramedic**: A credentialed paramedic assigned to an EMS Apparatus company as part of the paramedic rotation program or the paramedic officer program. An EMS Apparatus paramedic shall function as a credentialed paramedic within the limits of the equipment available.

3.18 **EMS Witnessed Arrest**: A patient who goes into cardiac arrest while in the presence of HFD personnel.

3.19 **Hospital Administration**: Senior hospital administrative personnel, not assigned to patient care duties in the emergency department, who are responsible for hospital operations at the time of the diversion request.

3.20 **Infant**: 28 days to < 1 year of age.

3.21 **Level I/II Trauma Center**: Comprehensive trauma facility capable of providing the most advanced level of care to the victim of major trauma.

3.22 **Level III Trauma Center**: General trauma facility that has the resources and capabilities to provide resuscitation, stabilization, and assessment of trauma patients and can either provide treatment or arrange for appropriate transfer to a Level I/II trauma facility.

3.23 **Medical Decision Making Capacity**: A state of being in which a person is oriented to person, place, time, circumstance and is able to demonstrate/verbalize an understanding of their medical problem, and potential consequences of refusing or receiving treatment.

3.24 **Minor**: A legal term. A person less than 18 years of age, unless emancipated.

3.25 **Neonate**: Up to 28 days of age.

3.26 **OEC**: Office of Emergency Communications.

3.27 **On-line Physician**: Physician designated by the EMS Physician Director to be responsible for directing patient care in individual cases (this may be in person, by phone/radio, or through the Base Station).

3.28 **Patient**: Any person who 1) requests a medical evaluation, or 2) is concerned they have an acute emergency medical problem or an exacerbation of a chronic medical problem, or 3) is an individual whom a competent EMT would identify as having a medical problem in need of evaluation or treatment.

3.29 **Patient Care Guidelines**: Guidelines for practices that are used by EMS personnel in a variety of situations within the EMS system.

3.30 **Patient Care Record**: The electronic or paper means used to document all information relating to a patient encounter. This includes demographic information, patient complaint information, treatment and therapy information, patient refusals and any other information relevant to the particular patient encounter.

3.31 **Pediatric**: Encompasses patients less than 16 years of age or less than 40 kg/88 lbs. Subcategories of 'pediatric' include neonate, infant, child and adolescent.

3.32 **Persistent Shockable Rhythm**: A shockable rhythm (ventricular fibrillation or pulseless ventricular tachycardia) that remains shockable after three standard defibrillation attempts delivered by an AED or ALS defibrillator with ongoing CPR.

3.33 **Return of Spontaneous Circulation (ROSC)**: A return of a palpable pulse (including a transient return) at any point during the resuscitative efforts.

3.34 **Restraints**: Any mechanism used to physically confine a patient including soft composite dressing, tape, leathers or hand cuffs which are wrapped and secured at the wrist(s) and/or ankle(s) and/or chest and/or lower extremities.

3.35 **Resuscitation**: Any effort, including basic and advanced life support procedures, used to restore cardiopulmonary functions.

3.36 **Standing Orders**: Strictly defined written orders for actions, techniques, or drug administration that may be implemented before communication has been established with the physician providing on-line medical direction.

3.37 **Unwitnessed Arrest**: A patient who was found without a pulse or breathing, and whose collapse was neither seen nor heard.

3.38 **Witnessed Arrest**: A patient who was seen or heard by bystanders (non-HFD personnel) to collapse or become unconscious and was found to be without a pulse or breathing.

4.00 SCOPE

4.01 These guidelines apply to all members of the Houston Fire Department while on duty. Each member shall perform to his/her level of authorization and credentialing within the HFD system.

4.02 HFD members possessing a Texas Department of State Health Services (TDSHS) Paramedic certification or licensure, credentialed at the paramedic level by the EMS Physician Director, and officially functioning as a paramedic are authorized to provide ALS care for patients under these guidelines through the off-line Delegated Practice of Medicine of the EMS Physician Director only while on-duty with the HFD. Paramedics are authorized to provide ALS care beyond these guidelines only through the On-line Delegated Practice of Medicine of the authorized on-line physician.

4.03 HFD members possessing a Texas Department of State Health Services EMT, EMT-I or Paramedic certification or licensure, credentialed at the EMT level by the EMS Physician Director, and are officially functioning as an EMT are to provide care as described in these guidelines at the EMT level only. EMT's are authorized to provide BLS care beyond these guidelines only through the On-line Delegated Practice of Medicine of the authorized on-line physician.

4.04 HFD members **not** possessing Texas Department of State Health Services EMS certification or licensure are **not** to provide patient care.

4.05 HFD members **not** credentialed at the paramedic or EMT level by the EMS Physician Director are **not** to provide patient care.

5.00 RESPONSIBILITIES

5.01 Patient Care Guidelines and Standing Orders

A. Specific for medical and traumatic injury patients as well as cardiac arrest patients. Each describes the care to be provided by HFD personnel at the BLS and ALS levels. HFD personnel are to review and be familiar with these guidelines.

B. BLS unit personnel are to provide care within their scope of practice and under authorization by the EMS Physician Director.

5.02 Members are expected to provide care and transportation in keeping with departmental policies, procedures, patient care guidelines and the local standard of care.

5.03 Station Captains are responsible for ensuring that all members under their command are familiar with the contents of this guideline.

5.04 Station Captains shall ensure that a copy of this guideline, signed by the EMS Physician Director, is carried on all EMS Apparatus and EMS vehicles under their command in compliance with the EMS Act of the State of Texas.

5.05 All personnel and/or representatives of the Houston Fire Department will be responsible for adhering to the guidelines outlined in this document.

5.06 All personnel are to operate and conduct themselves in the best interest of the public.

5.07 The highest ranking member on each apparatus is to ensure the completion and electronic posting of the patient care record in the PCR software for their apparatus. In addition, members shall fully document all aspects of patient care and patient care decisions as per 6.06 Documentation.

6.00 GUIDELINES

6.01 Fundamental Principles

A. The Holder Rule

Assistant Chief Dennis Holder
Houston Fire Dept. 1957-1995

"Treat patients and their families as if they are a member of your own family."

1. Consider that if this was your brother, mother, daughter, grandfather; what care you would want for them if you were not present.
2. Provide a compassionate, caring, friendly demeanor and use reassuring tones/words.
3. If tensions exist, strive to defuse them or find others (e.g. a supervisor) who can help.
4. Treat on-lookers and even interveners with respect.
5. Keep in mind that, as a firefighter, you provide a public service. Often, the greatest asset provided to the citizens you serve is your reassurance and caring.

B. The Rule of Public Trust

1. Houston Fire Department EMS professionals, under the authority of their state licensure, the endorsement of the department, and credentialing by the EMS Physician Director, have unsupervised, intimate, physical and emotional contact with patients at a time of maximum physical and emotional vulnerability, as well as unsupervised access to a patient's personal property. These patients may be unable to defend or protect themselves, voice objections to particular actions, or provide accurate accounts of events at a later time. EMS professionals, therefore, are placed in a position of the highest public trust. The public, in need of out-of-hospital medical services, relies on firefighters, EMT's, and paramedics to conduct themselves with the utmost professionalism and respect for persons at all times.

6.02 Ambulance Diversion

A. Ambulance Diversion Request Categories:

1. Emergency Department Saturation: Hospital emergency department resources (bed, equipment, and/or appropriately trained personnel) are fully committed and have no other resources for additional incoming critical or seriously ill patients and acceptance of any additional patients requiring advanced life support would seriously jeopardize the care of other patients in the emergency department.
2. ICU Saturation: Hospital intensive care resources are fully committed and have no other resources available for additional patients requiring intensive care. The emergency department can handle minor illnesses not likely to require ICU admission. Avoid bringing chest pain, difficulty breathing, elderly patients with abdominal pain, etc., to the hospitals on ICU saturation. ICU saturation refers to the hospital's ability to care for seriously and critically ill medical patients. Trauma Center Hospitals on ICU saturation generally can still handle trauma patients.
3. Trauma Saturation (trauma centers only): Trauma resources are committed and the facility can not accept seriously injured patients because the trauma team is encumbered with trauma patients in the Operating Room, ED or CT scanner. When a Trauma Center hospital is requesting diversion, seriously injured patients should be taken to an alternative hospital.

When all Trauma Centers of a specific level (e.g. Level I/II) are on diversion, choose hospital destination based on Base Station's recommendation.

4. Internal Disaster: Hospitals cannot receive patients due to a physical plant breakdown (e.g. fire, bomb threat, power outage, etc.). For situations in which a hospital has advance knowledge that it will need to divert due to an Internal Disaster, hospitals have been asked to notify the Base Station, as well as EMS Command in advance.

B. CPR Cases: In situations of CPR (non-trauma) in progress, patients will be transported to the closest facility regardless of diversion request with two exceptions:
   1. The closest hospital is on diversion due to an internal disaster (i.e., power failure, bomb scare, etc.).
   2. A second hospital (open) is nearly as close (i.e., the major medical center hospitals example: CPR in progress – 3 of 4 equally close hospitals are all open. One is closed due to ICU saturation – take the patient to one of the completely open hospitals).

C. During the process of contacting the Base Station for patient transport destination, the Base Station will notify the unit if the intended hospital is on diversion. Members will then discuss the hospital's request for diversion with the patient. The Base Station shall be updated on the final destination decision.

   • Example of an unacceptable situation: The emergency transport of a sick patient to the patient's hospital of choice. Upon arrival at hospital X, the ED staff asks "Didn't you know we were on diversion?" and the EMS answer is "No, we did not know." Not knowing is not a defendable answer. Conversely, after reporting the emergency destination to Base Station and learning that the patient's hospital is on diversion and explaining the consequences to the patient and the patient chooses to proceed, then it is appropriate to take them to a hospital on diversion.

D. The diversion status of each hospital is available on the EMSystems website at the Base Station. Hospitals are responsible for updating their individual diversion status.

E. In the event the intended hospital destination has requested diversion (and that diversion request applies to the patient/condition) the member will advise the patient and agree on an "open" hospital, or provide the Base Station with a reason the patient will be transported to the original hospital destination requesting diversion.

F. HFD apparatus will honor diversion requests provided that:
   1. The apparatus estimates that it can reach an "open" and appropriate medical facility within 15 minutes transport from the incident location. If there are no "open" facilities within this time frame, the apparatus will be directed to the most appropriate facility, regardless of its diversion status (exception: internal disaster).
   2. The patient does not exhibit an uncontrolled problem in the field such as an unmanageable airway, or cardiopulmonary arrest with CPR in progress. Patients with these types of problems will be transported to the closest appropriate facility.
   3. The patient is not suffering from an acute exacerbation of a chronic illness which is evaluated and managed by that particular hospital/hospital system which is on diversion.

6.03 Communication

A. Contact the Base Station (channel alpha-charlie 3) for <u>all</u> patient transports as part of emergency ambulance routing.

B. Inform the Base Station of the transport code for the patient.
   1. <u>Priority 1</u> : Transport of a patient with an immediate life-threatening situation or CPR in progress. The hospital will be informed of the clinical situation and the unit's impending arrival.
   2. <u>Priority 2</u> : Transport of a patient who is clinically unstable, suffering a medical emergency, or whose care would benefit from hospital notification prior to arrival. The hospital will be

informed of the clinical situation and the unit's impending arrival.

3. Priority 3 : Transport of a patient who is clinically stable and not suffering from a medical emergency. The hospital will receive online notification of the unit's impending arrival.

C. All units who have contacted and initiated a Base Station record (transports, refusals, cardiac arrests and DNR cases) shall close out their Base Station record before returning to service.

D. Any unit having problems or conflicts with communications shall contact an EMS Supervisor.

E. When communication with the Base Station fails or is not possible, firefighters are expected to provide care to the patient according to the patient's needs in accordance with fire department policies, training, and scope of practice as recognized by HFD.

F. Each occurrence of communication failure will be considered a breakdown in system operations and will be reviewed to determine if the occurrence was due to equipment failure or member non-compliance with department policy, procedure or guidelines.

6.04 Confidential Patient Information

A. It is the responsibility of all HFD personnel, particularly those members who have direct contact with patient information, to ensure that patient information is kept confidential. Texas law prohibits the disclosure of any patient information to unauthorized individuals or entities.

B. Texas Health and Safety Code, Chapter 773, Emergency Medical Services, Subchapter D. Confidential Communications (773.091): Records of the identity, evaluation, or treatment of a patient by EMS personnel or by a physician providing medical supervision that are created by EMS personnel or physician or maintained by an EMS provider are confidential and privileged and may not be disclosed with the following exceptions:

1. Medical or law enforcement personnel, EMS personnel, the physician providing medical supervision, or EMS provider determines that there is a probability of imminent physical danger to any person or if there is a probability of immediate or emotional injury to the patient;
2. Governmental agencies if the disclosure is required or authorized by law;
3. Qualified persons to the extent necessary for management audits, financial audits, program evaluations, system improvements, or research, except that any report of the research, audit, or evaluation may not directly or indirectly identify a patient;
4. Any person who bears a written consent of the patient or other persons authorized to act on the patient's behalf for the release of confidential information as provided by Section 773.093;
5. The department for data collection or complaint investigation;
6. Other EMS personnel, other physicians, and other personnel under the direction of a physician who are participating in the diagnosis, evaluation, or treatment of the patient;
7. Individuals, corporations and/or governmental agencies involved in the payment or collection of fees for emergency medical services rendered by EMS personnel.

C. Any other request for patient information shall be directed to the HFD Records Section. They are the official custodians of records for HFD.

6.05 Controlled Substances Accountability

A. In order to carry and administer controlled substances (i.e. narcotics), members are required to comply with the Federal Government's daily accountability regulations for Schedule II drugs.

B. At the beginning of each shift, the Controlled Substances Accountability Form shall be completed according to the current Controlled Substances Accountability Guideline.

C. When there is a change in the key-responsible paramedic, the Controlled Substances Accountability Form shall be completed according to the current Controlled Substances Accountability Guideline.

6.06 Documentation

A. Documentation provides a record of what you did or did not do while additionally serving as a Medical Record and a Legal Document.

B. Each unit involved in direct patient care shall complete the appropriate record. For quality assurance and other purposes, other EMS professionals, physicians, nurses, insurance companies, Medicare/Medicaid personnel and the legal community frequently examine these records. They are also used in court cases, grand rounds at the hospitals and reviewed by the Texas Department of State Health Services and the local media.

C. When EMS responds to a request for service and finds individuals not meeting the definition of a patient (*Ref. Def. 3.28*), the record should be appropriately coded.

D. S.O.A.P.: **S**ubjective data, **O**bjective data, **A**ssessment, **P**lan

E. **S**ubjective Data: *What you were told by . . .*

1. Patient, family, bystanders, witnesses, police officers, other HFD members. Start with the patient's Chief Complaint(s) (CC).
2. The patient's history:
   a. History of the Present Illness (HPI). Each Chief Complaint has a HPI to be pursued. For each CC the HPI will consist of determining:
      •Onset of the symptom •Duration of the symptom
      •Frequency of the symptom •Character of the symptom
      •Intensity of the symptom •Associated symptoms and Aggravating / Alleviating factors
   b. The past medical history of the patient (SAMPLE)
      •**S**igns / Symptoms
      •**A**llergies
      •**M**edications
      •**P**ast illnesses
      •**L**ast meal, Last Menstrual Cycle
      •**E**vents leading up to this event

F. **O**bjective Data: *What you saw . . . What you found (Mechanism of Injury)...*

1. On your approach, at the scene, where the patient was found, the patient's position.
2. Your PHYSICAL findings from the primary survey, the secondary survey, vital signs and diagnostics (glucose levels, ECG tracings, SpO_2 levels and $ETCO_2$).
3. Physical Exam (CHAMPION)
   •**C**ardiac (Heart Sounds, Pulses)
   •**H**EENT
   •**A**bdomen
   •**M**ental Status
   •**P**ulmonary (Breath Sounds, Work of Breathing)
   •**I**ntegumentary (Skin)
   •**O**ther (Vital Signs, Diagnostics)
   •**N**euro (Strength, Sensation)

G. **A**ssessment: Based on the data collected, document the assessment of the patient's problem and which plan/guideline you are going to follow.

H. **P**lan: All interventions performed: C-collar / spinal immobilization, AED, CPR, intubation, I.V. therapy, medications, evaluation of the therapies performed and on-going monitoring noting changes in the patient's status including notations on the patient's condition on arrival at the ED.

I. Responsibility

1. When members hold the same EMS credentialing status, members are <u>equally responsible</u> for complete and accurate documentation of the record.
2. In situations where one member is credentialed by the EMS Physician Director at a higher

level, that member is responsible for the complete and accurate documentation of the record.

3. The highest ranking member on the apparatus is responsible for signing the patient care record and ensuring it is completed and posted.

J. In ALL cases, the patient care record will be uploaded/posted prior to the unit leaving the hospital property, even during periods of resource management. For each patient transported to a hospital by HFD apparatus, there must be a 'Patient Transport - In Charge' record posted by the responsible unit.

K. For all dispatched EMS incidents (FE dispatch code or FP police requests), and all Fire incidents (FF dispatch code) in which an Ambulance, Medic, Squad or EMS Supervisor is dispatched, an EMS patient care record shall be completed.

1. All units shall utilize the laptop electronic patient care record (ePCR), ensuring that it contains:
   a. Dispatch information including accurate location address.
   b. Correct shift, apparatus and all personnel with appropriate crew level and role.
   c. Identifying patient information including insurance information on transports.
   d. A chief complaint, a physical exam and a working assessment.
   e. A narrative detailing the specifics of the patient's presentation, care, decision making processes, and proper documentation of patient refusals if applicable.
   f. Documentation of vital signs, medications and procedures in their appropriate sections. **It is not acceptable for vitals, medications and procedures to be listed only in the narrative section.**
   g. All information from the ALS cardiac monitor when it is connected to the patient, shall be electronically downloaded into the record (rhythm strip, 12-lead ECG, vitals, etc.).
   h. The appropriate Incident Disposition for the incident.
   i. The signatures from all required HFD personnel and, as indicated, the patient, witness, law enforcement or hospital representative.
   j. The Base Station Personnel's name when the Base Station is contacted and the patient's Hospital Encounter Number (or similar) when a patient is transported.
   k. The name of the receiving hospital for all patient transports.
2. Any unit without a laptop computer to complete the ePCR shall utilize the ePCR software on a station computer to complete the record according to the requirements stated.

L. All members are to fully document and describe the events of their dispatched incident, even when a patient (*Ref. 3.28*) was not found. An explanation for why an individual for whom EMS was requested is not 'a patient' is required.

6.07 Emergency Transfers (One Emergency Dept. to Another)

A. In all cases when dispatched to a hospital Emergency Department, HFD members should contact their immediate EMS Supervisor to apprise him/her of the situation.

B. The EMS Supervisor is to review the case to ensure the use of public safety resources is appropriate. If there is any question or doubt, contact the on-line physician via the Base Station. A completed Memorandum of Transfer (MOT) must be present and accompany the patient OR the on-line physician must approve an emergency transfer without the MOT.

C. Given approval from the EMS Supervisor, HFD members shall transfer patients as long as the patient care is within their scope of practice. If the patient is in need of a medication that is not currently on the approved drug list or is on a mechanical device that is not used by the Houston Fire Department, then a healthcare provider managing such medications/devices needs to accompany the patient during the transfer. Alternatively, the healthcare provider may discontinue the medication(s) or device for transport without requiring them to accompany the patient to the hospital.

6.08 Equipment and Actions on Each Run

A. Bring all basic equipment (see "D.R.O.P.S." below) in close proximity to the patient.
B. Basic equipment ("D.R.O.P.S.") includes: **D**efibrillator (LifePak, A.E.D., etc.), **R**adio, **O**xygen and airway equipment, **P**rimary Medical Kit and **S**uction.
C. The defibrillator and/or the suction may be left in the ambulance at a motor vehicle incident scene, only if it remains in close proximity and there is no prior evidence or communication of possible need for these devices.
D. Consider special circumstances in which additional equipment should be immediately carried (such as stretcher/backboard into a high-rise or a C-collar and other packaging devices in an entrapment case).
E. ALS units must take all appropriate ALS equipment onto the transporting BLS unit.
F. Upon arrival to the dispatched address, the HFD apparatus will attempt to locate the person(s) for which 911 was activated.
G. If a person is found, the HFD apparatus will determine if this/these individual(s) meet the definition of a 'patient' as per 3.28.
H. If the person does not meet the definition of patient, a brief description of why persons for whom 911 was activated do not meet the definition of a patient is required.
I. For all patients, a complete history and physical exam will be conducted and documented. Members shall offer transport to the hospital to the patient, or if they feel the situation does not warrant transport by ambulance or medic unit, members should utilize the ETHAN program during operational hours.
J. If the patient refuses transport or any indicated treatment, follow the Non-Transport Guideline, *ref. 6.16 Non-Transports / Refusal of Care and/or Transportation by Patients*. If the patient is being transported but the patient refuses specific treatments, document the refused treatments in the patient care record as per 6.16 B. 4.

6.09 Family-Centered Care

A. Family-centered care is a systematic approach to building collaborative relationships between health care professionals and families that uses those relationships to assist in providing quality EMS care and promoting overall community health and safety.
B. It acknowledges and uses the family's knowledge of their family member's condition and their skills in communicating with and caring for their family member. It emphasizes the importance of keeping family members informed about their loved one's condition, prognosis, and treatment.
C. Pre-hospital family-centered care encourages family presence during procedures and embraces family-centered care principles during on-scene treatment, transport, and transition of care to in-hospital health care providers.
D. The goal of family-centered care is to achieve the best possible outcome for children, and all other patients, through a mutually beneficial collaboration of health care professionals and family members. Families desire to be kept informed, to have their questions answered and to participate in their loved one's care. They generally object to processes that make them feel helpless, uninformed or uninvolved. Patients generally want to feel assured that they are receiving the care and treatment they need and desire to be comforted and supported by their families during care. Meeting the family's needs can help reduce patient and family anxiety.
E. Guideline
    1. Identify a team member to interact with family members on each call. Let the family know who that person is, and when that person changes. Make eye contact when speaking. Identify yourself by name, and ask patients and family members how they would like to be addressed. Use courtesy titles (Mr. Mrs. etc.) and avoid slang terms.

2. Communication should be consistent and constant throughout the incident. Explain equipment and procedures in clear, factual terms (what you're doing and why you are doing it), avoiding jargon and technical terms. Be aware of individual differences in ability to understand, but do not assume that family members cannot understand explanations. Watch for verbal and non-verbal cues from families about the amount of information they want and whether they understand what you are telling them. Know that it is acceptable to say "I don't know", but follow that answer with "we will do everything we can to reach the best possible outcome for your child."
3. Acknowledge feelings, offer support (how can I help you?) and express empathy when appropriate. Allay guilt by calling attention to something the family has done right. Maintain a calm professional demeanor; avoid matching emotional responses from family members. Avoid confrontations with other health care providers in the presence of patients or family members.
4. Provide family members with options whenever possible. Helping families to restore a sense of control can decrease patient and family member anxiety and combativeness.
5. Allow a family member to accompany the patient in the ambulance when possible. Allow a family member to remain with the patient during transport (seat-belted securely) if possible.
6. Use the family as a source of assistance to patient care by providing information (pertinent history, normal level of consciousness, special developmental concerns, dominant hand, best known IV site, etc.) and comfort (hold the patient's hand, reassuring the patient, singing a favorite song, comforting the patient during procedures, etc.).

F. Family Presence and Participation During Transfer of Care
1. Be diligent in meeting the family's information needs. Introduce the patient and the family to the health care professional receiving the patient and identify a transition team member to the family. Give the family the option to listen to your prehospital care report. Talk to the family before you leave and explain the outcome of your care with clear, honest dialogue. Say goodbye to the family.

G. Be aware of cultural differences that can affect delivery of care.
1. Cultural competency can positively affect patient care. Prehospital providers may come in contact with multi-cultural families with diverse health beliefs, customs and practices. Many of these practices include alternative remedies and treatment methods that may seem foreign. Recognizing and appropriately responding to these practices may impact care. Acknowledge unusual practices without judgment, discuss them with families at the scene, or during transport and report them on the patient report.
2. Develop procedures to overcome language barriers and effectively communicate with culturally diverse segments of your community. Avoid using children as interpreters when possible; this is considered inappropriate in some cultures.

6.10 Helicopter Utilization

The decision to request a medical helicopter is often complicated. Use the following guidelines to assist in that decision process:

A. Helicopter transportation should be considered only when EMS personnel feel that the advantages of its use outweigh the disadvantages for a particular situation.

B. Consider patients for air transport who are severely ill or injured such that the duration of transport time to the hospital is a major factor in the patient's outcome. Patients with severe trauma generally can only receive definitive treatment for their injuries at a Level I/II Trauma Center. Use the method of transportation that offers the least delay in delivering the patient to a Level I/II Trauma Center.

*Not all patients meeting Level I/II Trauma Center criteria need helicopter transport.

*Not all patients in need of helicopter transport meet Level I/II Trauma Center criteria.

C. If:
   1. The transport time for a HFD ambulance to a Level I/II Trauma Center is estimated to exceed the time for a helicopter to be requested, respond, land, load and return to Memorial Hermann TMC Hospital and,
   2. The patient's medical condition necessitates rapid transport;

   Contact OEC and request LifeFlight and an ETA. Continue to care for the patient and manage the situation as if HFD will transport the patient until it is confirmed that LifeFlight is available, responding and has provided an ETA. Estimate times (intervals) from request until patient delivery at Memorial Hermann Hospital for several area locations are listed in ***Table 6-1***.

D. Consider prolonged extrication time, remote scene location and poor ground access, traffic or weather conditions that prohibit ground transport and multiple casualty situations when deciding the transportation method. Sometimes helicopter transport is not available due to call volume or weather conditions. Continue to care for the patient and manage the scene with the expectation that HFD will provide transportation until it is confirmed that LifeFlight is responding.

E. **Notify an EMS Supervisor whenever LifeFlight is requested.**

Table 6-1 : Estimated LifeFlight Time from Request to Arrival At Texas Medical Ctr.

(Time in Minutes)

SCENE	North Base	West Base	South Base	East Base	Hermann TMC
HCAH Kingwood	33	43	41	35	36
HCAH West	31	27	32	33	26
Houston Methodist Sugarland	38	30	37	43	36
HCAH Clear Lake	44	40	27	32	34

Incorporated in the times listed is a maximum lift-off time of seven minutes and an average ground time of eight minutes.

6.11 Hospital Destination Decisions - Emergency Ambulance Routing

A. Background
   1. The choice of a hospital destination depends upon an understanding of the patient's chief complaint, the urgency of care needed, the specific care needed, hospital diversion status, EMS Resource status, and the patient's routine hospital of choice.

B. Emergency Ambulance Routing - *Reference* ***Table 6-2***
   1. Prior to the patient's transport, the EMT or Paramedic in-charge of patient care **shall** contact the Base Station to determine the most appropriate transport decision.
   2. A preferred destination will be determined in consultation with Base Station personnel taking into account issues such as the patient's condition and acuity, exacerbation of a pre-existing condition, time to appropriate care and the hospital's recent patient load.
   3. Emergency Ambulance Routing does not alter the current transport guidelines for trauma, cardiac arrest, stroke, acute MI or seriously ill pediatric patients. These patients will be transported to facilities that are capable of handling the specialty care issues involved.
   4. Patients who have an exacerbation of an existing medical problem should be transported to the hospital that regularly treats them for their condition. This will facilitate the treatment of their condition as their treating physician and medical records will be accessible to the ED staff.
   5. Patients with clearly non-emergent medical problems will be preferentially routed to a nearby facility capable of handling the patient's condition and which has sufficient patient capacity.
   6. If the patient refuses transportation to the preferred facility, an alternate facility should be identified and offered to the patient. If the patient continues to refuse, the EMT or paramedic

in-charge, acting as the patient's advocate for appropriate care, will be responsible for determining the patient's final resolution. This resolution may be:
   a. transporting the patient to the hospital initially requested by the patient,
   b. contacting an EMS Supervisor or on-line physician for assistance,
   c. or if no other solution is practical, accepting the patient's refusal of transport, providing complete documentation of the events leading to this refusal and that alternate hospital destinations were offered.
7. Once the destination hospital is confirmed, the EMS unit shall contact the Base Station so that a transport record can be created, hospital notification can occur and all required information can be documented by the Base Station.
8. The Base Station personnel's name shall be included in your patient care record.

C. Non-Trauma Patients

Patients benefit from being transported to the medical facility which has previously evaluated the patient for their medical complaint. In cases of acute exacerbations of chronic illnesses, attempt to take the patient to their usual hospital (or hospital system) since their physician and patient records are maintained there. There are exceptions to this concept however:

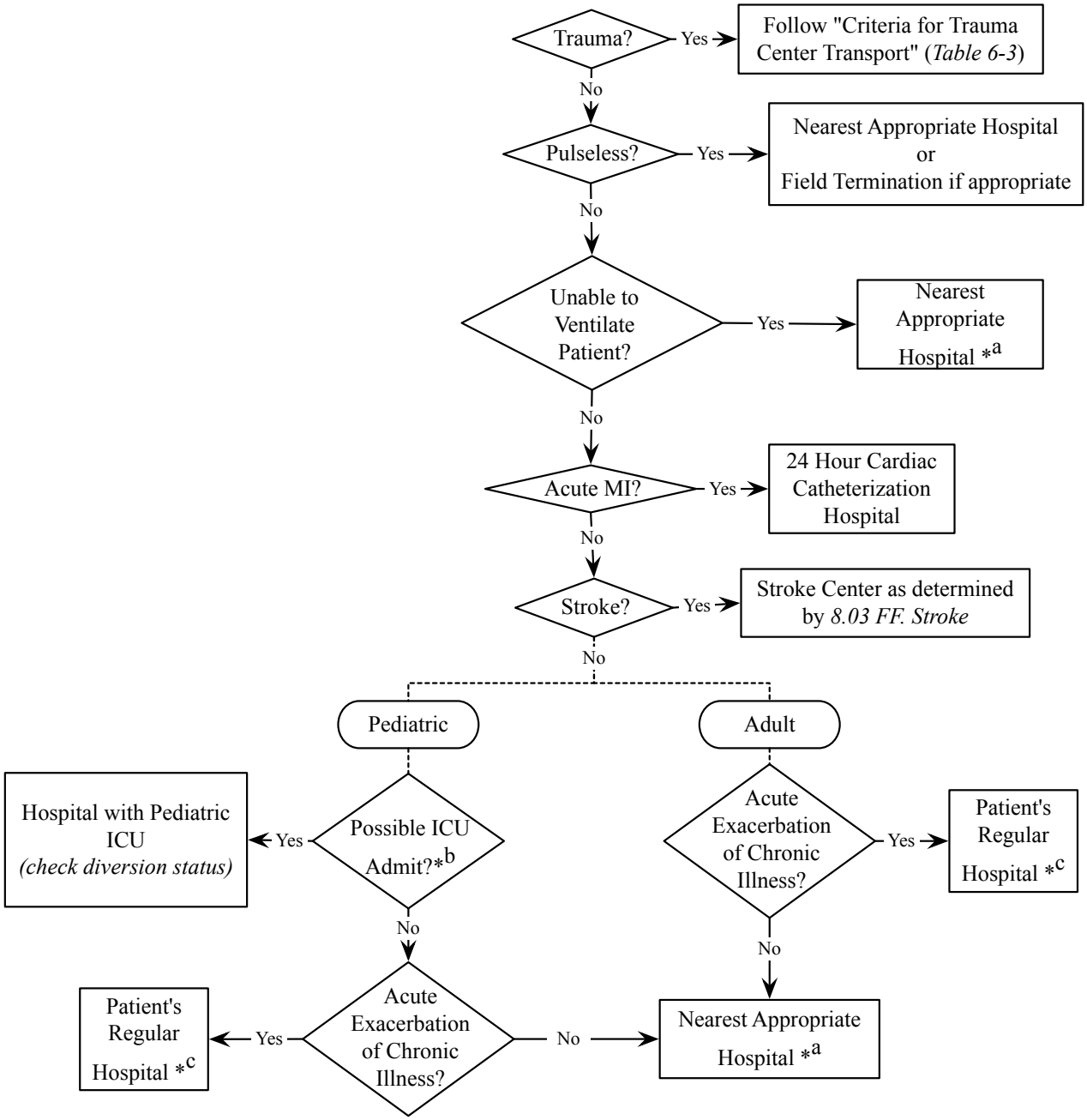
1. Any transport with a transport time that will exceed twenty (20) minutes travel time from the incident location to the hospital **shall** be discussed with an EMS Supervisor to gain approval prior to transport during periods of EMS Resource Management. EMS Supervisors will consider the patient's chief complaint, current condition, and reason for requesting a specific hospital before authorizing the transport.
2. Transport emergent patients (life threatening condition) to the nearest medical facility capable of handling the patient's problem. Take patients with non-trauma related CPR in progress, an inability to obtain an advanced airway in patients who require one, or any life threatening condition to the nearest approved medical facility. Pediatric patients with moderate or serious illness (not meeting above criteria) should be transported to hospitals with Pediatric ICU facilities (*Ref. 9.05*).
3. When the hospital which routinely cares for a patient's chronic illness is on "drive-by," inform the patient of the hospital's status and confirm the destination decision with the patient. The patient may choose another hospital not on diversion or may choose to be transported to their regular hospital.
4. Try to avoid transporting emergent patients to hospitals on emergency department or ICU saturation. If another appropriate facility has a nearly equal estimated transport time, go to the second closest facility. Do not exceed 10 minutes longer transport time to the second facility if the patient is critically ill. Transport patients with CPR in progress, an uncontrollable airway, or any immediate life threatening condition, to the nearest appropriate medical facility (*Ref. 6.02 Ambulance Diversion*).
5. If a hospital is on drive-by due to "Internal Disaster," **do not transport any patient** to that facility (*Ref. 6.02 Ambulance Diversion*).
6. TCH West, TCH Woodlands, and TCH Medical Center do not take care of pregnant patients. The only TCH hospital that takes care of non-trauma pregnant patients is TCH Pavilion for Women.

D. Trauma Patients: *Reference* ***Table 6-3***

1. Trauma Centers and the entire trauma care system are designed to provide the best possible care to victims of trauma. To facilitate attaining this goal, trauma center transport guidelines were established. Transport adult patients with any of the 'physiologic parameters' or 'anatomical injuries' listed in ***Table 6-3*** to a Level I/II Trauma Center, provided that transport time is less than 45 minutes. Transport pediatric patients who meet the same criteria to a Pediatric Level I Trauma Center, if possible within 45 minutes.

2. Level III Trauma Centers are willing to accept trauma patients who meet 'mechanism of injury' criteria or 'high-risk' criteria. Trauma patients requiring Level I/II care by 'physiologic parameters' or 'anatomical injuries', but are greater than a 45 minute transport time from a Level I/II Trauma Center, may be taken to a Level III Trauma Center.
3. If unable to transport a pediatric patient who meets Pediatric Level I Trauma Center criteria to the Pediatric Level I trauma center, transport the pediatric patient to the closest trauma center (Level I/II Preferred)
4. Take patients with major burns (*Ref. 8.04 E. Burns*), particularly those with accompanying smoke inhalation (or even pure smoke inhalation) to a Burn Center (*Ref 9.05*). These hospitals have the capability of caring for severely burned patients and should be utilized in cases of severe burn patients.
5. In situations involving multiple critical patients or saturation of Trauma Centers with critical trauma patients, the on-line physician may direct EMS Supervisors to triage emergent trauma patients to the less crowded trauma centers as indicated. The Base Station will monitor critical patient volumes at all trauma center hospitals to guide supervisors in terms of balancing patient transports in periods of high volume/multiple casualty incidents.
6. Blunt trauma patients with CPR in progress or an inability to ventilate shall be taken to the nearest Trauma Center, Level I/II or Level III.
7. Penetrating trauma patients with CPR in progress shall be taken to an Adult Level I/II trauma center or a Pediatric Level I trauma center if transport time is 20 minutes or less. If transport time is greater than 20 minutes, transport all patients to the closest trauma center (for pediatric patients, an adult Level I/II is preferred).

Table 6-2 : Hospital Destination Decision

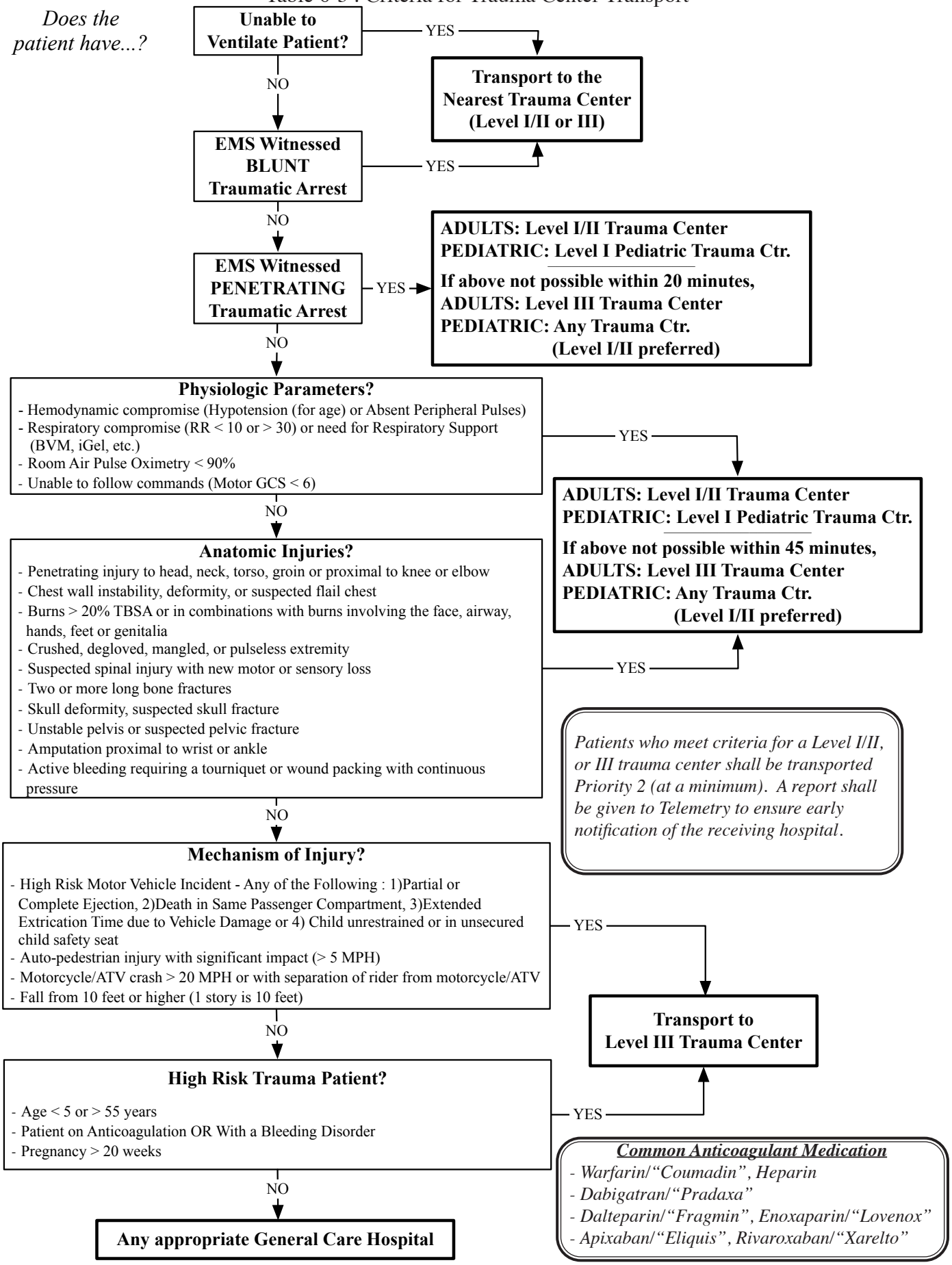


[a] - Nearest general care hospital not on diversion which is capable of taking care of the patient's problem.
-Patients who are <u>DETAINEES in a Harris County Jail Facility</u> are treated, by contract, at a Harris Health Facility (Ben Taub or LBJ). DETAINEE patients shall be transported to one of these facilities unless they need a specialized level of care and/or a specific destination has been arranged by the Clinic facility. Confirm with personnel at the Jail as to which facility has already been contacted or is preferred. This policy overrides hospital diversion status except for Internal Disaster.
-<u>VA Benefit Recipients</u> are most appropriately treated by the Veteran's Administration Hospital. These patients shall be transported to this facility unless they need a specialized level of care which is not provided there.
-<u>Non-Traumatic Pregnant Patients</u> cannot be treated at TCH West, TCH Woodlands, and TCH Medical Center. The only TCH hospital that takes care of non-trauma pregnant patients is TCH Pavilion for Women.

[b] - i.e. serious illness, pulses post-cardiac arrest, etc.

[c] - A patient suffering from an acute exacerbation of a chronic illness may go to the hospital or hospital system which regularly evaluates and treats their illness despite that hospital being on diversion.

Table 6-3 : Criteria for Trauma Center Transport



6.12 Identification Badges

A. TDSHS requires that all personnel on an in-service vehicle or when on-scene be identified by their name, certification/license and provider name. **All members shall wear their identification badges as outlined in Rules and Regulations. All members shall also carry on their person their TDSHS certification card.**

6.13 Infection Control Precautions

A. Use standard universal precautions during all patient interactions. Personal Protective Equipment (PPE) is supplied and available to all personnel.
B. Wear gloves during all patient interactions. Contact with blood or body fluids may be unpredictable. Gloves reduce the likelihood of disease transmission during contact with blood or body fluids, non-intact skin or mucous membranes.
C. In addition, wear masks, gowns and eyewear during patient interactions that are likely to produce spray, splash or any uncontrolled distribution of blood or body secretions. PPE's such as mask and eyewear shall be worn for procedures which may include, but are not limited to, ventilating, suctioning or intubating a patient. If large amounts of blood or body fluids are likely during procedures such as childbirth or trauma, gowns shall be worn to protect members.

6.14 Medical Facility Interactions

A. When a 911 call is placed to HFD from a medical facility, the assumption is that the treating healthcare provider wants the patient transported to the hospital by ambulance or medic.
B. When responding units arrive, they are entitled to a full patient care handoff from the treating healthcare provider which should include how the patient presented, what evaluations/results have occurred, what is the diagnosis (or concern), what treatments have been initiated or that the provider wants initiated, and if there is a specific destination/ER the provider wants or has arranged.
C. In a non-emergent scenario, this information should be obtained prior to patient contact.
D. HFD members shall make patient contact and review the information obtained. If the patient consents, transport the patient to the hospital. If the patient does not consent, HFD members shall report back to the treating provider this lack of consent and standby while asking the provider to obtain consent. Either the patient will consent, or HFD's services can be refused by the patient.
E. If the HFD member does not think ambulance transport is warranted, the ETHAN program should be used during operational hours.
F. If there are any concerns about the interaction between HFD members and the medical facility personnel, the EMS Supervisor shall be contacted and the on-line physician may be contacted.

6.15 Multiple Casualty Management

A. Refer to Multiple Casualty Management and Triage Guidelines, Volume No. III Reference No. III-09.
B. The on-line physician may authorize deviations to the Patient Care Guidelines and Standing Orders for BLS, and ALS Units when this guideline is in effect.

6.16 Non-Transports / Refusal of Care and/or Transportation by Patients

Members of the Houston Fire Department are not to refuse transport.

A. General
   1. In Refusal situations, the EMT or paramedic shall determine the patient's capacity to refuse care (*ref. 3.10*). Involve the EMS Supervisor and/or on-line physician for assistance in this determination as necessary.
   2. For patients WITH capacity, ref. 6.16 B. Adult with Medical Decision Making Capacity. For

patients WITHOUT capacity ref. 6.16 C. Adult without Medical Decision Making Capacity. For minor patients, ref. 6.16 E. Non-Transport Guidelines for Minors.

3. If there is to be a patient refusal, the EMS apparatus shall complete the ePCR on the laptop in order to reduce the unnecessary response of an EMS transport unit and enable an EMS apparatus to return to service. The ePCR shall be completed as per 6.22 Responsibilities of EMS Unit.
4. In multiple patient situations where HFD personnel are caring for and intending to transport seriously ill or injured patients, patient care is a higher priority than on-scene documentation. Other EMT's arriving on EMS apparatus on scene will document refusals and non-transports by agreement in order to **not delay the treatment/transport of seriously ill/injured patients.**

B. Adult with Medical Decision Making Capacity : Refusing Care Against Medical Advice (AMA)

1. The patient must meet the definition of having the 'capacity to refuse medical care' as defined in the definitions (*Ref. 3.10 and 3.23*). Importantly, the patient must recite back the nature of his/her medical condition, the risks and benefits of the proposed care and the risks of refusing the proposed care.
2. Discuss the benefits of medical care/transportation with each patient. Continue to offer medical care/transportation to an appropriate hospital. If the patient refuses medical care and/or transportation, inform the patient of the possible medical consequences of refusing treatment/transportation. Again, offer medical care/transportation to an approved hospital, including the use of the ETHAN program during operational hours. If the patient continues to refuse medical care and/or transportation, all Ambulances and EMS Apparatus not staffed with an EMS Apparatus Paramedic, shall contact an EMS Supervisor through the Base Station while still on scene with the patient.
    a. Accurately and completely describe the patient's medical circumstances and reasons for refusing medical care/transportation to the supervisor.
    b. The EMS Supervisor will review the description of the patient for decision making capacity and advise the members how to best handle the situation based on the information they are provided.
    c. The on-line physician is also available through the Base Station to speak with patients to help convince them to allow care/transport.
3. After attempting the foregoing steps, obtain signatures for "Refusal of Transport" in all cases. On the HFD laptop, on the "Signatures" tab, select the "Patient Refusal of Transport " signature and have the patient sign for the refusal. Signatures must be obtained from the patient and also a third party witness (under the Witness Signature). If the patient refuses to sign, document this, and have a third party witness the refusal-to-sign. If no third party is present, a member must document that the patient refused medical care and/or transport and that there was no third party present.
4. If a patient consents to transportation and/or a portion of the treatment and refuses another recommended therapy (e.g., does not want to be placed on a backboard, refuses an IV, etc.), he/she must provide their signature on the "Patient Refusing Treatment/Procedure" signature section. Document the specific items refused in the "Treatments" panel, and after selecting the procedure or medication, choose "Refused" under the Pertinent Negative section of that medication or procedure. Signatures must be obtained from the patient and a third party witness. If the patient refuses to sign, document this, and have a third party witness the refusal-to-sign. If no third party is present, a member must document that the patient refused medical care and/or transport and that there was no third party present.
5. Document the following thoroughly:
    - History

- Physical exam including pertinent negatives and vital signs
- Any treatment provided
- Reason(s) patient insisted on non-transport
- Potential consequences of non-transport as explained to patient
- Efforts made to persuade patient to go to a hospital
- Any treatments or care that the patient refused
- Person whose care patient was left in, if appropriate
- Advice/precautions given to patient; and
- EMS Supervisor's payroll number if applicable.

C. Adult Without Decision Making Capacity : Refusing Care (AMA)
Procedures for an adult without decision making capacity in need of care/transportation or refusing care Against Medical Advice.

1. Attempt steps under 6.16 B. of the above, *Adult with Medical Decision Making Capacity : Refusing Care Against Medical Advice (AMA)*.
2. If the patient continues to refuse service, the highest EMS trained member directly involved in the patient's care shall contact an EMS Supervisor through the Base Station. The EMS Supervisor will oversee the efforts of HFD members to ensure that every reasonable effort has been made in the best interest of the patient.
3. If the patient continues to refuse care/transportation and has what reasonably appears to be a life-or-limb-threatening medical problem, the patient may need to be forcefully transported to the hospital against his/her will. Consult with the EMS Supervisor and a peace officer (*Ref. 6.19 Physical Restraints*).
4. If in the EMS Supervisor's opinion the patient does not have the capacity for medical decision making and is suffering from what reasonably appears to be a life-or-limb-threatening injury or illness, the supervisor may direct the members to transport the patient.
5. When the patient is considered a danger to himself/herself or others, contact the appropriate law enforcement agency. EMS personnel will inform the peace officer why the patient is a danger to himself/herself or to others. If the patient is placed in custody or is under an emergency detention order, then the means of transport will be determined by the law enforcement agency. Document the peace officer's name, badge number/unit number in the patient care record. If the patient is in custody, violent, and/or in need of ambulance transport, a peace officer(s) should accompany the EMS personnel to the hospital. If the EMS personnel are satisfied with the security of the patient, then the peace officer(s) may follow or meet the ambulance at the hospital. The facility choice should be in accordance with standard HFD guidelines.
6. In all cases, document events thoroughly (*Ref. 6.16 B.5. Adult with Medical Decision Making Capacity : Refusing Care Against Medical Advice (AMA)).*

D. EMS Initiated Non-Transport

1. Ambulance personnel shall not refuse transportation for patients to a hospital. It is therefore a violation of this policy for any EMT or Paramedic to refuse transportation for any sick or injured person from the place of an emergency or the place of a direct call to which he/she has responded. The circumstances that such person is or appears to be indigent and unable to pay the cost of such service shall not serve as an excuse from this requirement.

E. Non-Transport Guidelines for Minors
All minor patients shall be considered for transport to an appropriate medical facility regardless of their appearance or situation unless the non-transport policy is followed. For minor patients who may be non-transports in cases as defined in *6.16 B. Adult with Medical Decision Making Capacity : Refusing Care Against Medical Advice (AMA)* and *6.16 C. Adult Without Decision Making Capacity : Refusing Care (AMA)*, an EMS Supervisor **shall** be contacted through

the Base Station by the EMS Apparatus, BLS unit or ALS unit prior to the non-transport occurrence.

Observe the following specific guidelines with minor patients:

1. Patients who are minors with an apparently minor injury or illness can be cared for at any full service emergency department. Patients with apparently serious illness should be transported to a hospital with pediatric intensive care facilities (*Ref. 9.05 Approved Hospitals and Hospitals with Specialized Facilities*). If the parents request a different facility, contact the Base Station to provide an accurate patient report to that facility and determine if that facility can adequately care for the minor. Communicate with the minor patient's parents as each decision is made when possible.
2. Contact the EMS Supervisor through the Base Station prior to any non-transport of a minor patient.
3. If recommended EMS services are refused, make every effort to transport the patient. This includes contacting the EMS Supervisor or on-line medical control to help convince the family or guardians to allow EMS personnel to transport the patient. The Base Station paramedic will record the appropriate information relating to the nature of the situation.
4. Document the nature of the situation, including the number of requests/attempts made to transport the patient, the possible medical consequences that were explained to those refusing/declining services, in whose adult care the patient was left, and whether or not the parties involved acknowledged this "informed refusal." Obtain the name, phone number, and address of at least one adult witness and record it in the patient record.
5. In cases where child abuse and/or neglect is suspected, request the Houston Police Department (HPD) to immediately investigate. If indicated, HPD may take the minor into protective custody to enable HFD to provide the necessary care and transportation to a medical facility. Additionally, ensure CPS is contacted in all cases of suspected abuse or neglect.
6. All units shall notify the Base Station for any non-transport of a minor patient.
7. Refusals can only be made by legally designated guardians, not by EMS personnel.

6.17 Out-of-Hospital DNR Orders

A. Health and Safety Code Chapter 166 defines the Out-of-Hospital Do-Not-Resuscitate (DNR) law for the State of Texas. A DNR order may exist as a written order or as an identification device such as a bracelet or necklace. HFD EMS personnel shall honor an Out-of-Hospital DNR form provided:
   1. They can establish the identity of the patient as the person who executed the DNR order or for whom the DNR order was executed, and;
   2. It is a valid Out-of-Hospital DNR order; and
   3. It is an original, copy or legible photo of the Texas Department of State Health Services form.

B. An Out-of-Hospital DNR order is considered to be valid if it includes:
   1. Written responses in the places designated on the form for the names, signatures and other information required of persons executing or witnessing the execution of the order.
   2. A date in the place designated on the form for the date the order was executed.
   3. The signature of the declarant or persons executing the order and the attending physician's signature in the appropriate places.
   4. Once the original order has been properly executed and signed in the appropriate places, a photocopy or other complete facsimile of the completed form may be used for any purpose for which the original written order may be used. Reference ***Example 6-1*** for DNR example.
   5. The DNR Form was revised in 2020. The older TDH Standard OOH DNR forms are still valid forms and shall be honored.

C. If these conditions (A,B) are not met, do not honor the Out-of-Hospital DNR order. Begin or

continue resuscitation procedures.

D. The DNR order (Written form or identification device), when available, must accompany the person during transport.
E. Honor Out-of-Hospital DNR forms that appear to be valid unless the person or persons found at the scene:
    1. Identify themselves as the declarant or as the attending physician, legal guardian, parent, spouse or adult child of the person or agent of the person having a durable power of attorney for health care who executed the Out-of-Hospital DNR order on behalf of the person; **and**
    2. Request that CPR or certain life sustaining procedures be initiated or continued.
F. An Out-of-Hospital DNR order is effective until it is revoked. There is no expiration.
G. Honor DNR orders if:
    1. The patient presents with no pulse; or
    2. The patient presents with a pulse but no respirations; and
    3. There is a valid DNR order as described above.
H. DNR orders <u>will not</u> be honored if:
    1. The order is not considered to be valid; or
    2. There is suspicion of homicide, suicide or other non-natural cause of death; or
    3. The patient is pregnant.
I. In the event the patient expires prior to EMS arrival or during on-scene assessment and the DNR order is valid and uncontested, notify the tactical dispatcher of a fatality in order that HPD and the Medical Examiner's office are notified.
J. If a patient expires during transport and the DNR is valid and uncontested:
    1. Honor the DNR and withhold resuscitative measures.
    2. Notify the Base Station. The Base Station will contact the receiving facility and advise them of the patient's expiration.
    3. Proceed to the receiving facility in a non-emergency fashion.
K. In all cases where a patient is encountered for whom a DNR order is presented, notify Base Station to comply with reporting requirements of TDSHS.
L. **When unsure of the correct action, contact an EMS Supervisor**.
M. Out-of-State DNR Forms will be honored. DNR Orders in charts at Nursing Homes, etc. will be honored.
N. State of Texas DNR bracelets will be honored and regarded as properly executed DNR forms.
O. Advance Directives may be honored as a DNR provided it is apparent to the member that the patient suffers from an irreversible and terminal medical condition.
P. A verbal declaration from a patient's physician (either in person or over the phone if identified as the patient's physician by the healthcare facility) with regard to DNR status or the wish to terminate resuscitative efforts should be treated as a DNR and should be appropriately documented on the run record.
Q. A correctly completed DNR form will consist of completion of either:
    1. Any one of Sections A, B, C, D, or E, in addition to the "Two Witnesses" section, the "Physician's Statement" section and completed signatures at the bottom of the page, OR;
    2. Section F in addition to the completed signatures at the bottom of the page.
R. Operating Procedure
    1. EMS personnel shall actively engage the family and answer their questions as appropriate. The on-call physician will be available to directly converse with the family at the family or the bystanders request.
    2. Once the decision has been made to honor the valid DNR, or if at any time during a respiratory or cardiac arrest resuscitation, a valid DNR form, advanced directive, or verbal order from the patient's physician is produced, all resuscitative efforts should be stopped, and

termination of resuscitative efforts should be documented.

3. Tie off and knot any established intravenous lines (close to the IV/IO site) and remove the IV fluid bag and remaining tubing. The IV/IO catheters and the endotracheal tube (or alternative airway) shall remain in place. Clean up debris from the resuscitation.
4. Contact the dispatcher for notification of the Medical Examiner and HPD.
5. Document the time of death in the PCR.
6. At all times, HFD members will be attentive to the social and psychological support needs of the "survivors" (i.e., family, friends, witnesses) and provide support as needed (*ref. 6.01 A. Holder Rule and 6.09 Family Centered Care*).
7. If there is no suspicion of any criminal activity, the body may be moved by HFD personnel a short distance to minimize family members' discomfort with the event (in bed, etc).
8. Consider notifying the patient's primary care physician.
9. Be prepared to answer questions as to what happens next. Notify them that a Law Enforcement officer will arrive and assist with the next steps, and that a funeral home will need to be contacted.
10. Unless patient is in a residential medical facility (nursing home, etc.), do not leave the scene until HPD or the Medical Examiner has arrived.
11. Contact on-line physician as necessary for direction.

EXAMPLE 6-1

Figure: 25 TAC §157.25 (h)(2)

OUT-OF-HOSPITAL DO-NOT-RESUSCITATE (OOH-DNR) ORDER

TEXAS DEPARTMENT OF STATE HEALTH SERVICES

STOP DO NOT RESUSCITATE

This document becomes effective immediately on the date of execution for health care professionals acting in out-of-hospital settings. It remains in effect until the person is pronounced dead by authorized medical or legal authority or the document is revoked. Comfort care will be given as needed.

Person's full legal name _____ Date of birth _____ ☐ Male ☐ Female

A. Declaration of the adult person: I am competent and at least 18 years of age. **I direct that none of the following resuscitation measures be initiated or continued for me: cardiopulmonary resuscitation (CPR), transcutaneous cardiac pacing, defibrillation, advanced airway management, artificial ventilation.**

Person's signature _____ Date _____ Printed name _____

B. Declaration by legal guardian, agent or proxy on behalf of the adult person who is incompetent or otherwise incapable of communication:

I am the: ☐ legal guardian; ☐ agent in a Medical Power of Attorney; OR ☐ proxy in a directive to physicians of the above-noted person who is incompetent or otherwise mentally or physically incapable of communication.

Based upon the known desires of the person, or a determination of the best interest of the person, **I direct that none of the following resuscitation measures be initiated or continued for the person: cardiopulmonary resuscitation (CPR), transcutaneous cardiac pacing, defibrillation, advanced airway management, artificial ventilation.**

Signature _____ Date _____ Printed name _____

C. Declaration by a qualified relative of the adult person who is incompetent or otherwise incapable of communication: I am the above-noted person's:

☐ spouse, ☐ adult child, ☐ parent, OR ☐ nearest living relative, and I am qualified to make this treatment decision under Health and Safety Code §166.088.

To my knowledge the adult person is incompetent or otherwise mentally or physically incapable of communication and is without a legal guardian, agent or proxy. Based upon the known desires of the person or a determination of the best interests of the person, **I direct that none of the following resuscitation measures be initiated or continued for the person: cardiopulmonary resuscitation (CPR), transcutaneous cardiac pacing, defibrillation, advanced airway management, artificial ventilation.**

Signature _____ Date _____ Printed name _____

D. Declaration by physician based on directive to physicians by a person now incompetent or nonwritten communication to the physician by a competent person: I am the above-noted person's attending physician and have:

☐ seen evidence of his/her previously issued directive to physicians by the adult, now incompetent; OR ☐ observed his/her issuance before two witnesses of an OOH-DNR in a nonwritten manner.

I direct that none of the following resuscitation measures be initiated or continued for the person: cardiopulmonary resuscitation (CPR), transcutaneous cardiac pacing, defibrillation, advanced airway management, artificial ventilation.

Attending physician's signature _____ Date _____ Printed name _____ Lic # _____

E. Declaration on behalf of the minor person: I am the minor's: ☐ parent; ☐ legal guardian; OR ☐ managing conservator.

A physician has diagnosed the minor as suffering from a terminal or irreversible condition. **I direct that none of the following resuscitation measures be initiated or continued for the person: cardiopulmonary resuscitation (CPR), transcutaneous cardiac pacing, defibrillation, advanced airway management, artificial ventilation.**

Signature _____ Date _____

Printed name _____

TWO WITNESSES: (See qualifications on backside.) We have witnessed the above-noted competent adult person or authorized declarant making his/her signature above and, if applicable, the above-noted adult person making an OOH-DNR by nonwritten communication to the attending physician.

Witness 1 signature _____ Date _____ Printed name _____

Witness 2 signature _____ Date _____ Printed name _____

Notary in the State of Texas and County of _____. The above noted person personally appeared before me and signed the above noted declaration on this date _____.

Signature & seal: _____ Notary's printed name _____ *Notary Seal*

[Note: Notary cannot acknowledge the witnessing of the person making an OOH-DNR order in a nonwritten manner]

PHYSICIAN'S STATEMENT: I am the attending physician of the above-noted person and have noted the existence of this order in the person's medical records. **I direct health care professionals acting in out-of-hospital settings, including a hospital emergency department, not to initiate or continue for the person: cardiopulmonary resuscitation (CPR), transcutaneous cardiac pacing, defibrillation, advanced airway management, artificial ventilation.**

Physician's signature _____ Date _____

Printed name _____ License # _____

F. Directive by two physicians on behalf of the adult, who is incompetent or unable to communicate and without guardian, agent, proxy or relative: The person's specific wishes are unknown, but resuscitation measures are, in reasonable medical judgment, considered ineffective or are otherwise not in the best interests of the person. **I direct health care professionals acting in out-of-hospital settings, including a hospital emergency department, not to initiate or continue for the person: cardiopulmonary resuscitation (CPR), transcutaneous cardiac pacing, defibrillation, advanced airway management, artificial ventilation.**

Attending physician's signature _____ Date _____ Printed name _____ Lic# _____

Signature of second physician _____ Date _____ Printed name _____ Lic# _____

Physician's electronic or digital signature must meet criteria listed in Health and Safety Code §166.082(c).

All persons who have signed above must sign below, acknowledging that this document has been properly completed.

Person's signature _____ Guardian/Agent/Proxy/Relative signature _____

Attending physician's signature _____ Second physician's signature _____

Witness 1 signature _____ Witness 2 signature _____ Notary's signature _____

This document or a copy thereof must accompany the person during his/her medical transport.

6.18 Patient Belongings

A. All patient belongings shall be returned to the patient or transferred to the appropriate hospital staff or relative. To assist in identifying patient's items and transferring those items to the receiving facility, the Department has developed a pre-marked belongings bag for this purpose. Items such as keys, eyeglasses, dentures and prescription medications are to be placed in the bag, sealed and properly identified on the bag as well as documented in the PCR.
   1. It is imperative that all HFD members return identification items to the patient.
   2. Any items that are placed in a patient property bag and given to the receiving staff at the hospital must be documented in the patient care report with a description of the items and the name of the employee receiving the items.

B. Members shall inspect their station and apparatus daily for Patient Belongings and any items found on a unit shall immediately be given to the Station Captain. If the Station Captain determines that the property is unable to be returned to the owner, the item(s) will be logged in the Station log and Captain's log by the Officer before the end of the shift. The items will be secured in the current Blue envelope in a designated station area (Officer's room or Watch office) before the end of the shift. Members shall include the following information within the envelope:
   1. Incident number, if known
   2. Date found
   3. Station and shift
   4. Apparatus item found on, if known
   5. Member payroll number

   Larger items will be tagged and identified as appropriate in the station log.

C. The Station Officer will then contact an EMS Supervisor to deliver the items to EMS Headquarters during normal operating hours. If the items have not been picked up when the on-coming shift begins, the EMS Supervisor shall again be notified. The EMS Supervisor will deliver the property to a classified member at EMS HQ. If the items are reported to the Station Captain at a time that does not allow the items to be delivered to the EMS HQ that day, the Station Captain will document this in the Captain's log and the EMS Supervisor will deliver item to EMS HQ the next normal working day.

6.19 Physical Restraints

A. Physical restraints prevent a confused, disoriented, intoxicated, violent, psychotic or suicidal patient from self injury or injury to others. It also provides a means of control in dealing with combative or destructive behavior.

B. Inform the patient of the reason for restraint. Remember your own personal safety first.

C. Restrain patients in a manner that does not impair circulation, cause choking, aspiration or restricts the chest or the patient's ability to breath. **Do not restrain patients in the prone position (face down)**. Prone positioning while restrained may impair the patient's ability to breathe adequately. Patients have died as a result of being restrained and transported in the prone position. Obtain assistance from the police and other HFD personnel as needed to assist in patient restraint.

D. As soon as possible, attempt to remove any potentially dangerous items (belts, sharp objects, etc.).

E. Assess the patient's circulation (checking pulses in the feet and wrists) every 2 minutes, or as frequently as time permits, while the patient is restrained. If circulation is impaired, adjust or loosen restraints as needed. Document the presence of pulses in each extremity and the patient's ability to breathe after restraint is accomplished.

F. Inform hospital personnel who assume responsibility for the patient's care of the reason for restraining the patient.

G. Be prepared for unexpected regurgitation or vomiting. Have enough personnel to log roll or turn the restrained patient on their side. Additionally, have suction equipment ready for use in case the

patient does vomit.

H. If it is necessary to restrain a patient to protect the patient from injury, document the events leading to restraint in the HFD patient record. Patient care comes first, then document on the patient care record the method of restraint, the position of the restraints and the reason for restraining the patient.

6.20 Physician Intervener at the Scene

A. Physicians may provide assistance to EMS personnel. Treat them with professional courtesy. Physicians should identify themselves and be prepared to provide identification indicating they are a physician. All physicians licensed in the State of Texas are provided with a wallet-sized identification card with their name, address and medical license number indicated.

B. A physician may merely offer assistance or may assume responsibility for patient care. If a physician desires to assume responsibility for patient care, that individual must provide physician identification. Inform the physician that once they assume medical responsibility for the care of the patient they are expected to accompany the patient until care is transferred to another physician.

C. When a patient's private physician is present and provides proof of identity, EMS personnel should comply with his/her medical direction.

D. Follow medical direction given by the on-scene physician who assumes responsibility for patient care provided it is similar to HFD guidelines and standing orders. Report any conflicts immediately to an EMS Supervisor and on-line physician.

6.21 Requesting Assistance

A. ALS Unit Requesting BLS Units for Transports:

1. BLS units will respond in an emergency fashion during all initial incident dispatches unless directed otherwise by OEC. ALS units may request a BLS unit for minor emergency transportation or for assistance at a scene for purposes other than routine BLS transport (such as for a multiple victim motor vehicle incident). The ALS unit should advise OEC of the type of BLS unit requested (ambulance vs. EMS apparatus) and to have the BLS unit(s) respond "emergency" or "non-emergency" as appropriate.
2. Other special situations, which may require the use of emergency lights and sirens by the BLS units while responding are heavy traffic and periods of high call volume. OEC or an EMS Supervisor may advise the BLS unit to "respond emergency" during a period when a substantial number of units are unavailable in the service area. They shall notify OEC of their intentions to do so. EMS Supervisors shall monitor the EMS units under their supervision for inappropriate use of this provision.

B. BLS Unit Requesting Additional BLS Assistance:

1. A BLS unit responding alone to an initial emergency incident may request an additional BLS unit to respond when they anticipate a response time of greater than 15 minutes. During extended response times, the BLS unit will advise OEC of their ETA to the location. With the information available from the caller, OEC will determine if the dispatch of an additional BLS unit is advisable.
2. On location, a BLS unit may request additional assistance as needed and will notify the dispatcher and state the specific nature of the request (i.e. "help with lifting", "to wash fuel", "assistance with multiple patients", etc.). The BLS unit should advise OEC to have the BLS unit(s) respond "emergency" or "non-emergency."

C. BLS Unit Requesting ALS Assistance:

If no ALS unit has been dispatched to the incident and the BLS unit determines the need for ALS evaluation or care, they shall request ALS or EMS Supervisory assistance. BLS units shall provide

OEC with the nature of the request for assistance and shall also contact the Base Station for interim instructions and advice.

D. BLS Unit Disregarding of ALS Units:
   1. When a BLS unit is responding with an ALS unit, the BLS unit may advise the ALS unit to "disregard" prior to the ALS arrival. These circumstances include the following:
      a. When no patient is found at the location.
      b. When only minor traumatic injuries are involved.
      c. When patients can be assessed, managed and transported appropriately by the BLS unit.
      d. When the patient refuses treatment.
      e. Other non-transport incidents as outlined in guidelines.
   2. **A BLS unit shall not disregard an ALS unit AND an ALS assessment is required** (if ALS was dispatched) if the patient currently has, or recently had, the following complaints discovered during BLS assessment:
      a. Decreased level of consciousness / Unconsciousness
      b. Chest Pain / Discomfort
      c. Difficulty Breathing
      d. Syncope
   3. When BLS personnel are unsure of a patient's need for ALS care, they shall allow the ALS unit to proceed to the location while providing the ALS unit with updated information on a designated tach channel.
   4. If BLS transport time to the hospital is shorter than ALS arrival time, contact the ALS unit on the designated tach channel to arrange a rendezvous en route or to advise of BLS-only transport. If a BLS-only transport occurs in this situation, the reasons shall be clearly documented in the patient care record.

E. BLS Unit Transport of Critically Injured Patients
   1. When a BLS unit is first on the scene with a "critically injured" trauma patient, BLS personnel shall quickly immobilize (if required), provide BLS support, and rapidly transport the patient directly to a Trauma Center (*Ref. 6.11 D. Hospital Destination Decisions for Trauma Patients and 9.05 Approved Hospitals and Hospitals With Specialized Facilities*).
   2. **The patient's chances for survival following a serious traumatic injury are directly related to the amount of time required to get the patient to the appropriate trauma center**. A BLS unit is dispatched to a serious traumatic incident to rapidly transport the patient to a Trauma Center.
   3. BLS units are **NOT** to delay transport awaiting the arrival of a paramedic. Immediate BLS transport to a Trauma Center is appropriate and provides the patient the greatest chance of survival. For example, in a situation where the patient has suffered an airway injury, paramedics may be able to provide an advanced airway intervention. Unless an appropriate rendezvous point can be established between the BLS and ALS, provide direct, immediate, and rapid transport of the patient to a Trauma Center. If the BLS unit transports the patient, that unit must continue to provide all of the following, as indicated:
      a. Basic airway management.
      b. Basic respiratory support with supplemental oxygen.
      c. Spinal immobilization (including C-spine precautions) as indicated.
      d. Basic circulatory support, including hemorrhage control and CPR as needed.
   4. If at any time there is a question as to whether a patient is a candidate for rapid BLS transport, notify the responding ALS unit to report the patient's condition and request transport instructions. If no ALS unit has been dispatched, proceed with rapid transport to the closest appropriate trauma center. OEC may be contacted to arrange a rendezvous with an ALS unit provided that such action does not delay a patient's arrival to the trauma center.

6.22 Responsibilities of EMS Unit

A. BLS Crew Responsibilities:

1. BLS Ambulance
   a. The Engineer/Operator EMT (EOE) will be considered to have the primary duty of ensuring delivery of patient care on the emergency scene.
   b. The Engineer/Operator EMT (EOE), either acting or assigned, is in charge of the BLS unit. The Fire Fighter EMT (FFE) will assist the EOE in providing patient care as needed throughout the incident. The EOE may delegate BLS task level assignments such as patient assessments, therapies and PCR documentation to an FFE but remains ultimately responsible for these actions.
   c. Prior to a transport, the EOE and FFE should discuss the plan of care and/or monitoring of the patient during the transport.
   d. In the event the FFE believes the EOE is inappropriately directing patient care, the FFE must notify the EMS Supervisor as soon as possible of the situation.
   e. The EOE is responsible for the complete and accurate documentation of EMS records including the patient care record and documentation of patient refusals. The EOE shall sign the patient care record (and review the PCR if delegated) attesting that it was completed accurately and consistent with these Guidelines and other Department policy.
   f. The Texas Department of State Health Services holds all members of the same State Certification / Licensure equally responsible for patient management and record documentation, regardless of Department rank.
   g. It is expected that BLS crew members will assist ALS members with any BLS level evaluation, treatment or other necessary activities on an emergency incident.
2. BLS EMS Apparatus
   a. The apparatus officer will be considered to have the primary duty of ensuring delivery of patient care on the emergency scene. The officer may delegate BLS task level assignments such as patient assessments, therapies and PCR documentation to another crew member but remains ultimately responsible for these actions.
   b. Any time a member of an EMS apparatus company holds a higher EMS credentialing level than the officer in charge, the higher credentialed member will be in charge of patient care and the documentation of the EMS record.
   c. The officer in charge of the EMS apparatus shall sign the patient care record and bears the responsibility to ensure the EMS record is completed accurately and consistent with these Guidelines and other Department policy.
   d. It is expected that BLS crew members will assist ALS members with any BLS level evaluation, treatment or other necessary activities on an emergency incident.

B. ALS Crew Responsibilities:

1. The Engineer/Operator Paramedic (EOP) will be considered to have the primary duty of ensuring delivery of patient care on the emergency scene.
2. The Engineer/Operator Paramedic (EOP), either acting or assigned, is in charge of the ALS unit. The Fire Fighter Paramedic (FFP) will assist the EOP in providing patient care as needed throughout the incident. The EOP may delegate BLS and ALS task level assignments such as patient assessments, therapies and PCR documentation to an FFP but remains ultimately responsible for these actions.
3. Prior to a transport, the EOP and FFP should discuss the plan of care and/or monitoring of the patient during the transport.
4. In the event the FFP or an FFE believes the EOP is inappropriately directing patient care, the FFP or FFE must notify the EMS Supervisor as soon as possible of the situation.

5. The EOP is responsible for the complete and accurate documentation of EMS records including the patient care record and documentation of patient refusals. The EOP shall sign the patient care record (and review the PCR if delegated) attesting that it was completed accurately and consistent with these Guidelines and other Department policy.
6. In the case of an ALS unit made up of an FFP and an EOE acting or assigned, the FFP will be considered to have the primary duty of delivering ALS level patient care on the emergency scene and the EOE or FFE will assist the FFP in providing BLS patient care and evaluation as needed throughout the incident. The FFP may delegate BLS task level therapies to an EOE or FFE.
7. The Texas Department of State Health Services holds all members of the same State Certification / Licensure equally responsible for patient management and record documentation, regardless of Department rank.
8. Generally speaking, the first arriving paramedic will be in charge of patient care until such time as a higher ranking paramedic assumes patient care or until transfer of care for the purposes of patient transport is appropriate.
9. The EMS Apparatus Paramedic is responsible for immediate patient care until the arrival of the Medic or Squad Paramedic. The EMS Apparatus Paramedic will assist the Medic or Squad Paramedic in providing patient care as needed throughout the incident.
10. Should circumstances dictate, the EMS Apparatus Paramedic will assume full responsibility for patient care and will remain with the patient at the scene and during transport in order to ensure the continuity of patient care. In these cases, the EMS Apparatus Paramedic must notify the EMS Supervisor as soon as possible of the situation.

6.23 Termination of Resuscitation

A. Background
   1. Termination of ALS efforts in the out-of-hospital setting will apply to patients who experience a non-traumatic cardiac arrest and meet the specific criteria indicating futility for further resuscitative efforts.
   2. This policy is intended to be applied to situations involving patients who may have had poor quality of life factors or whose death was anticipated. The policy may, under appropriate circumstances, also be applied to situations involving patients whose death was unexpected.

B. Inclusion Criteria:
   The decision is based on the following criteria:
   1. Patient must have had a presumed primary medical arrest.
   2. Patient must be successfully intubated or successfully ventilated with an alternative airway device, have IV or IO access and have standard advanced life support (ALS) measures applied throughout the resuscitation effort.
   3. On-scene advanced resuscitation efforts by paramedics will be sustained for at least 20 minutes from the administration of the first ALS medication, regardless of previous CPR time and the arrest interval. In other words, patients should receive 20 minutes of ALS medication not counting the time for basic CPR/defibrillation provided by BLS prior to paramedic arrival.
   4. Persistent asystole or agonal rhythm is present and no reversible causes are identified during the resuscitation effort.
   5. As it requires the on-line physician for a field termination decision, the on-line physician must be contacted.

C. Exclusion Criteria:
   Resuscitation efforts will not be terminated in patients found in open public places or who meet the following exclusion criteria:
   1. The patient whose medical arrest may be associated with hypothermia or cold water

submersion injury.

2. The patient who has persistent ventricular fibrillation (VF) or ventricular tachycardia (VT) or normal appearing, well organized complexes without pulses (QRS rate > 60/min.).
3. The patient who demonstrates any neurological signs (i.e., spontaneous opening of the eyes or spontaneous movements).
4. The patient who has a cardiac arrest after being in the care of HFD personnel.
5. Patients with a Ventricular Assist Device.

D. Operating Procedure:
   1. If a patient remains unresponsive to ALS resuscitation measures and meets all of the inclusion criteria and none of the exclusion criteria, field termination shall be pursued.
   2. In all cases, the paramedic in charge of the resuscitation will notify an EMS Supervisor of every opportunity to terminate resuscitative efforts. EMS Supervisors will make every effort to respond to the scene of a potential on-scene termination of resuscitative efforts.
   3. The EMS Supervisor or paramedic in-charge of the case shall discuss the situation in its entirety with the on-line physician. The on-line physician may then give permission to terminate the resuscitation.
   4. During resuscitation, EMS personnel (and preferably an EMS Supervisor) will apprise the family of the progress of resuscitative efforts. The EMS Supervisor will advise them of the on-line physician's directives to terminate efforts.
   5. The family, or relevant bystanders, shall be approached and notified that all resuscitative efforts have failed to restore a pulse and that transport of the patient to the hospital is not going to change the patient's ultimate outcome. Because of this, HFD will stop resuscitative efforts and HFD will turn scene management over to HPD.
   6. HFD shall not transport patients who meet criteria for Termination of Resuscitation unless a) the resuscitation takes place in a public setting or b) HFD member's personal safety may be endangered by non-transport of the patient or c) the family strenuously objects.
   7. EMS personnel shall actively engage the family and answer their questions as appropriate. The on-line physician will be available to directly converse with the family if the family or the bystanders wishes to do so.
   8. Upon approval to terminate the resuscitation effort, tie off and knot any established intravenous lines (close to the IV/IO site) and remove the IV fluid bag and remaining tubing. The IV/IO catheters and the endotracheal tube (or alternative airway) will remain in place.
   9. Contact the dispatcher for notification of the Medical Examiner and HPD.
   10. At all times, HFD members will be attentive to the social and psychological support needs of the "survivors" (i.e., family, friends, witnesses) and provide support as needed (*Ref. 6.01 A. Holder Rule and 6.09 Family Centered Care*).
   11. If there is no suspicion of any criminal activity, the body may be moved by HFD personnel only to place the body in a bed (to minimize family members' discomfort with the event).

E. Documentation:
   1. Information surrounding the events of the resuscitative efforts and the time of death will be properly recorded on the Patient Care record in the comments section in addition to a detailed description of the resuscitation attempt.

F. If at any time during a respiratory or cardiac arrest resuscitation a valid DNR form, advanced directive, or verbal order from the patient's physician is produced (*Ref. 6.17 Out-of-Hospital DNR Orders*), all resuscitative efforts should be stopped and termination of resuscitative efforts should be documented.

6.24 Voluntary Self Reporting of Medical Errors

A. Purpose

1. To establish and maintain a system in which certain types of medical errors are viewed as sentinel events to be taken advantage of in order to improve the overall quality of patient care, while at the same time ensuring the safety of the public.

B. Definitions
   1. Error – an act that deviates from what is correct. For the purposes of this policy, correct action is defined by HFD policy and procedures referenced III-01 7.00 through and including 9.06.
   2. Neglect – to fail to care or give proper attention to; to fail to do as through oversight or carelessness.

C. Procedure
   1. Self Reported Errors
      a. When a member recognizes they have committed a medical error, that member has twenty-four on-duty hours to report the error to an EMS Supervisor.
      b. The officer to whom the medical error has been reported will document the report on a Medical Error Reporting Form found in the HFD Forms list.
      c. The officer will perform and complete an investigation to include interviewing of other members, witnesses or examination of equipment, or any other such investigation as necessary to determine the nature, severity and circumstances of the reported error.
      d. The officer will also document action taken by the officer in response to the report. The officer may choose from the following options:
         1) Document analysis of the perceived error and provide positive reinforcement to the member for bringing the opportunity for improvement to the supervisor's attention.
         2) Provide immediate counseling and document such counseling on a Medical Error Reporting Form.
         3) Provide immediate counseling as above and recommend further remediation through the Medical Director's Office.
         4) Remove the member from patient care duties pending review by the Medical Director's Office.
      e. Members who self-report medical errors will not be subjected to formal investigation by the Medical Director's Office.
   2. Unacceptable Errors
      a. Most reported medical errors will be considered to be opportunities for system improvement by the Office of the Medical Director.
      b. Certain errors will be considered unquestionably unacceptable behavior on the part of the member and remediation will not be offered. While many of these errors are also addressed in other areas of fire department policy, the following offenses will be considered grounds for immediate revocation of paramedic and/or EMT patient care privileges:
         1) Willfully inflicting harm of any kind on a patient.
         2) Willful neglect of a patient.
         3) Willful disregard for patient care policies and procedures.
         4) Untruthfulness with the EMS Physician Director, his or her designee, or an officer of the department with regard to patient care, documentation, or error reporting.
         5) Failure to remediate or repeatedly committing the same or similar errors in spite of remediation and/or re-education.
   3. Errors Reported by Others
      a. Medical errors alleged by the public, patients, patient's family members, medical professionals (including HFD firefighters) or any other persons not previously addressed by this policy will be immediately forwarded to the Medical Director's Office for processing.
   4. Supervisors Completing the Medical Error Reporting Form
      a. Supervisors receiving reports of medical errors are to complete the Medical Error

Reporting Form (found in HFD Forms list) in its entirety upon completion of their investigation.

b. Supervisors are to forward the completed Medical Error Reporting Form to the Office of the Medical Director in a sealed envelope marked CONFIDENTIAL, within 24 on-duty hours of being made aware of the error.

5. Confidentiality
   a. All medical error investigations and resolutions shall be considered privileged quality improvement committee activities and are protected under Texas Statues Title 9 Health and Safety Code Chapter 773.

7.00 SKILLS

TABLES

7.01 Patient Assessment [BLS/ALS]

A. Assess the Situation

1. Is the scene safe?
   Consider the potential dangers to self and other rescuers (e.g., live loose power lines, HAZ-MAT, violent individuals, etc.) If danger exists, make a decision and action plan that will adequately protect as many people as possible.
2. How many patients are there?
   A rapid triage of patients is necessary to evaluate the needs of the situation. Complete the scene triage process prior to the initiation of patient care.
3. What help do I need?
   After answering the above questions, make an initial assessment of the situation and determine what other resources are needed. Make contact through OEC to request additional resources.

B. Primary Survey

Basic Life Support Sequence C-A-B: Evaluate the Circulation, Airway and Breathing, then neurologic Disability and Physical Exam. Priorities of management are established on a life threat basis. NOTE: In children < 8 years old, the priority is Airway-Breathing-Circulation.

1. Circulation: Assess the circulation / perfusion
   •Assess rate and quality of pulses – peripheral and central pulses.
   •No spontaneous pulses – begin chest compressions at an appropriate rate and depth.
   •Assess skin color, temperature, and capillary refill.
   •A patient who is unresponsive and has either no breathing or no normal breathing (only gasping) is presumed to be pulseless and CPR should be started immediately without a pulse check being performed.
2. Airway and C-Spine: Provide appropriate head/neck position, jaw thrust, oral airway, oxygen and bag-valve-mask or supraglottic airway as needed. Protect c-spine, if there is a potential for c-spine injury use the modified jaw thrust. If the airway is:
   •Patent – no intervention needed
   •Partially obstructed – if patient is conscious, allow the patient to cough forcefully to expel foreign body; if the patient is unconscious, see *Airway Foreign Body Removal* (*Ref. 7.02 G. Adult / 7.02 H. Pediatric*).
   •Obstructed – If the airway is completely obstructed attempt to clear airway (*Ref. 7.02 G. Adult / 7.02 H. Pediatric*). Paramedics should perform video laryngoscopy (or direct laryngoscopy if video unavailable) and use Magill forceps to remove foreign bodies.
3. Breathing: Assess respirations (rate, depth, and work of breathing, quality of breath sounds). Provide oxygen as indicated (*ref. 7.02 M.*). If the respirations are:
   •Spontaneous – observe the chest rise and fall, auscultate breath sounds posteriorly first (beginning at the bases, moving superiorly), then anteriorly.
   •Labored – observe for signs of distress – use of secondary muscles, cyanosis, or tachypnea. Never withhold oxygen from a patient in distress.
   – Administer oxygen as per 7.02 M. Oxygen Therapy Guideline and Table 7.8 Oxygen Therapy Guideline.
   •Agonal/Absent breathing – Ventilate with an appropriately sized supraglottic airway or insert an oral airway and bag-valve-mask ventilate and provide 100% oxygenation. Whenever possible, two persons should operate a bag-valve-mask; one to ensure a good mask-to-face seal and the other to perform proper ventilation technique.
   a. Equipment needed:
      •Oxygen sources – always check the supply and have a spare bottle.
      •Oral airways (40, 60, 80, 90, 100 mm).
      •Bag-valve-mask (BVM) with attached reservoir bag (adult/adolescent, infant/child,

neonatal). Make sure the reservoir bag fills with oxygen and use a flow rate of 15 LPM.

•Supraglottic Airway device (multiple sizes)

b. Bag-valve-mask use without endotracheal intubation (*see Table 7-1*)
   - •Each ventilation should be a one second ventilation which produces visible chest rise. This ensures against under-inflation and lack of oxygenation.
   - •Avoid rapid or forceful breaths in order to minimize or eliminate insufflation of air into the stomach with possible vomiting and aspiration as the result.
   - •Try to coordinate and synchronize the ventilation with CPR.

Table 7-1 : Bag-Valve-Mask Ventilation

Consider Potential C-Spine Injury (e.g., pool incident/accompanying fall/motor vehicle collision) and position accordingly (see "P" below)
Oral Airway (properly sized to push the tongue up and out of the way)
Position the Head (neutral position if there is a risk of c-spine injury; sniffing position if no suspicion of c-spine risk; do not hyperextend children's necks)
Elevate the jaw (usually with the tips of the fourth and fifth fingers, bilaterally, placed at the angle of the jaw, lifting it directly upward and perpendicularly to the ground)
Seal the Mask with Two Hands (forming two opposed "C-shaped clamps", by placing the thumbs on the bridge of the nose, and the index fingers over the chin
Squeeze (each ventilation delivered in 1 second with enough volume to produce visible chest rise)
Oxygen (delivered at a rate to maintain reservoir bag inflation)

c. Bag-valve use with endotracheal intubation:
   - •In an adult patient, the 21 cm mark on the endotracheal (E.T.) tube should generally be at the front teeth (*ref. 7.02 C. 6.*)
   - •In a pediatric patient, depth size varies. Consult the Pediatric Dosing Guidelines for recommended depth.
   - •If the E.T. tube is moved, tell the paramedic immediately.
   - •The paramedic should note the right depth when he/she intubates.

d. Tell the paramedic immediately if:
   - •Air is blowing out of the patient's mouth; it probably means there is a "leak" or deflated E.T. tube cuff. It may also mean the tube is not in the trachea.
   - •The patient's chest is not rising equally (right and left side).
   - •The resuscitation bag becomes hard to squeeze.
   - •Any problems are noticed during bagging with either a BVM or with the E.T. tube in place.

e. Ventilation Rate:
   - •During Pediatric / Adolescent / Adult CPR, when the patient is pulseless, give synchronized ventilations along with chest compressions with enough volume to produce visible chest rise.
   - •Once pulses are restored, ventilate according to guidelines below.
   - – Neonate : 1 Breath every 1-1.5 sec [40 to 60 breaths per minute]
   - – Infant : 1 Breath every 2 - 3 sec [20 to 30 breaths per minute]
   - – Children : 1 Breath every 2 - 3 sec [20 to 30 breaths per minute]
   - – Adolescents : 1 Breath every 3 - 4 sec [15 to 20 breaths per minute]
   - - Adults : 1 Breath every 3 - 5 sec [10 to 20 breaths per minute]

4. Disability: Assess the neurological status. Immobilize the spinal column as indicated. Assess the patient's level of consciousness using the AVPU Method (*See Table 7-2*).

Table 7-2 : AVPU Mental Status Exam

A	Alert : Alert and oriented to person, place, time
V	Verbal : Responds to verbal stimulation, not oriented
P	Pain : Responds to painful stimulus only
U	Unresponsive : Does not respond to verbal or painful stimulus

5. Exam:
   - •Perform a rapid head to toe survey.
   - •Exsanguinating hemorrhage should be treated immediately.
   - •When assessing medical patients, quickly evaluate skin signs, central and peripheral pulses for rate and quality to identify immediate life threats.

Only interrupt a primary assessment for life threatening emergencies, cases of airway obstruction, a need for CPR or controlling exsanguinating hemorrhage.

C. Secondary Survey
1. Chief Complaint: The secondary survey begins with the patient's chief complaint (CC). The CC is what the patient states or believes is the primary problem. It is reported in the context of the patient's age, sex, CC, and its duration.
2. History of Present Illness (HPI)
   The HPI is a concise but complete description of the medical sequence of events, that led to the patient's request for help, i.e.:
   - •"OPQRST" questions (*see Table 7-3*)
   - •What was the patient doing when the symptoms began?
   - •When did the symptoms start?
   - •What has the patient done to relieve his or her symptoms?
   - •Have any of these efforts made the patient feel better?
   - •What other symptoms does the patient have?

Table 7-3 : OPQRST Questions

O	Onset
P	Provocation
Q	Quality
R	Region / Radiation
S	Severity
T	Timing

3. Past History: Obtain an "AMPLE" history (*see Table 7-4*).

Table 7-4 : AMPLE History

A	Allergies
M	Medications
P	Past Medical History
L	Last Oral Intake
E	Events Preceding the Incident

4. Physical Exam: "head to toe" survey
   a. For trauma patients employ the techniques of the BTLS secondary survey (*see Table 7-5*).

Table 7-5 : BTLS Secondary Survey (Head to Toe Exam)

Head - Look for contusions, lacerations, raccoon eyes, Battle's sign, drainage of blood or fluid from the ears or nose. Assess pupils for symmetry. Reassess the airway again.
Neck - Look for lacerations, contusions, tenderness, distended neck veins, or deviated trachea.
Chest - Reassess breath sounds bilaterally, checking for symmetry.
Abdomen - Look for signs of blunt or penetrating trauma. Feel for tenderness and rigidity.
Pelvis - Palpate for tenderness or instability. Provide inward and downward compression to evaluate, don't rock the pelvis.
Extremities - Look and palpate for signs of trauma, check distal pulses, sensory and motor function. Repeat and record for any splint applications.

   b. For all other patients, perform a detailed head-to-toe physical exam *(see Table 7-6)*.

Table 7-6 : CHAMPION Physical Exam

C	Cardiac (Heart Sounds, Pulses)
H	HEENT
A	Abdomen
M	Mental Status
P	Pulmonary (Breath Sounds, Work of Breathing)
I	Integumentary (Skin)
O	Other Tests (Vital Signs, Diagnostics)
N	Neuro (Strength, Sensation)

   c. Neurological Survey
      1) Assess the level of consciousness using the Glasgow Coma Scale (*see Table 7-7*).

Table 7-7 : Glasgow Coma Scale : Adult and Pediatric

ADULT GLASGOW			PEDIATRIC GLASGOW	
Eye Opening (4)			Eye Opening (4)	
Spontaneous	4		Spontaneous	4
To Speech	3		To Speech	3
To Pain	2		To Pain	2
None	1		None	1
Best Motor Response (6)			Best Motor Response (6)	
Obeys Commands	6		Spontaneous Movement	6
Localizes Pain	5		Withdraws to Touch	5
Withdraws From Pain	4		Withdraws from Pain	4
Abnormal Flexion	3		Abnormal Flexion	3
Abnormal Extension	2		Abnormal Extension	2
None	1		None	1
Verbal Response (5)			Verbal Response (5)	
Oriented	5		Coos, Babbles	5
Confused	4		Irritable Cry	4
Inappropriate	3		Cries to Pain	3
Incomprehensible	2		Moans to Pain	2
None	1		None	1
Total (Out of 15)			Total (Out of 15)	

2) Assess the level of orientation by asking the patient:
   - •Person – Does the patient know their own name? The correct name of a friend or family member present? Does the patient recognize police officers, firefighters and/or paramedics?
   - •Place – Does the person know where they are now?
   - •Time – Can the person correctly state the month, day, year and the season of the year?
   - •Circumstance – Does the person know how it is that they came to be speaking to an EMT/paramedic? Do they fully understand their situation in terms of the current incident and their health status? (*Ref. 6.16 Non-Transports*)
3) Assess bilateral pupil reaction to light.
4) Evaluate motor and sensory function by evaluating for facial droop, testing grip strength and arm strength/pronator drift along with sensation to touch on extremities.

d. Vital signs will be measured on all patients to include blood pressure, pulse rate and respiratory rate and temperature.

e. Exposure: A thorough exam cannot be accomplished through clothing. Keep modesty in mind for all patients. Ask for the patient's permission to raise his/her shirt so that you may examine the back and auscultate the lungs. The patient must be kept warm during the

process. Passive warming (multiple sheets or blankets) techniques are frequently necessary to preserve body temperature.

f. Continually Monitor: Monitor the patient for changes in condition and document vital signs every 5 minutes for unstable patients and every 15 minutes for stable patients. Assess and record a minimum of two sets of vital signs for each patient transported.

g. Event Sequence: Application of the above sequence of events in the evaluation of a patient will vary depending on the patient's condition. EMT's and paramedics are to use their best judgment when initially evaluating a patient. Necessary treatment takes precedence over completing a history and physical.

7.02 Airway Management

Pulse Oximetry shall be assessed and maintained on all pulsatile patients requiring ventilation assistance.

A. Two Person Bag-Valve-Mask Ventilation [BLS/ALS]
1. Insert appropriately sized oropharyngeal airway and/or nasal trumpet.
2. Whenever possible, two-persons should operate a bag-valve-mask device.
3. Rescuer #1 uses both hands to form a tight mask-to-face seal. Use pads of thumbs to press mask to face, wrap fingers beneath jawbone to raise jawbone toward mask.
4. Rescuer #2, after ensuring 100% oxygen is being delivered to reservoir bag, delivers one second ventilations which produce visible chest rise.

B. One Person Bag-Valve-Mask Ventilation [BLS/ALS]
1. Insert appropriately sized oropharyngeal airway and/or nasal trumpet.
2. Use non-dominant hand to form a C-clamp (thumb over mask at bridge or patient's nose, index finger over mask over the patient's chin, remaining fingers wrapped beneath patient's jaw) forming a tight seal between the mask and the patient's face.
3. Dominant hand is then used to squeeze the bag, delivering one second ventilations which produce visible chest rise.

Note: Overaggressive squeezing of the bag will generate high airway pressures and force air into the esophagus and stomach.

C. Orotracheal Intubation [ALS]
1. If present, video laryngoscopy should be the primary method of orotracheal intubation in adults/adolescents. Use of the bougie may also be used primarily as an intubation adjunct. Utilize direct laryngoscopy for children/infants/neonates, or if a video laryngoscope is not present.
2. Place pulse oximetry on patient and pre-oxygenate the patient with Bag-Valve-Mask Ventilation (and oropharyngeal or supraglottic airway if tolerated) to maximize pre-intubation oxygen saturation.
3. Prepare all required equipment
•Laryngoscope - If unit has video laryngoscope, verify battery is inserted and scope turns on. For children/infants/neonates or personnel without video laryngoscope, ensure appropriate sized blade with a functional light.
•Turn suction on and verify working with rigid catheter attached.
•Select appropriately sized endotracheal tube and verify integrity of the cuff/pilot balloon, and stylet placed in tube. Utilize Pediatric Dosing Guidelines for pediatric ET tube sizes.

•Have bougie tube introducer available, along with other ET tube sizes as needed.

4. Position head. Extend the head, flex the neck; "sniffing position" for non-trauma patients. Trauma patients with suspected spinal injury are to be intubated with the c-collar removed and manual in-line stabilization of the c-spine by a second provider performed.
5. Open patient's mouth. Suction patient's oropharynx. Insert blade into right side of patient's mouth and gently advance blade to correct depth while sweeping blade and tongue to the left and observing landmarks - look for epiglottis, arytenoid cartilages and vocal cords.
   •Maintain visualization of the vocal cords.
   •Advance endotracheal tube or bougie between vocal cords and beyond. Visualize tube/bougie between the vocal cords on video camera screen or by direct visualization.
6. If the bougie is used, have an assistant place the ET tube over the bougie and advance to the fingers of the intubating medic. While keeping the blade in the patient's mouth, slide the ET tube over the bougie and into the trachea to the appropriate depth while visualizing with the camera or with direct visualization. Inflate the cuff. Gently remove the bougie from the ET tube while holding the ET tube tightly while maintaining visualization of the cords, then remove the laryngoscope blade from the mouth and verify ET tube placement.
   •In all patients, the correct tube depth can be estimated by the formula

   $$\underline{\text{ET Depth (cm)}} = 3 \times \text{ET Tube Size}$$

   In an adult patient, a 7.0 tube should generally be placed around the 21 cm mark at the teeth/gumline. In a pediatric patient, a 3.0 tube should generally be placed around the 9 cm mark at the teeth/gumline. Utilize pediatric dosing guidelines for pediatric ET tube size.
   •If the bougie is not used, remove the ET tube stylet without moving the ET tube while maintaining visualization of the cords and then remove the laryngoscope blade from the mouth and verify ET tube placement as described below. Inflate cuff before removing the stylet.
   •Auscultate over epigastric area. If no sounds are heard over epigastric area, auscultate for breath sounds over lateral chest walls. If sounds are heard over epigastric area, visually reconfirm placement of tube between vocal cords or reattempt intubation after re-oxygenating the patient. When in doubt – TAKE IT OUT.
   •Attach end-tidal CO_2 detector. Observe for waveform on CO_2 monitor screen.
   •Reconfirm endotracheal tube placement with absence of ventilatory sounds over epigastric area and auscultation of equal breath sounds at lateral chest wall locations, as well as continued presence of an end tidal CO_2 waveform.
   •Reconfirm placement with each movement of the patient (floor to backboard, into ambulance, etc.).
   •Reconfirm correct placement of endotracheal tube upon arrival at hospital, just prior to exiting ambulance. Document $ETCO_2$ in record or by printing rhythm strip on the LifePak 15.
7. End Tidal CO_2 monitoring shall be used on each and every intubated patient for confirmation of tube placement and continuous monitoring.
8. No more than three intubation attempts shall occur on each individual patient. An attempt is defined as the laryngoscope blade being placed at or beyond the teeth.

D. Nasotracheal Intubation [ALS]

1. Eligibility of patient confirmed:
   •Patient is NOT apneic (patient is breathing).
   •Patient does NOT have injury to bones of the face.
   •Patient does NOT have evidence of basilar skull fracture (ecchymosis beneath eyes or behind ears and no CSF from the nose or ears).
2. Pre-oxygenate patient with high flow O_2 by non-breather mask or Bag-Valve-Mask as appropriate.

3. Examine nostrils and select correct size endotracheal tube.
4. Lubricate distal end of endotracheal tube.
5. Advance the tube into nostril, guiding it in an anterior-to-posterior direction.
6. As the tube is advanced, LISTEN closely for breath sounds coming from the end of the tube.
7. When the breath sounds are loudest, and the misting is greatest within the tube during exhalation, have the patient take a deep breath and advance the tube during the INHALATION (if the patient is not conscious, try to time advancing the tube with one of the patent's inhalations).
8. Check that misting continues to occur during exhalation that can be felt exiting the end of the tube.
   •The patient should not be able to speak, if conscious, as the tube should be positioned between the vocal cords; if the patient can speak – the tube is not properly placed.
   •Confirm proper tube placement by auscultating the epigastric area for breath sounds; if none heard, auscultate lateral chest walls for equal breath sounds indicating good tube placement.
   •Attach end tidal CO_2 detector. Observe for the characteristic waveform on CO_2 monitor screen.
   •Secure the endotracheal tube in place.
   •Reconfirm correct tube placement frequently and with each movement of the patient.
9. End Tidal CO_2 monitoring shall be used on each and every intubated patient for confirmation of tube placement and continuous monitoring.

E. Supraglottic Airway [BLS/ALS]
1. Members shall be responsible for knowing which supraglottic airway is available and what sizes are distributed.
2. Indications for Use
   •Supraglottic airways are to be used as the initial advanced airway in adult and pediatric respiratory arrest and cardiac arrest resuscitations (*Ref. 8.02 A.1. Cardiac Arrest Emergencies Philosophy/Practices*).
3. Contraindications for the use of supraglottic airways are:
   •Responsive patient with an intact gag reflex
   •Patient with known esophageal disease or history of ingestion of caustic substances
   •Severe maxillofacial trauma
   •Patient height and/or weight for which a supraglottic airway device of the appropriate size is not available
4. Patient Position
   •Patient should be placed supine with the airway and head in the sniffing position. For patients who need cervical spine immobilization, the head may be kept in a neutral position.
5. Insertion
   •Choose the correct size supraglottic airway based on training materials for the specific airway.
   •Ensure the device is lubricated with water-based lubricant to allow placement.
   •Hold the supraglottic device at the connector with the dominant hand. With non-dominant hand, hold open mouth and apply chin lift unless contraindicated by c-spine precautions.
   •Advance the supraglottic device into the oropharyngeal cavity, consistent with training for that specific device. Generally, this entails gentle advancement of the device along the hard palate until it 'seats' in the appropriate position.
   •Never utilize excessive force when advancing the device. If there is resistance, the device should be removed and the re-lubricated and the patient's airway repositioned.
   •If the device requires inflation of a bulb, inflate consistent with device requirements.
6. Ventilation

•With a BVM bag, ventilate the patient and ensure equal and adequate chest rise.
•Ensure appropriate volume of each ventilation. Too much volume can divert air into the stomach.
•If unable to ventilate, ensure the correct size was chosen and placement is correct with adequate lubrication. If continued inability to ventilate, revert to BVM ventilations.

7. Ongoing Use
•End-tidal CO_2 detector, if available, shall be attached and used with every supraglottic airway device insertion.
•Secure the device with tape, endotracheal tube holder or supplied securing straps.
•If gastric lumen present, insert lubricated nasogastric tube through the gastric lumen and connect to suction to evacuate air and contents from the stomach.

F. One-Person Bag-Valve-ET Tube/Supraglottic Airway Ventilation [BLS/ALS]
1. Attach valve of bag-valve device to end-tidal CO_2 sensor adapter.
2. Verify position of endotracheal tube by noting depth of incisor teeth according to centimeter (cm.) markings on tube.
3. ET tube or supraglottic device should be secured in place.
4. Ventilate the patient by using a one second ventilation which produces visible chest rise.
5. Constantly monitor depth of endotracheal tube, and oxygen supply. Replace oxygen supply when ¼ or less of tank is available.
6. Immediately notify paramedic of any changes in airway (e.g., bag becoming difficult to squeeze, blood/fluid visible in the tube, etc.).
7. Monitor for air leakage which may require repositioning or replacement of ET Tube or Supraglottic airway.

G. Airway Foreign Body Removal (Adult/Adolescent) [BLS/ALS]
1. Partial Airway Obstruction in Responsive Patient
•If the patient can cough, speak or breathe – allow the patient to attempt to clear the obstruction by forceful coughing.
•If the patient demonstrates a weak, ineffective cough, high pitch noise while inhaling, extreme respiratory difficulty, and/or cyanosis, treat the patient as having a complete airway obstruction.
2. Complete Airway Obstruction in Responsive Patient
•Use abdominal thrust maneuver with standing patient. If the patient is in late stages of pregnancy or the rescuer is unable to encircle the abdomen with arms, utilize chest thrusts.
•Stand behind the victim with your arms wrapped around the patient's waist.
•Place the thumb side of your fist against the patient's abdomen, in the midline slightly above the navel and well below the xiphoid process.
•Grasp the fist with the other hand and press the fist into the patient's abdomen with a quick inward and upward thrust.
•Repeat the thrusts until the object is expelled or the patient becomes unresponsive.
3. Complete Airway Obstruction in an Adult Patient Who Becomes Unresponsive
•Carefully support the patient to the ground.
•Without a pulse check, immediately begin chest compressions followed by ventilations at a 30:2 ratio.
•Each time the airway is opened in CPR, look for an object in the patient's mouth and remove it if seen.
•Position the airway and attempt to ventilate; if unable to ventilate, continue chest compressions.

•Repeat cycles of chest compressions and ventilations at 30:2 ratio until either ventilation is successful or advanced life support measures become available.

4. Airway Obstruction if Adult Patient Found Unresponsive
   •If an adult patient is found unresponsive and with no breathing or no normal breathing (only gasping), then CPR shall be started immediately.
   •If the patient is unable to be ventilated with the BVM, then airway obstruction should be considered.
   •Chest compressions should be continued, and each time the airway is opened in CPR, look for an object in the patient's mouth and remove it if seen.
   •Position the airway and attempt to ventilate; if unable to ventilate, continue chest compressions.
   •Repeat cycles of chest compressions and ventilations at 30:2 ratio until either ventilation is successful or advanced life support measures become available.
5. Airway Obstruction in Unresponsive Adult Patient by Advanced Life Support
   •Perform a progressive laryngoscopy until foreign body is visualized.
   •Insert closed Magill forceps into oral cavity, open forceps, grasp foreign body and remove.

H. Airway Foreign Body Removal (Child/Infant) [BLS/ALS]

1. Partial Airway Obstruction
   •If the patient can cough, speak or breathe – allow the patient to attempt to clear the obstruction by forceful coughing.
   •If the patient demonstrates a weak, ineffective cough, high pitch noise while inhaling, extreme respiratory difficulty, and/or cyanosis; treat the patient as having a complete airway obstruction.
2. Complete Airway Obstruction
   -Child : Use abdominal thrust maneuver with standing child patient.
   •Stand behind the victim with your arms wrapped around the patient's waist.
   •Place the thumb side of your fist against the patient's abdomen, in the midline slightly above the navel and well below the xiphoid process.
   •Grasp the fist with the other hand and press the fist into the patient's abdomen with a quick inward and upward thrust.
   •Repeat the thrusts until the object is expelled or the patient becomes unresponsive.
   -Infant / Neonate : Use a combination of back blows and chest thrusts in an infant or neonatal patient.
   •Deliver five back blows between the infant's shoulder blades with the heel of the hand while the infant is supported in the prone position straddling the rescuer's forearm, with the head lower than the trunk.
   •After delivering the back blows, place your free hand on the infant's back, holding the infant's head. Turn the infant over while the head and neck are carefully supported, and hold the infant in the supine position draped on the thigh. The infant's head should remain lower than the trunk.
   •Give five quick downward chest thrusts in the same manner and location as chest compressions.
3. Complete Airway Obstruction in a Pediatric Patient Who Becomes Unresponsive
   •Carefully support the patient to the ground.
   •Without a pulse check, immediately begin chest compressions followed by ventilations at a 15:2 ratio.
   •Each time the airway is opened in CPR, look for an object in the patient's mouth and remove it if seen.

•Position the airway and attempt to ventilate; if unable to ventilate, continue chest compressions.
•Repeat cycles of chest compressions and ventilations at 15:2 ratio until either ventilation is successful or advanced life support measures become available.

4. Airway Obstruction if Pediatric Patient Found Unresponsive
•If a pediatric patient is found unresponsive and with no breathing or no normal breathing (only gasping), then CPR shall be started immediately.
•If the patient is unable to be ventilated with the BVM or supraglottic airway, then airway obstruction should be considered.
•Chest compressions should be continued, and each time the airway is opened in CPR, look for an object in the patient's mouth and remove it if seen.
•Position the airway and attempt to ventilate; if unable to ventilate, continue chest compressions.
•Repeat cycles of chest compressions and ventilations at 15:2 ratio until either ventilation is successful or advanced life support measures become available.
5. Airway Obstruction in Unresponsive Pediatric Patient by Advanced Life Support
•Perform a progressive laryngoscopy until foreign body is visualized.
•Insert closed Magill forceps into oral cavity, open forceps, grasp foreign body and remove.

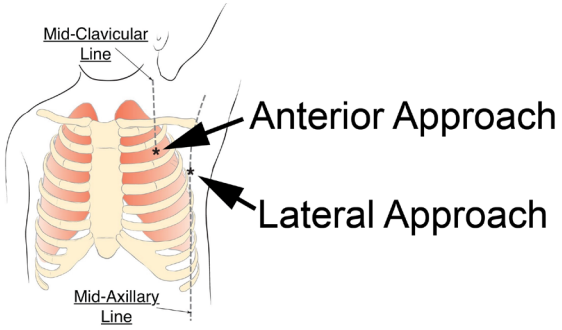
I. CPAP - Continuous Positive Airway Pressure [ALS]

CPAP is a method of patient ventilation which provides a noninvasive continuous positive-pressure ventilation to prevent alveolar collapse. It decreases the work of breathing, enhances oxygen and carbon dioxide exchange and increases cardiac output.

1. Indications
Mask CPAP ventilation is indicated for the treatment of impending ventilatory failure in an attempt to avoid intubation and standard mechanical ventilation. This non-invasive pressure support system seems best applied to patients whose respiratory failure is expected to quickly respond to medical therapy, as continuous mask CPAP or ventilation requires close attention. The patient shall meet all of the following criteria:
   a. Dyspnea with pulmonary edema or wheezes, or near drowning or submersion with possible aspiration
   b. An awake patient, adult or pediatric, who is able to follow commands
   c. The ability to maintain an open and protected airway and handle secretions
   d. Two or more of the following signs:
      •Respiratory rate > 24 / min.
      •Pulse Oximetry of < 94% at any time
      •Use of accessory respiratory muscles
2. Contraindications
   a. Decreased level of consciousness / Unconsciousness
   b. Unable to maintain a patent airway
   c. Pneumothorax (unilateral absence of breath sounds)
   d. Hypotension (SBP < 90 mmHg)
   e. Recent surgery to face or mouth, epistaxis, or other impediment to proper mask placement or fitting
   f. Pediatric patient who is too small for the CPAP mask to fit appropriately
3. Usage
   a. Assure patent airway.
   b. Perform appropriate patient assessment, including obtaining vital signs, pulse oximeter (SpO_2) reading and cardiac rhythm.

c. Prior to initiation of the mask CPAP treatment, the patient must be informed of the purpose of the mask and cooperation ensured.
d. The Mask CPAP System components are assembled (CPAP mask, tubing, pressure relief valve) and connected to the oxygen cylinder.
e. Connect the pressure tubing and pressure relief valve to the connection port.
f. Turn on gas supply.
g. Verify controls are set (FiO_2).
h. Hold the mask in place as the patient adjusts to the ventilatory support. With the mask in place, modify the CPAP System settings to optimize the patient's ventilatory status. Titrate to effect, generally a range of 5 - 10 cm H_2O of PEEP in adults and 3 - 5 cm H_2O of PEEP in pediatric patients.
i. Encourage the patient to breathe deeply.
j. Adjust the mask for comfort and to minimize air leak especially about the eyes.
k. Periodic evaluation of the patient's status should be coupled with ongoing vital sign and pulse oximetry measurements. Consider usage of $ETCO_2$ monitoring.
l. If patient's anxiety level prevents patient from tolerating the device, consider contacting on-line medical control for sedation.
m. Monitor and document the patient's respiratory response to the treatment.
n. Continue to coach patient to keep mask in place and readjust as needed.
o. For patients requiring nebulized medication, utilize the T-Piece to administer nebulized medicine concurrently with CPAP.

J. Needle Thoracostomy [ALS]
1. Indication
a. Emergent treatment of a clinically unstable patient with a tension pneumothorax.
b. A tension pneumothorax is the progressive collection of air in the pleural space with subsequent increasing pleural pressures and respiratory compromise.
c. Treatment of a tension pneumothorax should begin as soon as it is clinically recognized.
2. Relative contraindications
a. Insertion of needles through an area of infection. Select alternative insertion site.
b. In patients being manually ventilated, use extreme caution. If the presumption of tension pneumothorax is incorrect, insertion of the needle may create a pneumothorax which, with positive pressure ventilation, can convert into a tension pneumothorax.
3. Insertion Site
a. Primary site: Lateral approach, patient in a supine position with the head of the stretcher elevated 30° and the patient's arm extended above the head. Insertion site is the fourth/fifth intercostal space in the midaxillary line.
b. Alternative site: Anterior approach, patient in a supine position with the head of the stretcher elevated 30°. Insertion site is the second intercostal space in the midclavicular line.

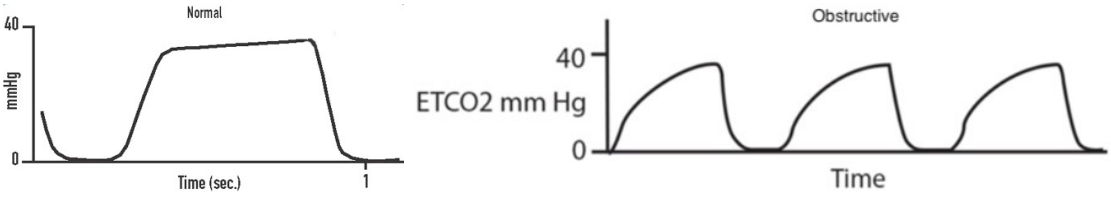


4. Technique
    a. Prepare needle insertion site with antiseptic solution or alcohol.
    b. Select the longest 14G IV catheter for adult patients. A shorter 14G IV catheter may be chosen for pediatric patients.
    c. Palpate the fourth and fifth rib in the midaxillary line (to locate the 4th intercostal space) for the lateral approach. This is generally at the nipple line. Insert the needle perpendicularly just over the upper edge (towards the head) of the fifth rib. Ensure the needle passes over the upper edge/top of the rib as opposed to lower edge where the intercostal vessels and nerves lie.
    d. For the alternative site, palpate the second and third rib at the midclavicular line (to locate the 2nd intercostal space) for the anterior approach. Insert the needle perpendicularly just over the upper edge (towards the head) of the fifth rib. Ensure the needle passes over the upper edge/top of the rib as opposed to lower edge where the intercostal vessels and nerves lie.
    e. Advance the needle. A 'pop' may be felt as the pleural space is entered and air is encountered.
    f. Advance the catheter into the chest and then withdraw the needle.
    g. Secure the catheter in place with tape, being sure not to block or kink the catheter.
    h. Continue to reassess patient. If no improvement, consider persistent tension pneumothorax requiring no more than one additional catheter placement.

K. Waveform Capnography - End Tidal CO_2 Monitoring [ALS]
1. Capnography is a noninvasive method for monitoring the level of carbon dioxide in exhaled breath, to assess a patient's ventilatory status. Capnography is also an indirect measure of circulatory status/cardiac output of the patient. End Tidal CO_2 Monitoring on the LifePak 15 provides both a numeric $ETCO_2$ value and a waveform. Normal $ETCO_2$ is 35 - 45. End Tidal CO_2 monitoring can be performed with either the nasal cannula or ET Tube connector devices.
2. There is a good concordance with the partial pressure of CO_2 in the blood and the $ETCO_2$. This can help provide a quicker detection of acute respiratory events than pulse oximetry would otherwise indicate.
3. Indications
    a. Airway Maintenance Confirmation - All patients having their airway and breathing maintained by ALS with either a BVM, Supraglottic airway, or Endotracheal Intubation shall have ETCO2 monitored to ensure successful airway control, both initially and throughout the duration of care of that patient.
    b. Assessment of Sedation - In patients sedated by drugs or alcohol, or those sedated by HFD narcotic or benzodiazepine therapy, ETCO2 monitoring provides a gauge of their ventilatory status. With an ETCO2 within normal values, the patient is in less respiratory compromise than the patient whose ETCO2 is elevated or becoming progressively elevated indicating hypoventilation. This information can be used as a guide to therapy of a patient with regard to both naloxone administration as well as potential repeat dosages of narcotics or benzodiazepines.
    c. Assessment of perfusion status in patients with ventricular assist devices.
    d. Chest compression quality - $ETCO_2$ is reflective of the cardiac output achieved while a patient is receiving chest compressions. While no specific value can be obtained in any specific patient, a decrease in $ETCO_2$ over a period of chest compressions should draw concern to proper chest compression technique, specifically rate and depth.
    e. CPAP adjustment - $ETCO_2$ can assist in determining the most effective level of PEEP for a patient requiring CPAP. As PEEP increases, oxygenation increases and the $ETCO_2$

value will decrease. Too much PEEP can be detrimental however, worsening oxygenation. As this point is reached, the $ETCO_2$ value will increase and the pulse oximetry will decrease.

f. Respiratory assessment, unknown etiology- By physical exam alone, it is not always clear if a patient is having an exacerbation of asthma/COPD, CHF or a cardiac presentation. In obstructive respiratory diseases (asthma/COPD), the $ETCO_2$ waveform will have a sloping upward plateau similar to a shark's fin appearance. In cardiac disease ("cardiac wheezing"), there will be a normal plateau along with a likely increased $ETCO_2$ value.



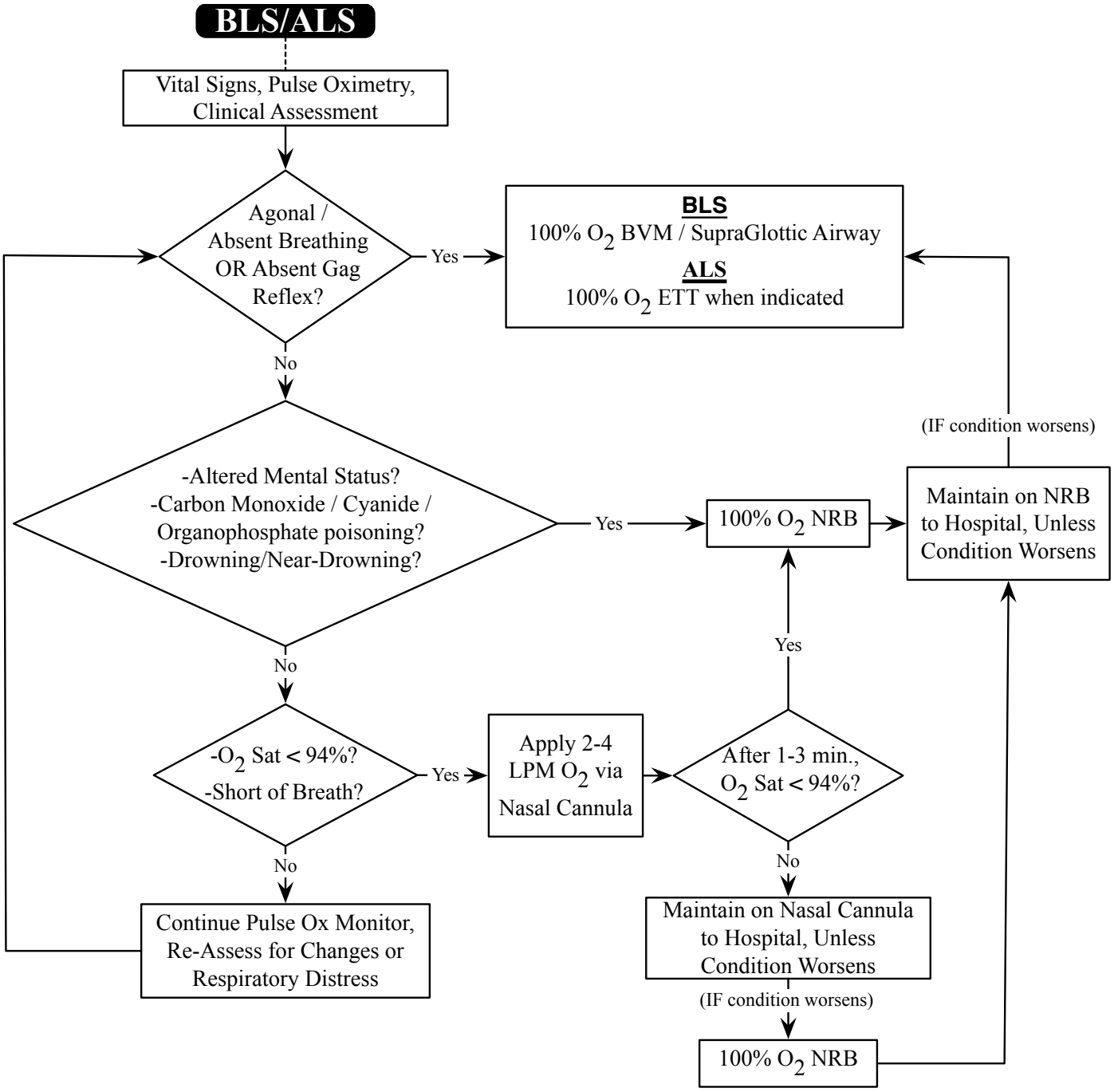
L. Neonatal / "Newly Born" [BLS/ALS]

1. Bulb suctioning is indicated immediately following birth for those neonates who have obvious obstruction to spontaneous breathing or who require BVM ventilations.
2. Deep suctioning of the airway with an endotracheal tube is no longer recommended. Standard bulb suctioning alone is recommended to remove any secretions present.
3. Because the neonate is an obligate nose breather, it is advisable to suction once through each nostril to ensure patency of the upper airway.

M. Oxygen Therapy Guideline [BLS/ALS]

1. The intent of the Oxygen Therapy Guideline is to provide an individualized approach to oxygenation to the patient. Taking into account vital signs, pulse oximetry and condition of the patient, the guideline provides patient-focused means of oxygenation.
2. The use of Pulse Oximetry is required for the guideline. If Pulse Oximetry is unobtainable, utilize clinical judgement to administer O2 via NC or NRB as required.
3. When a specific guideline indicates additional respiratory treatment (i.e. nebulization, CPAP), that treatment replaces, or is utilized in addition to, the oxygen therapy indicated here.

Table 7-8 : Oxygen Therapy Guideline



N. Tracheostomy Care [BLS/ALS]

1. Obstructed tracheostomy
   a. If a mucous plug is suspected, select an appropriately sized suction catheter.
   b. Insert 1 – 2 ml of normal saline in tracheostomy.
   c. Insert suction catheter into tracheostomy and suction as you are withdrawing the catheter.
   d. If obstruction does not clear, remove tracheostomy tube.
   e. If patient is not in respiratory distress after tracheostomy tube is removed, provide O_2 via guideline and initiate transport to the hospital.
   f. If patient is in respiratory distress after tracheostomy is removed, insert a bougie into the stoma and attempt to reinsert a new tracheostomy tube over the bougie. Note: for tracheostomy tubes size 5.5 or smaller, do not use a bougie as the tube will not fit over the

bougie.
g. If a new tube is not available, insert an ETT 0.5 size smaller than patient's tracheostomy over the bougie and into stoma and ventilate with BVM ensuring bilateral breath sounds.
h. If unable to insert an ETT through stoma, cover the stoma with gauze and BVM via mouth.
i. If unable to BVM, consider orotracheal intubation.
j. Call on-line physician for further orders.

2. Dislodged tracheostomy
a. If tracheostomy is dislodged, assess the patient for respiratory distress.
b. If patient is not in distress, provide supplemental O_2 per guideline and initiate transport to hospital.
c. If patient is in respiratory distress after tracheostomy is removed, insert a bougie into the stoma and attempt to reinsert a new tracheostomy tube over the bougie. Note: for tracheostomy tubes size 5.5 or smaller, do not use a bougie as the tube will not fit over the bougie.
d. If a new tube is not available, insert an ETT 0.5 size smaller than patient's tracheostomy over the bougie and into stoma and ventilate with BVM.
e. If unable to insert an ETT through stoma, cover the stoma with gauze and BVM via mouth.
f. If unable to BVM, consider orotracheal intubation.
g. Call on-line physician for further orders.

7.03 Medication Administration

A. Airway Administration – Aerosol [BLS/ALS]
1. Pour medication from storage bottle into medication cup portion of nebulizer and reattach lid.
2. Turn on oxygen and adjust flow rate (6-8 LPM) to generate a mist coming out of the nebulizer.
3. Place the nebulizer mask over the patient's mouth and instruct the patient to breathe as deeply as possible.
4. For patients receiving assisted ventilations (BVM, ET Tube, supraglottic airway or CPAP therapy), utilize the T-Piece to administer nebulized medications if needed.
5. EMT's shall administer Albuterol only to patients who routinely use Albuterol for treatment of their asthma or COPD exacerbations.
6. Albuterol and Ipratropium Bromide can be mixed together in the medication cup portion of the nebulizer if both medications are to be administered.

B. Intraosseous – EZ-IO® [ALS]
1. Indications
a. Inability to obtain an IV after two attempts by two separate paramedics AND,
b. Patient is unconscious, seizing or suffering from cardiac or respiratory arrest AND,
c. Patient has no contraindications to IO placement.
d. Only with approval of the on-line physician, an EZ-IO® may be placed in a conscious or semi-conscious patient who requires emergent medical therapy. Contact the on-line physician early for these situations.

2. Contraindications
a. Fracture of the humerus, tibia or fibula. Consider the opposite side if not fractured.
b. Previous orthopedic procedures (i.e. knee replacement) at site.
c. Any infection over the insertion site.
d. An extremity that is compromised by a pre-existing medical condition such as tumor or peripheral vascular disease.
e. Inability to locate anatomical landmarks.
f. Excessive tissue over the insertion site. This can be determined by powering the needle set

through the skin and up to but not into the bone. At this point, the 5 mm mark (black line closest to the hub) on the EZ-IO catheter should be visible. If this mark is not visible, then there is excessive tissue over the site.

3. Insertion Site Identification – Humeral Head (Preferred for adults)
   a. Patient should be in the supine position.
   b. Expose shoulder and adduct humerus (place patient's arm against patient's body) leaving elbow resting on the stretcher or ground. (With the patient in this position you may note the humeral head on the anterior-superior aspect of the upper arm or lateral shoulder).
   c. Identify the acromion or "bump" on the patient's shoulder. Identification of the anterior aspect of the acromion can be accomplished by placing one hand on the lateral superior aspect of the patient's shoulder and palpating for the protrusion. Identifying the acromion can also be accomplished by "walking" your index and middle finger along the clavicle to the shoulder's lateral end.
   d. Identify the greater tubercle insertion site two finger widths inferior to the anterior aspect of the acromion. One can envision the location of this site by creating an inverted triangle. – The base of this triangle should be running between two points on the lateral shoulder or "scapular hood" (the coracoid process & the acromion) and one point inferior by two finger widths.
   e. Confirm identification and level of the greater tubercle insertion site. Leave one finger on the insertion site as defined in step d. above. Use your free hand to grasp and then flex the patient's forearm 90 degrees – leaving the adducted elbow resting on the stretcher or ground. Rotate the forearm laterally then medially using the elbow as the axis point. This process will allow you to positively identify the intertubercular sulcus or groove (a key confirmation point), which is located between the greater and lesser tubercle. The insertion site is one finger width lateral to the intertubercular groove.
   f. Place the patient's forearm on their abdomen (leaving the elbow on the ground or stretcher). Following this final medial rotation your finger will once again be resting on the greater tubercle insertion site – Two finger widths inferior to the acromion and one finger width lateral to the intertubercular groove.
   g. Important: Superior to the greater tubercle insertion site is the bursa (tissue surrounding the humeral joint). Located within the intertubercular groove are tendons. Medial to the lesser tubercle (and a safe distance from the insertion site) are vessel and nerves. **For this reason it is important that you do not attempt insertion of any IO device without positive, confirmed identification of the greater tubercle and the intertubercular groove.**
   h. Do not attempt insertion medial to the greater tubercle at any time.
4. Insertion Site Identification – Proximal Tibia (Preferred for pediatrics, Backup for adults)
   a. Locate the patella on the front surface of the leg just below the femur.
   b. Locate the tibial tuberosity, 2 finger widths below the patella.
   c. The proper insertion site is the flat part of the tibia, approximately 2 cm medial to the tibial tuberosity.
5. Insertion
   a. Locate the insertion site as described above.
   b. Clean the insertion site with an alcohol swab.
   c. Open the EZ-IO® case and remove the driver and one EZ-IO® cartridge. Ensure usage of the Pink Pediatric cartridge for pediatric patients or the Blue Adult cartridge or the Extra Large needle for adult patients. Open the cartridge and attach the needle set to the driver. Remove the needle set from the cartridge and remove the safety cap from the needle.
   d. Holding the EZ-IO® in one hand, stabilize the insertion site area. Position the driver at the insertion site with the needle at a 90 degree angle to the surface of the skin/bone.

e. Insert the needle set into the skin at the insertion site until you feel the needle set tip encounter the bone itself. Verify the 5 mm mark is visible on the needle.
f. Apply firm and steady pressure on the driver and power through the cortex of the bone, ensuring the driver is maintained at a 90 degree angle at all times.
g. Stop when the needle flange touches the skin or a sudden decrease in resistance is felt. This indicates entry into the bone marrow cavity.
h. While supporting the needle set in one hand, gently pull straight up on the driver and lift away to remove the driver. Return the driver to its case.
i. While grasping the hub firmly with one hand, rotate the stylet counter-clockwise, pulling the stylet out of the catheter and place it into the empty cartridge. Discard it into a biohazard sharps container.
j. Proper placement of the IO catheter tip can be confirmed through the following:
•The IO catheter stands straight up at a 90 degree angle and is firmly seated in the bone, or
•Blood at the tip of the stylet, or
•Aspiration of a small amount of bone marrow with a syringe, or
•A free flow of drugs or fluid without difficulty and with no evidence of extravasation underneath the skin.
k. If the insertion fails confirmation or cannot be flushed, remove and dispose of the needle set. Repeat the procedure in the opposite arm or leg.
l. Attach the primed EZ-Connect extension set to the EZ-IO® hub.
m. For unconscious patients, flush with 5-10 ml Normal Saline.
n. For conscious or semi-conscious patients, administer IO Lidocaine [40 mg in adults, 0.5 mg/kg (max of 40mg) in pediatric patients] into the intraosseous space, over 60 seconds, to provide pain relief. After lidocaine, flush with 5-10 ml Normal Saline.
o. Administer the infusion or medication as per guideline or on-line medical direction. A pressure infuser (or BP cuff) can be used to maintain adequate flow rates.
p. Apply the wristband to the patient and secure the EZ-IO® as an impaled object.

6. Removal
   a. Attach a sterile syringe to the catheter hub.
   b. Support the patient's arm or leg while rotating the catheter clockwise and gently pull out the catheter while maintaining a 90 degree angle.
   c. Place removed catheter in a biohazard sharps container.
   d. Dress the insertion site with an appropriate dressing.
7. Cleaning and Disinfecting
   a. Wipe clean with moistened cloth. Remove large contaminants.
   b. Spray with antimicrobial solution, following the solution instructions.
   c. Momentarily depress trigger several times during cleaning.
   d. Clean around drive shaft with cotton applicator as needed and wipe driver dry.
   e. Inspect driver and return to case.
   f. Never submerge the EZ-IO® driver in any liquid at any time.

C. Intranasal (IN) - Mucosal Atomization Device
1. Intranasal administration of medication is performed by the atomization of medication to 30 micron particle size which adheres to the nasal mucosa over a larger surface area allowing for effective absorption.
2. Half the medication volume should be administered in each nostril with no more than 1.0 ml administered per nostril.
3. Airborne PPE should be worn when administering medication via this route due to a sneeze

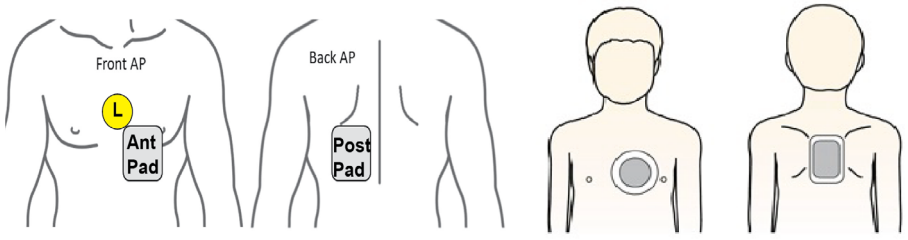
reflex in conscious patients.

D. Intranasal Spray – Single Dose Pre-Packaged by Manufacturer
   1. Remove medication from the box. Peel the back tab to open the package.
   2. Hold spray bottle with your thumb on the bottom of the plunger and your index and middle fingers on either side of the nozzle.
   3. Tilt the patient's head back and support the neck with your hand. Gently insert the tip of the nozzle into ONE nostril until your fingers on either side of the nozzle are against the bottom of the patient's nose. Direct the nozzle toward the back of the nose, not the top/bottom.
   4. Press plunger firmly to deliver the dose of the medication.
   5. Remove spray bottle from the nostril and discard in safe place (away from children).

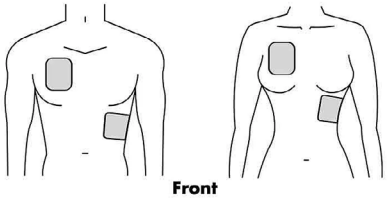
7.04 Cardiac Electrical Therapy

A. Automated External Defibrillator [BLS/ALS]
   1. Apply the AED to all pulseless patients suspected of cardiac arrest.
   2. Contraindications:
      a. Patient with a pulse
      b. Patient meets obviously dead criteria (*Ref. 8.02 A. 2. c.*)
   3. Use with these types of trauma patients:
      a. Trauma secondary to cardiac arrest (i.e., MVI with minor vehicle damage and patient in cardiac arrest) or traumatic arrests being resuscitated according to Cardiac Arrest Guidelines (*Ref. 8.04 A. 1. f.*).
   4. To attach defibrillator:
      a. Press On/Off.
      b. Bare the patient's chest. Shave the chest of any excessive chest hair.
      c. For patients less than 8 years of age, use the 'Infant/Child' AED pads. For all others, use the standard adult AED pads.
      d. Place the pads as indicated:
      <u>Primary Pad Placement</u>: place the anterior pad on the patient's mid left torso, just lateral and inferior to the sternum (so as not to be touched by mechanical CPR device). The anterior pad may need to be placed underneath the breast tissue if the breasts impede proper placement. Place the posterior pad on the patient's back, behind the anterior pad, under the left scapula.

<u>ADULT</u> <u>PEDIATRIC</u>



<u>Secondary Pad Placement</u>: For Adults, place the anterior pad on the patient's upper right torso, lateral to the sternum and below the clavicle. Place the lateral pad lateral and inferior to the patient's left nipple with the center of the electrode in the midaxillary line.



e. Connect the electrodes to the AED.

5. There are three possible messages after the AED has performed an analysis:
   a. If the AED detects a shockable rhythm, it will emit the charging tone and state "Stand Clear. Push Shock Button." Immediately clear from the patient and depress the shock button. Chest compressions shall resume immediately after the defibrillation without a pulse check.
   b. If the AED detects a non-shockable rhythm, it will state "No Shock Advised. Start CPR."
   c. After three minutes, the defibrillator will prompt, "Stand Clear. Analyzing Now. Stand Clear." and the analysis will begin automatically.
   d. If at any time motion interferes with the analysis, the AED will state "Motion Detected. Stop Motion." Make certain no one is touching the patient, wires or device. The device will automatically analyze when the motion stops.
6. If the patient loses pulses at any time (an EMS witnessed arrest), immediately initiate an AED analysis by pressing the right soft-key.
7. Documentation of AED use
   a. Record comments about the incident regarding AED use, bystander CPR and other therapies in the patient care record.
   b. AED information shall be downloaded as soon as possible (*Ref 9.04 Procedure for Downloading AED and LifePak 15 Data*).

B. Synchronized Cardioversion [ALS]
1. Select the guideline-determined energy setting on the defibrillator unit.
2. Push the synchronizer button and verify that the device is sensing QRS complexes.
3. Place the pads on the patient the same as described for the AED (*Ref. 7.04 A.4.d.)*.
4. If 'Adult' AED pads have been attached, they shall be connected directly to the LP15 (via an AED pad adaptor if necessary). If ALS arrives and 'Infant/Child' AED pads have been attached, they must be removed and replaced with the salmon label 'Pediatric' LP15 electrode pads.
5. Clear the area around the patient by loudly stating, "Clear! I'm clear, you're clear, everybody's clear" while visually verifying that you and all other persons are clear of the patient.
6. Push and <u>hold</u> the "shock" button on the defibrillator unit until the cardioversion has occurred.

C. Defibrillation [ALS]
1. ONE ALS Monitor present
   a. Select the guideline-determined energy setting on the defibrillator unit.
   b. Place the pads on the patient the same as described for the AED (*Ref. 7.04 A.4.d.)*.
   c. If 'Adult' AED pads have been attached, they shall be connected directly to the LP15 (via an AED pad adaptor if necessary). If ALS arrives and 'Infant/Child' AED pads have been attached, they must be removed and replaced with the salmon label 'Pediatric' LP15 electrode pads.
   d. Clear the area around the patient by loudly stating, "Clear! I'm clear, you're clear, everybody's clear" while visually verifying that you and all other persons are clear of the patient.
   e. Push the "shock" button on the defibrillator unit.
2. Dual Sequential Defibrillation: TWO ALS Monitors present [ADULTS ONLY]
   a. Ensure two sets of pads are placed on the patient in both the primary and secondary locations (*Ref. 7.04 A.4.d.)*. Connect each monitor to a set of pads.
   b. Charge both monitors to 360J.
   c. Clear the area around the patient by loudly stating, "Clear! I'm clear, you're clear,

everybody's clear" while visually verifying that you and all other persons are clear of the patient.

d. Push the "shock" button on one of the ALS monitors. Then push the "shock" button on the other ALS monitor. DO NOT PRESS "SHOCK" ON BOTH MONITORS SIMULTANEOUSLY. Saying "1, 2, 3" where the defibrillation occurs on 2 and then 3 will assist correctly performing this procedure.

D. Cardiac Pacing – Transthoracic [ALS]

1. Place the pads in accordance with 7.04 A.4.d. Cardiac Electrical Therapy.
2. If 'Adult' AED pads have been attached, they shall be connected directly to the LP15 (via an AED pad adaptor if necessary). If ALS arrives and 'Infant/Child' AED pads have been attached, they must be removed and replaced with the salmon label 'Pediatric' LP15 electrode pads.
3. Connect the cardiac monitor limb leads to the patient.
4. Turn on the pacemaker function and observe the ECG monitor screen to verify that the device is properly sensing the QRS complexes.
5. Set the initial pacing rate at 60 beats per minute for adults/adolescents (and as directed by on-line medical control for pedi/infant/neonatal patients) and set the electrical current at the minimal setting.
6. Activate the pacemaker by pushing the appropriate button.
7. Adjust the electrical current upward in 3 second increments until mechanical capture has been obtained. Then, increase it by approximately 10% to maintain a threshold.
8. Remember, it is safe to touch the patient during pacing.
9. To determine capture, feel for carotid or femoral pulse. This may be difficult to assess with the muscle contractions caused by pacing. Additionally, return of pulses should increase the end-tidal CO_2, so it may be used as a guide towards return of circulation.
10. If there is no mechanical capture (production of pulses) within 20 to 30 seconds of attempted pacing, discontinue the attempt at pacing.

7.05 Cardiopulmonary Resuscitation [BLS/ALS]

Table 7-9 : CPR/Resuscitation Parameters, All Ages

Category	Age Range	Vent. Rate (Breaths/Sec)	CPR Ratio	Chest Compression Rate
Neonate	< 28 days	1 Breath every 1 - 2 sec	3 : 1	120 / min
Infant	28 days to < 1 year	1 Breath every 2 - 3 sec	15 : 2	100 / min
Child	1 year to < 8 years	1 Breath every 2 - 3 sec	15 : 2	100 / min
Adolescent	8 years to < 16 years	1 Breath every 5 - 6 sec	30 : 2	100 / min
Adult	≥ 16 years	1 Breath every 5 - 6 sec	30 : 2	100 / min

A. Neonatal CPR

1. Upon birth, follow *8.03 P. Childbirth - Emergency (Neonate/"Newly Born")*. Upon the indication for chest compressions, position the neonate face-up on a flat, firm surface. Place a folded towel under the shoulders to prevent further flexion of the neck and resultant obstruction of the airway.
2. Place the neonate's head in a neutral position. Do not hyperextend the neonate's head and neck as this may collapse the airway. If trauma is suspected, use the jaw thrust maneuver.
3. Begin chest compressions.
   a. Compress the chest with two hands encircling the chest and compressing the chest with two

thumbs on the lower third of the sternum just below the nipple line.
   b. Compress the sternum at least 1/3rd the depth of the chest.
   c. Provide 3 chest compressions (at a rate of 120 per minute) to 1 ventilation.
   d. "Push hard, push fast." Allow complete recoil of the chest wall between compressions and minimize interruptions of chest compressions.
4. To ventilate, maintain a patent airway and deliver 1 breath with an infant BVM. Maintain a seal using the appropriate sized facemask around the patient's nose and mouth. Deliver each rescue breath over 1 second and give a sufficient volume to just produce visible chest rise. Place a supraglottic airway as soon as possible and follow the airway management guidelines (*ref. 8.02 A.1.d.*)
5. Any and all umbilical pulse checks should take no more than 10 seconds, and if a pulse is not definitely felt within 10 seconds, chest compressions should be restarted.
6. If there is an umbilical pulse > 60/min., continue with rescue breaths at a rate of one breath every 1 to 1.5 seconds with frequent checks to ensure pulse remains.

B. Infant CPR
1. Assess unresponsiveness – shout loudly and attempt to stimulate patient. If unresponsive, make certain the appropriate resources are responding.
2. Position the infant face-up on a flat, firm surface. Place a folded towel under the shoulders to prevent further flexion of the neck and resultant obstruction of the airway. Open the airway using a gentle head tilt-chin lift maneuver. Do not hyperextend the infant's head and neck as this may collapse the airway. If trauma is suspected use the jaw thrust maneuver.
3. Assess breathing - is there no breathing visible or no normal breathing (only gasping)?
4. If the patient is unresponsive with no breathing or no normal breathing (only gasping), immediately begin CPR with chest compressions first.
5. Begin chest compressions.
   a. Compress the chest with two hands encircling the chest and compressing the chest with two thumbs on the lower third of the sternum just below the nipple line.
   b. Compress the sternum at least 1/3rd the depth of the chest or 1.5 inches.
   c. Provide 15 chest compressions (at a rate of 100 per minute) to 2 ventilations.
   d. "Push hard, push fast." Allow complete recoil of the chest wall between compressions and minimize interruptions of chest compressions.
6. To ventilate, maintain a patent airway and deliver 2 breaths with an infant BVM. Maintain a seal using the appropriate sized facemask around the patient's nose and mouth. Deliver each rescue breath over 1 second and give a sufficient volume to just produce visible chest rise. Place a supraglottic airway as soon as possible and follow the airway management guidelines (*ref. 8.02 A.1.d.*)
7. Any and all pulse checks should take no more than 10 seconds, and if a pulse is not definitely felt within 10 seconds, chest compressions should be restarted.
8. If there is a pulse, continue with rescue breaths at a rate of 20-30 per minute with frequent checks to ensure pulse remains.
9. Once an advanced airway is placed (supraglottic airway or ET Tube), convert to continuous chest compressions at a rate of 100/minute without pauses for ventilations. Ventilations should be provided at a rate of one breath every 2-3 seconds on the upstroke of a chest compression.

C. Child CPR
1. Assess unresponsiveness – shout loudly and attempt to stimulate patient. If unresponsive, make certain the appropriate resources are responding.

2. Position the patient face-up on a flat, firm surface and open the airway using a gentle head tilt-chin maneuver. If trauma is suspected, use the jaw thrust maneuver.
3. Assess breathing - is there no breathing visible or no normal breathing (only gasping)?
4. If the patient is unresponsive with no breathing or no normal breathing (only gasping), immediately begin CPR with chest compressions first.
5. Begin chest compressions.
    a. Compress the chest with the heel of one or both hands over the lower third of the sternum at the nipple line.
    b. Compress the sternum at least 1/3rd the depth of the chest or 2 inches.
    c. Provide 15 chest compressions (at a rate of 100 per minute) to 2 ventilations.
    d. "Push hard, push fast." Allow complete recoil of the chest wall between compressions and minimize interruptions of chest compressions.
6. To ventilate, maintain a patent airway and deliver 2 breaths with an child BVM. Maintain a seal using the appropriate sized facemask around the patient's nose and mouth. Deliver each rescue breath over 1 second and give a sufficient volume to just produce visible chest rise. Place a supraglottic airway as soon as possible and follow the airway management guidelines (*ref. 8.02 A.1.d.*)
7. Any and all pulse checks should take no more than 10 seconds, and if a pulse is not definitely felt within 10 seconds, chest compressions should be restarted.
8. If there is a pulse, continue with rescue breaths at a rate of 20-30 per minute with frequent checks to ensure pulse remains.
9. Once an advanced airway is placed (ET Tube or Supraglottic Airway), convert to continuous chest compressions at a rate of 100/minute without pauses for ventilations. Ventilations should be provided at a rate of one breath every 2-3 seconds on the upstroke of a chest compression.

D. Adolescent / Adult CPR
1. Assess unresponsiveness – shout loudly and attempt to stimulate patient. If unresponsive, make certain the appropriate resources are responding.
2. Position the patient face-up on a flat, firm surface and open the airway using a gentle head tilt-chin maneuver. If trauma is suspected, use the jaw thrust maneuver.
3. Assess breathing - is there no breathing visible or no normal breathing (only gasping)?
4. If the patient is unresponsive with no breathing or no normal breathing (only gasping), immediately begin CPR with chest compressions first.
5. Begin chest compressions.
    a. Compress in the center of the chest midline at the nipple line with the heel of one hand and the other hand on top.
    b. Compress the sternum at least 2 inches deep for each compression.
    c. Provide 30 chest compressions (at a rate of 100 per minute) to 2 ventilations.
    d. "Push hard, push fast." Allow complete recoil of the chest wall between compressions and minimize interruptions of chest compressions.
6. To ventilate, maintain a patent airway and deliver 2 breaths with an adult BVM. Maintain a seal using the appropriate sized facemask around the patient's nose and mouth. Deliver each rescue breath over 1 second and give a sufficient volume to just produce visible chest rise. Place a supraglottic airway as soon as possible and follow the airway management guidelines (*ref. 8.02 A.1.d.*)
7. Any and all pulse checks should take no more than 10 seconds, and if a pulse is not definitely felt within 10 seconds, chest compressions should be restarted.
8. If there is a pulse, continue with rescue breaths. Ventilations should be provided at a rate of one breath every 3-5 seconds on the upstroke of a chest compression.

9. Once an advanced airway is placed (ET Tube or Supraglottic Airway), convert to continuous chest compressions at a rate of 100/minute without pauses for ventilations. Ventilations should be provided at a rate of 8-10 per minute (every 6-8 seconds) on the upstroke of a chest compression.

7.06 Childbirth [BLS/ALS]

A. Eligibility for Resuscitative Care
   1. If the family or mother states that the infant is ≥ 22 weeks gestation, then the infant shall be resuscitated.
   2. If gestational dates are unknown, examine the fingers of the infant to determine if the fingers are still fused.
      a. If they **are not** fused, the infant shall be resuscitated.
      b. If they **are** fused, the infant is not to be resuscitated and considered a miscarriage.
   3. Regardless of the number of weeks gestation, if an infant is born with 1) no signs of life **and** 2) has one of the following characteristics, then resuscitation shall not be attempted.
      a. Decomposing and/or macerated, sloughing off of skin.
      b. Anencephalic infants, missing a major portion of the head and/or brain.

B. Emergency Childbirth Procedure
   1. Assist delivery, checking for umbilical cord wrapped around the neck. If the cord is wrapped around the neck, gently remove the cord.
   2. When the child's head is delivered, clear the airway with bulb suction (*Reference 7.02 L. Neonatal / "Newborn" Airway Management).*
   3. Once completely delivered, stimulate the child by vigorously drying child with a towel.
   4. Evaluate child's perfusion and respiratory effort. Begin resuscitation as needed per *8.03 P. Childbirth - Emergency (Neonate / "Newly Born").*
   5. If no active resuscitation is necessary, wrap the child in a thermal blanket or dry towel. Place on his/her back and keep the child warm.
   6. After the child is completely delivered, clamp and cut the cord 2-3 inches from infant's abdomen.

C. Miscarriage Procedure
   1. Clamp and cut the cord 2-3 inches from infant's abdomen.
   2. Wrap the child in a dry towel.
   3. If the mother desires to hold the infant during transport, that is appropriate. Otherwise, place the infant in the towel in a red bag and bring the infant with the mother to the hospital.

7.07 Hemorrhage Control [BLS/ALS]

A. Direct Wound Care
   1. Use proper body substance isolation precautions.
   2. Remove any sharp, loose fragment of glass or other foreign substance which, if pressed upon, could result in further injury to the patient or rescuer.
   3. Impaled objects should not be removed, but should be stabilized in place to prevent further movement or deeper insertion.
   4. Cover the bleeding site with several gauze dressings so that their edges extend at least slightly beyond the edges of the wound.
   5. While firmly holding the limb/body with one hand so that it will not move, apply firm pressure directly over the wound with the palm of the other hand. To be most effective, pressure should be directed so that the injured vessels lie between where the pressure is applied and an underlying bone.

6. Elevate the limb such that the wound is above the level of the heart.
7. For wounds over the thorax, cover the wound with a chest seal or 3-sided semi-occlusive dressing.

B. Tourniquet Use
1. Use a commercially produce tourniquet or a blood pressure cuff as the tourniquet if a standard one is not available. The tourniquet should be place as proximal as possible to the wound ("high and tight") leaving at least two inches of uninjured skin between the tourniquet and the wound. For upper extremity injuries, the preferred placement is around the upper humerus. For lower extremity injuries, the preferred placement is around the upper femur. Do not place over the knee or elbow.
2. All lower extremity injuries requiring a tourniquet for bleeding control should automatically have a second tourniquet placed distal to the first tourniquet placed (as the first tourniquet should be placed as proximal as possible on the upper femur). Ensure the tourniquets are not overlapping and the windless rods are offset from each other to allow for tightening of the second tourniquet.
3. If one tourniquet does not stop the bleeding sufficiently on the upper extremity, a second tourniquet should be place just distal to the first tourniquet.
4. Mark the time the tourniquet was applied on a piece of tape, placed on the patient. Use 'TK' to indicate the significance of the time. Example: TK 1330 hrs.

C. Wound Packing
1. Wound packing should be considered in the setting of junctional hemorrhage in which direct pressure has failed to control the bleeding and tourniquet application is not possible due to wound location. Wound packing shall only be performed in junctional hemorrhage (wounds to the groin, axilla, or neck) and SHALL NOT be performed in wounds to the chest or abdomen.
2. Removing clothing from around the wound and clear away excess blood while preserving any clots already formed in the wound. Locate the source of the most active bleeding.
3. Using either roller gauze or hemostatic gauze (if available), pack the wound tightly with gauze, focusing on the area of the most active bleeding. More than one roll of gauze may be required to fill the wound cavity and stop the bleeding.
4. Apply direct pressure to the packed wound, focusing on the area of the most active bleeding. Hold pressure for a minimum of three (3) minutes.
5. After three minutes, reassess the wound for hemostasis. DO NOT REMOVE THE PACKING FROM THE WOUND! If bleeding continues, continue to apply direct pressure and rapidly transport the patient to the appropriate facility.
6. If the bleeding appears to be controlled on reassessment, secure the packing with a pressure dressing and initiate rapid transport to the appropriate facility. Reassess the wound frequently for continued bleeding. If more bleeding is observed, reapply direct pressure.

7.08 Extremity Splinting Skills [BLS/ALS]

A. Repositioning Injured Extremities
1. Injured extremities with apparent fractures should be repositioned only if there is loss of signs of circulation, loss of sensation distal to the deformity, or if it is necessary in order to otherwise care for and transport the patient.
2. Firmly grasp the joint immediately proximal and immediately distal to the injured section and apply opposing manual traction – pulling both joints until the injured section is aligned into an approximately straight line.
3. When repositioning an injured JOINT, traction is generally not required. The distal bone is

simply returned to a normal appearing neutral position.
4. After an injury has been repositioned, confirm presence of pulses and sensation in the distal portion.
5. After an injury has been repositioned, the joint above and below, as well as the injured section, should be immobilized.

B. Use of Splints
1. The primary objective of field care for suspected fractures is to provide a rigid external support along the entire length of the injured bone.
2. Splints will be used of sufficient length or design, to allow the member to secure and immobilize the adjacent proximal joint, the injured bone, and the adjacent distal joint.
3. After an injury has been immobilized, confirm the presence of distal pulses or capillary refill less than 2 seconds, and normal sensation.

C. Use of Traction Splints
1. Traction splints are used primarily for treatment of suspected closed, mid-shaft femur fractures. The largest muscle mass in the human body surrounds the length of the femur. Application of traction reduces the muscle spasm associated with a fractured femur and eliminates much of the pain. It causes alignment of the bone fragments, reduces/controls bleeding and shock, and prevents further nerve, vascular and tissue damage.
2. The Sager® splint is designed for use on adult and pediatric patients. It also can be used on single and bilateral femur fractures.
3. Position splint shaft between the patient's legs, resting the cushion against the ischial tuberosity and apply the thigh strap.
4. Note the absence or presence of distal pulses. Check for sensation.
5. Remove shoe(s), if possible, and apply the ankle harness. Shorten the ankle sling length, as needed.
6. Apply gentle traction to the injured extremity by extending the splint shaft. The recommended pressure should be 10% of the patient's body weight per fractured femur up to 15 pounds.
7. At the hollow of the knees, gently slide the elastic leg cravats through the space, slide to the appropriate position, and secure. Recommended areas to secure are the mid-shaft, the lower legs, and the ankles.
8. After immobilization, confirm the presence of distal pulse/capillary refill of less than 2 seconds, and normal sensation.
9. Contraindications of a traction splint associated with a femur fracture:
•Pelvic fracture.
•Bone fragments sticking through the skin.
•Supracondylar fractures of the distal end of the femur.
•Fractures of the ankle and foot.
The above fractures should be splinted as found.

7.09 Eye Irrigation [BLS/ALS]

A. Indication
1. Treatment of chemical injury to the eye. Serious chemical injury requires irrigation at the site of the injury, before the patient is brought to the emergency department.
2. Indicated for all acute chemical injuries to the eyes.

B. Contraindication
1. None, but care should be given in cases of possible perforating injury to the eye. Do not apply pressure to the eye in this circumstance.

C. Technique
   1. Attach a one liter normal saline bag to IV tubing.
   2. During irrigation, the eyelids must be open. Utilization of 4x4 gauze to open eyelids may be helpful.
   3. Open the IV tubing, allowing saline to flow. Direct the gentle stream onto the sclera (white part) of the eye, letting the entire eye be rinsed. Avoiding pointing the saline flow directly at the iris/pupil.
   4. It is recommended to irrigate acid injuries to the eye for a minimum of 5 minutes and to irrigate alkali injuries to the eye a minimum of 15 minutes.

7.10 Patient Movement [BLS/ALS]

A. Patients shall be moved into the ambulance and into the emergency department in a manner which does not further injure or exacerbate their medical condition or traumatic injury.
B. The stretcher shall be brought next to the patient for transportation into the ambulance, or as close as reasonably possible. The patient shall be removed from the ambulance and brought into the emergency department by stretcher.
C. When using any patient moving equipment, all present straps, belts or other methods of securing the patient shall be used.
D. If a patient refuses to be moved by recommended methods, note that refusal in the patient care report narrative.
E. Ensure patient care documentation explains any extenuating circumstances which alter standard means of patient movement.

7.11 Radio Report [BLS/ALS]

A. Give a full verbal report when contacting the Base Station. A full report consists of the following information, in this order:
   •Unit number.
   •Hospital destination with ETA and transport priority code (*ref. 6.03 B.*)
   •Age and sex of patient.
   •Chief complaint.
   •History of present illness or method of injury.
   •Past medical history (include medication/allergies).
   •Vital Signs.
   •Level of consciousness (AVPU method).
   •Glasgow Coma Score.
   •Physical Exam with Neurological Findings.
   •Diagnostics (i.e., Pulse Ox, Glucose level, 12 lead ECG).
   •All interventions performed or medications given prior to contact and patient response. Give a similar report to the medical personnel at the receiving facility.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EMERGENCY MEDICAL SERVICES

8.00 GUIDELINES / STANDING ORDERS

TABLES

If not specified "ADULT ONLY" or "PEDIATRIC ONLY", each guideline is applicable to both Adult and Pediatric patients.

Table 8-1 : Patient Age Distributions

Neonate	< 28 days old
Infant	28 days to < 1 year old
Child	1 year old to < 8 years old
Adolescent	8 years old to <16 years old
Adult	≥ 16 years old

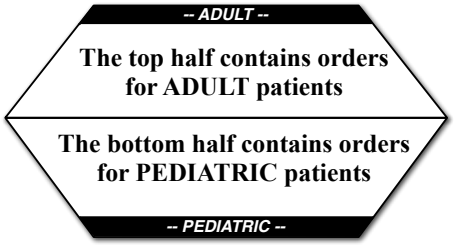
Table 8-2 : Normal Vital Signs by Age Group

Age Group	Respiratory Rate / Min.	Pulse / Min.	Systolic BP
Neonate	30-60	120-160	≥ 70
Infant	30-50	120-160	≥ 70
Child	20-30	80-120	70 + (age in yrs. x 2)
Adolescent	15-20	60-110	90-120
Adult	12-20	60-100	90-140

Table 8-3 : Signs of Poor Perfusion : Pediatric

Weak Pulses	Altered Mental Status
Capillary Refill > 3 Seconds	Hypoxia
Mottled or Cool Skin	

For the Treatment Flowcharts, Medication Therapies Are Indicated as Shown



NOTE
-All pediatric dosing is per the Pediatric Dosing Guidelines.
-No pediatric medication dose shall exceed the standard adult dose.

8.01 General Principles for Guidelines / Standing Orders
(Applies to ALL Guideline/Standing Orders; Adult/Pediatric, Trauma/Medical)

A. BLS / ALS Level

1. The BLS portion of the following flowchart guidelines apply to all members assigned to emergency operations and special operations while on duty for the Houston Fire Department.
2. The ALS portion of the following guidelines apply only to those members credentialed to function as paramedics by the EMS Physician Director for the City of Houston, while they are assigned to EMS duties and intended to function as a paramedic.
3. Upon arrival to scene, evaluate for personal safety (goggles, gloves, mask, etc.).
4. Perform Baseline Assessment (*Ref. definition 3.08 and Ref. 7.01 "Patient Assessment"*)
5. "First Do No Harm" (is the indication for what you are about to do still there?).
6. Never underestimate the importance of basics (ABC's). Whenever a patient deteriorates without apparent reason, re-evaluate per C-A-B or A-B-C if age < 8 years old.
7. When in doubt, shout (Contact EMS Supervisor, Base Station, on-line physician).
8. The AED downloads are considered part of the quality improvement process and shall be down-loaded from each AED to HFD EMS headquarters for each case when a patient was connected to the AED. (*Ref 9.04 Procedure for Downloading AED and LifePak 15 Data*).

B. ALS Level

1. The standing orders allow paramedics to change between treatment guidelines. Paramedics are permitted to change the treatment plan from one standing order to another once prior to consulting with an on-line physician. Appropriate treatment of a patient may require the use of more than one guideline simultaneously. All members should employ their best clinical skills with complex medical patients and are encouraged to contact on-line medical control for further guidance.
2. Within each treatment guideline, ALS providers are responsible for any indicated treatments or evaluations which are listed under both the BLS and ALS sections of the flowchart.
3. If at any time a pulsing patient should unexpectedly deteriorate into cardiac arrest, HFD personnel are to immediately begin resuscitative measures in accordance with these guidelines and may continue to do so while making contact with the on-line physician.
4. Administration of medications via the IV route is often preferred over any other route (*See B.6.*). As an alternative to IV, intraosseous access (IO) can be initiated if available. Some drugs can be administered intranasally. Drugs shall not be administered via a supraglottic airway device or endotracheal tube.
5. Throughout the guidelines, medications specified as intravenously given may be given via the intraosseous route at the same dosage as the intravenous route.
6. Intranasal administration (IN) of medications is preferred if indicated for that specific medication. In cases of potential needle-stick hazards, IN administration may be preferred.
7. It is the responsibility of the paramedic to contact the Base Station in ample time so there is no delay in patient care waiting for an on-line physician. In other words, contact the Base Station prior to the last allowed steps of the standing orders.
8. The LifePak 15 downloads are considered part of the quality improvement process and shall be down-loaded from each LifePak 15 to HFD EMS headquarters for each case when a patient was connected to the ALS monitor. (*Ref 9.04 Procedure for Downloading AED and LifePak 15 Data*).
9. 12 Lead ECG's shall be downloaded into the patient care record whenever performed.

8.02 A. General Principles for Cardiac Arrest Emergencies

1. Cardiac Arrest Emergencies Philosophy/Practices
   a. Cardiac arrest resuscitations are a team effort by the members of the Houston Fire Department. Each and every level of care is essential to the success of resuscitation. Properly performed and managed BLS skills will resuscitate some cardiac arrest patients and provide the necessary groundwork for the ALS resuscitation of the others. HFD members involved in a cardiac arrest resuscitation shall know their tasks before hand and work in sync with other HFD members.
   b. **Chest compressions are believed to be the most vital task in a cardiac arrest resuscitation**. Any interruption in chest compressions shall be minimal and members on scene should verbalize to all present when chest compressions have been discontinued for more than 10 seconds.
   c. Airway management remains an important part of cardiac arrest management. There is a decreased demand in the amount of ventilation and oxygenation a pulseless patient requires. Additionally, studies have shown that hyperventilation is detrimental to the successful resuscitation of a cardiac arrest patient because the increased intrathoracic pressure produced by hyperventilation decreases perfusion to the heart. Therefore, be extremely mindful of ventilation rates and volumes.
   d. Airway Management

      •Adults : Initial airway management will be performed with Bag Valve Mask ventilation. A supraglottic airway will be inserted (if the appropriate size is available) as soon as possible during the initial stages of resuscitation. If these methods fail, proceed with endotracheal intubation ensuring no interruption in chest compressions. Assuming successful ventilations with the supraglottic airway, securing of the airway via an endotracheal tube shall be considered at an appropriate point later in the resuscitation effort that will allow the individual performing the intubation to do so in a controlled, focused fashion. It is unacceptable to interrupt chest compressions more than momentarily while performing endotracheal intubation. Appropriate periods to consider endotracheal intubation include: 1) patient acquires return of spontaneous circulation (as part of Post-Cardiac Arrest Care 8.02 F.), 2) prolonged unsuccessful resuscitative efforts prior to a transport or 3) when directed to intubate by the EMS Supervisor or on-line physician. Bilateral breath sounds shall be confirmed and $EtCO_2$ detector shall be connected by ALS to confirm ventilation.

      -In cases of sole respiratory arrest (pulses present) in ADULTS only, credentialed paramedics may place the endotracheal tube as the initial airway device. Its placement must be confirmed via $EtCO_2$, pulse oximetry and auscultation of bilateral breath sounds. Be extremely mindful of increased vagal tone produced by intubation which can lead to bradycardia and full cardiac arrest.

      •Pediatrics : Initial airway management will be performed with Bag Valve Mask ventilation. A supraglottic airway will be inserted (if the appropriate size is available) as soon as possible during the initial stages of resuscitation. Endotracheal intubation shall be performed ONLY if ventilation is unsuccessful with the BVM or supraglottic airway, ensuring no interruption in chest compressions during intubation. Bilateral breath sounds shall be confirmed and $EtCO_2$ detector shall be connected by ALS to confirm ventilation.

      -In cases of sole respiratory arrest (pulses present) in pediatric patients, credentialed EMT's or paramedics may place a supraglottic airway device as the initial airway device. Its placement must be confirmed via pulse oximetry and auscultation of bilateral breath sounds. Be extremely mindful of increased vagal tone produced by airway stimulation which can lead to bradycardia and full cardiac arrest.
   e. The guidelines are arranged as follows:
      1) "Unresponsive Person" : This is where each patient encounter should begin.
      2) "Pulseless Patient : BLS First on Scene" and "Pulseless Patient : ALS First on Scene" : These

guidelines describe the steps which should be taken in the initial stages of a cardiac arrest prior to the arrival of a full complement of responders. Given a limited number of personnel, priority is given to chest compressions, rhythm analysis (with defibrillation as required) and airway maintenance/ventilation.

3) "Cardiac Arrest Resuscitation" : This contains the guidelines for cardiac arrest resuscitation once ALS is on scene along with sufficient additional resources. In order to provide for maximal chest compressions, more than two persons are required to perform the actions detailed in this guideline.

2. BLS / ALS Level
   a. The electronic information captured by the AED or ALS monitor is considered part of the quality improvement process and **shall** be downloaded from each ALS monitor and AED to HFD EMS headquarters for each case where a patient was connected to the ALS Monitor or the AED (*Ref 9.04 Procedure for Downloading AED, LifePak15 Data*).
   b. In performing the baseline assessment, be sure to ascertain the patient's code status. Does the patient have a State of Texas Pre-Hospital (Out-of-Hospital) DNR papers? If so, where is the paperwork and is it valid? (*Ref. 6.17 Out-of-Hospital DNR Orders*)
   c. Resuscitation efforts may be withheld from individuals who meet obviously dead criteria:
      1) Dead-on-Arrival (DOA):
         •Decapitation •Rigor Mortis (Extremity) •Dependent Lividity
         •Decomposition •Incineration •Obvious Mortal Wounds
      2) Absence of any signs of life (pulse, respirations or any spontaneous movement) on HFD arrival to patient, caused by blunt or penetrating trauma.
      3) The patient shall not be pronounced DOA if there are any signs of life witnessed by the first arriving HFD Unit.

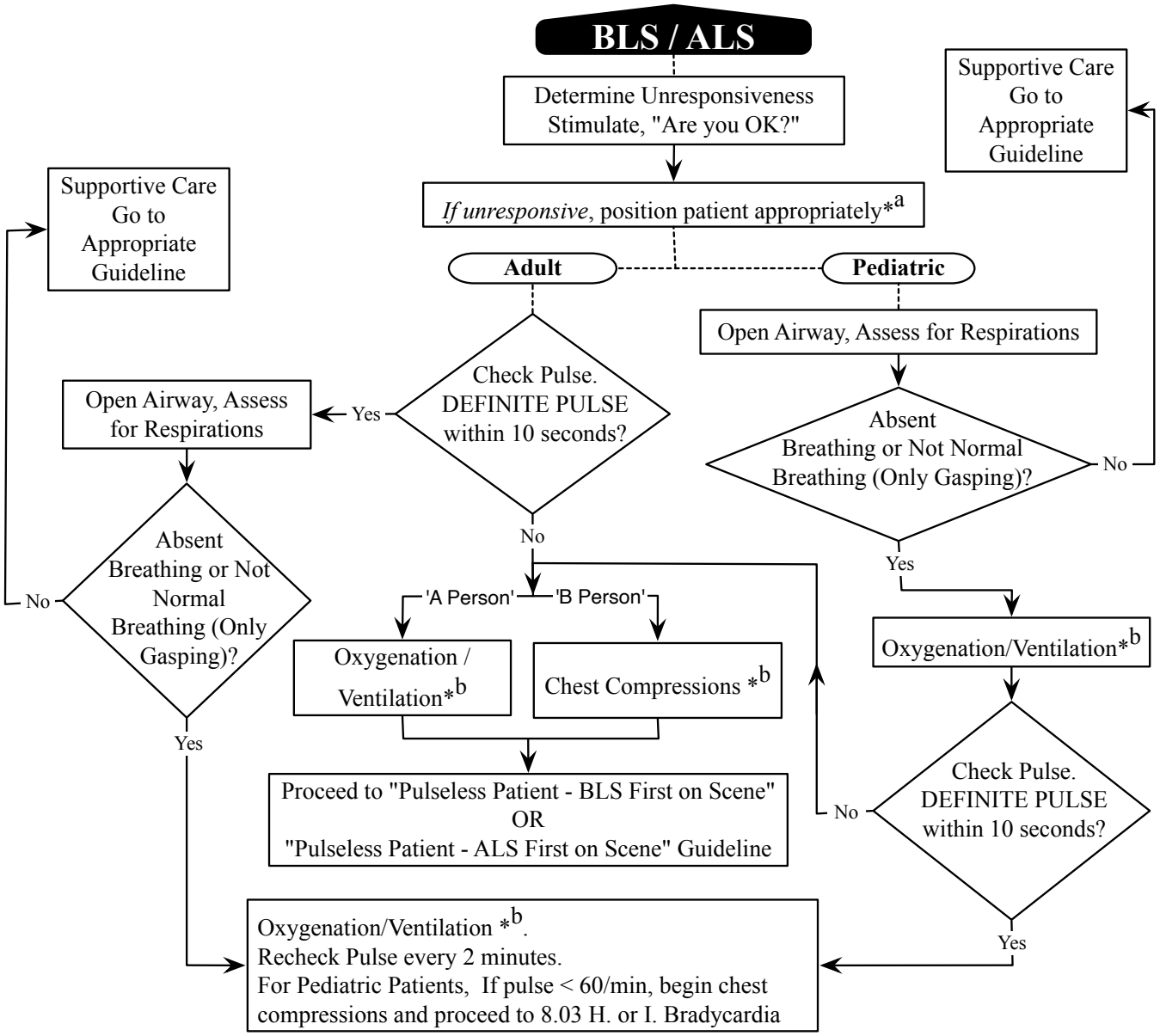
3. ALS Level
   a. Patients should be afforded substantial resuscitative efforts on scene prior to transport; medical CPR, in both adult and pediatric patients, is not a "load and go" situation.
   b. The utilization of video laryngoscopy shall be the standard initial technique for intubation. The bougie may be used to assist placement as well. Most importantly, **WHEN IN DOUBT, TAKE IT OUT** (ET tube). Correct endotracheal tube placement is of paramount importance (*Ref. 7.02 C.*). No more than three attempts at intubation shall occur per patient.
   c. When in doubt between asystole and fine ventricular fibrillation, treat as VFib and defibrillate the patient.
   d. In cardiac arrest, the preferred access route for medication shall be:
      Adolescents/Adults: 1) peripheral IV (including external jugular), 2) humeral IO, 3) dialysis access catheter if present, and lastly, 4) tibial IO.
      Neonate/Infant/Children: 1) tibial IO, 2) peripheral IV (no external jugular).
   e. Renal Dialysis and Cardiac Arrest
      1) In non-arrest, do not take blood pressures or attempt IV's in the same area of the dialysis access or catheter.
      2) If accessing a Vas Cath, Tetssio or Quinton catheter (Central Line used for temporary dialysis with red and blue ports), remove at least 3-5 ml of the catheter fluid (heparin solution) from either port. Then flush the port with 10 ml of Normal Saline, prior to attaching IV tubing and infusing fluids or medications.
   f. Transcutaneous Pacing is generally most successful in patients with symptomatic bradycardia. Pacing pulseless patients shall only be performed under the direction of the on-line physician.
   g. If the underlying etiology of the cardiac arrest is identified by patient history or clinical signs or values, HFD personnel shall reference the appropriate guideline and treat this cause as indicated

concomitant with the appropriate cardiac arrest guideline.

h. If the AED is being utilized upon ALS arrival, ALS personnel shall allow the AED to complete the upcoming analysis including a shock if required. Immediately after this, the patient shall be switched over to the ALS monitor. For adolescents/adults, detach the AED pads from the AED and connect to the ALS monitor. For neonates/infants/children, remove the AED Infant/Child pads and attach the Pediatric pads to the ALS monitor and the patient.
i. In pulseless patients, the blood glucose sample shall be obtained from a vein rather than a fingerstick.
j. Notify the Base Station of cardiac arrest situations as early as possible to ensure the availability of a physician to provide on-line medical control.

4. Vector Change [ALS only]
   a. Patients will start out with defibrillation pads placed in an anterior/posterior placement.
   b. After three consecutive defibrillations from AED/ALS Monitor (after three consecutive rhythm/pulse checks) which fail to convert the rhythm to a non-shockable rhythm, ALS shall open and place a new set of defibrillation pads in the secondary placement sites of anterior/lateral (*Ref. 7.04 A.4.*)
   c. All subsequent defibrillations shall be through the anterior/lateral pads unless directed to revert to anterior/posterior by physician on-line medical direction.
5. Dual Sequential Defibrillation [ALS only]
   a. Upon arrival of two ALS monitors in a patient with a persistent shockable rhythm who has already had three consecutive defibrillations performed, set up for dual sequential defibrillation (*Ref. 7.04 C.2.*).
   b. At the next, and all subsequent shockable rhythms, perform dual sequential defibrillation (*Ref. 7.04 C.2.*).

8.02 B. Unresponsive Patient



*[a] *Patient should be placed on a hard surface (floor/backboard) in a supine position. There should be enough room around the patient to allow adequate access to the patient for CPR and advanced medical therapies. It may be advisable to briefly move a patient prior to resuscitation to allow for maximal chest compressions and patient access. Assess the patient for trauma (log roll as necessary) to determine if traumatic or medical arrest.*

*[b] *See Table 7-9: CPR Parameters for proper chest compression and ventilation rates.*

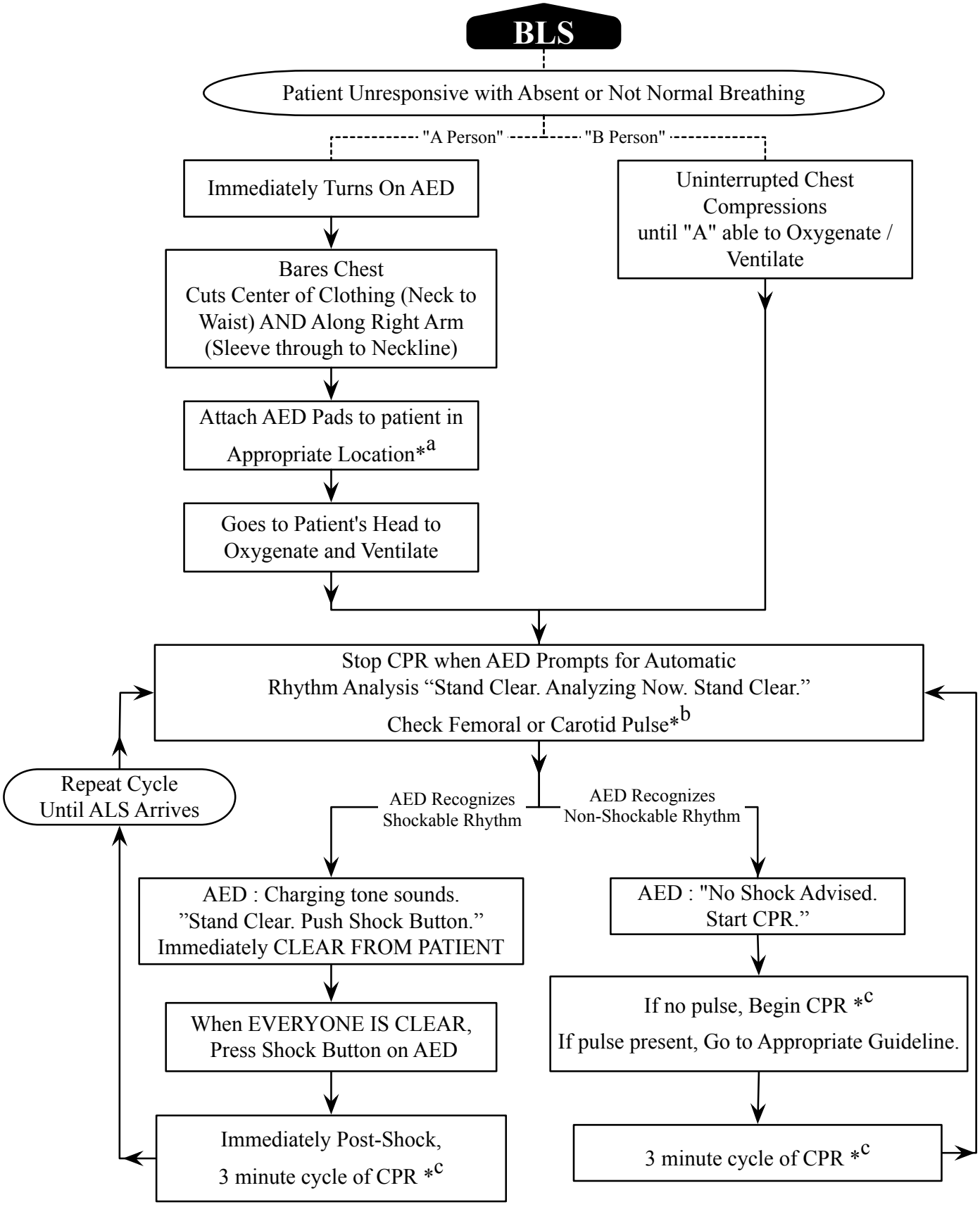
A. This is the **initial guideline** to follow when presented with an unconscious patient.

B. If CPR has been started, proceed to the appropriate guideline by determining the level of care provided by the unit on scene (i.e. ALS on scene, proceed to 8.02 D. "Pulseless Patient - ALS" guideline; BLS Engine only on scene, proceed to 8.02 C. "Pulseless Patient - BLS" guideline.)

C. If a EMS Apparatus Paramedic is on scene with an AED, proceed to the 8.02 C. "Pulseless Patient - BLS" guideline. If the EMS Apparatus Paramedic is utilizing a LifePak 15, proceed to 8.02 D. "Pulseless Patient - ALS" guideline.

D. When proceeding to either of the Pulseless Patient guidelines, notify OEC (and responding units) via the assigned tac channel of an adult or pediatric patient with "CPR in progress."

8.02 C. Pulseless Patient - BLS First on Scene



8.02 C. Pulseless Patient - BLS First on Scene : Notes

*[a] The primary site for pad placement shall be anterior-posterior, Refer to *7.04 A.4.d*.

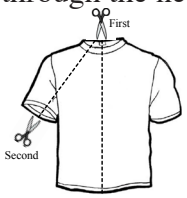
*[b] The femoral or carotid pulse check during analysis should be performed so as to not interfere with the analysis. If a pulse is felt, resume rescue breathing and obtain a blood pressure. Reconfirm the pulse every minute until ALS arrival.

*[c] Refer to *7.05 Cardiopulmonary Resuscitation* for proper CPR guideline.
**Once an advanced airway is placed (Supraglottic Airway or ET Tube), begin <u>continuous</u> chest compressions with a ventilation rate appropriate for the patient's age (*Ref. Table 7-9*). Ventilate on the up-stroke of the chest compression.

If at any point, EMS witnesses an arrest (or loss of pulses after ROSC), proceed to immediate AED rhythm analysis by pressing the right softkey on the AED.

A. It is important to turn on the AED once cardiac resuscitation is initiated. The AED's clock will prompt when to pause CPR for rhythm analysis and when to restart CPR. Ensure the proper AED pads are used - For patients < 8 years of age, use the "Infant/Child" Pads.

B. To remove the patients upper clothing, the "A Person" cuts the shirt midline from the neck to the waist and then along the patient's right sleeve up through the neckline.



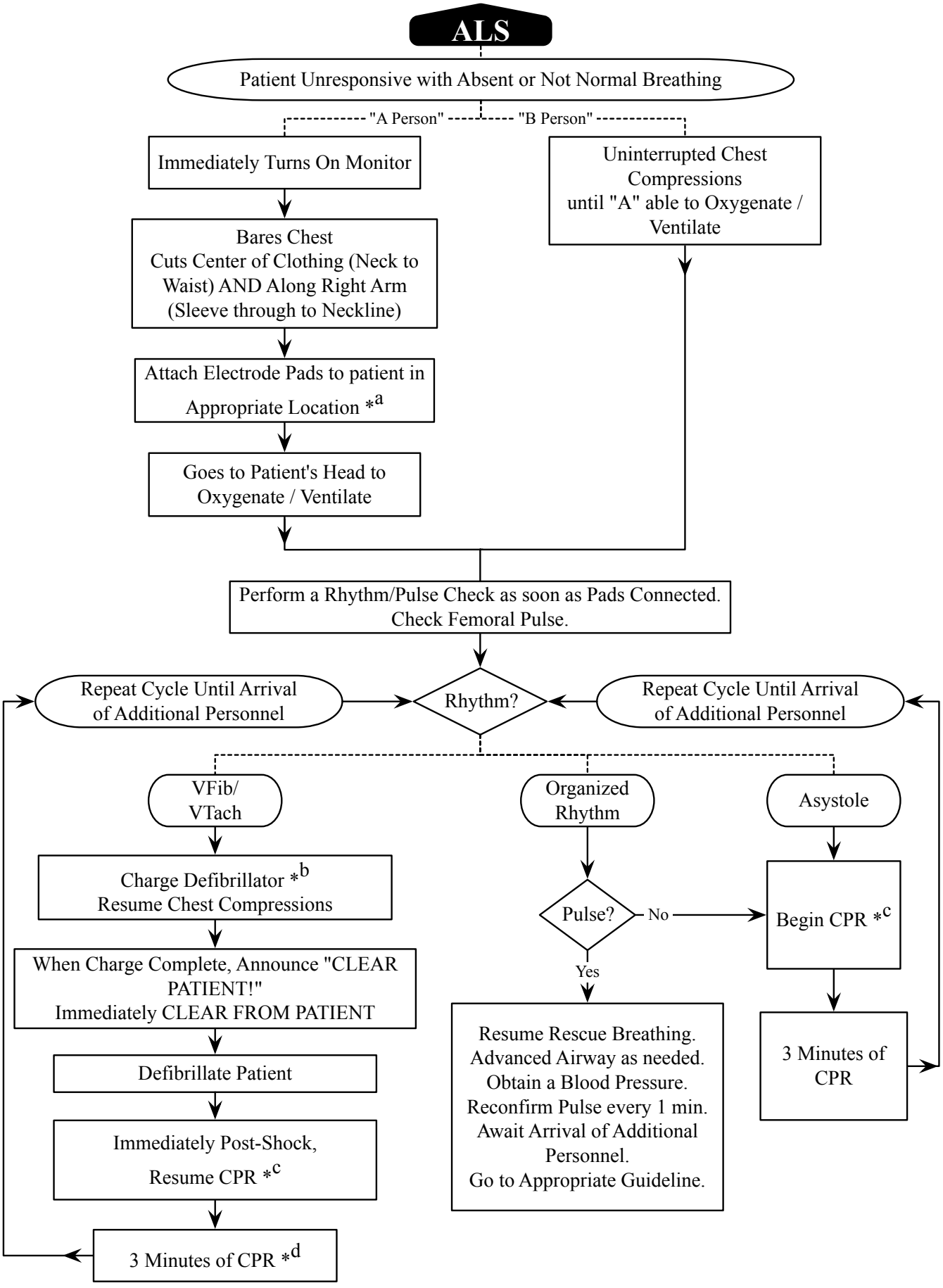
C. During the second (or subsequent) three minute cycle of CPR, alternate individuals responsible for chest compressions if possible.

D. Airway Management [BLS]: *Reference 8.02 A.1.d*.
•Adults: BVM then supraglottic airway (if available).
•Pediatrics: BVM then supraglottic airway (if available).

E. If a unit arrives with more than 2 personnel, the following shall apply:
1. Ambulance with student: The student shall assist "A Person" by cutting the patient's clothing along the right arm then proceed to switch in and out with the "B Person" for chest compressions.
2. Engine/Ladder: The Captain shall serve as the "Incident Commander." The Captain shall ensure HFD members are following the guidelines. Additionally, the Captain shall document pertinent data of the cardiac arrest (i.e. Witnessed? Bystander CPR? Approximate downtime? Past medical history?). The 4th member shall assist "A Person" by cutting the patient's clothing along the right arm then proceed to switch in and out with the "B Person" for chest compressions.

F. EMS Apparatus Paramedic Engine or Ladder
1. The Paramedic Officer shall delegate his duties as described in E.2. to another member of his Engine/Ladder in order to provide patient care.
2. The Paramedic shall obtain IV/IO access and, for pulseless patients, shall administer vasopressors as detailed in 8.02 D. or E. Cardiac Arrest Resuscitation Notes: Medication Delivery.

8.02 D. Pulseless Patient - ALS First On Scene



8.02 D. Pulseless Patient - ALS First On Scene : Notes

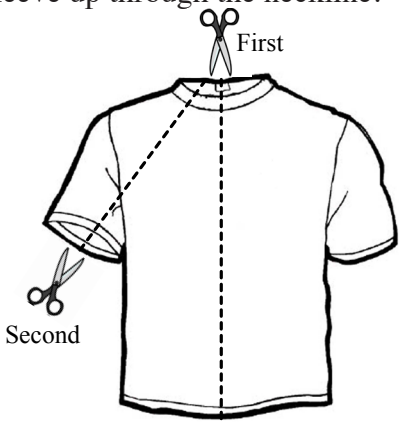
*[a] The primary site for pad placement shall be anterior-posterior, Refer to *7.04 A.4.d*.

*[b] **Defibrillation Joule Settings**
- Adult: 360 Joules each defibrillation
- Pediatric: per Pediatric Dosing Guidelines (*ref. 9.01 CC*.)

*[c] Refer to *7.05 Cardiopulmonary Resuscitation* for proper CPR guideline.
**Once an advanced airway is placed (Supraglottic Airway or ET Tube), begin <u>continuous</u> chest compressions with a ventilation rate appropriate for the patient's age (*Ref. Table 7-9*). Ventilate on the up-stroke of the chest compression.

*[d] After the third consecutive defibrillation attempt, proceed with vector change and/or dual sequential defibrillation (*Ref 8.02 A.4 / A.5*).

A. To remove the patients upper clothing, the "A Person" cuts the shirt midline from the neck to the waist and then along the patient's right sleeve up through the neckline.

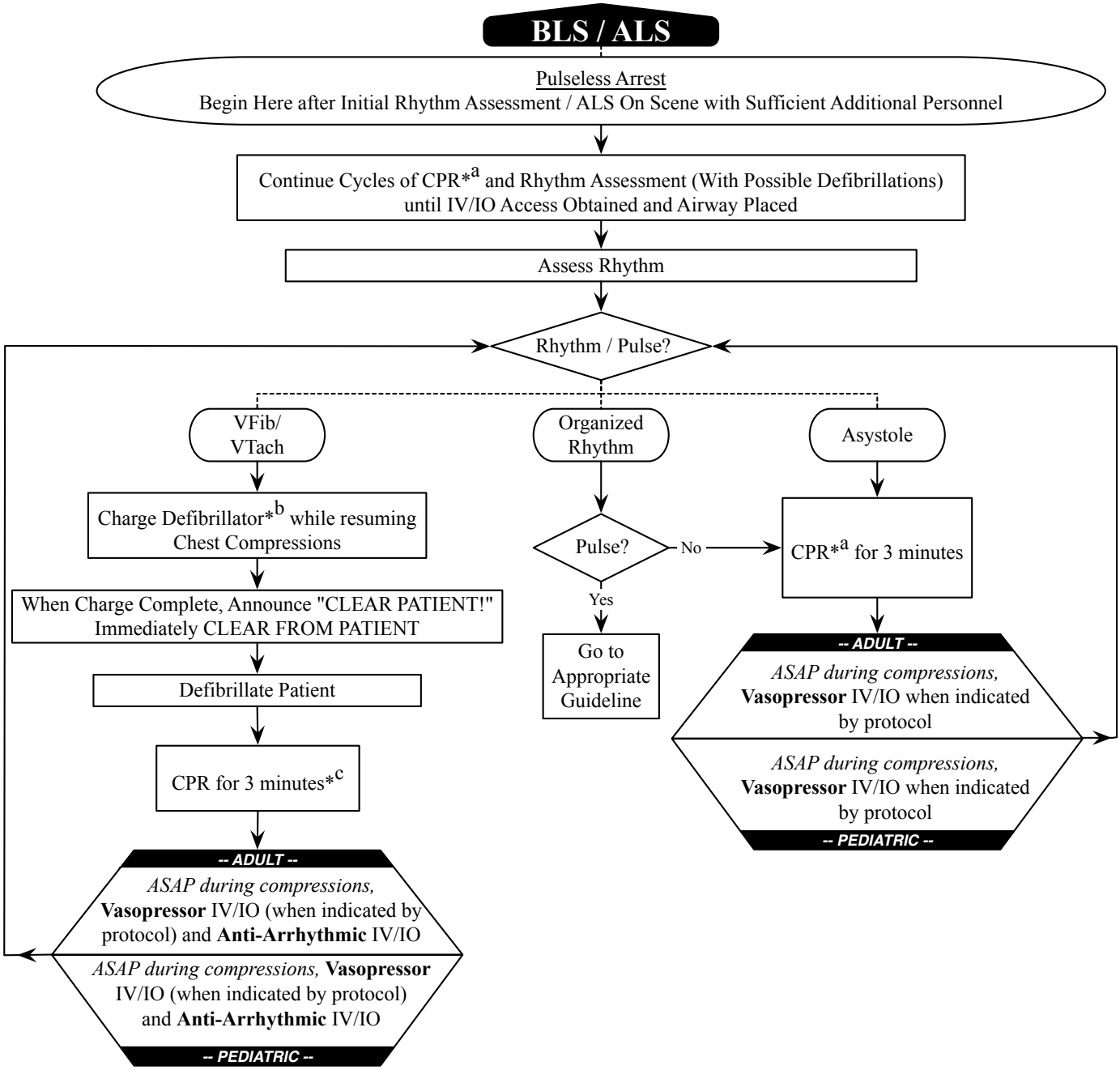


B. During the second (or subsequent) three minute cycle of CPR, alternate individuals responsible for chest compressions if possible.

C. Airway Management [ALS]
•Adults: BVM then supraglottic airway (if available). ET Tube as per 8.02 A.1.d.
•Pediatrics: BVM then supraglottic airway (if available). ET Tube ONLY if unable to ventilate.

D. If a unit arrives with more than 2 personnel, the following shall apply:
1. Medic/Squad with student: The student shall assist "A Person" by cutting the patient's clothing along the right arm then proceed to switch in and out with the "B Person" for chest compressions.
2. The student shall then work to establish an IV or IO or be ready to assist with chest compressions.

8.02 E. Cardiac Arrest Resuscitation



*a Refer to *7.05 Cardiopulmonary Resuscitation* for proper CPR guideline.
**Once an advanced airway is placed (Supraglottic Airway or ET Tube), begin continuous chest compressions with a ventilation rate appropriate for the patient's age (*Ref. Table 7-9*). Ventilate on the up-stroke of the chest compression.

*b **Defibrillation Joule Settings**
- Adult : 360 Joules each defibrillation
- Pediatric : Defibrillate according to Pediatric Dosing Guidelines (*ref. 9.01 CC.*).

*c After the third consecutive defibrillation attempt, proceed with vector change and/or dual sequential defibrillation (*Ref 8.02 A.4 / A.5*).

8.02 E. Cardiac Arrest Resuscitation : Notes

A. This contains the guidelines for all cardiac arrest resuscitations regardless of the rhythm. This guideline should only be begun once ALS is on scene with sufficient additional unit(s) to provide enough individuals for uninterrupted chest compressions and to allow paramedics to establish IV/IO access. Medication, when indicated, shall be given at the soonest possible rhythm check.

B. If the AED is being utilized upon ALS arrival, ALS personnel shall allow the AED to complete the upcoming analysis including a shock if required. Immediately after this, the patient shall be switched over to the ALS monitor. For adolescents/adults, detach the AED pads from the AED and connect to the ALS monitor. For neonates/infants/children, remove the AED Infant/Child pads and attach the Pediatric pads to the ALS monitor and the patient.

C. IV/IO Access : Please see 8.02 A.3.d. for the preferred method of medication delivery. After 2 failed attempts (or 2 minutes) for a peripheral IV, proceed to IO placement with the EZ-IO® device as described in 7.03 B.

D. ADULT Medication Delivery:
   1. As detailed in the guidelines, there are two classes of medications; Vasopressors and Anti-Arrhythmics. Medications, when indicated, shall be given after the earliest possible rhythm/pulse check.
   2. Vasopressors will be given EVERY OTHER Rhythm/Pulse check, roughly every 6 minutes. All other medications shall be given at each appropriate Rhythm/Pulse check, occurring every 3 minutes.

Adult Vasopressors	Adult Anti-Arrhythmics
1st: **Epinephrine** (1:10,000) 1 mg IVP	1st: **Amiodarone** 300 mg IVP
2nd - 8th dose: **Epinephrine** (1:1000) 1 mg IVP	2nd: **Amiodarone** 150 mg IVP
**** No more than 8 doses of Epi given during arrest***	Consult on-line physician for further orders

Pre-Approved Medications for Specific Indications

-If at any point in the arrest (the earlier the better), there is a known or suspected condition which would indicate one these following medications, administer the medication as soon as possible. The on-line physician must be contacted for repeat dosing.

Medication	Indication
Calcium Chloride 1 gram IVP	Incomplete or Missed Dialysis, Presumed Hyperkalemia, Ca+ Channel Blocker OD
Magnesium Sulfate 2 gram slow IVP diluted	Torsade De Pointes
Sodium Bicarbonate 1 mEq/Kg IVP	Incomplete or Missed Dialysis, Presumed Hyperkalemia, Cocaine Associated Arrest, Tricyclic Overdose (e.g. Amitriptyline, Doxepin, Amoxapine, Clomipramine, Nortriptyline)

E. PEDIATRIC Medication Delivery:
   1. As detailed in the guidelines, there are two classes of medications; Vasopressors and Anti-Arrhythmics. Medications, when indicated, shall be given after the earliest possible rhythm/pulse check.
   2. Vasopressors will be given EVERY OTHER Rhythm/Pulse check, roughly every 6 minutes. All other medications shall be given at each appropriate Rhythm/Pulse check, occurring every 3 minutes.

8.02 E. Cardiac Arrest Resuscitation : Notes Continued

Pediatric Vasopressors	Pediatric Anti-Arrhythmics
1st and subsequent dosing: **Epinephrine**(1:10,000) IV per Pedi Dosing guideline	1st: **Amiodarone** IVP per Pedi Dosing guideline Consult on-line physician for further dosing
**** No more than 8 doses of Epi given during arrest***	

F. All pulse checks shall be less than 10 seconds. If there is not a definitive pulse, resume chest compressions. Upon regaining pulses, quickly assess relative blood pressure by noting presence or absence of carotid, femoral and radial pulses.

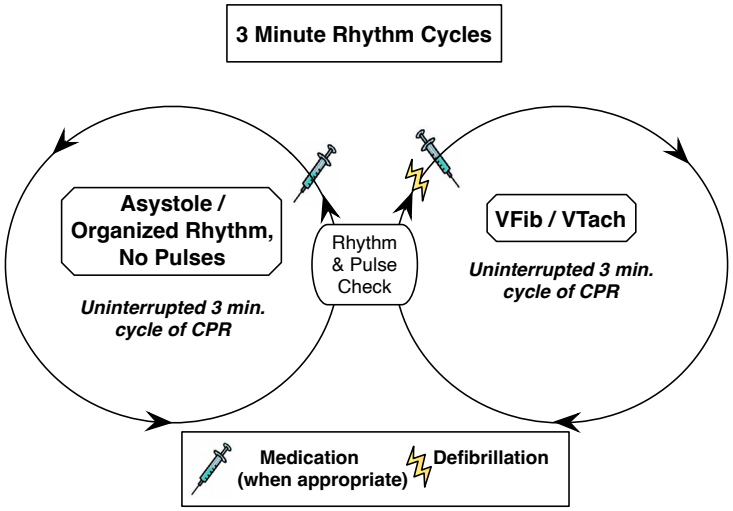
G. For organized electrical activity without a pulse (PEA), consider the causes (5 H's & 5 T's)

Hypovolemia	Hypoxia	Tension Pneumothorax	Tamponade (Cardiac)
Hyperkalemia/Hypokalemia		Tamponade (Cardiac)	Thrombosis (Acute Coronary)
Hydrogen Ions (Acidosis)		Thrombosis (Pulmonary)	Toxins / Tablets
Hypothermia			

H. Airway Management [ALS]
- •Adults: BVM then supraglottic airway (if available). ET Tube as per 8.02 A.1.d.
- •Pediatrics: BVM then supraglottic airway (if available). ET Tube ONLY if unable to ventilate.

I. Persistent Ventricular Fibrillation/Pulseless Ventricular Tachycardia
1. Persistent V. Fib./Pulseless V. Tach is defined as the persistent presence of a shockable rhythm after three consecutive rhythm checks resulting in defibrillations (AED or LifePak).
2. When persistent V.Fib/Pulseless V. Tach is present, place a second set of defibrillation pads in the anterior/lateral position (*ref. 7.04 A.4.d.)*, ensuring the pads do not overlap existing pads nor will be touched by any mechanical chest compression device.
3. For subsequent defibrillations, connect the ALS monitor to this second set of defibrillation pads (the new anterior/lateral pads) to enable a vector change for defibrillation.

K. Proper documentation of cardiac arrest incidents shall include:
- •What, if anything, did the patient complain of prior to requiring CPR?
- •Was the arrest unwitnessed or witnessed? If witnessed, by whom?
- •Was bystander CPR administered? Only chest compressions or ventilations as well?
- •Was an AED used, what AED, who operated it and how many times did it defibrillate?



8.02 F. Post-Cardiac Arrest Care

A. Unless a threat to provider safety exists, all relevant Post-Cardiac Arrest care measures shall be completed PRIOR to moving the patient to the apparatus.
B. When pulses return, determine a manual blood pressure and cardiac rhythm.
   1. If BP not able to be rapidly determined, assess carotid/femoral/radial pulses to approximate BP / level of perfusion.
   2. Treat cardiac arrhythmias consistent with relevant protocol.
C. Airway/Breathing Management
   1. Confirm ventilation at appropriate rate and volume for age.
   2. Monitor $EtCO_2$ and pulse oximetry and maintain oxygen saturation ≥ 94%.
   3. Endotracheal Intubation is to be delayed until all other priorities are assessed/managed, unless intubation is the only means to ventilate/oxygenate the patient.
D. Circulation
   1. Adult Patients
      a. If hypotensive with bradycardia, attempt transthoracic pacing. If patient remains hypotensive and bradycardic, administer Epinephrine drip IV. Titrate gtt to SBP > 100 mmHg.
      b. If hypotensive without bradycardia, administer Norepinephrine drip IV. Titrate gtt to SBP > 100 mmHg.
      c. If there is concern for decreased intravascular volume, administer 500 ml NS bolus. Further IV fluids can be administered per on-line physician order.
      d. Re-check blood pressure every 5 minutes during transport. SBP goal is > 100 mmHg systolic.
   2. Pediatric Patients
      a. If hypotensive, administer a Normal Saline bolus per Pediatric Dosing Guidelines (*Ref. 9.01 BB*.).
      b. Further care is to be determined by on-line physician director.
E. Perform a 12 lead ECG for transmission to destination hospital. Repeat the 12-lead ECG every 5 minutes to assess for changes. If STEMI is present, ensure prompt notification of Telemetry to activate a STEMI alert prior to moving the patient to the transport unit.
F. Disability
   1. Recheck blood glucose.
   2. Reassess patient with detailed head to toe exam.
G. Exposure
   1. Check patient temperature and follow the appropriate Hypothermia / Hyperthermia guideline.
H. Consult with EMS Supervisor and/or on-line physician for ET intubation with bougie as per 8.02 A.1.d.
I. Unless approved by online physician, adult patients with sustained ROSC must be transported to a 24 Hour Cardiac Cath facility. Pediatric patients with sustained ROSC must be transported to a facility with a Pediatric ICU (*Ref 9.05*).


CITY OF HOUSTON
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EMERGENCY MEDICAL SERVICES

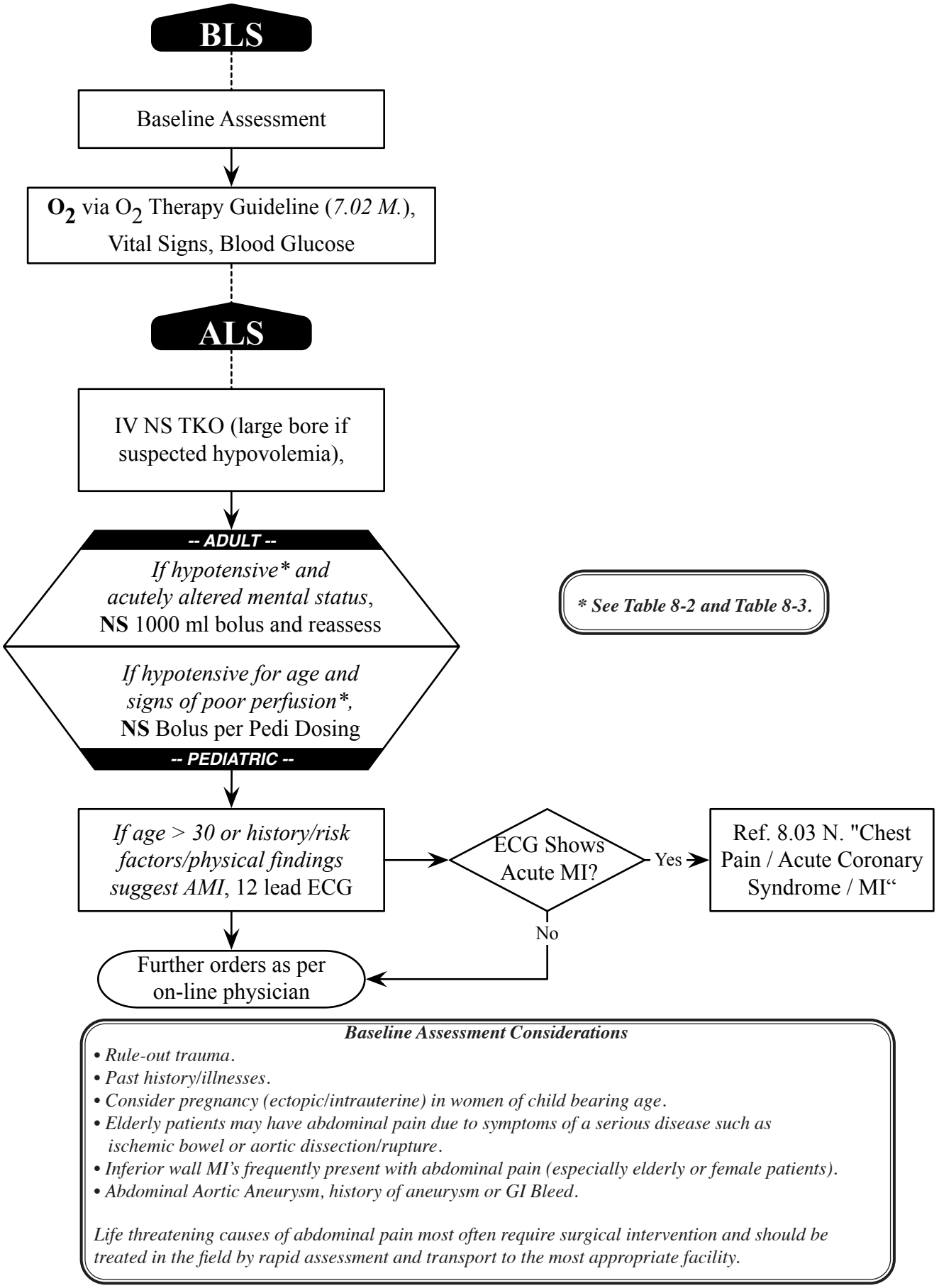
Tables

8.03 A. General Principles for Medical Emergencies

1. BLS / ALS Level
   a. When in doubt, shout. Contact the Base Station.

2. ALS Level
   a. Unstable patients
      1) If a patient becomes unstable at any time, move to 'unstable' arm of algorithm.
      2) An unstable patient shows symptoms of poor perfusion such as:
         •Altered mental status (altered from baseline status) or unconsciousness
         •Chest Pain
         •Dyspnea
         •Hypotension (*See Table 8-2*), or for Pediatric Patients, poor perfusion with capillary refill > 3 seconds)
         •Pulmonary edema
   b. Respiratory status
      1) Respiratory distress is a condition of abnormal respiratory rate or effort.
      2) Respiratory failure is inadequate oxygenation, ventilation or both to meet the metabolic demands of body tissues.
         Signs of failure may include:
         •Hypoxia and/or cyanosis
         •Hypercapnia (elevated $ETCO_2$)
         •Semi-conscious or unconscious in a setting of respiratory distress
         •Absent, agonal, or extremely ineffective/shallow breathing
      3) Distress generally means an inability to adapt to stressors and return to a normal state. Failure refers to an inability of an organ or system to function properly.
   c. If at any time during these treatment plans the patient deteriorates to a pulseless state, immediately proceed to the appropriate cardiac arrest guideline *(Ref. 8.02)*.
   d. For patients requiring cardioversion, after consultation with the on-line physician, sedation may be achieved with Midazolam 2.5 mg slow IVP. If the patient is unstable, attempt synchronized cardioversion without sedation. Midazolam is generally not recommended for patients with a systolic blood pressure less than 100 mmHg.
   e. When giving a Normal Saline bolus for hypotension, frequently reassess your patient for signs of fluid overload (rales) or increased difficulty of breathing (O_2 saturation may not decrease with pulmonary edema). You are not mandated to give the entire bolus.
   f. For Pediatric patients, use of the the patient's age and the Pediatric Dosing Guidelines are the standard of care to establish the patient's medication dosage and correct equipment sizes.

8.03 B. Abdominal Pain / Acute Abdomen

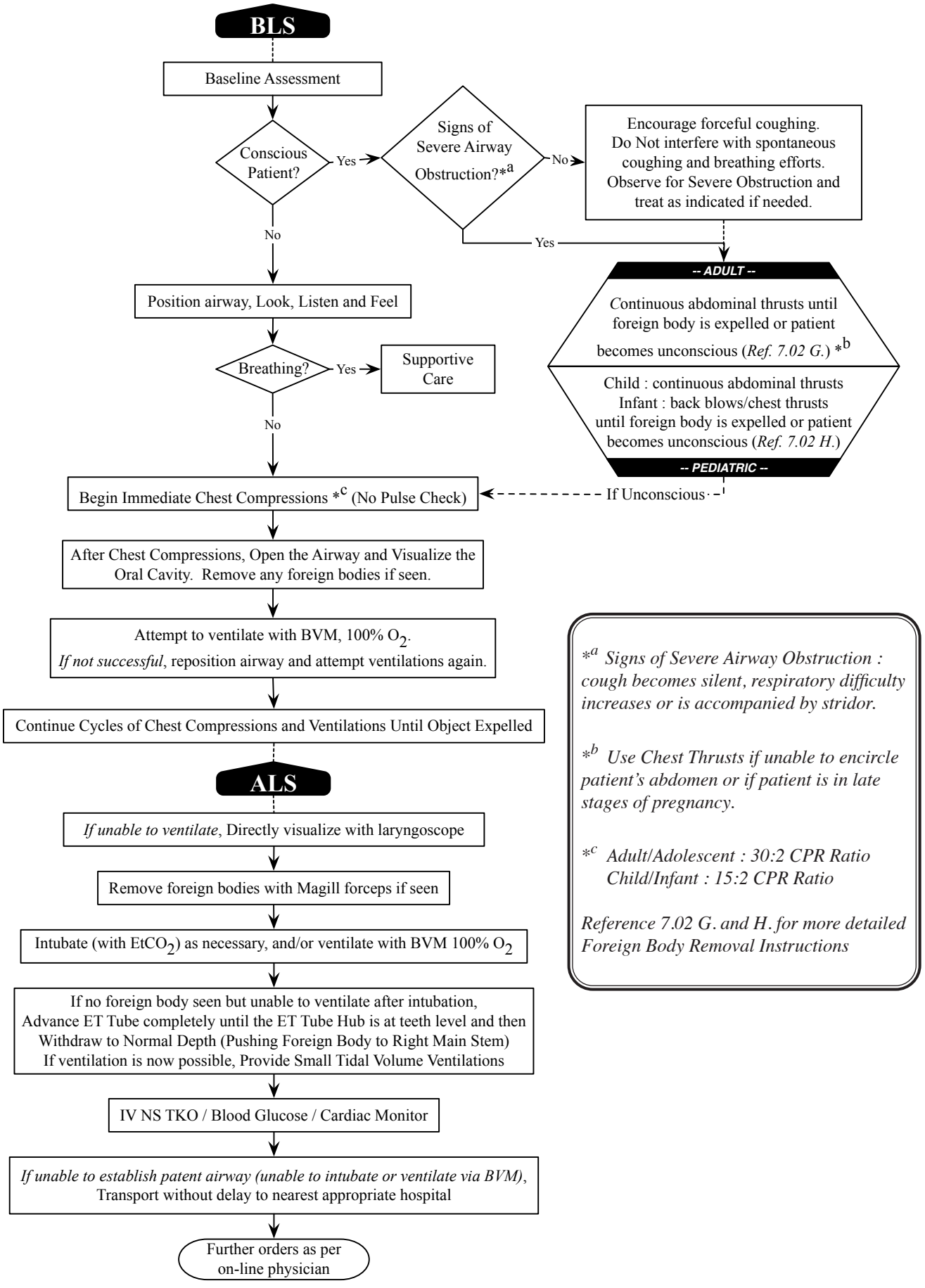


Baseline Assessment Considerations

- *Rule-out trauma.*
- *Past history/illnesses.*
- *Consider pregnancy (ectopic/intrauterine) in women of child bearing age.*
- *Elderly patients may have abdominal pain due to symptoms of a serious disease such as ischemic bowel or aortic dissection/rupture.*
- *Inferior wall MI's frequently present with abdominal pain (especially elderly or female patients).*
- *Abdominal Aortic Aneurysm, history of aneurysm or GI Bleed.*

Life threatening causes of abdominal pain most often require surgical intervention and should be treated in the field by rapid assessment and transport to the most appropriate facility.

8.03 C. Airway Obstruction (Foreign Body)



*a Signs of Severe Airway Obstruction : cough becomes silent, respiratory difficulty increases or is accompanied by stridor.

*b Use Chest Thrusts if unable to encircle patient's abdomen or if patient is in late stages of pregnancy.

*c Adult/Adolescent : 30:2 CPR Ratio
Child/Infant : 15:2 CPR Ratio

Reference 7.02 G. and H. for more detailed Foreign Body Removal Instructions

8.03 D. Allergic Reaction / Anaphylaxis

If anaphylaxis criteria not met, treat for Allergic Reaction and monitor the patient closely. Start "Anaphylaxis" Treatment if the criteria is met at a later time.

*[a] *Ref. Table 8-2 and Table 8-3.*

[b] Use a half-volume dose in pediatric patients with congenital heart disease.

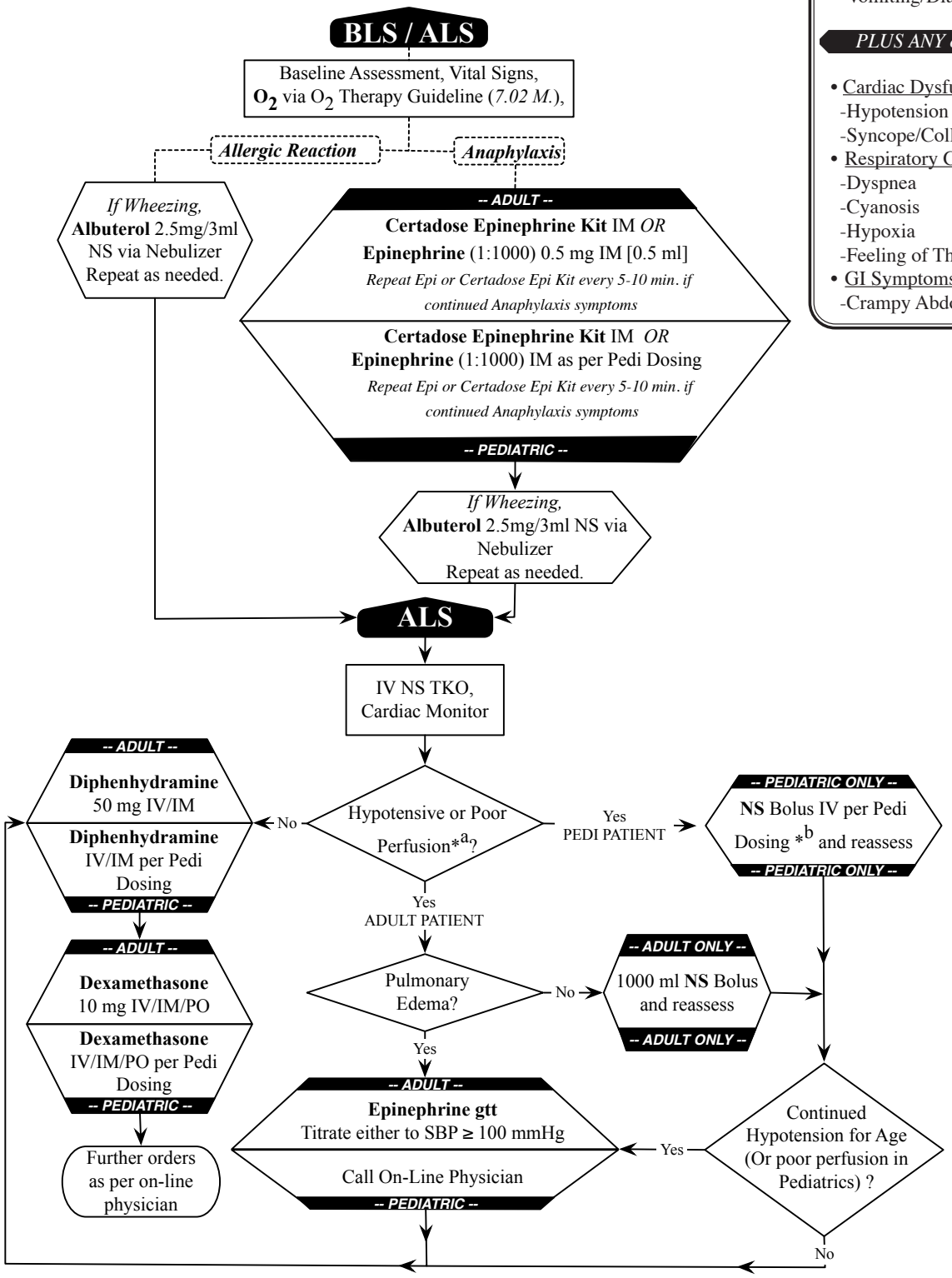
Anaphylaxis Definition

Acute Onset Cutaneous or Mucosal Involvement After Antigen Exposure

-Pruritus
-Urticaria/Hives
-Angioedema/Swelling
-Flushing
-Vomiting/Diarrhea

PLUS ANY of the FOLLOWING

- Cardiac Dysfunction
  - -Hypotension (age specific)
  - -Syncope/Collapse
- Respiratory Compromise
  - -Dyspnea
  - -Wheeze/Stridor
  - -Cyanosis
  - -Bronchospasm
  - -Hypoxia
  - -Change in Voice
  - -Feeling of Throat Swelling
- GI Symptoms
  - -Crampy Abdominal Pain



8.03 E. Altered Mental Status (AMS)

**[a] Signs of hypoventilation can include apnea or RR < age appropriate, $ETCO_2$ > 45, O_2 saturation < 94%, Diminished ventilatory effort*

**[b] Hypotension: Ref. Table 8-2 & Table 8-3*

A. Baseline assessment considerations:

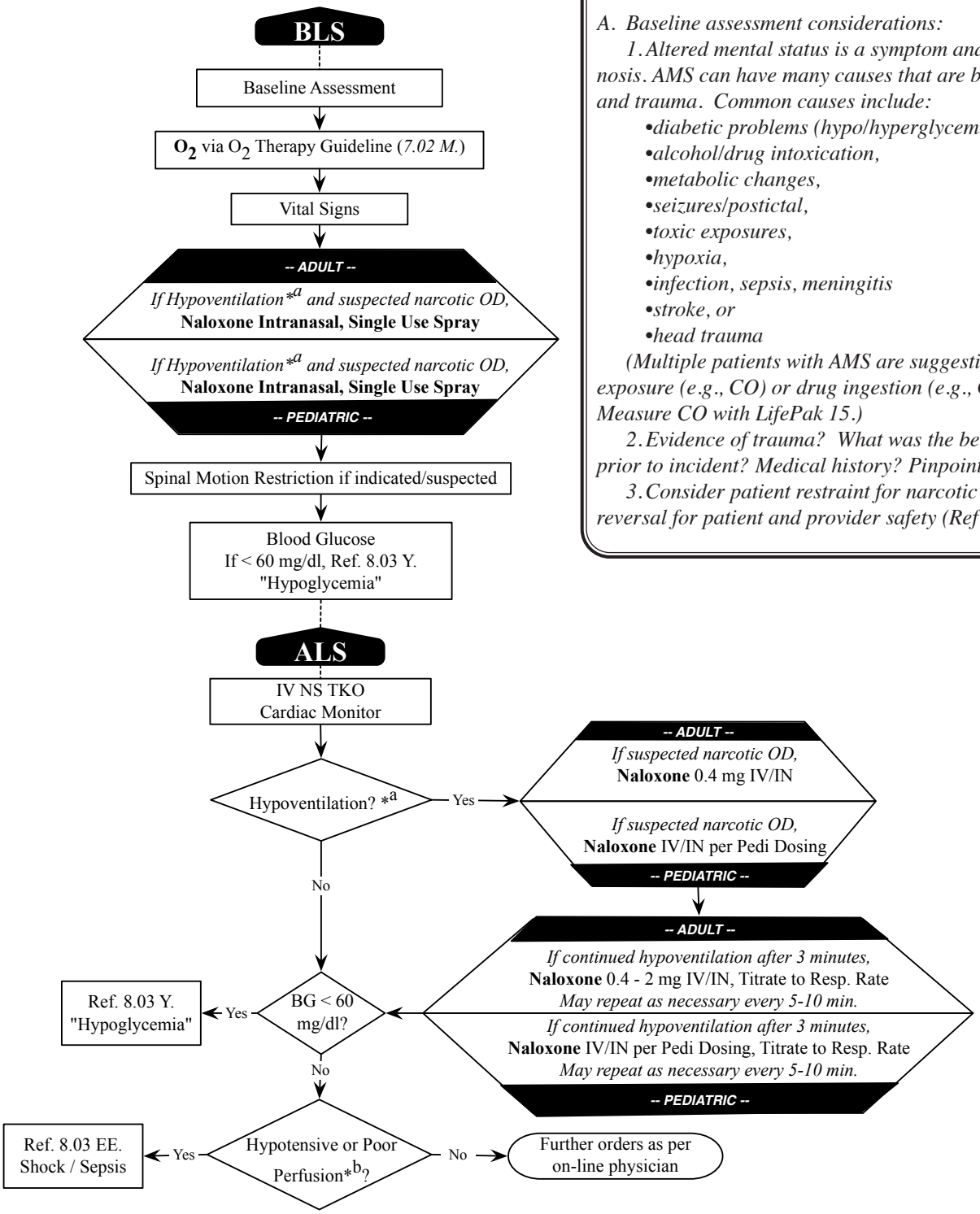
1. Altered mental status is a symptom and not a diagnosis. AMS can have many causes that are both medical and trauma. Common causes include:

- *diabetic problems (hypo/hyperglycemia),*
- *alcohol/drug intoxication,*
- *metabolic changes,*
- *seizures/postictal,*
- *toxic exposures,*
- *hypoxia,*
- *infection, sepsis, meningitis*
- *stroke, or*
- *head trauma*

(Multiple patients with AMS are suggestive of a toxic exposure (e.g., CO) or drug ingestion (e.g., GHB). Measure CO with LifePak 15.)

2. Evidence of trauma? What was the behavior like prior to incident? Medical history? Pinpoint pupils?

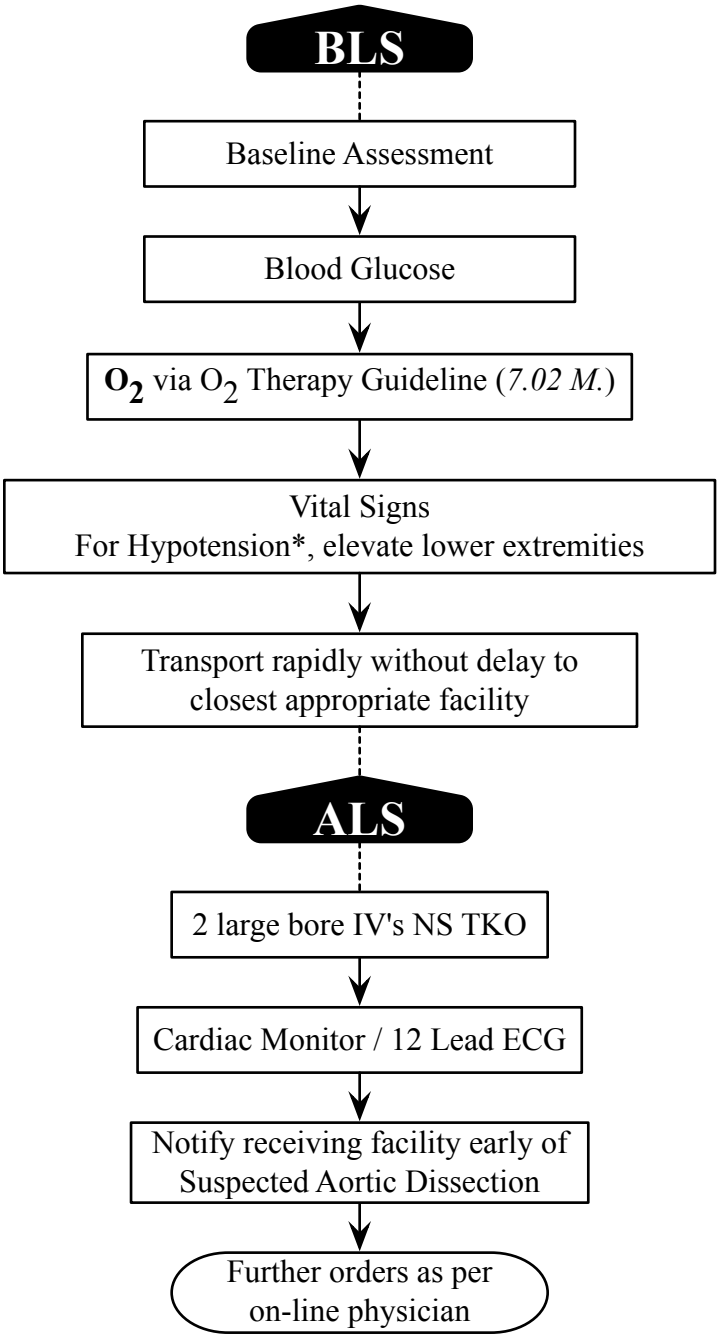
3. Consider patient restraint for narcotic overdose reversal for patient and provider safety (Ref 6.19).



[BLS] - Single Use Naloxone Intranasal Spray delivers 4mg Naloxone. It is not titratable. Ref. 7.03 D.

[ALS] - Slowly administer Narcan® (Naloxone) over at least a two minute period, titrating to respirations. ***The goal is not to awake the patient and if intubation performed or planned, do not try to awaken the patient with Narcan.***

8.03 F. Aortic Aneurysm / Dissection, Suspected - ADULT ONLY



**** Hypotension : See Table 8-2***

Baseline Assessment Considerations

1. <u>*Risk Factors of Aortic Aneurysm / Dissection*</u>
   - *Hypertension*
   - *Coronary Artery Disease*
   - *Turner's and Marfan's Syndrome*
   - *Male gender, Older Age*

   <u>*Symptoms/Signs of Aortic Aneurysm / Dissection?*</u>
   - *Painful, tearing sensation in back*
   - *Hypotension*
   - *Decreased femoral and pedal pulses*
   - *Palpable mass in abdomen (possible)*
2. *For hypotension, elevate lower extremities and assess lung sounds frequently for signs of pulmonary edema. Suspected Aortic Aneurysm patients are not cured by treatment in the field with IV fluids or vasopressors.*
3. *If patient severely hypertensive (SBP >180), contact on-line physician for possible medication orders.*
4. *Move patient as quickly and gently as possible.*

8.03 G. Bites and Stings

Limb Positioning / Care for Snake Bites

Pit Vipers/Crotalids: Rattlesnake, Cottonmouth, Copperhead
- *Elevate the affected extremity above the heart.*

Elapids: Coral Snake
- *Position the affected extremity in a position of comfort.*

BLS

Scene Safety, Baseline Assessment

O_2 via O_2 Therapy Guideline (*7.02 M.*)

Vital Signs

Snake Bites

Minimize patient movement

Loosen Clothing and Remove Jewelry From Affected Extremity

Mark the edge of the swelling and note time

Stings

Remove jewelry from affected extremity

Wash site with soap and water

Cool compresses, no direct ice

ALS

IV NS TKO

Signs of allergic reaction?

Yes → Go to "Allergic Reaction / Anaphylaxis" Ref. 8.03 D.

No

Notify receiving hospital ASAP so that antivenom can be secured if required

Further orders as per on-line physician

- *All potential venomous snakebites are treated and transported.*
- *Treatment for hypovolemia or neurogenic shock is appropriate since these are the same types of physiology actions that occur with snake's venom.*
- *If safe, take a picture of the snake for assistance in identification. Do not delay transportation to find the snake.*
- *To remove the stinger or venom sac, the traditional advice is to scrape the site with a blade or a card.*

8.03 H. Bradycardia (Unstable) - ADULT ONLY

*This sequence was developed to assist the treatment of a broad range of patients with bradycardia (20-60 beats/min) who meet "**unstable**" criteria (Ref. 8.03 A.2.a). Some patients may require care not specified herein. On-line physician must be consulted in such circumstances.*

**[a] If patient given Calcium and shows some improvement but still HR < 60, Call On-Line physician for second dose of Calcium Chloride AND for potential treatment of hyperkalemia with Sodium Bicarbonate and/or continuous Albuterol nebulizers.*

**[b] Hypotension: See Table 8-2*

BLS

Baseline Assessment

O_2 via O_2 Therapy Guideline (*7.02 M.*), Vital Signs, Blood Glucose, Temperature Ref. 8.03 Z. if Hypothermic

ALS

IV NS TKO

Cardiac Monitor, 12 lead ECG, Identify Rhythm

If Suspected Hyperkalemia (Renal Disease, Missed Dialysis, Peaked T Waves) or Ca^+ Channel Blocker Overdose, **Calcium Chloride** 1 gm IVP *[a]

Type II Second Degree AV Block or Third Degree Heart Block?

Yes → Transthoracic Pacing Ref. 7.04 D.

No → **Atropine** 1 mg IVP

After 1 min., is HR > 60 BPM?

Yes → *If Hypotensive**[b], **Norepinephrine** gtt, titrate to SBP = 100 mmHg → Further orders as per on-line physician

No → **Atropine** 1 mg IVP

After 1 min., is HR > 60 BPM?

Yes → *If Hypotensive**[b], **Norepinephrine** gtt, titrate to SBP = 100 mmHg → Further orders as per on-line physician

No → Return to Type II Second Degree AV Block or Third Degree Heart Block?

Transthoracic Pacing Ref. 7.04 D. → *If + Mechanical Capture, BUT Hypotensive*, **Norpinephrine** gtt, titrate to SBP = 100 mmHg *If NO Mechanical Capture, AND Hypotensive*, **Epinephrine** gtt, titrate to SBP = 100 mmHg → Further orders as per on-line physician

Reminder!!!

When using a LifePak 15 to monitor a patient who has an internal pacemaker firing, be aware that pacer spikes may not be visible on the monitor screen.

To determine if a patient's implanted pacemaker is operating, members shall print out a 3-lead strip or a 12-lead and look for the pacemaker detection arrows (hollow arrows) along the bottom of the rhythm strip or 12-lead. They should be at a regular interval with the presence of a QRS complex located above each arrow. These detection arrows are not visible on the monitor screen.

Solid arrows indicate active pacing.

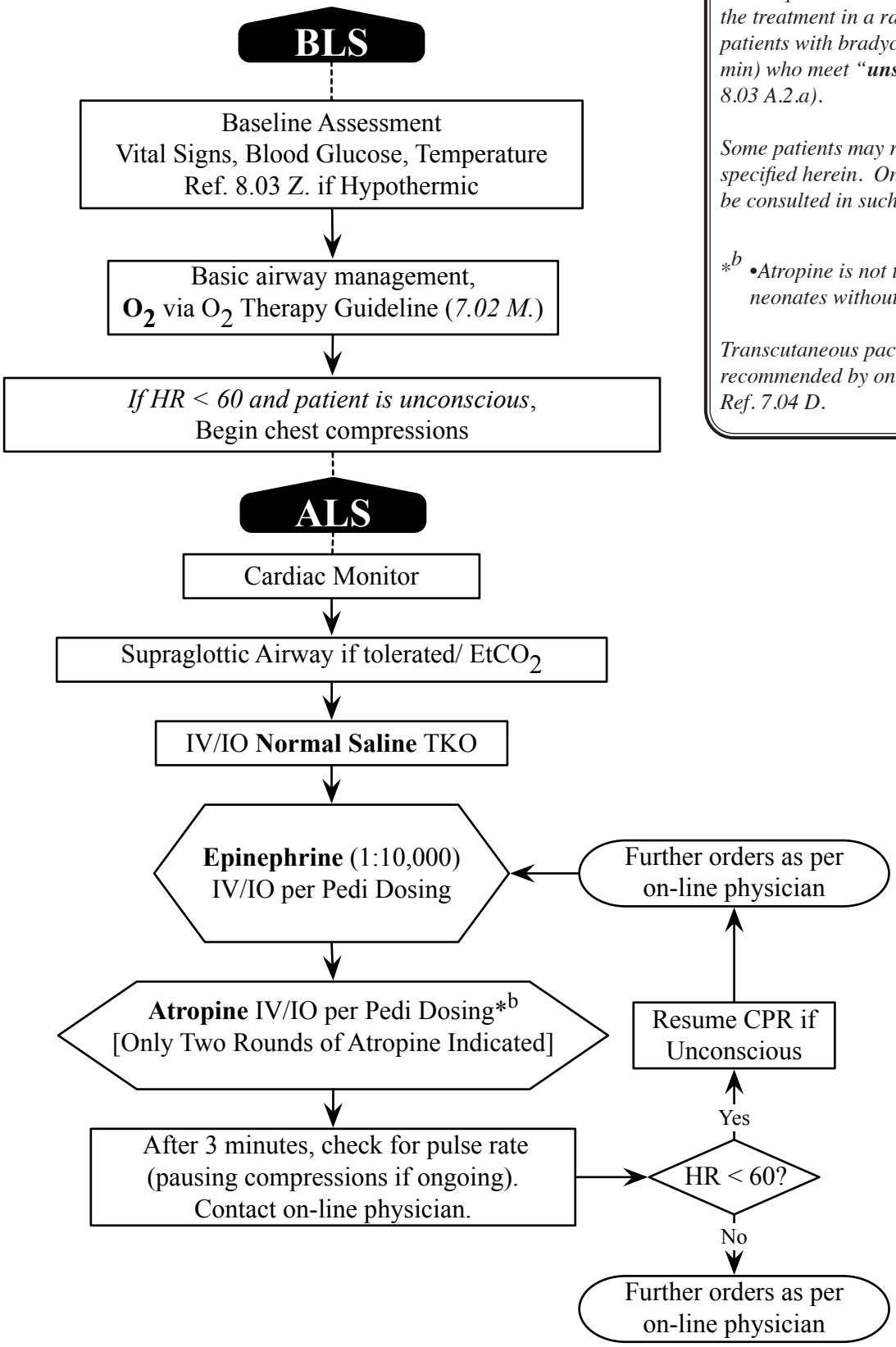
8.03 I. Bradycardia (Unstable) - PEDIATRIC ONLY

*This sequence was developed to assist the treatment in a range of pediatric patients with bradycardia (20-60 beats/ min) who meet "**unstable**" criteria (Ref. 8.03 A.2.a).*

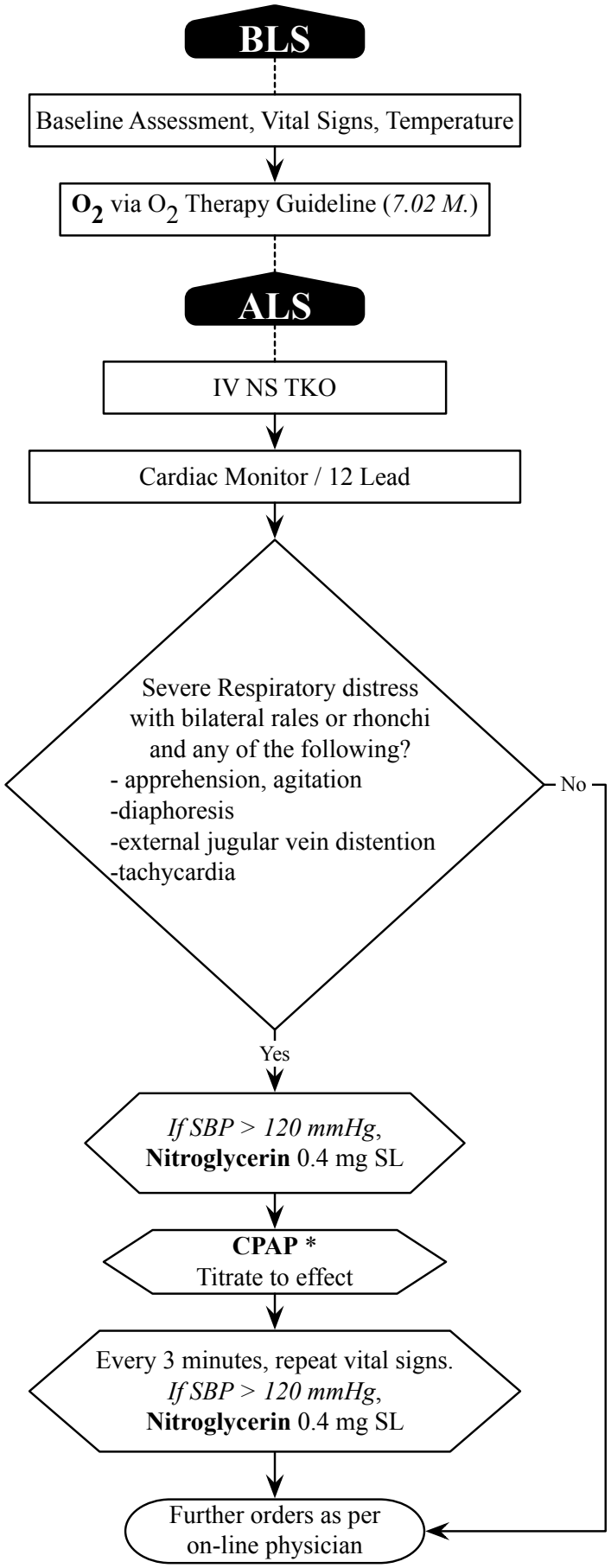
Some patients may require care not specified herein. On-line physician must be consulted in such circumstances.

**[b] •Atropine is not to be given to neonates without a physician order.*

Transcutaneous pacing may be recommended by on-line physician, Ref. 7.04 D.



8.03 J. Breathing Difficulty : Rales / Rhonchi (Pulmonary Edema) - ADULT ONLY



* *Reference 7.02 I. CPAP*

Utilize $ETCO_2$ Nasal Cannula for evaluation of patient.

A. *Use a nasal cannula at a flow rate of 4-6 liters per minute for supplemental oxygen for those patients who are in mild distress or have a history of severe COPD. If the respiratory distress does not resolve with Oxygen by nasal cannula, change to a non-rebreather oxygen mask.*

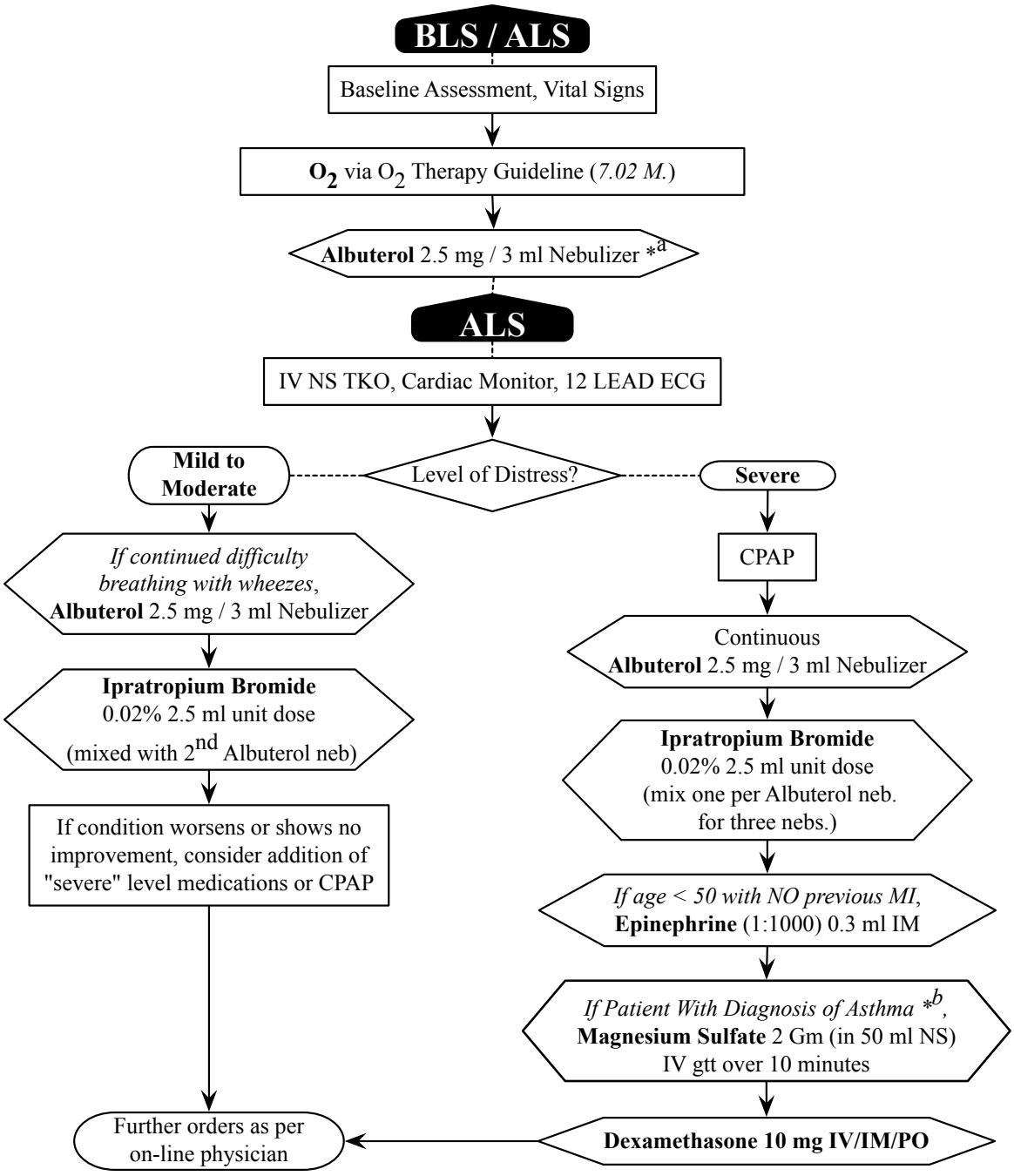
B. *Patients with difficulty breathing must be examined properly. Auscultation of breath sounds begins at the posterior bases and continues in six steps towards the apices.*

C. *All patients (male or female) who receive nitroglycerin must be questioned about taking Sildenafil Citrate (Viagra®) or other similar medications (i.e. Levitra® or Cialis®). Any patient that has taken these medications within the last 24 hours should not receive any form of nitroglycerin as irreversible hypotension may occur. It is imperative that the patient be questioned (in a confidential manner) about using these medications. The fact that the patient was questioned as well as their answer must be recorded in the patient care record. Contact on-line physician for further orders in this case.*

D. *In cases of suspected pneumonia (i.e. gradual onset, fever, productive cough), do not give NTG.*

E. *If severe respiratory distress, contact on-line physician ASAP!*

8.03 K. Breathing Difficulty : Wheezes (Asthma/COPD) - ADULT ONLY



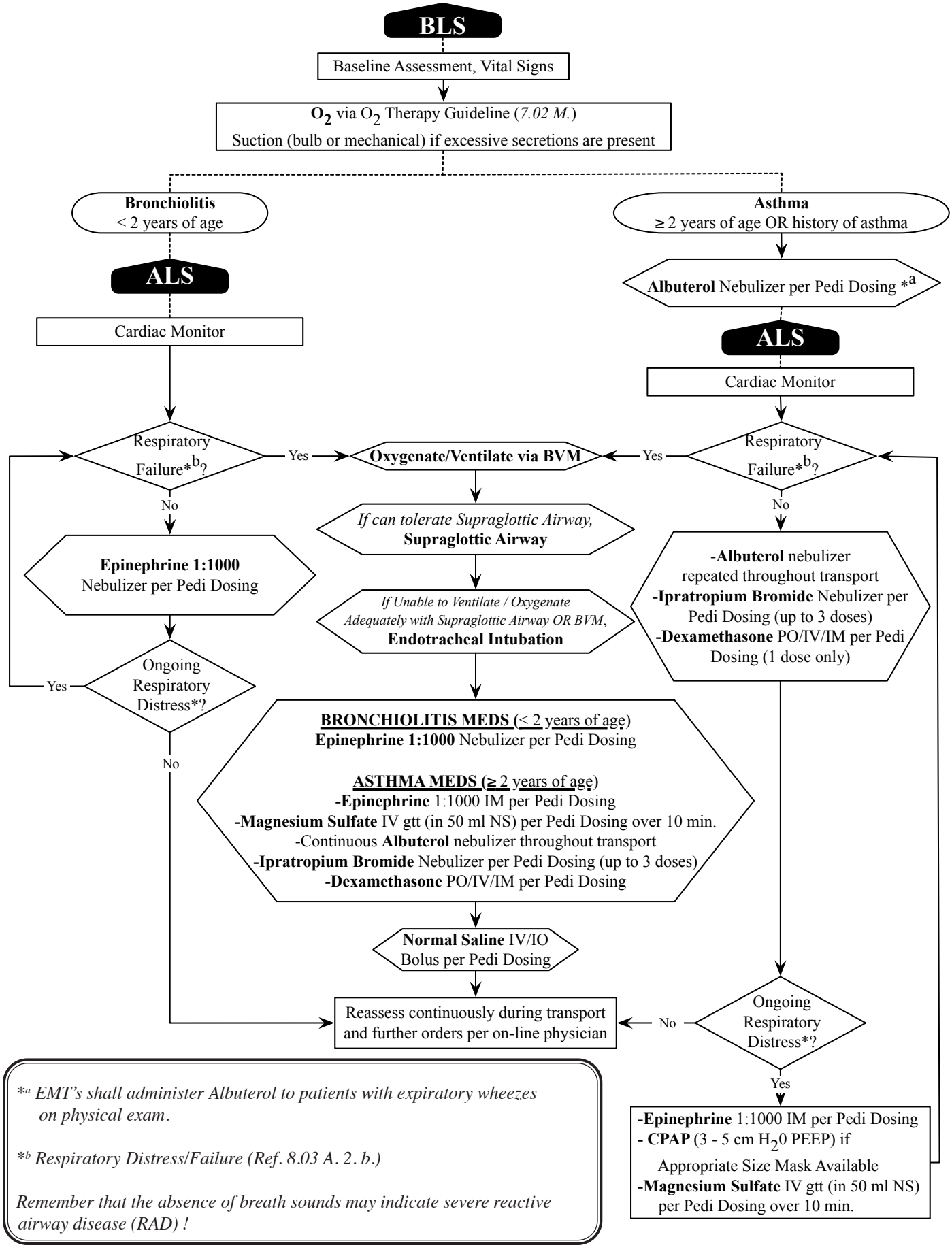
[a] EMT's shall administer Albuterol to patients with expiratory wheezes on physical exam.

[b] Magnesium Sulfate should not be given to patients who are known to have COPD only.

Severe exacerbations show signs of : pt. in tripod position, diaphoresis, altered mental status or acting erratically due to hypoxia, RR ≥ 45/min, tachycardia, SpO2 ≤ 90%. Patient may not show all of these signs but if several are present, patient should be treated accordingly.

Use a nasal cannula at a flow rate of 4-6 liters per minute for supplemental oxygen for those patients who are in mild distress or have a history of severe COPD. If the respiratory distress does not resolve with oxygen by nasal cannula, change to a non-rebreather oxygen mask. Never withhold oxygen from any patient in severe distress. Consider use of $ETCO_2$ Nasal Cannula for evaluation of patient. Rising $ETCO_2$ may indicate treatment failure and the provider should initiate treatments as per the 'severe level of distress' side.

8.03 L. Breathing Difficulty : Wheezes (Asthma/Bronchiolitis) - PEDIATRIC ONLY

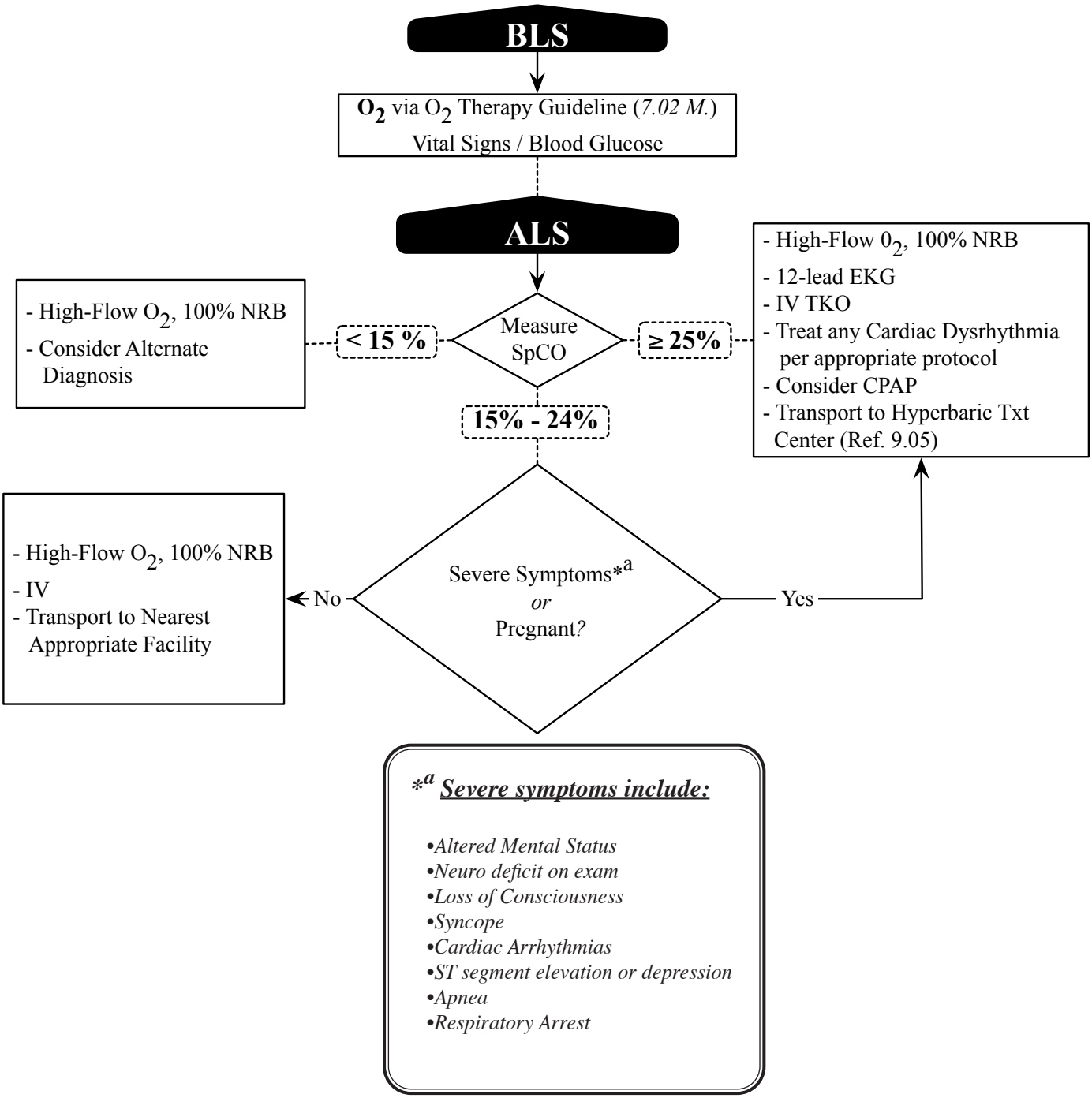


[a] EMT's shall administer Albuterol to patients with expiratory wheezes on physical exam.

[b] Respiratory Distress/Failure (Ref. 8.03 A. 2. b.)

Remember that the absence of breath sounds may indicate severe reactive airway disease (RAD) !

8.03 M. Carbon Monoxide (CO) Poisoning



a Severe symptoms include:

- *Altered Mental Status*
- *Neuro deficit on exam*
- *Loss of Consciousness*
- *Syncope*
- *Cardiac Arrhythmias*
- *ST segment elevation or depression*
- *Apnea*
- *Respiratory Arrest*

-"Cherry-Red" skin is not a reliable indicator of CO poisoning, and, if present, is a late sign.
-If a fire is involved in exposure, consider cyanide exposure (Ref. 8.03 R.).
-CO is measured by the 'rainbow' sensor on the LifePak 15.

-Pulseless patients shall be treated per Cardiac Arrest Guidelines and transported to the closest appropriate facility. If there is ROSC prior to transport, transport to destination according to this protocol.

8.03 N. Chest Pain / Acute Coronary Syndrome / MI - ADULT ONLY

Chest Pain Notes

A. NTG Inclusion Criteria Questions:

- *The patient must be at least 18 years of age.*
- *The patient must have a systolic blood pressure >120 mmHg.*
- *The patient must currently be experiencing chest discomfort or symptoms consistent with acute coronary syndrome.*

B. All patients (male or female) who receive nitroglycerin must be questioned about taking Sildenafil Citrate (Viagra®) or other erectile disfunction drugs (Levitra® or Cialis®). If taken within the last 24 hours, no nitroglycerin should be given as irreversible hypotension may occur. It is imperative that the patient be questioned (in a confidential manner) about the use of these medications. The fact that the patient was questioned as well as their answer must be recorded in the patient care record.

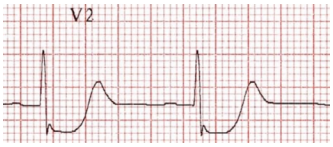
C. The patient must maintain a SBP > 120 mmHg before subsequent doses of nitroglycerin may be administered. If unable to establish an IV, a single dose of NTG may be administered if the patient's systolic BP ≥ 150.

D. Patients with suspected cardiac ischemia and/or ischemic changes on their 12-lead shall be transported Priority 2. The 12-leads shall be transmitted to the Base Station as detailed in 9.04 and included in the patient care record (ref. 6.06).

**[a] If patient has taken 81 mg ASA, give 243 mg ASA (3 baby ASA).*

**[b] Hypotension : See Table 8-2*

**[c] In addition to traditional MI patterns, be mindful of a Posterior MI pattern. Posterior MI is suggested by the following changes in V1-3:*
1) Horizontal ST depression 2) Tall, broad R waves (> 30ms) 3) Upright T waves



BLS/ALS

Baseline Assessment, Vital Signs, Blood Glucose

O_2 via O_2 Therapy Guideline (*7.02 M.*)

Aspirin 324 mg PO*[a] (chew 4 baby ASA)

ALS

12 lead ECG

IV NS TKO

Inferior Infarction (ST↑ in leads II/III/ AVF)?

Yes → *If Hypotensive*[b]*, **Normal Saline** 1000 ml Bolus → *If SBP > 120 mmHg,* **Fentanyl** 50 - 100 mcg IV/IN/IO → Transport To 24 Hours Cath Hospital (*Ref. 9.05*) Activate STEMI ALERT. Further orders as per on-line physician

No

Acute Myocardial Infarction Pattern on 12 lead ECG? *[c]

Yes → **Nitroglycerin** 0.4 mg SL May repeat every 3 min. if SBP > 120 mmHg → *If Chest Pain Present After 3 Nitroglycerin and SBP > 120 mmHg,* **Fentanyl** 50 - 100 mcg IV/IN/IO → Transport To 24 Hours Cath Hospital (*Ref. 9.05*) Activate STEMI ALERT. Further orders as per on-line physician

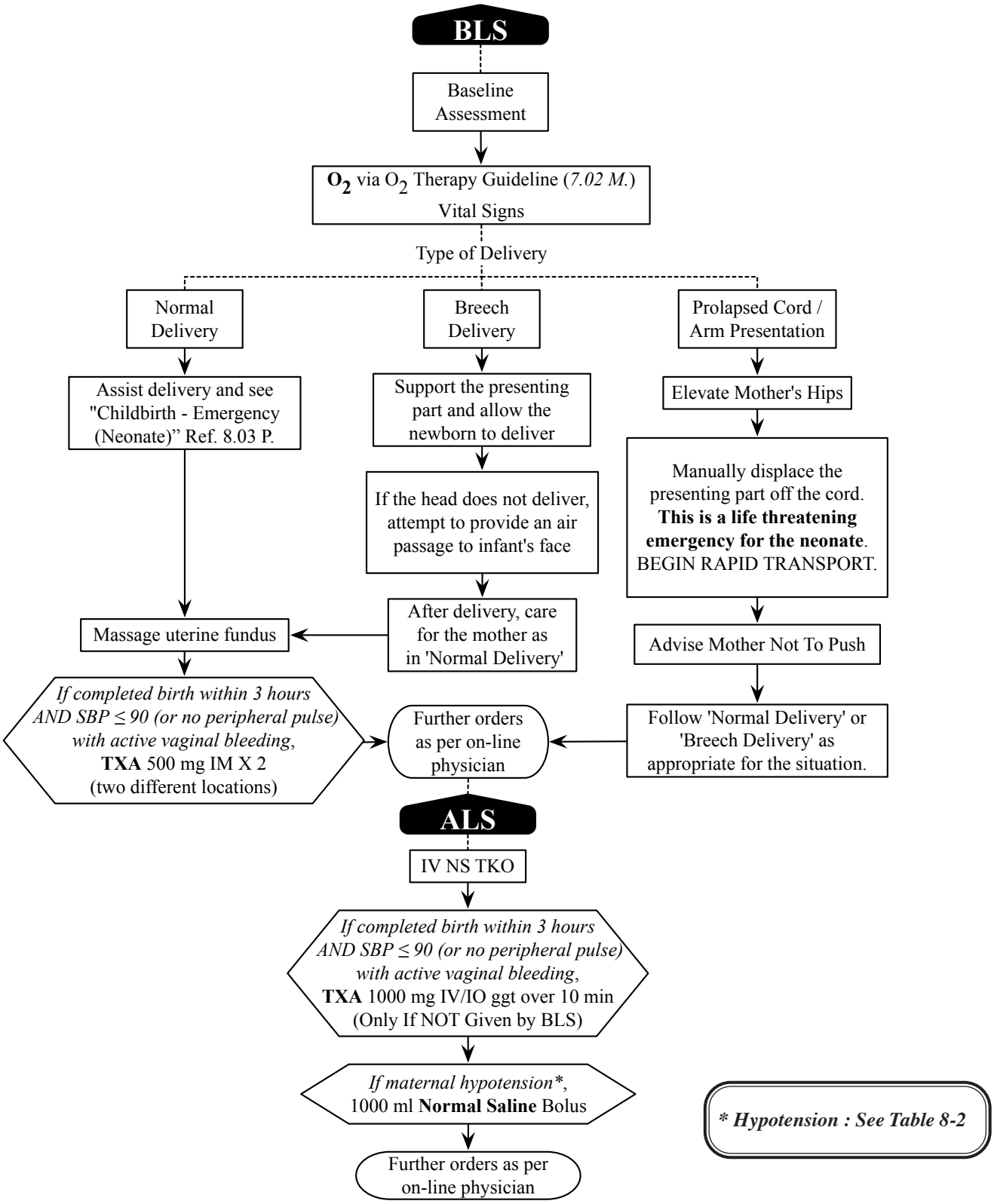
No

Meets all inclusion criteria for NTG?

Yes → **Nitroglycerin** 0.4 mg SL May repeat every 3 min. if SBP > 120 mmHg → Further orders as per on-line physician

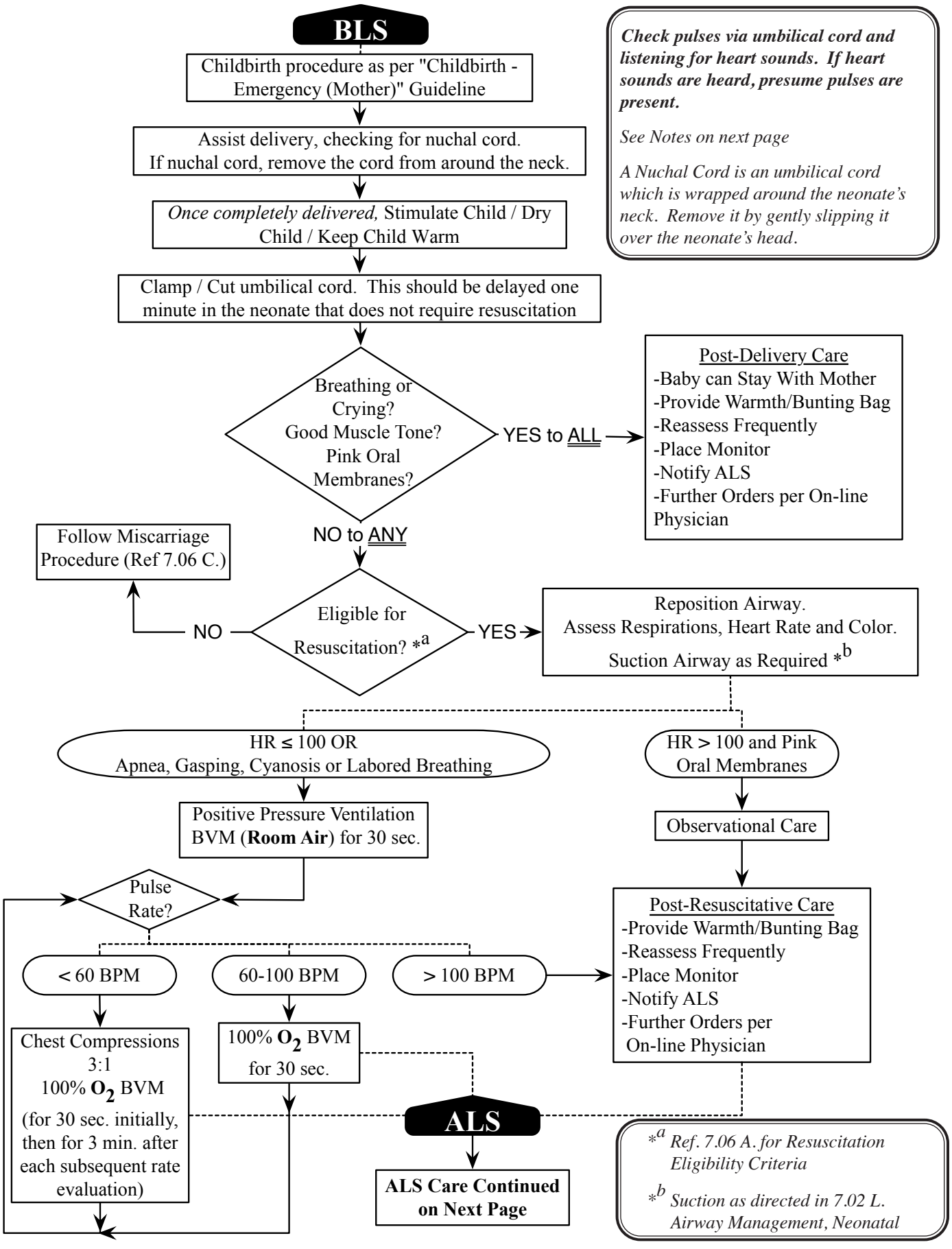
No → Further orders as per on-line physician

8.03 O. Childbirth - Emergency (Mother)

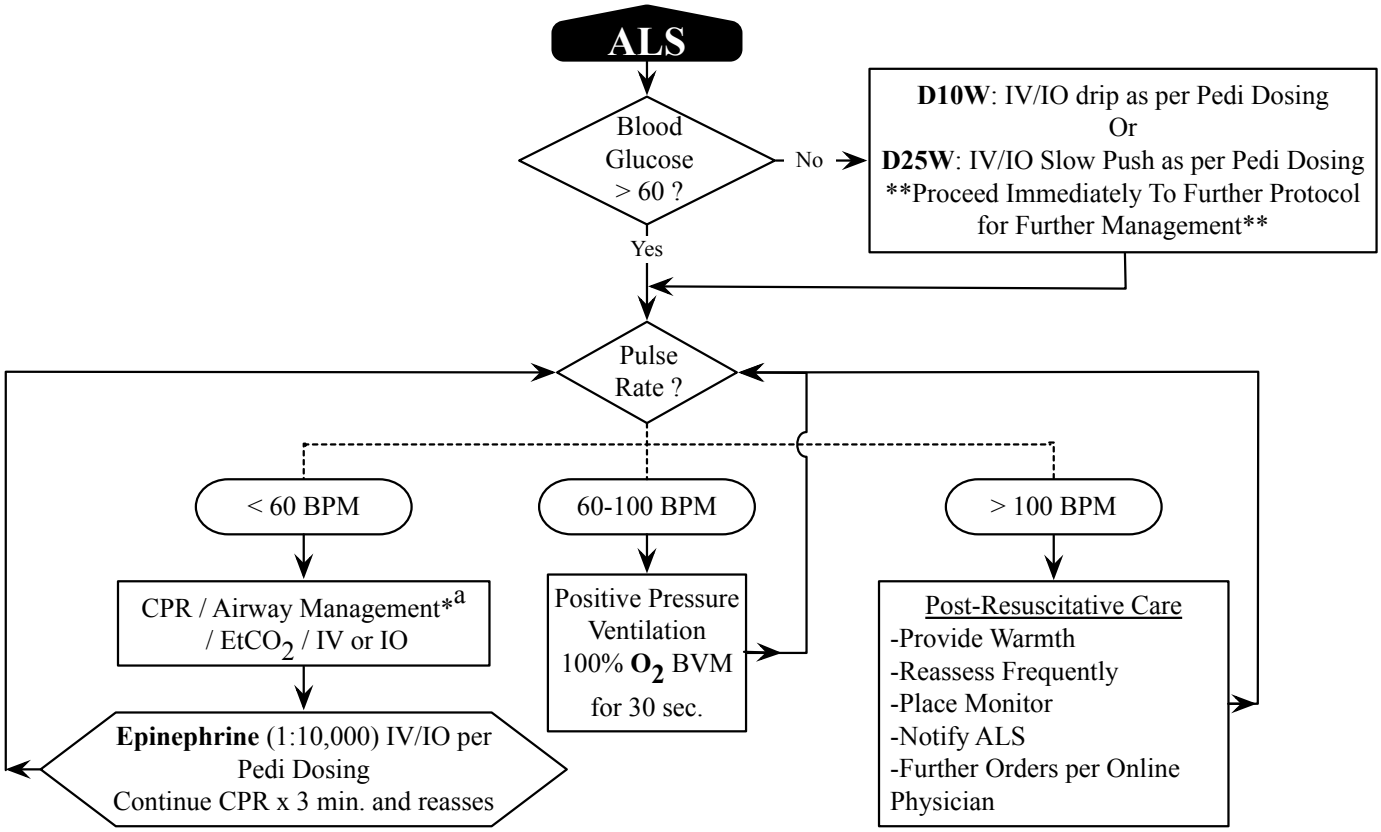


- *ALS: See ***Note under TXA Administration 9.01 AA. if BLS has only given one TXA IM administration.*
- *At no time should venous access take precedence over controlled delivery, airway management or emergency transport!*
- *In the setting of a miscarriage, place all products of conception in a red biohazard bag and transport with the patient to the Emergency Department.*
- *If the placenta has already been delivered, bring the placenta to the Emergency Department with the patient.*
- *Separate patient care records shall be completed for the mother and child.*

8.03 P. Childbirth - Emergency (Neonate / "Newly Born") - PEDIATRIC ONLY



8.03 P. Childbirth - Emergency (Newborn) NOTES



[a] With Pulse < 60, place a Supraglottic Airway as initial airway device. Intubate with ETT if unable to ventilate with Supraglottic Airway.

A. Notify the Base Station of a neonatal arrest situation as early as possible in order to ensure the availability of a physician to provide on-line medical control.

Table 8-4 : APGAR Score

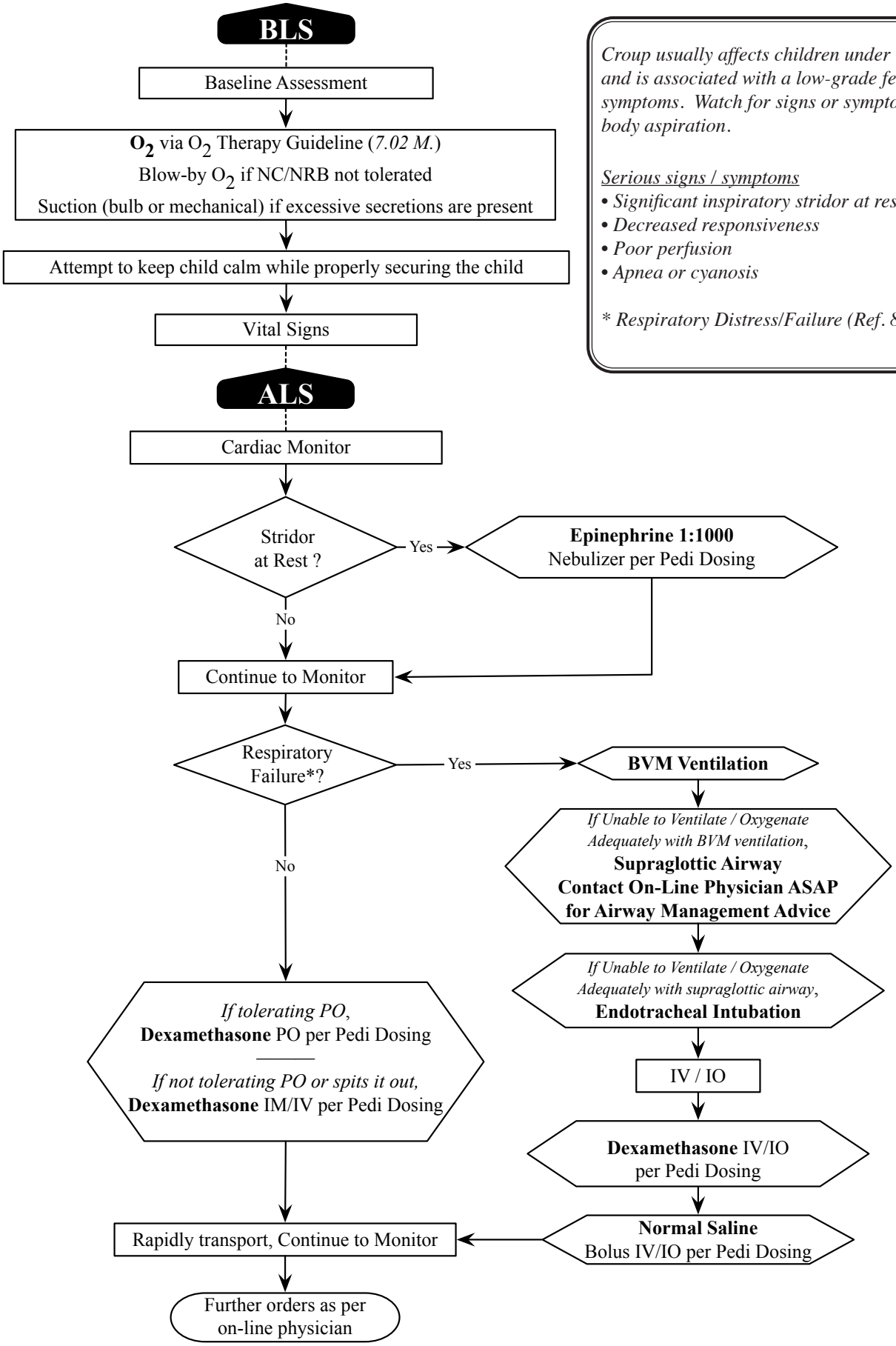
Sign	0	1	2	Score @ 1 Min.	Score @ 5 Min.
Appearance (Skin Color)	Blue, Pale	Body Pink, Extremities Blue	Completely Pink		
Pulse Rate (Heart Rate)	Absent	Below 100	Above 100		
Grimace (Irritability)	No Response	Grimaces	Cries		
Activity (Muscle Tone)	Limp	Some Flexion of Extremities	Active Motion		
Respiratory (Effort)	Absent	Slow and Irregular	Strong Cry		
			Total Score :		

8.03 Q. Croup / Inspiratory Stridor - PEDIATRIC ONLY

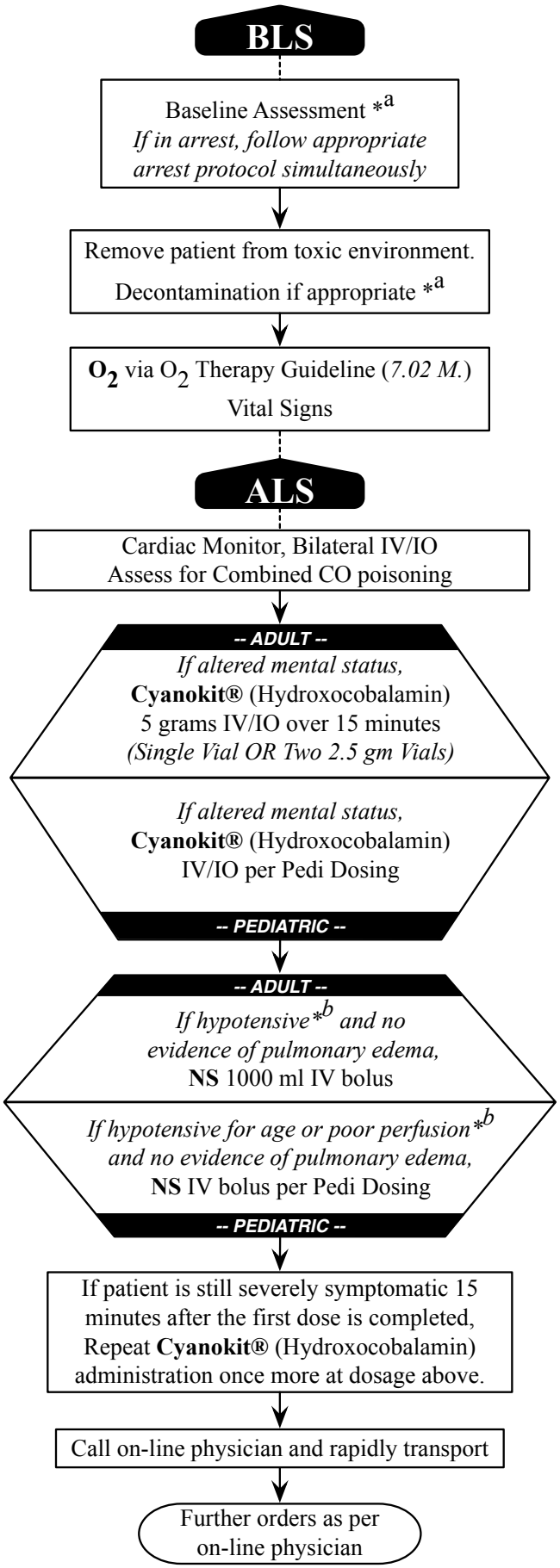
Croup usually affects children under the age of 3 and is associated with a low-grade fever and cold symptoms. Watch for signs or symptoms of foreign body aspiration.

Serious signs / symptoms
- *Significant inspiratory stridor at rest*
- *Decreased responsiveness*
- *Poor perfusion*
- *Apnea or cyanosis*

** Respiratory Distress/Failure (Ref. 8.03 A. 2. b.)*



8.03 R. Cyanide (CN-) Poisoning



Assessment Considerations

- *Toxic cyanide compounds include hydrogen cyanide (gas), sodium cyanide and potassium cyanide (water-soluble salts).*
- *Four common routes of exposure:*
  - *1-Occupational poisoning: industry and chemical labs (production of plastics, solvents, enamels, papers, glues, jewelry, pesticides, fertilizers, etc.)*
  - *2-Inadvertent, suicidal or homicidal ingestions*
  - *3-Ingestion of plant products containing naturally occurring cyanogenic glycosides*
  - *4-Inhalation of smoke from burning substances in closed space fire such as wool, silk, polyurethane or vinyls.*

In the setting of smoke inhalation and altered mental status, you should assume cyanide poisoning.

- *Cyanide blocks the ability of the cellular mitochondria to use oxygen thus producing a state of severe hypoxia despite the presence of oxygen (will have normal O_2 saturation). Anaerobic metabolism predominates, producing a lactic metabolic acidosis.*
- *The time course and severity of the clinical effects of poisoning depend on the nature of the compound and the length and method of exposure. Mild to moderate symptoms include restlessness, anxiety, palpitations, dyspnea and headache. Severe symptoms include loss of consciousness, seizures, cardiac dysrhythmias, coma and death.*
- *Patients with inhalational exposures often recover following rescue from toxic exposure. They do not require antidotal treatment if significant recovery occurs prior to receiving medical attention.*
- *The odor of bitter almond oil on the breath is highly suggestive of cyanide poisoning, but its absence does not rule out the possibility.*

**a Ensure your environment is safe. Protect yourself from decontamination runoff.*

**b Hypotension - Ref. Table 8-2 and 8-3.*

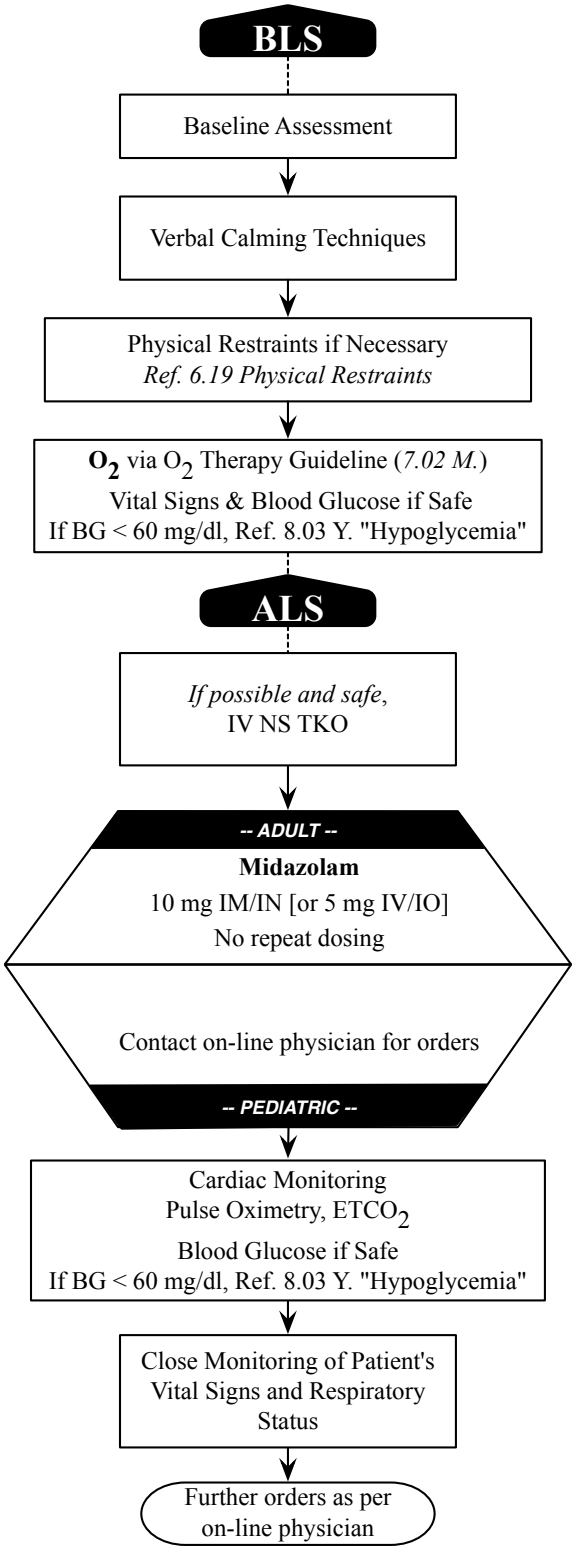
Cyanokits are carried by EMS Supervisors and District Chiefs. If treating, bring second Cyanokit to destination hospital or arrange for it to be brought to the hospital for potential continuation of therapy.

Cyanokit shall be administered through its own dedicated IV/IO.

Pediatric Dosing Considerations

Reference Table 9-2 : Hydroxocobalamin Pediatric Dosing

8.03 S. Delirium (Hyperactive with Severe Agitation)



Baseline Assessment Considerations

*• To receive treatment, the **patient must have Delirium**. Signs include:*

1. Altered Mental Status
2. Incoherent or nonsensical speech patterns
3. Paranoia
4. Inappropriate removal of Clothing

• Other physical exam findings concerning for this condition:

1. Tachycardia
2. Hypertension
3. High body temperature
4. Dilated pupils
5. Shivering
6. Rapid or inconsistent breathing patterns
7. Skin changes: Hot/Dry skin (anti-cholinergic), Profuse sweating (cocaine, MDMA)

• Assessment of a patient with delirium should consider a wide differential diagnosis to include:

1. Head Trauma
2. Hypoxia
3. Hypoglycemia/Electrolyte Imbalance
4. Infections
5. Head Injury
6. Psychiatric Disorders
7. Drugs or Alcohol Intoxication or Withdrawal

• This type of delirium can present as a spectrum ranging from very aggressive agitated behavior to coma. An imminent sign of cardiac arrest is when a patient becomes lethargic or tranquil after a significant period of violent or agitated behavior.

• Consider early use of high flow oxygen by mask as it serves to treat hypoxia in patients who are too agitated to assess pulse oximetry. Preoxygenation is also beneficial if the patient is sedated.

• Generally, management of any acute agitation should begin with reassuring and verbal de-escalation techniques. If this is unsuccessful, physical restraints may be used. Patients MUST NOT be restrained in a position with hands and feet tied together behind their back, prone (Ref. 6.19), or restrained with techniques that compromise airway or constrict the neck or chest. If patient is not immediately calm with physical restraints, medication should be utilized to decrease the patient's agitation.

• Midazolam can cause hypotension and decreased respiratory drive. Monitor the respiratory status with Pulse Oximetry and $ETCO_2$.

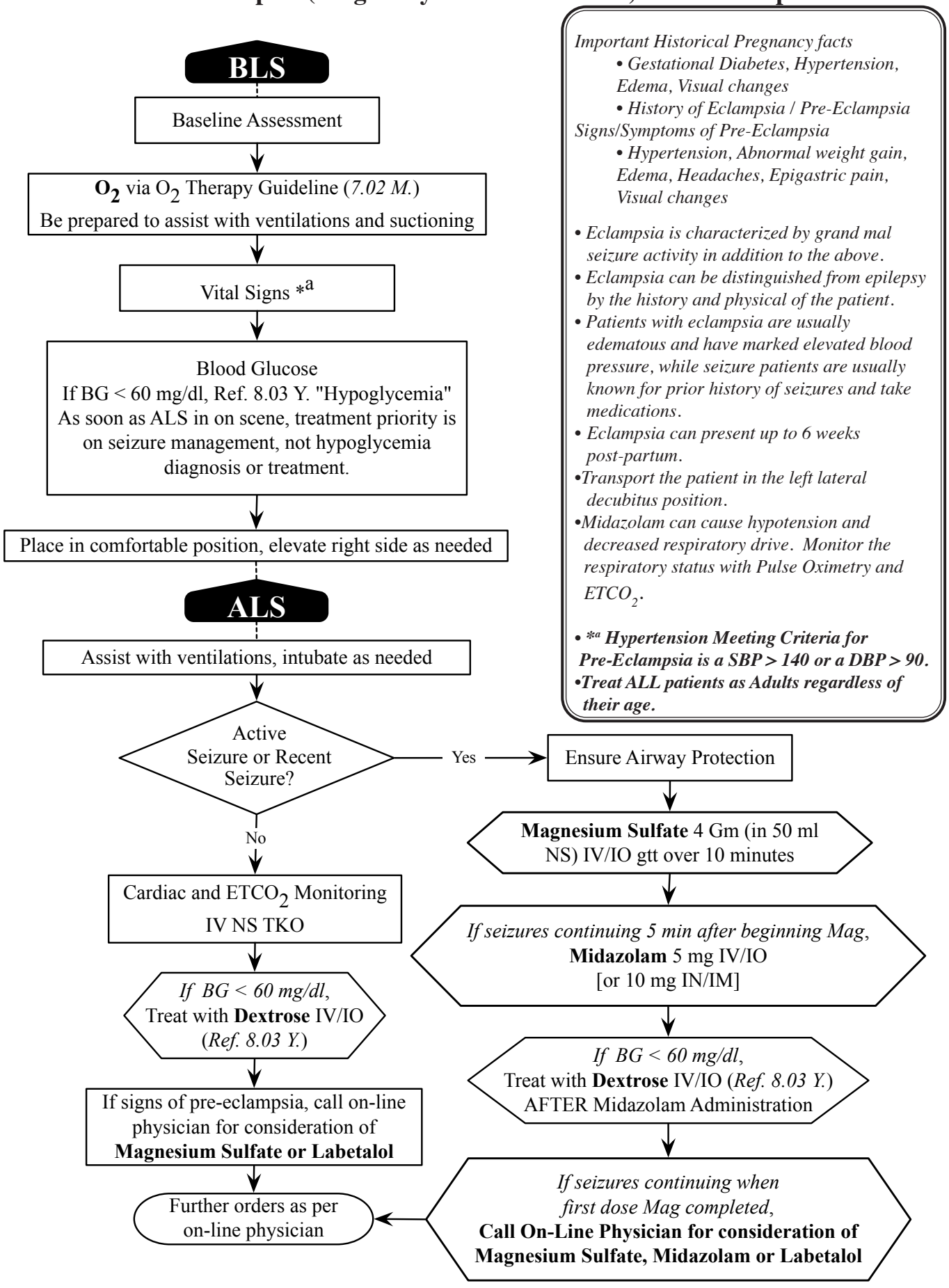
• Physical restraint and pharmacologic management/sedation when providing EMS care are only indicated to protect a patient, the public, and emergency responders from further injury, facilitate assessment, or allow for treatment of life-threatening injury or illness.

• EMS practitioners must NOT administer sedating medications to an individual to facilitate detainment or to assist law enforcement to take the individual into custody.

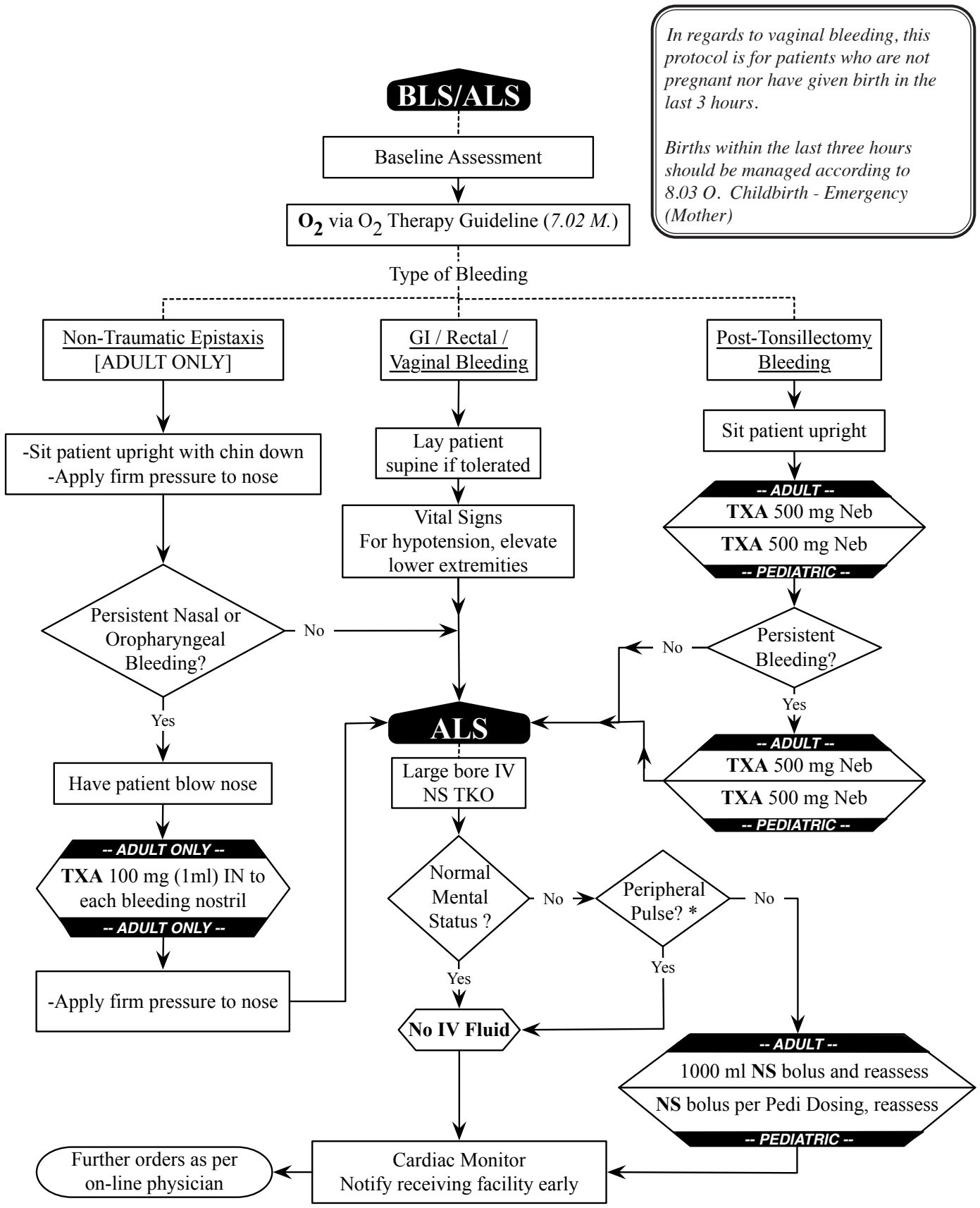
• If the patient imposes no threat to himself or others and has the capacity to make reasonable decisions, then he cannot be restrained or medicated without his or her permission.

• Medical record documentation should clearly describe the types of restraint applied, the indications for such restraint, and the repeated assessment of the patient's condition while restrained.

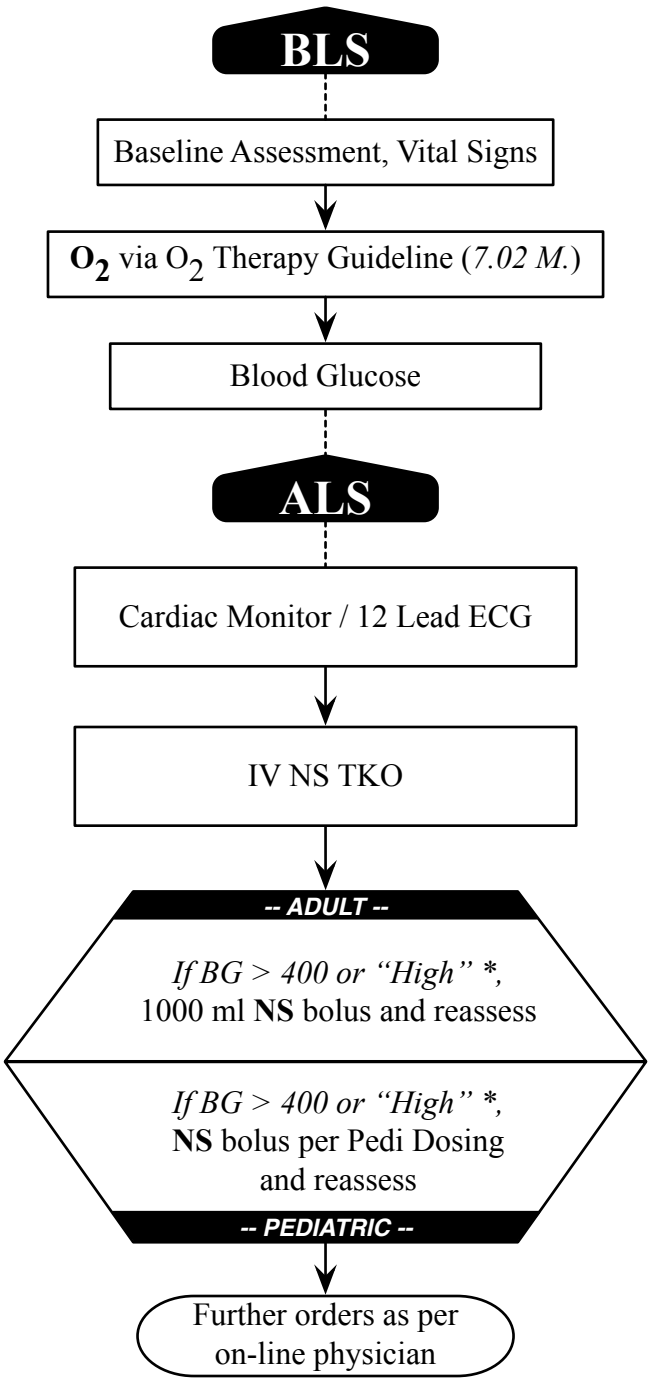
8.03 T. Eclampsia (Pregnancy Induced Seizures) / Pre-Eclampsia



8.03 U. Hemorrhage - Non-Traumatic



8.03 V. Hyperglycemia



Differential Diagnosis of Hyperglycemia

Diabetic Ketoacidosis (DKA): this is due to the inability of the cells to take up and use glucose when insulin is not present. This subsequently results in the release of counter-regulatory hormones (epinephrine, cortisol, glucagon, growth hormone) ultimately resulting in hyperglycemia, ketosis, and acidosis. Patients will often present with hyperventilation with or without altered mental status due to the acidosis.

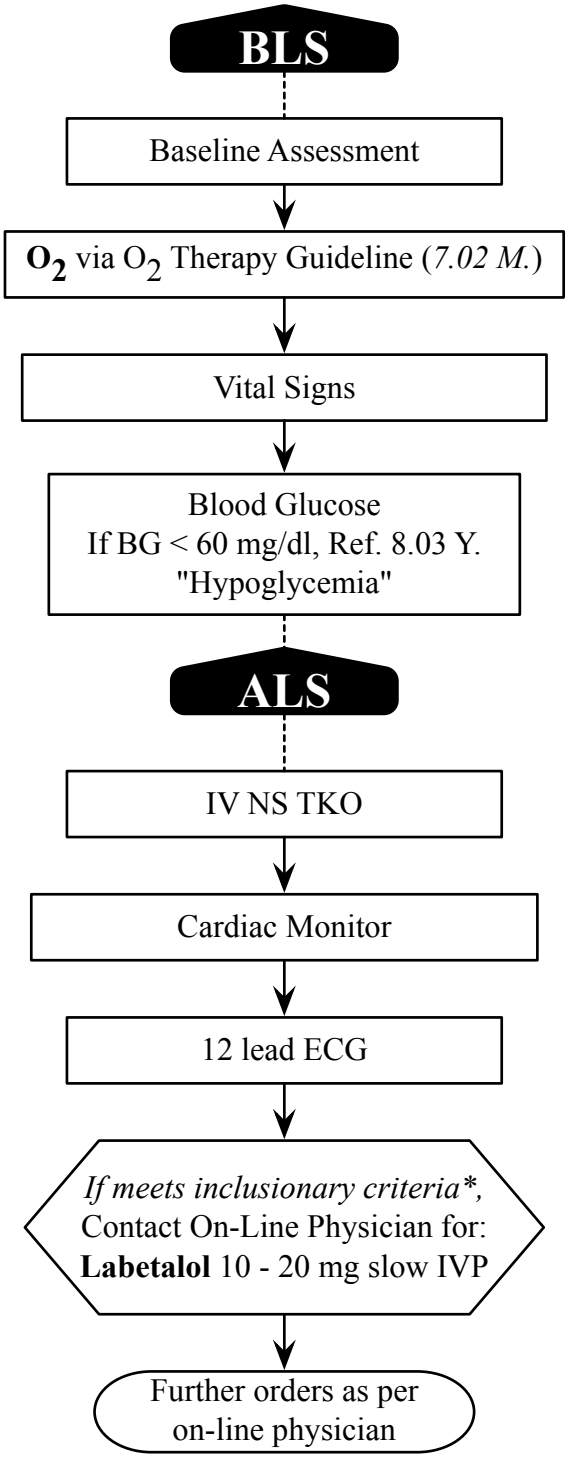
Hyperglycemic Hyperosmoler Non-Ketotic Syndrome (HHNK): This typically occurs in elderly diabetic patients resulting from an osmotic diuresis (water loss due to glucose impairing the kidneys ability to concentrate the urine). This is a very lethal disease with mortality rates ranging from 12-46% if untreated. Patients often present with a very elevated blood sugar and altered mental status.

Hyperglycemia: This represents an elevated blood sugar without subsequent complications associated with DKA or HHNK. Patients often complain of Polyuria (excessive urination), Polydypsia (excessive thirst), weight loss, fatigue and weakness, nausea and vomiting, and nonspecific abdominal pain.

Patients with significant hyperglycemia are often dehydrated secondary to the excessive urination (loss of water) associated with the elevated blood sugar. For this reason we will be providing 1 Liter of NS to patients with blood sugars > 400.

** "High" on the Glucometer is a glucose ≥ 600.*

8.03 W. Hypertensive Emergency - ADULT ONLY



Assessment Considerations

1. *Is there a history of hypertension or CVA? Headache? Dizziness? Syncopal episodes? Numbness or tingling in any part of the body?*

2. *Is there any weakness or paralysis on one side of the body? Is there any facial drooping? Aphasia or decreased level of consciousness? If so, consider use of "Stroke (Acute)" guideline (Ref. 8.03 FF.)*

Hypertension is not a disease, but an end result of multiple disease processes. It is important to recognize that an isolated hypertensive reading does not reflect the overall blood pressure status of the patient. While reduction in blood pressure to a "normal" range is important for all patients, acute lowering of the B/P may actually cause further harm to the patient by underperfusing end-organs. ***Asymptomatic HTN does not require treatment.***

The trend in medicine currently is to avoid aggressive lowering of elevated B/P's unless required by evidence of immediate end-organ damage (hemorrhagic stroke, etc.)

* *Inclusionary Criteria for Labetalol*

Patient Must Meet Each Criteria:

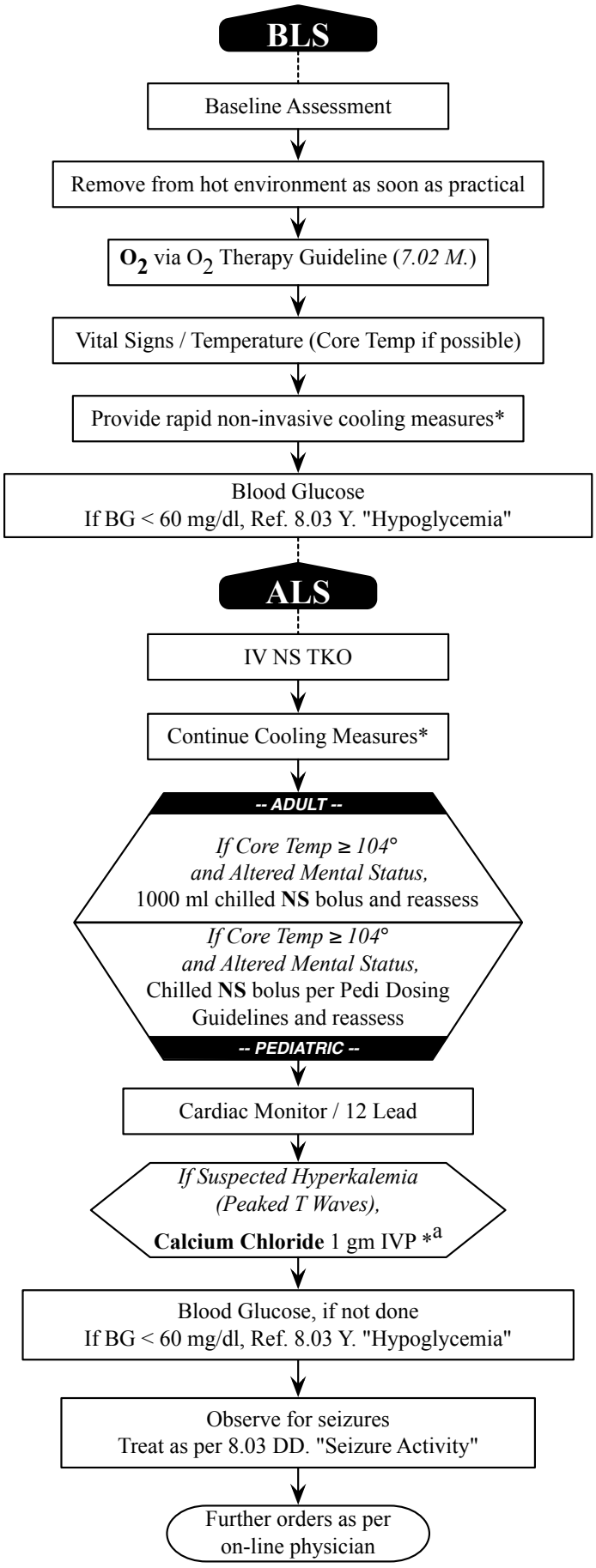
- *Age > 18 years old*
- *SBP > 180 and/or DBP > 120*
- *HR > 60*
- *A symptom of Hypertensive Emergency such as Altered Mental Status, Syncope, Chest Pain (See Note below) or Focal Neurological Deficit*

Patient Must Not Have:

- *Greater than a 1st degree Heart Block*
- *Signs or symptoms of Congestive Heart Failure such as Pulmonary Edema or Rales*
- *Known Cocaine Use*
- *Asthma or history of obstructive airway disease.*

Note : For patients additionally complaining of chest or anginal type pain, treat according to the chest pain guideline initially. For patients whose BP does not decrease with NTG, contact on-line physician for Labetalol consideration.

8.03 X. Hyperthermia (Environmental / Heat Stroke)



Environmental Hyperthermia

Hyperthermia is a condition related to the body's inability to cool itself adequately. Hormones, certain drugs or toxins can cause failure of thermoregulatory mechanisms with or without elevated environmental temperatures. Hyperthermia is more commonly associated with exposure to high-heat, high-humidity situations where individuals are unable to cool themselves adequately. This may be exacerbated by inadequate physical fitness, hydration status, co-morbid illness or extremes of age.

Historically, environmental heat-related illness has been divided into multiple conditions such as prickly heat, heat cramps, heat exhaustion, and heat stroke. This division has been artificial and has occasionally resulted in inadequate treatments since the symptoms associated with each illness are variable and have a great deal of overlap. The discussion regarding environmental heat-related illness is better understood as a continuum with heat stroke as the most severe form, identified as altered mental status from an elevated body temperature.

Core Temperature is Rectal Temperature or Esophageal Temperature (with ALS Monitor Temperature probe)

** The preferred rapid cooling measure is to strip the patient down to undergarments, sponge or pour room temperature water on the skin while providing gently moving air (fanning). Do not cause the patient to develop "goose bumps" or shivering by over cooling the patient.*

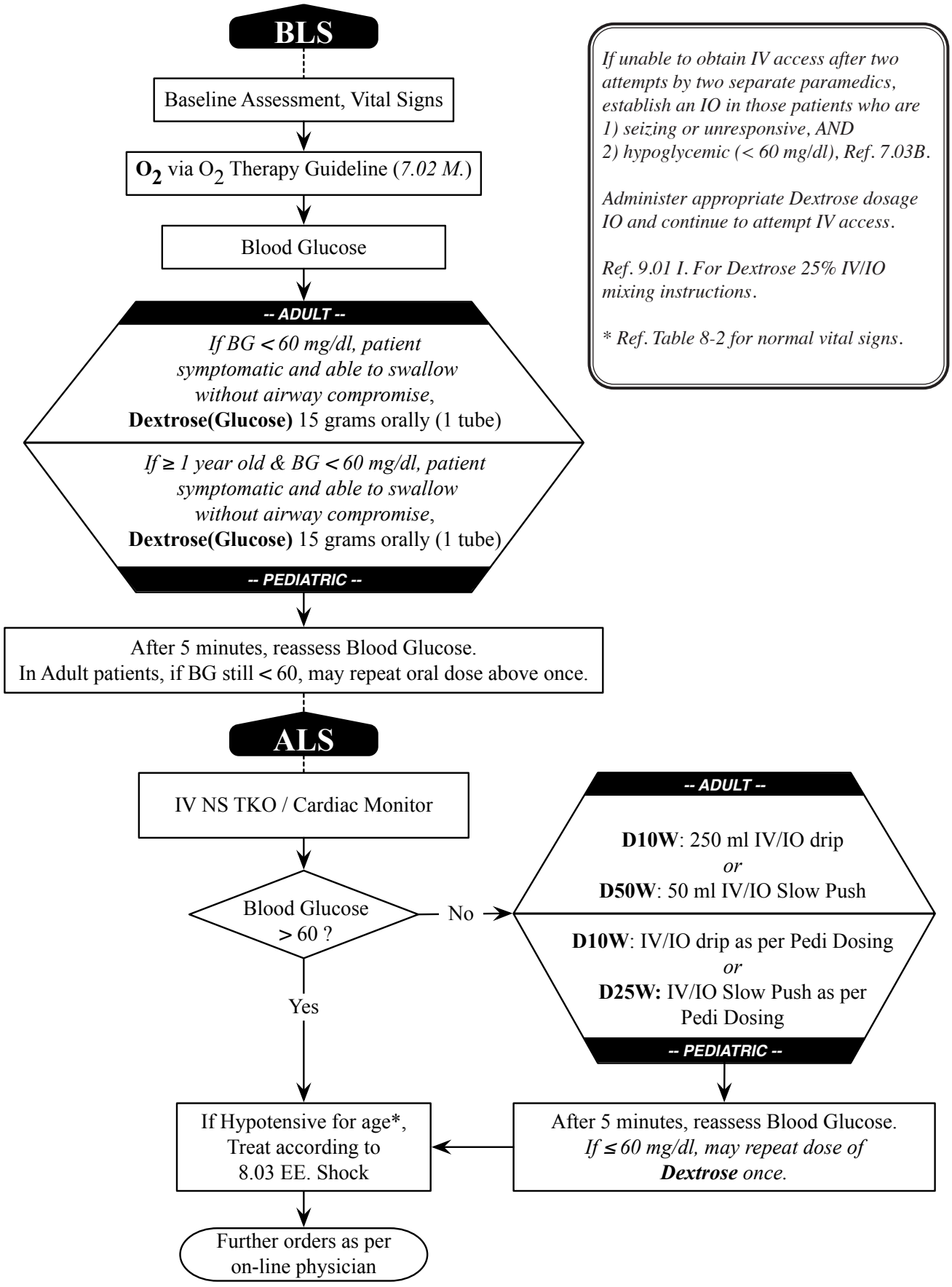
**Ice packs may be placed in the groin and axilla.*

**Aggressive cooling should be stopped once the patient's core temp reaches ≤ 102° to avoid overshoot hypothermia.*

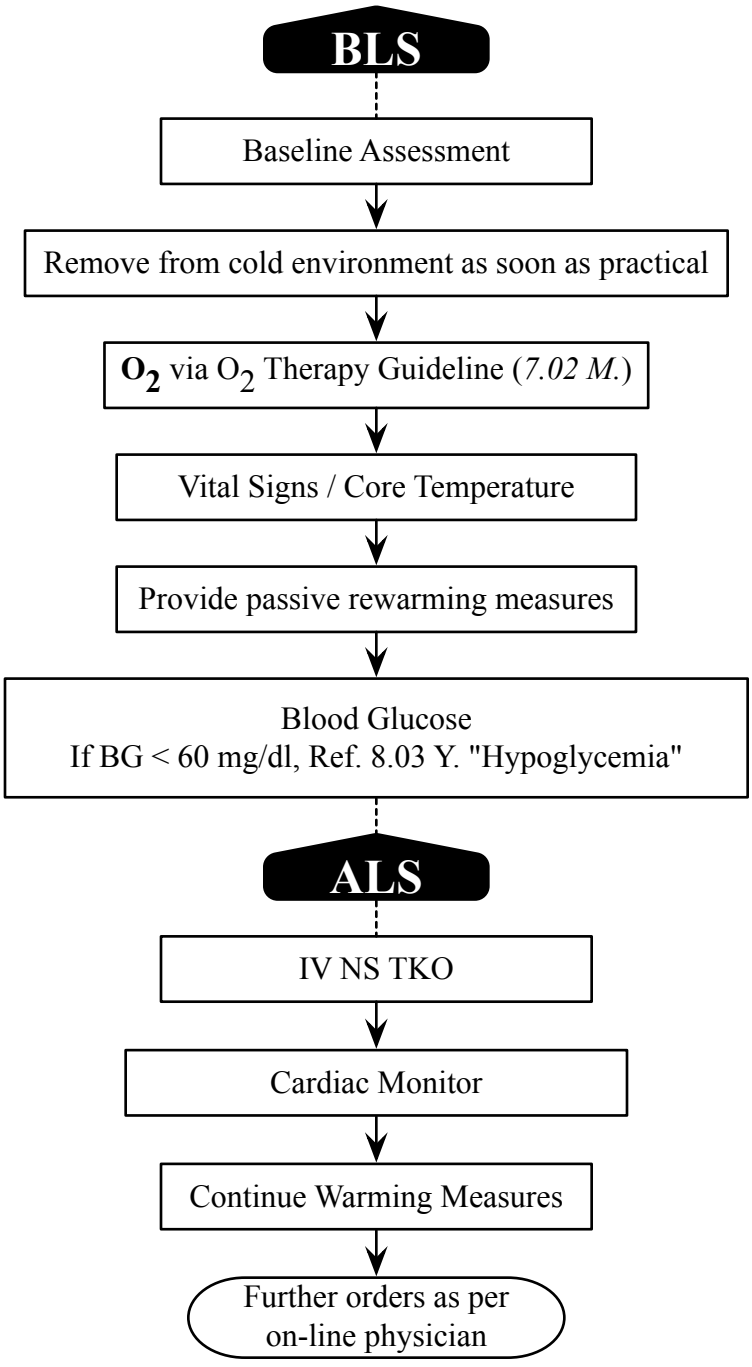
Hold all oral fluids until patient is alert and oriented, and has no complaints of nausea / vomiting.

Consider Sepsis 8.03 EE. when hyperthermic but in the absence of environmental causes.

8.03 Y. Hypoglycemia



8.03 Z. Hypothermia (Environmental)



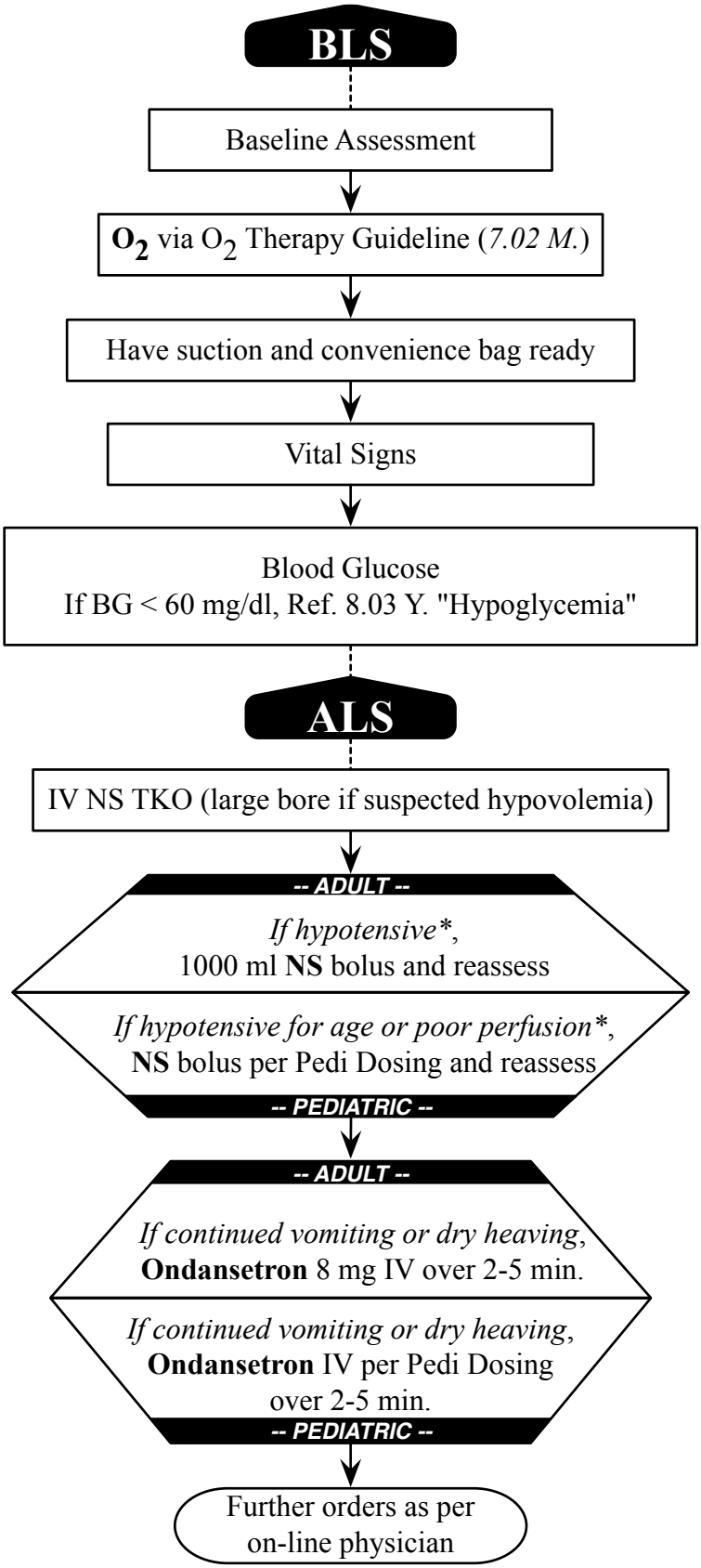
A. It is difficult to determine pulselessness in hypothermic patients. When in doubt take 30 - 60 seconds to examine the patient for pulses. If the patient is pulseless, begin CPR.

B. Passive warming methods include:
- *removing all wet clothing*
- *covering patient with dry sheet*
- *placing in warm environment*

C. Contact the On-Line Physician immediately for hypothermic cardiac arrest patients.

In cardiac arrest, defibrillate the patient only once and initiate early consultation with the on-line physician. Proper management of hypothermic cardiac arrest is complicated.

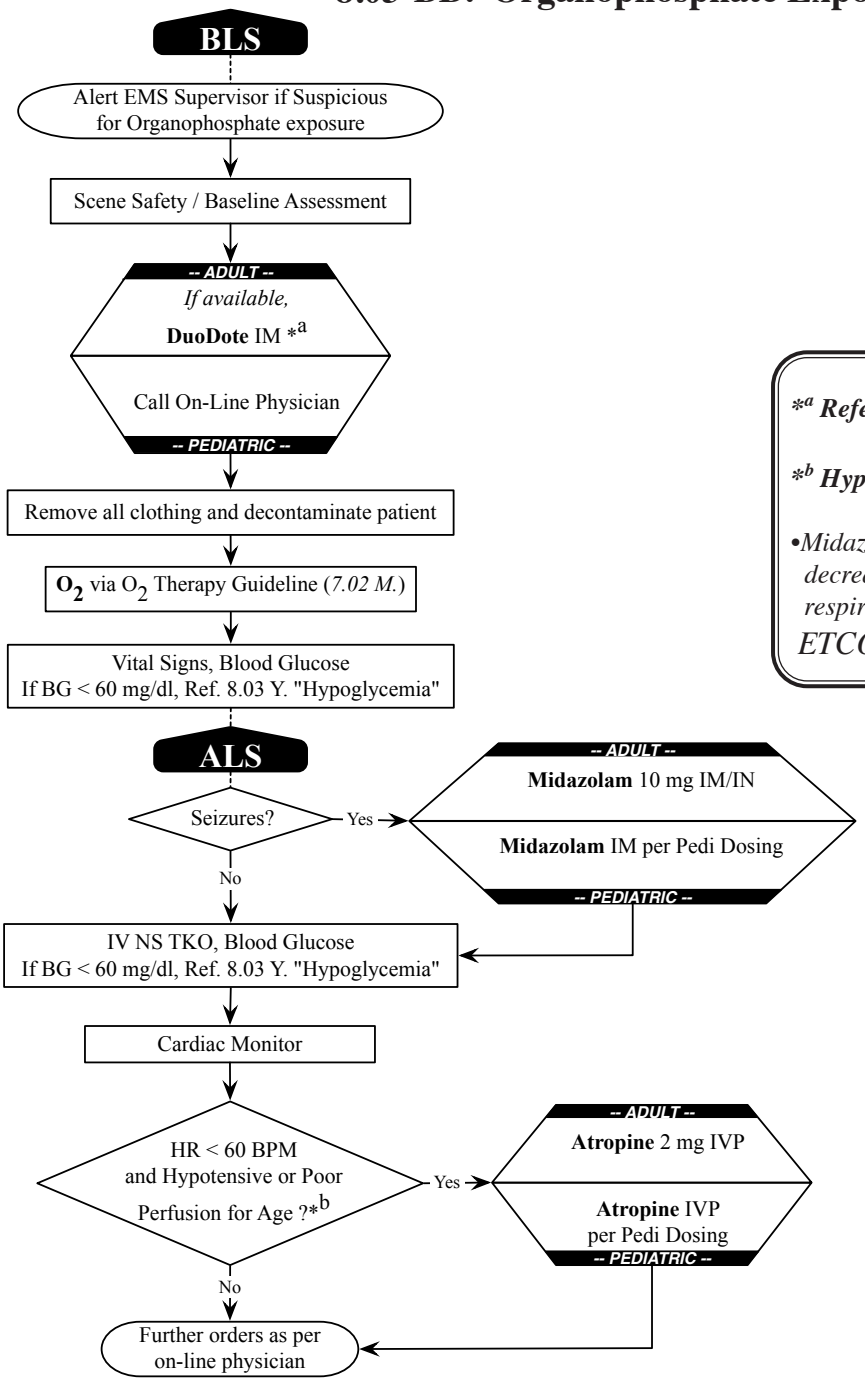
8.03 AA. Nausea / Vomiting



**** Hypotension : See Table 8-2 and Table 8-3.***

Be aware of nausea/vomiting as an acute coronary symptom, especially in atypical presentations amongst females, elderly or diabetics.

8.03 BB. Organophosphate Exposure



a Refer To 8.03 BB. Guidelines for dosing.

b Hypotension : See Table 8-2 and Table 8-3.

- *Midazolam can cause hypotension and decreased respiratory drive. Monitor the respiratory status with Pulse Oximetry and* $ETCO_2$.

A. Scene safety: Before taking any action to treat the patient, ensure that the scene is safe and evaluate for more than one patient. This standing order is used to treat organophosphate exposures.

B. Baseline assessment considerations:
Presentation of organophosphate ingestion will have the "SLUDGEM" signs/symptoms.
- *S = Salivation*
- *L = Lacrimation (eye tearing)*
- *U = Urination*
- *D = Diarrhea*
- *G = Gastrointestinal distress*
- *E = Emesis*
- *M = Miosis (constricted pupils)*

C. Do not contaminate yourself while treating the patient. Utilize appropriate precautions. Consider activating the Haz-Mat Team.

8.03 BB. DuoDote Antidote Auto-Injector

1. Equipment
   - DuoDote Auto-injector antidote contains:
     a. Atropine (2.1 mg)
     b. Pralidoxime Chloride (2-PAM) (600 mg)

2. Guidelines
   - The DuoDote antidote is for rapid use before an IV line is established. The DuoDote antidotes are for use on any patient who has been exposed to a chemical agent and is showing signs or symptoms of exposure.

   - DuoDote antidotes are carried on each District Chief and EMS Supervisor vehicle. DuoDote antidotes are distributed on the order of an HFD Medical Director or EMS Supervisor.

   - The first step to take when someone displays symptoms of nerve agent exposure is to remove that person from the hazardous environment. Then, begin treatment. For mild symptoms in exposed patients, administer one auto-injector kit. **Unconscious patients or patients showing more severe signs of nerve agent exposure should receive three antidotes.**

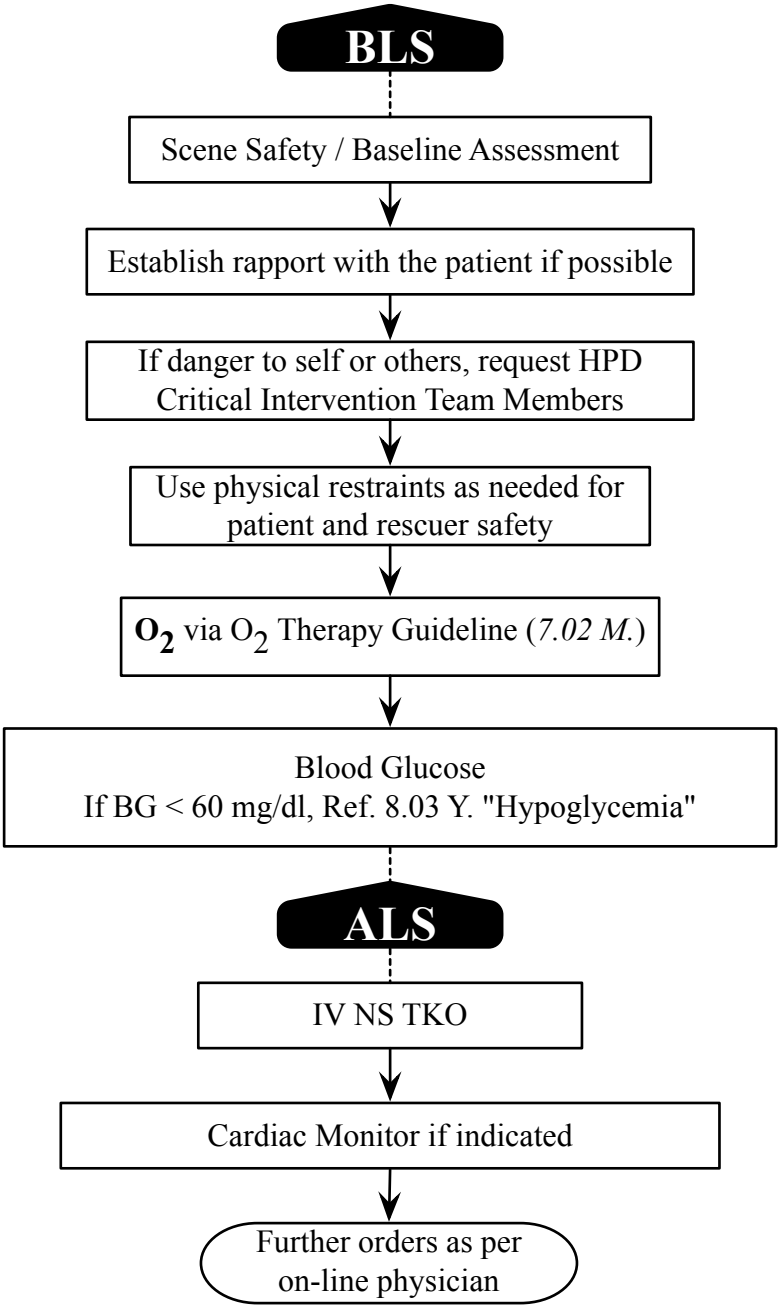
3. Procedure
   - Injection Site Selection
     a. Injection site is normally in the outer thigh muscle. It is important that the injections be given into a large muscle area.
     b. If the individual is thinly built, then administer the injections into the upper outer quadrant of the buttocks.
     c. DuoDote Auto-injector can be administered through clothing, including bunker gear. Make sure pockets at the injections site are empty.

   - Arming the Auto-injector
     a. Tear open the plastic pouch at any of the notches. Remove the DuoDote auto-injector from the pouch.
     b. Place the DuoDote auto-injector in your dominant hand. Firmly grasp the center of the DuoDote auto-injector with the green tip (needle end) pointing down.
     c. With your other hand, pull off the gray safety release. The DuoDote auto-injector is now ready to be administered.

   - Administering the antidote to yourself
     a. Swing and firmly push the green tip straight down (a 90° angle) against the mid-outer thigh.
     b. Continue to push firmly until you feel the DuoDote auto-injector trigger.

c. After the auto-injector triggers, hold the DuoDote auto-injector firmly in place against the injection site for approximately 10 seconds.
d. Remove the DuoDote auto-injector from the thigh and look at the green tip. If the needle is visible, the drug has been administered. If the needle is not visible check to be sure the gray safety release has been removed, and then repeat the above steps, pushing harder against the thigh.
e. After the drug has been administered, push the needle against a hard surface to bend the needle back against the DuoDote auto-injector.
f. Put the used DuoDote auto-injector back into the plastic pouch, if available. Leave the used DuoDote auto-injector(s) with the patient to allow other medical personnel to see the number of DuoDote auto-injector(s) administered.
g. Immediately move yourself and the patient away from the contaminated area and seek definitive medical care for the patient.

8.03 CC. Psychiatric Emergencies



A. If the patient is suicidal, do NOT leave patient by themselves.

B. Clearly document the need for physical restraints as per 6.19 Physical Restraints.

C. ALL Hospitals listed in 9.05 are expected to provide emergency psychiatric evaluation and stabilization.

8.03 DD. Seizure Activity

A. Baseline assessment considerations:
- *How many seizures has the patient had?*
- *Is there a history of seizures or diabetes?*
- *Medications for seizures?*
- *Type of seizure activity and Urinary/fecal incontinence?*
- *Did patient awaken after the seizure?*
- *Was the seizure preceded by any trauma?*

B. In Adult patients, if hypotensive (See Table 8-2), administer a Normal Saline fluid bolus of 1000 ml. Recheck the patient's vital signs immediately after the bolus is completed.

C. Always apply Cardiac monitor, pulse ox and $EtCO_2$ when giving a respiratory depressant (Midazolam).

D. If patient is known / suspected pregnancy, treat as Eclampsia, Ref. 8.03 S.

E. Consider other seizure mimics: syncopal episode with seizure like activity, patients peri-arrest may have seizure like activity, and dystonic reactions (lip smacking, involuntary neck movements, abnormal neck postures, back muscle spasm causing head & lower limbs to bend backward, body arch forward, rotary eye movements).

F. If dystonic reaction, treat with Diphenhydramine 50 mg IV/IM for adults or per Pedi Dosing Guidelines (9.01 BB.)

G. If IV/IO present upon arrival, can administer Midazolam IV/IO. Limit Adult dose to 5mg per dose and Pedi Dose per Guidelines. Do not administer in PICC or Central lines.

BLS

Scene Safety / Baseline Assessment

O_2 via O_2 Therapy Guideline (*7.02 M.*)

Vital Signs / Ask Bystander for Patient's Age

Blood Glucose
If BG < 60 mg/dl, Ref. 8.03 Y. "Hypoglycemia"
As soon as ALS in on scene, treatment priority is giving a 1st dose of midazolam.

ALS

Active Seizure?

No

Cardiac and $ETCO_2$ Monitoring
IV NS TKO

If BG < 60 mg/dl,
Treat with **Dextrose** IV/IO
(*Ref. 8.03 Y.*)

Further orders as per on-line physician

Yes

DO NOT Place an IV/IO
DO NOT Check Blood Glucose yet

ADULT — PEDI

-- ADULT ONLY --
Midazolam
10 mg IM/IN

-- PEDI ONLY --
Midazolam IM/IN by Age
or Length based tape

< 6 months: Per Pedi Dosing
6 - 16 months: 0.25 ml (1.25 mg)
17 months - 5 yrs: 0.5 ml (2.5 mg)
6 - 11 years: 1 ml (5 mg)
≥ 12 years: 2 ml (10 mg)

Cardiac and $ETCO_2$ Monitoring
IV NS TKO (IO as required)

If BG < 60 mg/dl,
Treat with **Dextrose** IV/IO (*Ref. 8.03 Y.*)

-- ADULT --
If seizure continues > 5 min. after initial dose,
Midazolam 5 mg IV/IO
[or 10 mg IM/IN]

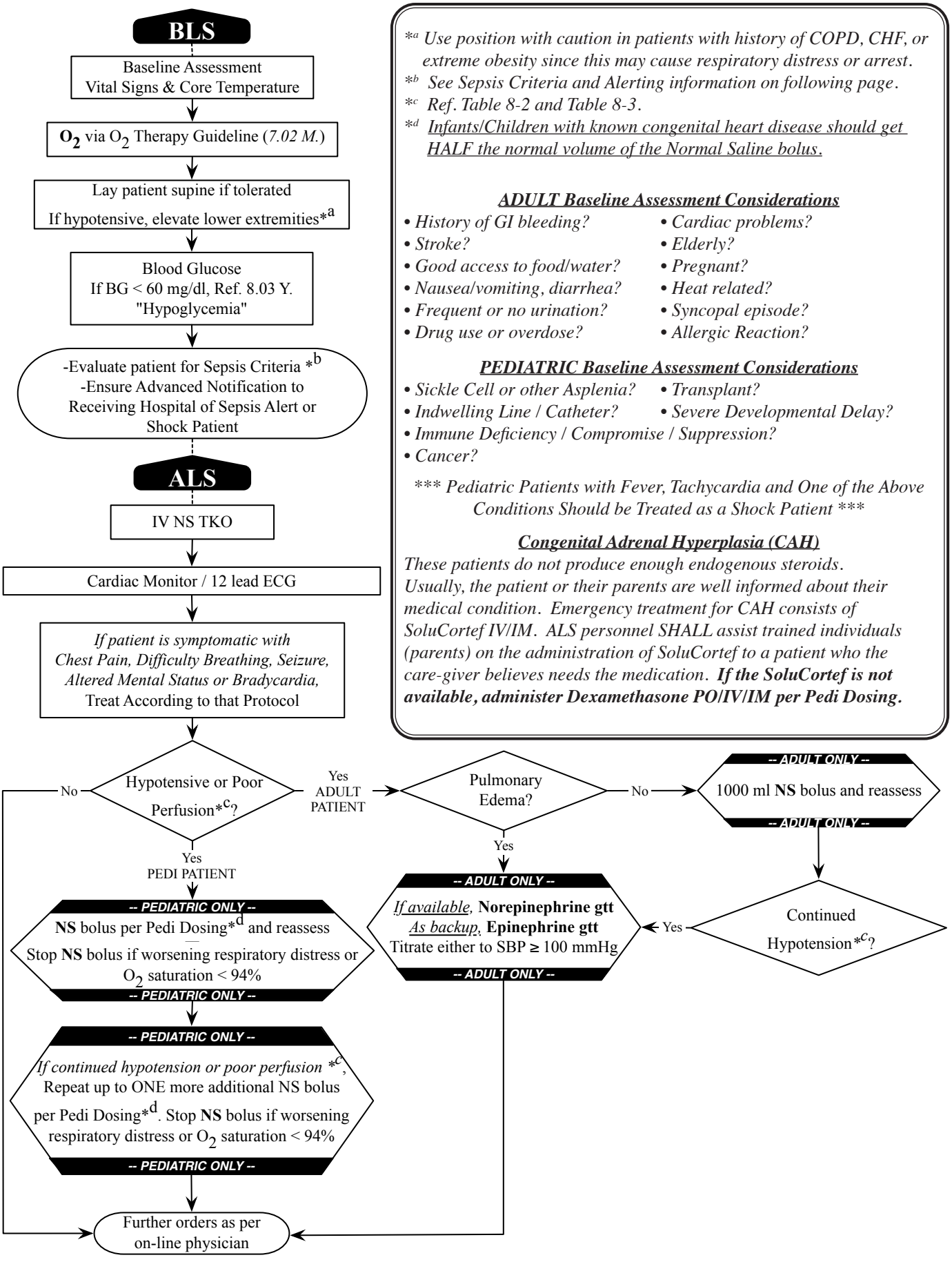
If seizure continues > 5 min. after initial dose,
≤ 11 years old: Repeat **Midazolam** IM/IN dose as above
12 - 15 years old: Further orders as per on-line physician

-- PEDIATRIC --

Length Based Tape

Gray	< 6 months
Pink	6-11 months
Red	12-16 months
Purple / Yellow / White	17 months-5 yrs
Blue / Orange / Green	6-11 years
Taller Than Tape	≥ 12 years

8.03 EE. Shock (Not Traumatic/Suspected Aortic Aneurysm) / Sepsis



*a Use position with caution in patients with history of COPD, CHF, or extreme obesity since this may cause respiratory distress or arrest.

*b See Sepsis Criteria and Alerting information on following page.

*c Ref. Table 8-2 and Table 8-3.

*d Infants/Children with known congenital heart disease should get HALF the normal volume of the Normal Saline bolus.

ADULT Baseline Assessment Considerations

- History of GI bleeding?
- Stroke?
- Good access to food/water?
- Nausea/vomiting, diarrhea?
- Frequent or no urination?
- Drug use or overdose?
- Cardiac problems?
- Elderly?
- Pregnant?
- Heat related?
- Syncopal episode?
- Allergic Reaction?

PEDIATRIC Baseline Assessment Considerations

- Sickle Cell or other Asplenia?
- Indwelling Line / Catheter?
- Immune Deficiency / Compromise / Suppression?
- Cancer?
- Transplant?
- Severe Developmental Delay?

*** Pediatric Patients with Fever, Tachycardia and One of the Above Conditions Should be Treated as a Shock Patient ***

Congenital Adrenal Hyperplasia (CAH)

These patients do not produce enough endogenous steroids. Usually, the patient or their parents are well informed about their medical condition. Emergency treatment for CAH consists of SoluCortef IV/IM. ALS personnel SHALL assist trained individuals (parents) on the administration of SoluCortef to a patient who the care-giver believes needs the medication. ***If the SoluCortef is not available, administer Dexamethasone PO/IV/IM per Pedi Dosing.***

8.03 EE. Shock (Not Traumatic/Suspected Aortic Aneurysm) / Sepsis - Continued

-Sepsis is the result of a systemic infection and inflammatory response.
-Early recognition and early resuscitative treatments in coordination with hospital notification can improve patient outcomes.

-Goal: Advance notification of hospitals through Telemetry for a Sepsis Alert.

Sepsis Alert should be initiated when both conditions are met:

1) Suspected Infection
   -Consider pneumonia, skin/soft tissue infection, new abdominal pain with infectious signs, or urinary complaints
2) Two or more signs of sepsis (see Adult and Pediatric Signs of Sepsis below)

Adult Signs of Sepsis

1) Temp > 38 C (100.4 F)
2) Temp < 36 C (96.8 F)
3) Respiratory Rate > 20/min
4) Heart Rate > 90 bpm
5) Altered Mental Status

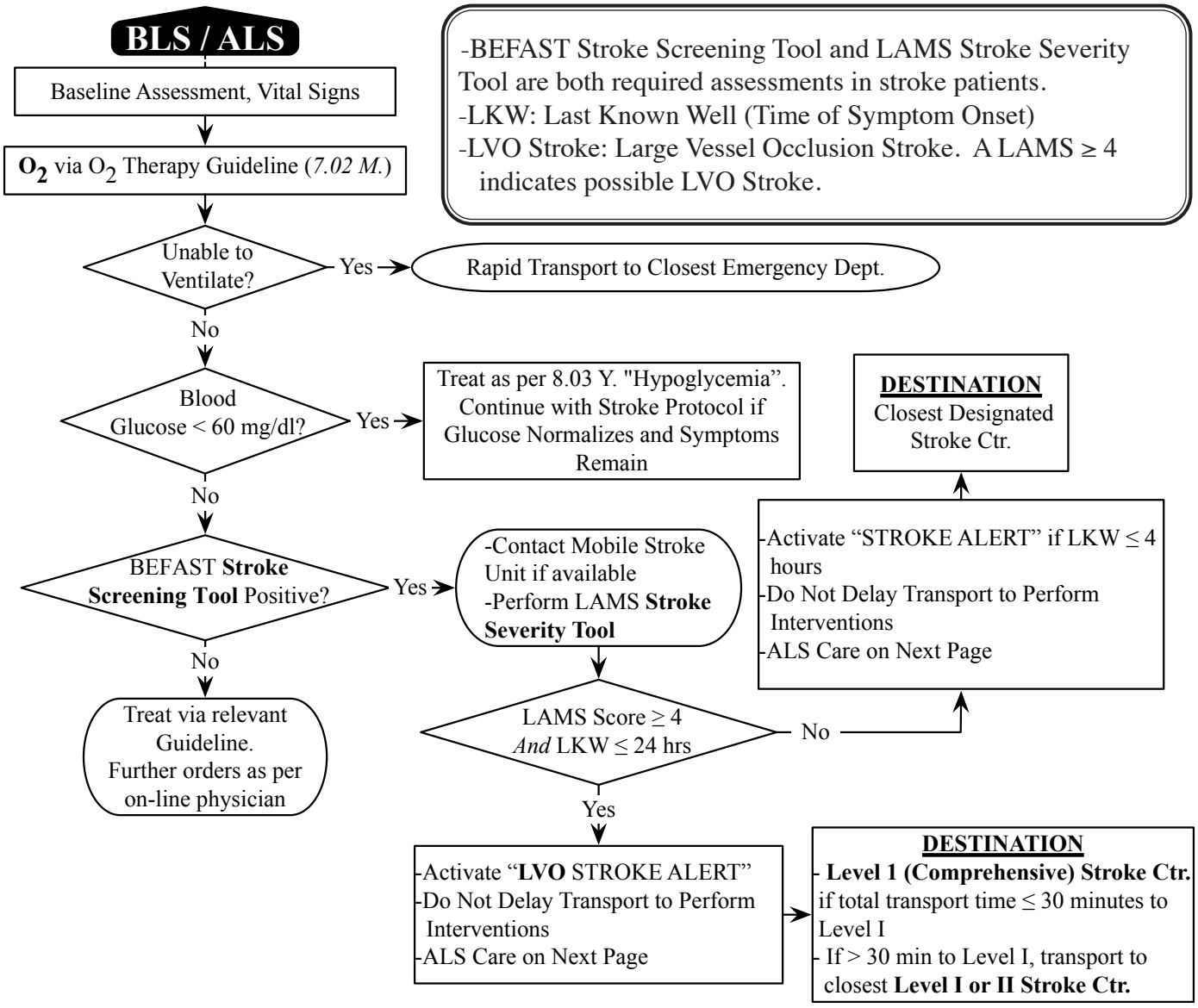
Pediatric Signs of Sepsis

1) Temp > 38 C (100.4 F)
2) Temp < 36 C (96.8 F)
3) Vital Signs Outside Normal for age range (Ref. Table 8-2)
4) Cap Refill > 3 sec
5) Mottled Skin
6) Altered Mental Status

-If indicated, treatment of the patient per the following guidelines shall be completed in addition to this guideline (without duplicating NS fluid therapy)

1) Hyperthermia 8.03 X.
2) Hypoglycemia 8.03 Y.
3) Hypothermia 8.03 Z.
4) Stroke 8.03 FF.

8.03 FF. Stroke (Acute) - ADULT ONLY



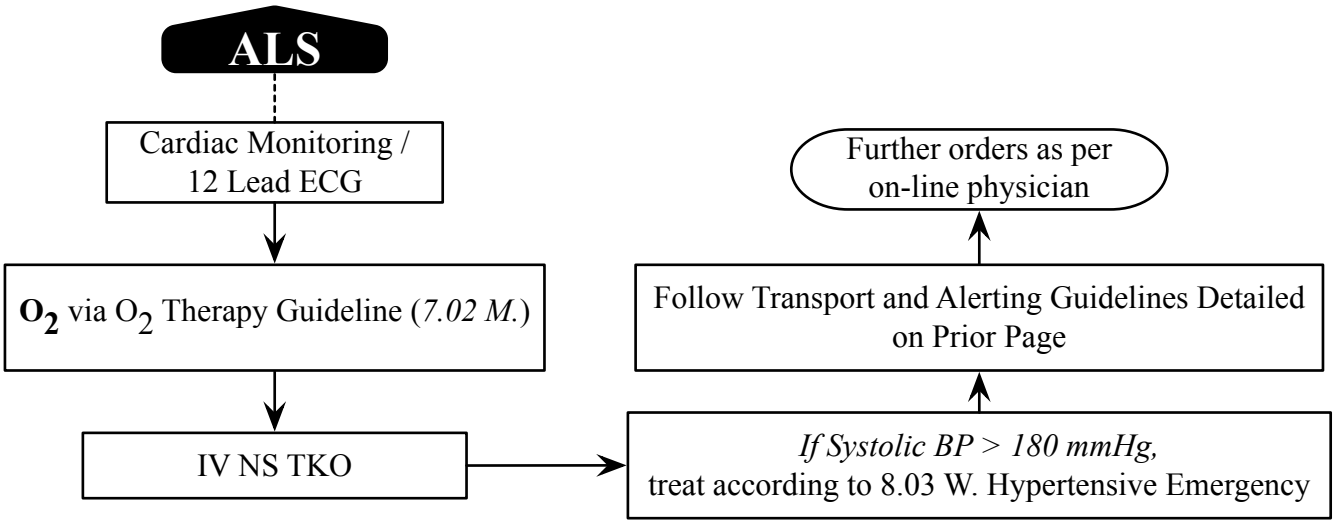
BEFAST Stroke Screening Tool

B: Balance: Sudden loss of balance, Staggering gait, Severe Vertigo?
E: Eyes: Loss of vision in one or both eyes, Double Vision?
F: Face: Uneven or drooping face?
A: Arm: Loss of strength or sensation on one side of the body (arm and/or leg)
S: Speech: Speech slurred? Trouble speaking or seem confused?
T: Terrible Headache: Thunderclap headache or worst headache of life (maximum intensity within seconds to a minute)?

The Los Angeles Motor Scale (LAMS) Stroke Severity Tool

Facial Droop	*Arm Drift*	*Grip Strength*
Absent = 0	Absent = 0	Normal = 0
Present = 1	Drifts Down = 1	Weak Grip = 1
	Falls Rapidly = 2	No Grip = 2

The LAMS score will be between 0 and 5. Add up the points for each of the three sections to determine the score.



1. ***Important Signs / Symptoms to Document***
   - *Sudden, unilateral facial drooping / weakness*
   - *Sudden, unilateral arm weakness*
   - *Sudden, unilateral decreased grip strength*
   - *Sudden, difficult speech / aphasia*

   Important History to Document
   - *Time last known well*
   - *Any sign of seizure activity*
   - *Any trauma before onset of symptoms*
   - *Any recent illness, surgery or trauma*
   - *List of all current meds, especially anticoagulants*

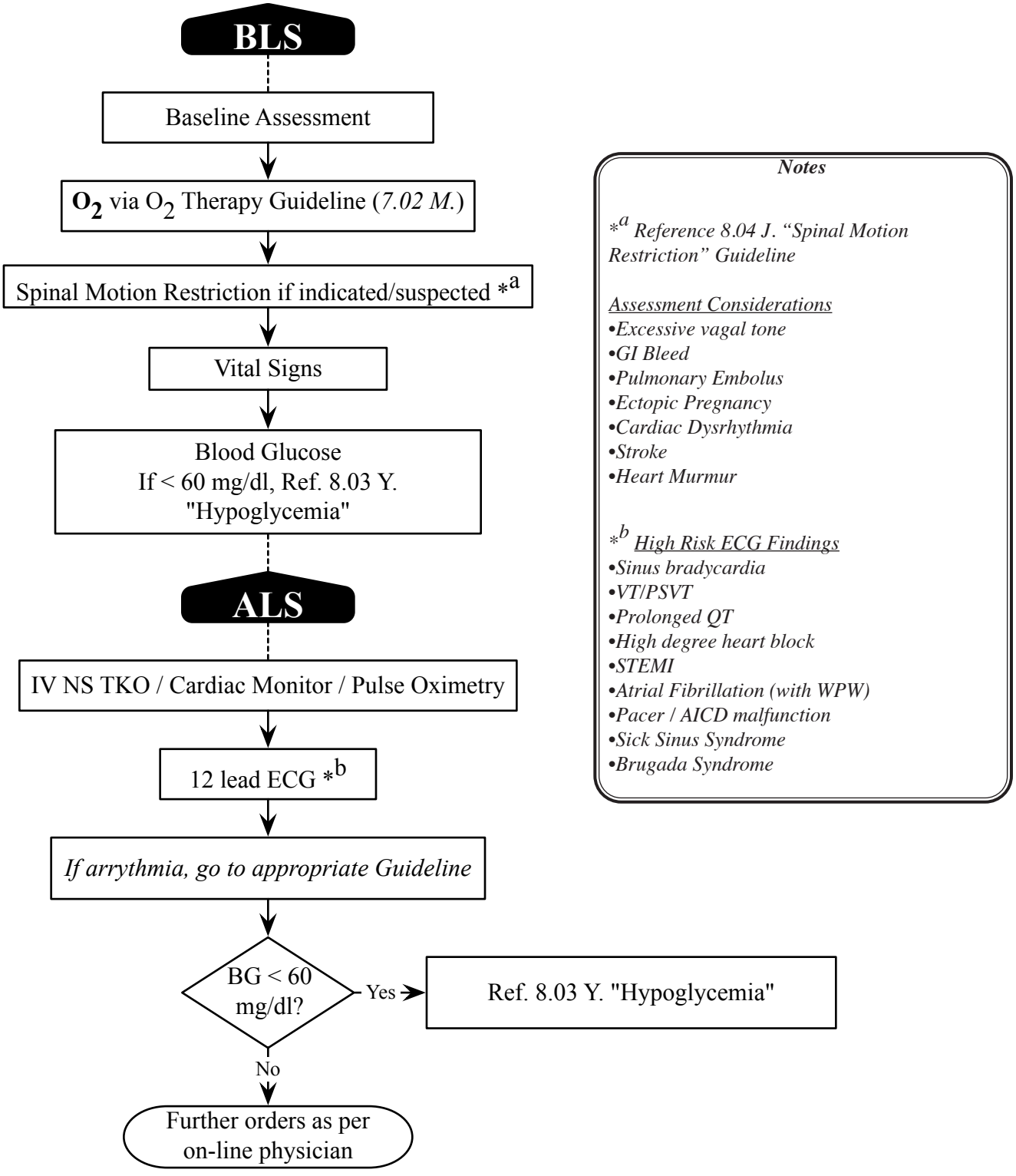
2. *Family members should accompany the stroke patient in the transport apparatus in order to verify the time of symptom onset and to provide consent for interventional therapy. If this is not possible, obtain a phone number for the next of kin for these purposes.*

Mobile Stroke Unit

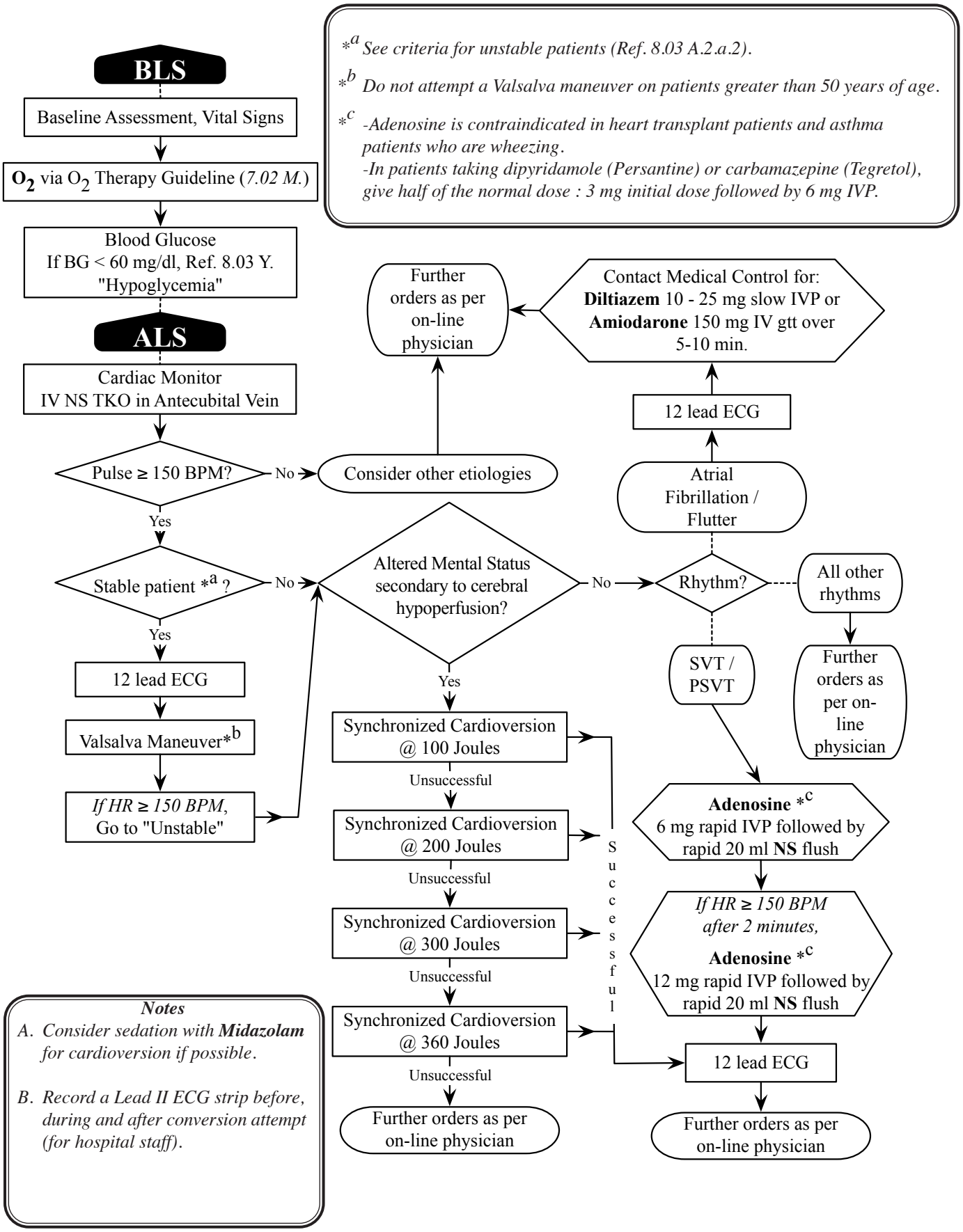
1) On all patients who screen positive for stroke with the BEFAST stroke screening tool, the Mobile Stroke Unit (CAT unit), if in service, shall be contacted to determine availability of response and ETA.

2) If the patient is placed in the Mobile Stroke Unit, that is a transfer of patient care and the Mobile Stroke Unit shall transport the patient to the hospital. The ePCR disposition shall reflect the transfer of patient care to the Mobile Stroke Unit.

8.03 GG. Syncope



8.03 HH. Tachycardia : Narrow Complex (Symptomatic) - ADULT ONLY



8.03 II. Tachycardia : Wide Complex (Symptomatic) - ADULT ONLY

This sequence was developed to assist the treatment of a broad range of patients with sustained Wide Complex Tachycardia (non-cardiac arrest patients). Some patients may require care not specified herein. Consult the on-line physician in such circumstances. The flow of the algorithm presumes that Wide Complex Tachycardia is continuing.

NOTE: This guideline is intended for symptomatic patients with heart rates >150 bpm. Consider other etiologies for patients with heart rates <150 bpm. Not all cases of Wide Complex Tachycardia are Ventricular Tachycardia.

Consider sedation with ***Midazolam*** *for cardioversion if possible.*

**[a] See criteria for unstable patients (Ref. 8.03 A.2.a.2).*

BLS

Baseline Assessment, Vital Signs

O_2 via O_2 Therapy Guideline (*7.02 M.*)

Blood Glucose
If BG < 60 mg/dl, Ref. 8.03 Y. "Hypoglycemia"

ALS

Cardiac Monitor
IV NS TKO in Antecubital Vein

Pulse ≥ 150 BPM?

No → Consider other etiologies → Further orders as per on-line physician

Yes

Stable patient?*[a]

No → Altered Mental Status secondary to cerebral hypoperfusion?

No → 12 lead ECG → *If known recent cocaine usage or tricyclic antidepressant OD,* **Sodium Bicarbonate** 1 mEq/Kg IV → **Amiodarone** 150 mg IV gtt over 5-10 minutes

Yes

12 lead ECG → Further orders as per on-line physician

Yes

Synchronized Cardioversion @ 100 Joules — Successful

Unsuccessful

Synchronized Cardioversion @ 200 Joules — Successful

Unsuccessful

Synchronized Cardioversion @ 300 Joules — Successful

Unsuccessful

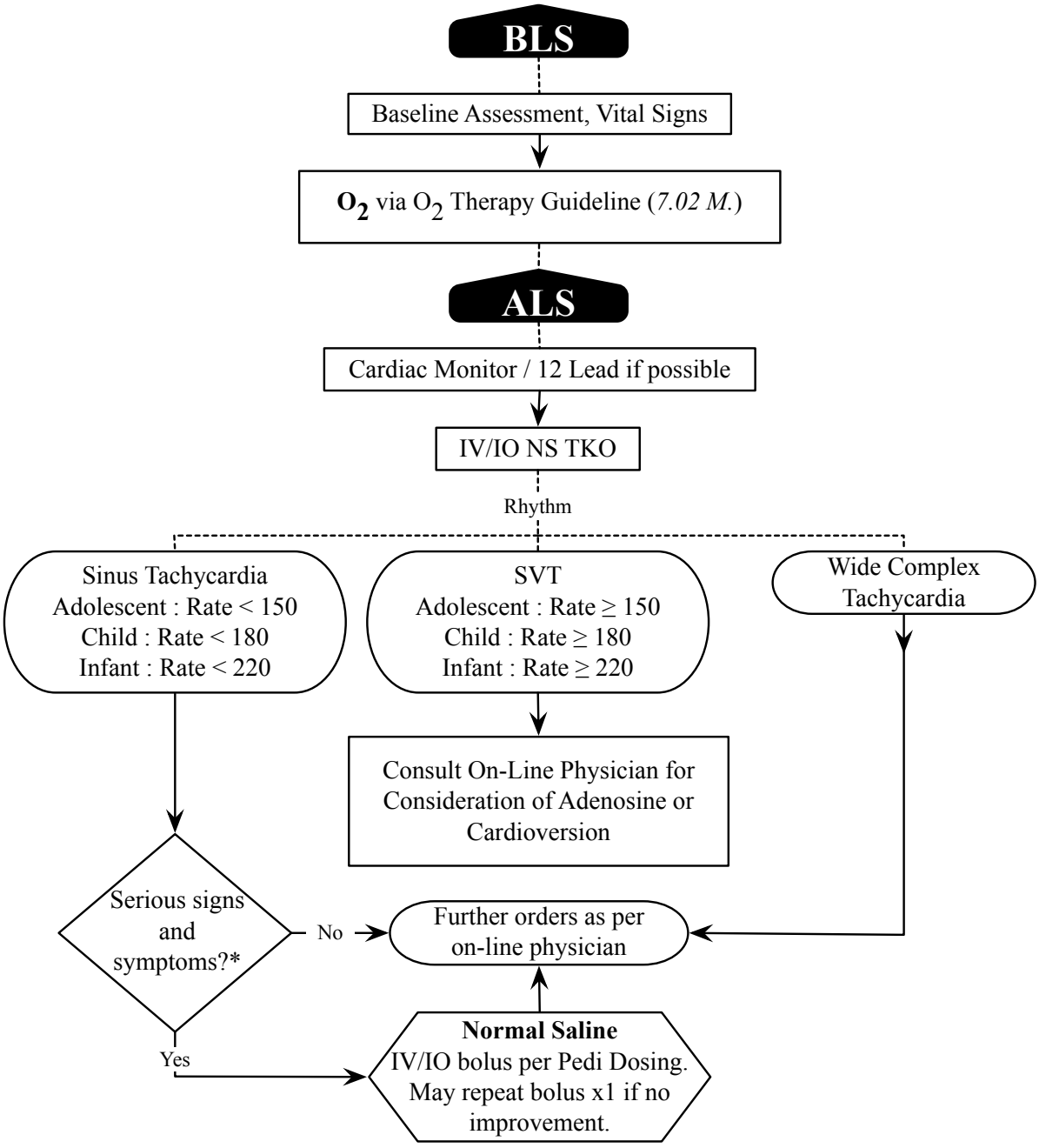
Synchronized Cardioversion @ 360 Joules — Successful → 12 lead ECG → Further orders as per on-line physician

Unsuccessful → Further orders as per on-line physician

Note

In some cases, polymorphic wide-complex rhythms will not be able to be synchronize cardioverted. In these unstable patients with AMS, if the synchronized cardioversion energy fails to be delivered, it is acceptable to perform an unsynchronized defibrillation at 360 Joules to restore a perfusing rhythm.

8.03 JJ. Tachycardia (Symptomatic) - PEDIATRIC ONLY



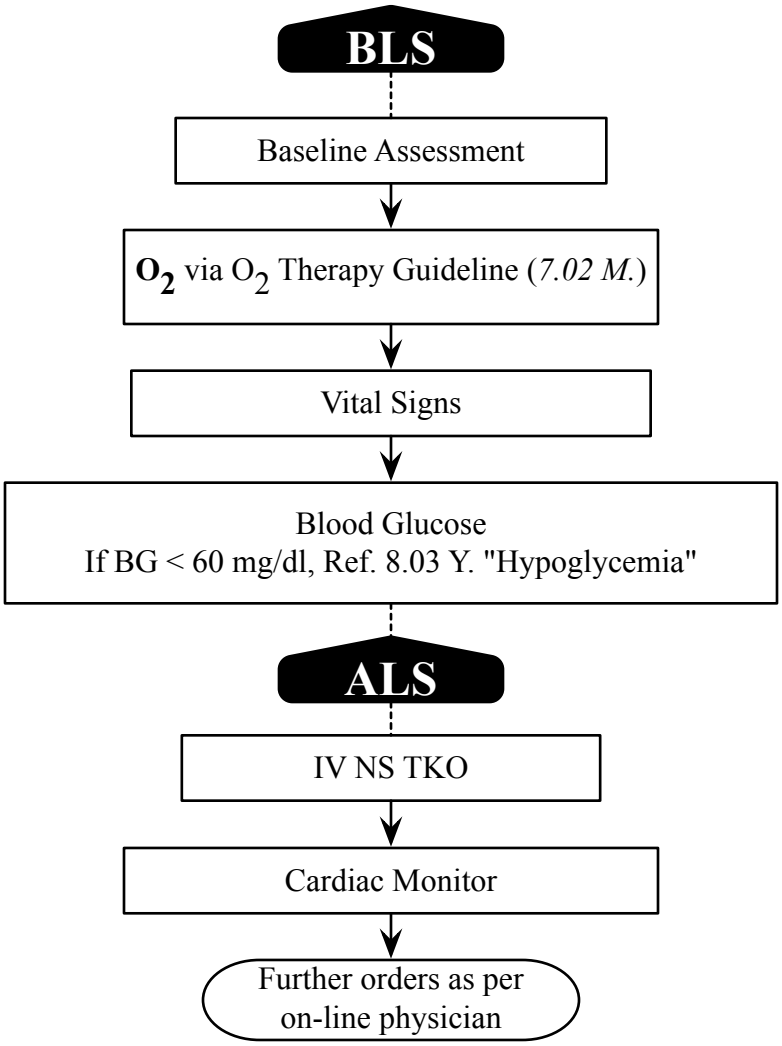
* *Serious Signs / Symptoms include:*
- *Unresponsiveness*
- *Hypotension*
- *Poor perfusion (capillary refill > 3 sec.)*
- *Respiratory Distress*

Therapies ONLY upon approval by MD On-Call

Adenosine - Rapid IVP per Pedi Dosing within 1-3 sec, followed by rapid flush of 10cc Normal Saline. Second Dose of Adenosine is doubled in the Pedi Dosing Guidelines.

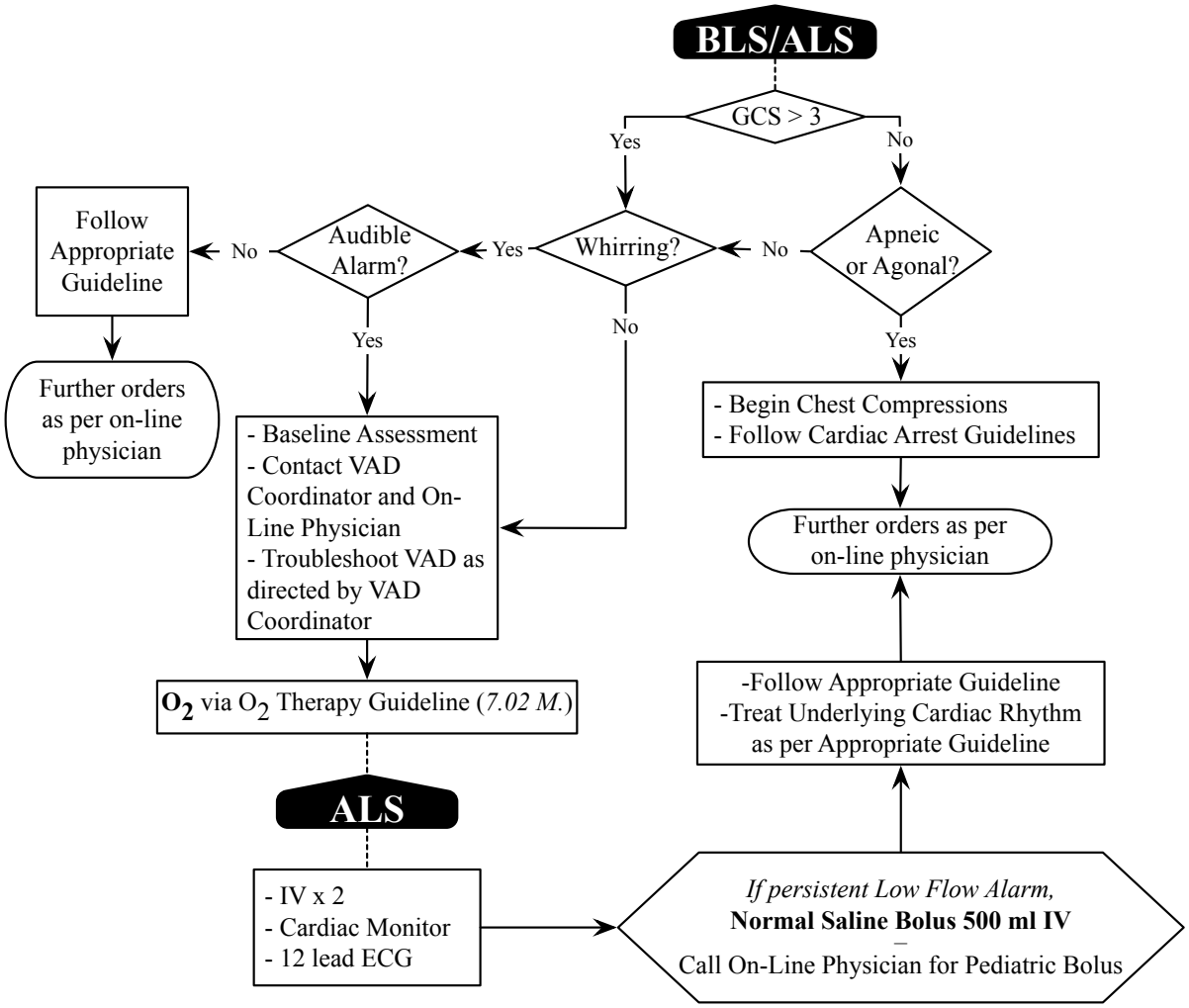
Sync Cardioversion as per Pedi Dosing Guidelines and directed by on-line physician.

8.03 KK. Therapeutic Discretion



EMT's and Paramedics should utilize this guideline in the best interest of the patient and when no other guideline is more applicable.

8.03 LL. Ventricular Assist Devices (VAD)



A. For ALL patients with a VAD, regardless of complaint, contact their VAD coordinator via the Base Station and transport **ONLY** to an appropriate VAD hospital. The only exception for destination is in the case of an uncontrolled airway.
B. Transport/Destination decision
    1. Adult trauma patients (which meet any trauma center criteria except for taking anticoagulants): Memorial Hermann TMC
    2. All other adult patients: Patient's regular VAD hospital
    3. Pediatric patients: Memorial Hermann Children's or Texas Children's Hospital TMC (whichever facility they had it placed in).
C. Always transport the patient's backup batteries, controller and emergency equipment with the patient.
D. If no ALS apparatus is dispatched to a patient with a VAD, the BLS personnel's priority is to get the patient ALS level of care ASAP. This would be either rapid transport to the appropriate destination described above, or requesting an ALS unit to the scene of the incident.
E. In the initial assessment of the VAD patient with altered mental status, pay early attention to correcting hypoglycemia or treating opiate overdose with narcan. VAD patients with a GCS of 3 with hypoglycemia or opiate toxicity should not get chest compressions or cardiac arrest medications unless they do not respond to therapy with glucose or narcan.
F. Obtain information regarding the VAD device, hospital, VAD Coordinator name and contact information. It may be located on the device, in the patient's wallet, on a bracelet, on the refrigerator, etc. Determine presence of DNR and/or advanced directives.
G. Request for help early. Contact the patient's VAD Coordinator through the Base Station as soon as

possible. Utilize the patient's caretaker for assistance, as they are the VAD experts on scene. Listen to them regarding device management until able to contact the VAD coordinator. Determine if the patient or their caregiver have already contacted the VAD coordinator and what was discussed.

*****The VAD Coordinator may provide direction / recommendations regarding the VAD device in the setting of a VAD patient with a VAD / Cardiovascular issue. In this capacity, they may serve as an extension of the medical director through on-line medical control. *****

H. Assessment Considerations
   1. First, assess the patient. Determine if the call was for a VAD problem, or for another problem and proceed accordingly.
   2. Patients with a VAD may not have a palpable pulse.
   3. The use of other parameters for patient assessment (level of consciousness, skin color, skin temperature, capillary refill) are necessary.
   4. Pulse oximetry is not a reliable resource in these patients.
   5. Blood pressure may not be obtainable if they have minimal to no native cardiac function. If available, the patient's caregiver may have a doppler and be able to obtain mean arterial pressure (MAP). The ideal MAP range is 60-90 mmHg.
   6. $ETCO_2$ will provide a good estimate of perfusion with an ideal range between 35-45 mmHg.
   7. The 12 lead ECG will reveal the patient's underlying heart rhythm. The patient may or may not be symptomatic with arrhythmias.

I. Device Considerations
   1. Determine if the device is working. This is where the caretaker and/or VAD coordinator are important. Auscultate the LUQ of the patient's abdomen. Listen for a 'hum'. Determine if the device has power and check the connections and batteries.

J. Treatment Considerations
   1. Provide oxygen as clinically indicated. Pulse oximetry may not be accurate.
   2. Establish IV for fluid resuscitation. VAD patients are very preload dependent. Prepare for fluid resuscitation in the septic shock patients.
   3. Nitroglycerin should only be given per orders of on-line physician.
   4. No termination of resuscitation of VAD patients, unless traumatic arrest.
   5. Treat the underlying cardiac rhythm per appropriate guideline. Patients with a VAD may be in ventricular fibrillation while awake and alert. Consult the on-line physician for Midazolam sedation prior to defibrillation.

K. VAD Complications
   1. Increased incidence of bleeding secondary to anticoagulation.
   2. Increased risk of stroke.
   3. Most patients will have an ICD. If defibrillation is necessary, move the controller to the patient's right side, away from the pads as much as possible. Allow the VAD to continue running during defibrillation.

VAD Coordinator Contact Phone Numbers: Call Through Base Station

CHI St. Luke's TMC: 832-355-4146 - Ask to be directly connected to LVAD Coordinator on-call. State it is urgent and this is HFD EMS and give them the patient's name.

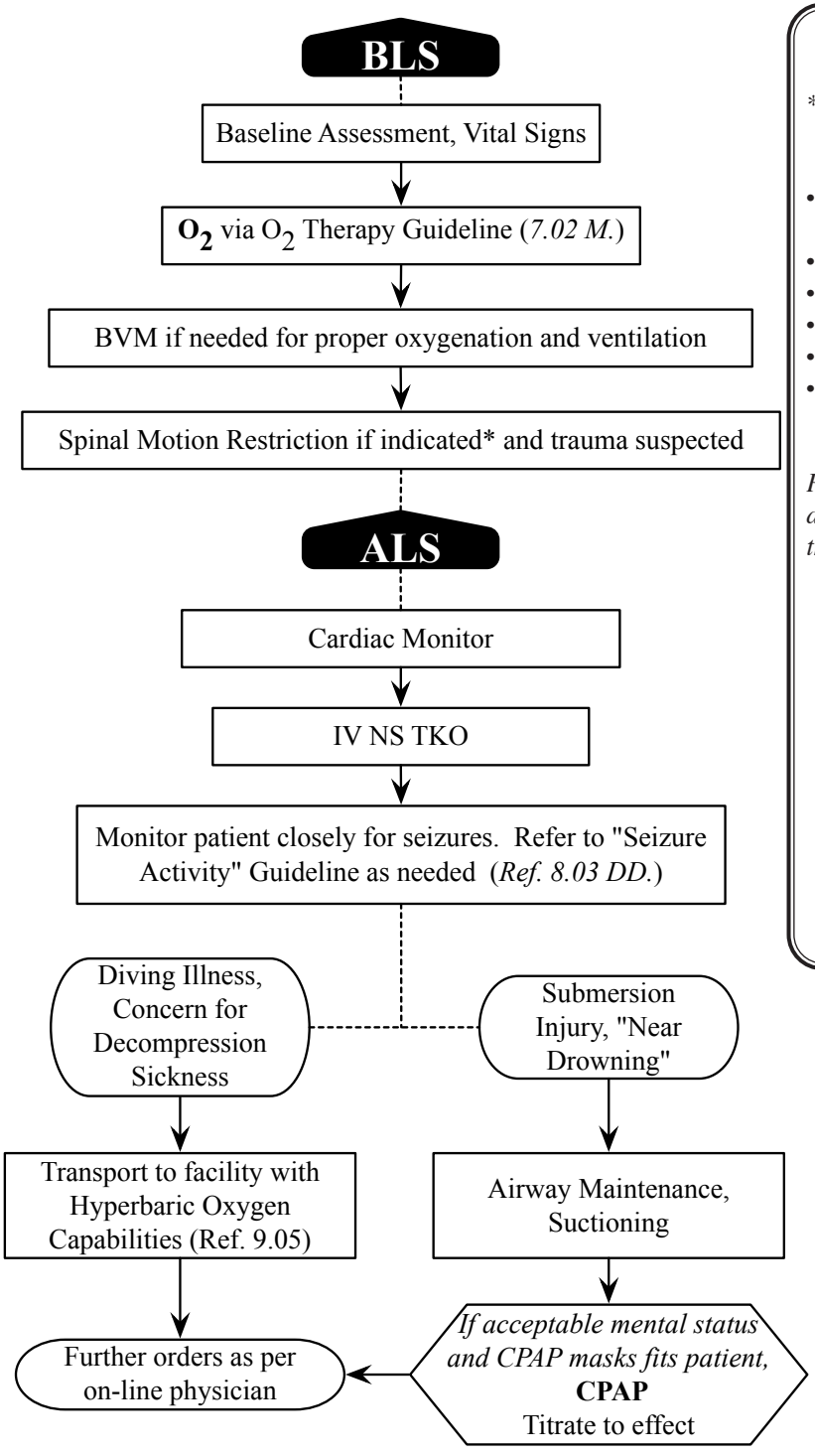
Houston Methodist TMC: 346-238-5700 - Option 2 and ask to be directly connected to the On-Call VAD Coordinator.

Memorial Hermann TMC: 713-704-4300 - Option 2 and ask to be directly connected to the On-Call VAD Coordinator.

Texas Children's TMC: 832-775-3822

Veteran's Administration Hospital: 713-494-3275

8.03 MM. Water Related Emergencies



Questions for Baseline Assessment

* *Reference 8.04 J. "Spinal Motion Restriction" Guideline*

- *Has patient recently been diving (last 24-48 hours)?*
- *Any sudden depressurization?*
- *Police dive team member?*
- *Recent rescue or training?*
- *Recent return from diving vacation?*
- *During dive: How long underwater and how deep?*

Presenting signs/symptoms with a diving illness are usually sudden, dramatic and very often life-threatening. The following may occur:

- *coronary occlusion*
- *cardiac arrest*
- *stroke*
- *focal paralysis*
- *sensory disturbances*
- *blindness*
- *severe joint pain*
- *deafness*
- *vertigo*
- *dyspnea*
- *seizures*
- *aphasia*

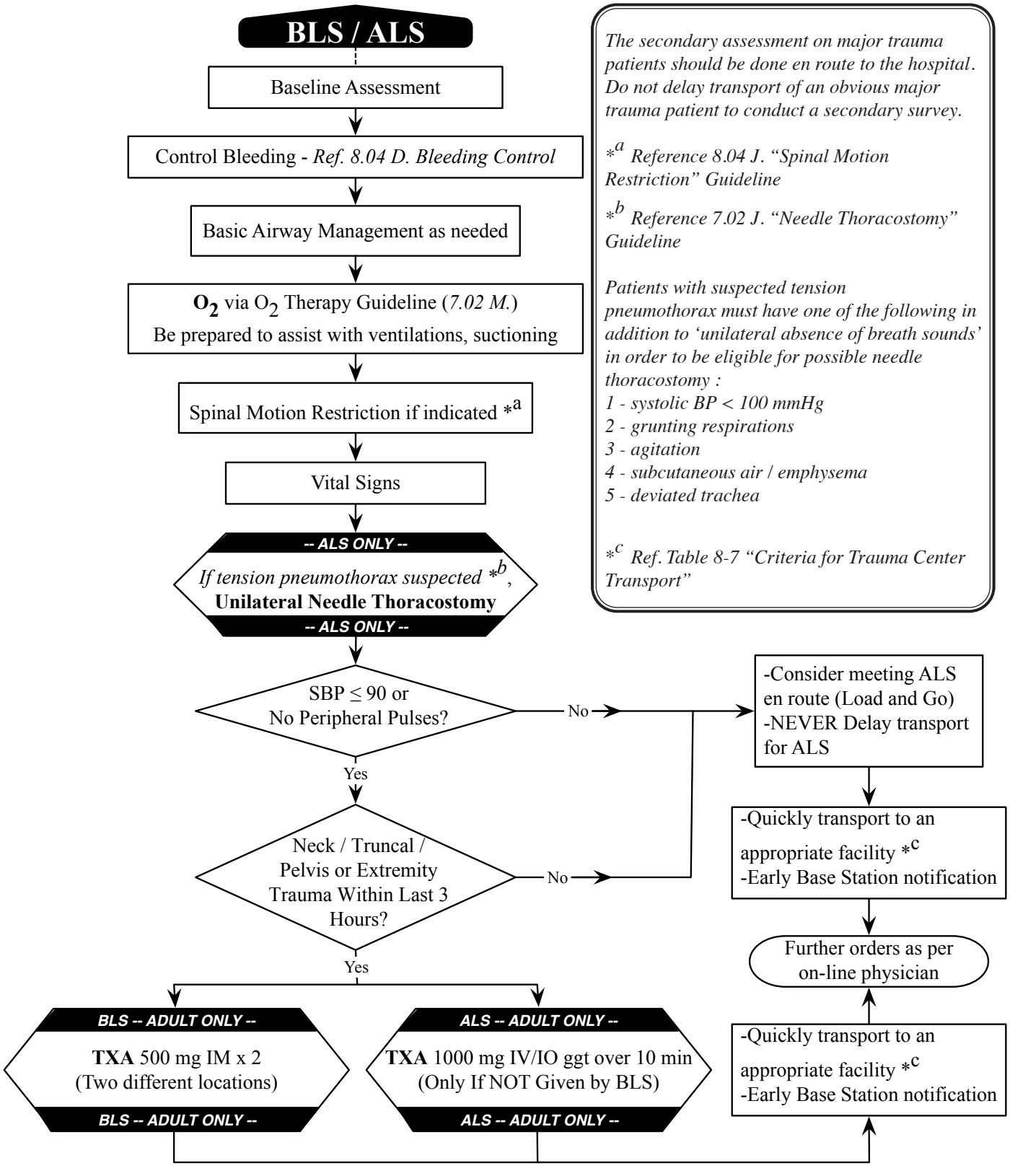
The incidence of cervical spine injury in drowning victims is low (0.009%). Unnecessary cervical spine immobilization can impede adequate opening of the airway. Only immobilize if circumstances suggest a spinal injury (dive into shallow water, etc.).

Tables

A. General Principles for Trauma Emergencies

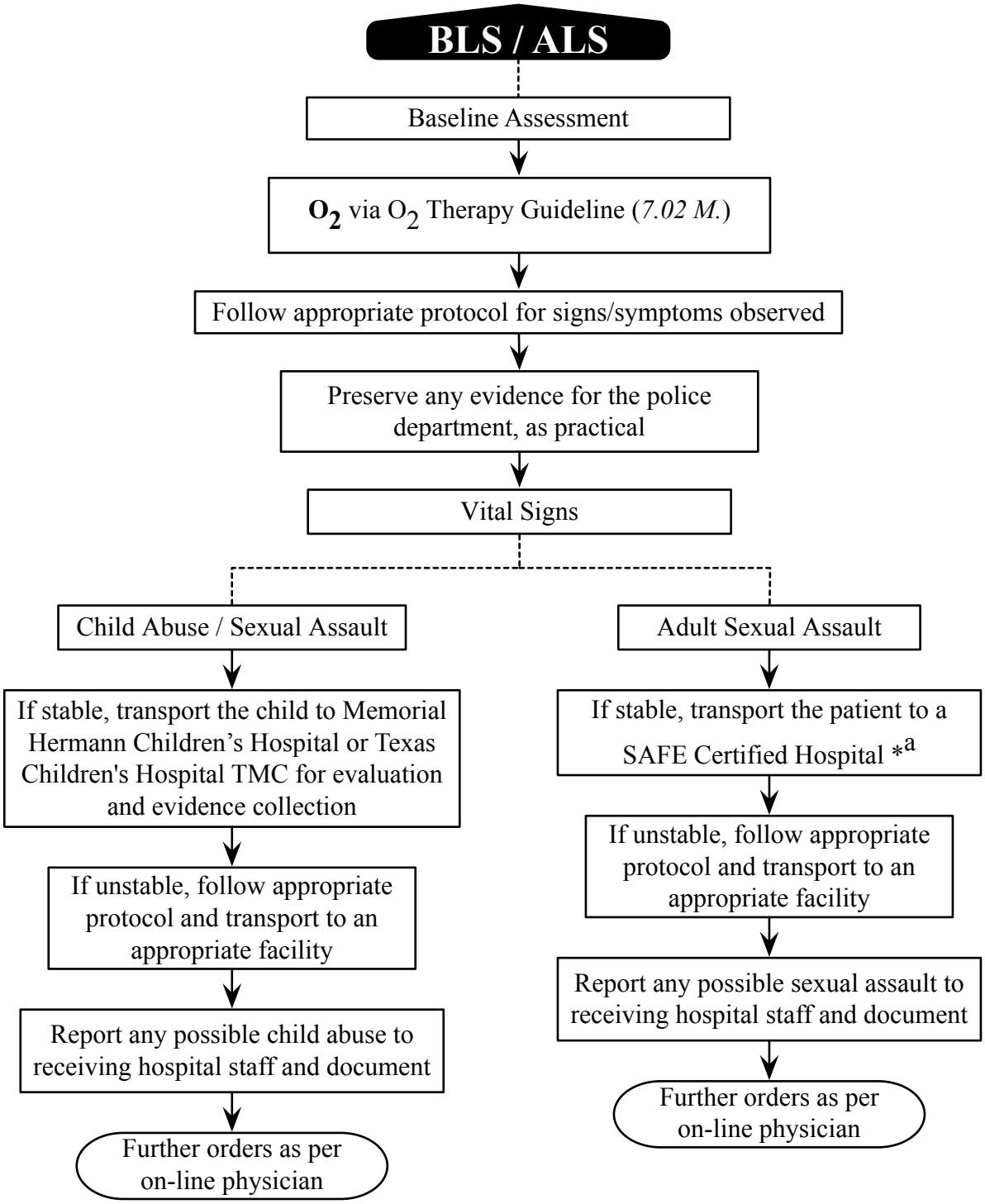
1. BLS / ALS Level
    a. DO NOT delay transport waiting for an ALS unit to arrive. Unless there is an unavoidable delay at the scene, meet the ALS unit en route to the hospital.
    b. DO NOT delay transport for treatment. Unless there is an unavoidable delay at the scene, perform therapeutic interventions en route to the Trauma Center. Beyond controlling life threatening hemorrhage, establishing an airway (with basic or advanced techniques) and potential spinal motion restriction, the priority in caring for the trauma patient is rapid evacuation of the patient with further care performed en route to the hospital.
    c. DO inform the Base Station as early as possible when transporting a seriously injured patient for hospital notification.
    d. Maximize the use of Level III Trauma centers as long as transport decision is consistent with Table 8-7, Criteria for Trauma Center Transport.
    e. Resuscitation efforts may be withheld from individuals who meet obviously dead criteria:
        1) Dead-on-Scene (DOS):
        •Decapitation
        •Decomposition
        •Dependent lividity
        •Rigor Mortis (Extremity)
        •Incineration
        •Obvious mortal wounds
        2) Absence of any signs of life (pulse, respirations or any spontaneous movement) on HFD arrival to patient, caused by blunt or penetrating trauma.
        3) The patient shall not be pronounced DOA if there are any signs of life witnessed by the first arriving HFD Unit.
    f. In cases of trauma where the vascular system is expected to be intact, resuscitate the patient according to 'medical' arrest guidelines. The AED is to be applied as in medical guidelines. This applies to patients with arrest due to:
        1) Drowning
        2) Hanging
        3) Overdose
        4) Inhalational Injury (Smoke)
        5) Electrocution
2. ALS Level
    a. Paramedic may delegate notification of the Base Station in order to facilitate early activation of the trauma team.
    b. Use End Tidal CO_2 for confirmation of tube placement and continuous monitoring.
    c. All IV's placed should be large bore (14 or 16 gauge) if possible. Two large bore IV's should be placed in patients suffering from major trauma. Do not delay transportation to initiate IV access.

8.04 B. General Guidelines for All Trauma Patients



*ALS: See ***Note under TXA Administration 9.01 AA. if BLS has only given one TXA IM administration.*

8.04 C. Abuse of Child / Sexual Assault of Child or Adult



*[a] *SAFE Certified Hospital = Sexual Assault Forensic Exam Ready Hospital*

All victims of sexual assault shall preferentially be transported to a SAFE certified hospital for proper evaluation, treatment and data collection. Reference 9.05 Approved Hospitals.

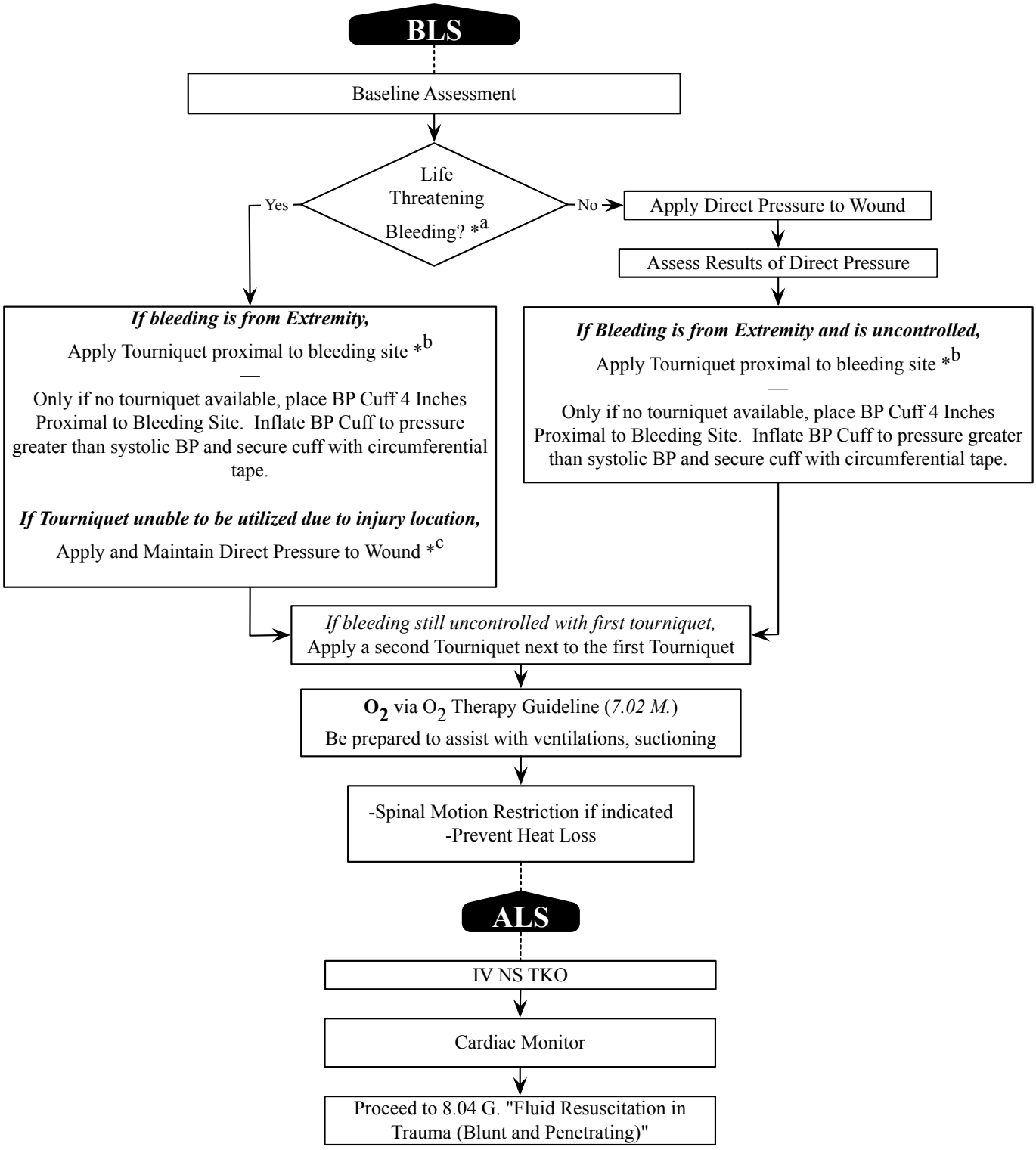
8.04 D. Bleeding Control

-*[a] *Major or arterial bleeding that will cause loss of life rapidly if not controlled.*

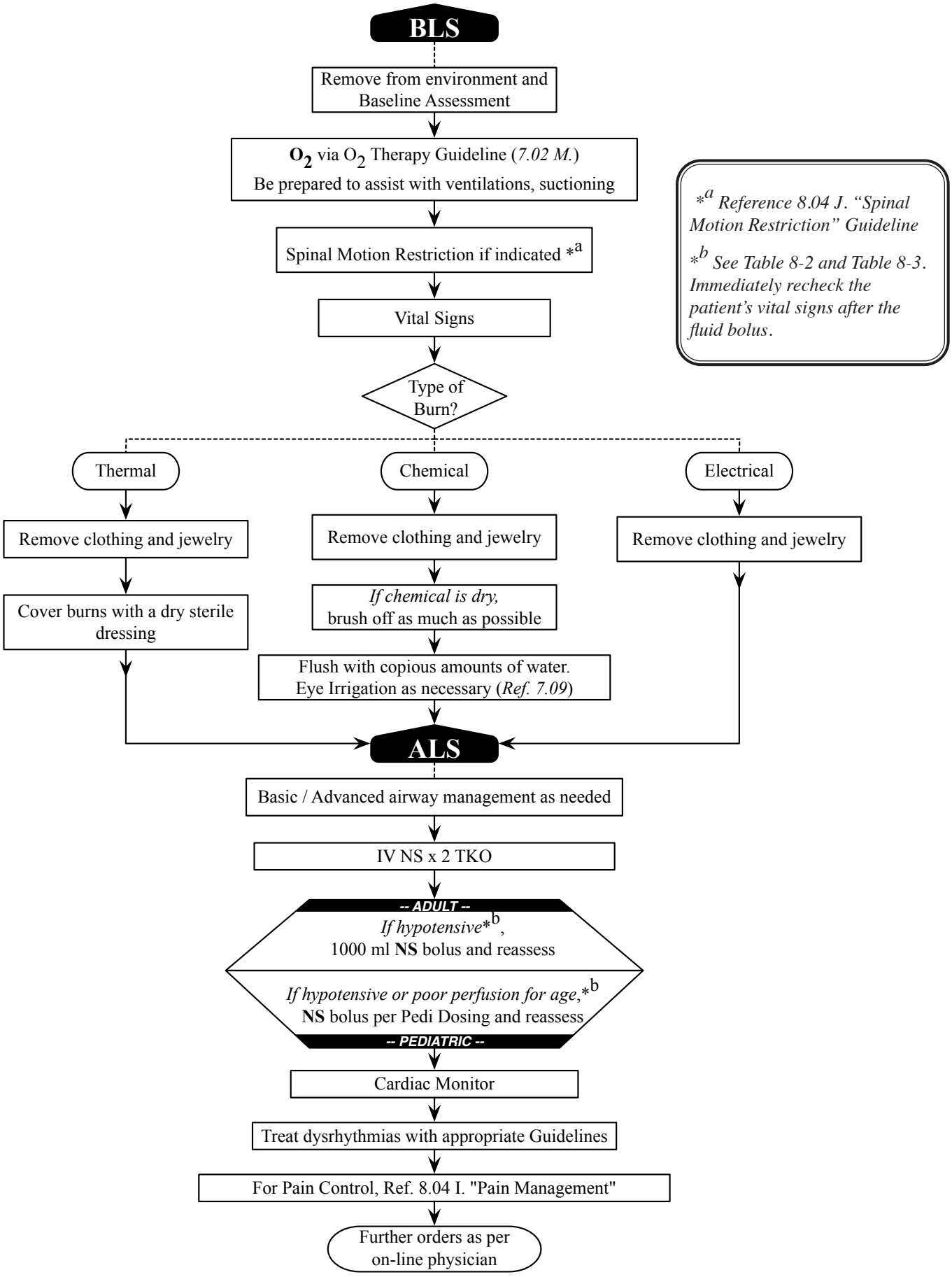
-*[b] *Tourniquet Application, Reference 7.07 B.*

-*[c] *Consider wound packing in the setting of junctional hemorrhage (neck, axilla or groin) that cannot be controlled with direct pressure and is not suitable for tourniquet placement. Ref. 7.07 C.*

- *Ref. 8.04 I. for Pain Control treatment*



8.04 E. Burns

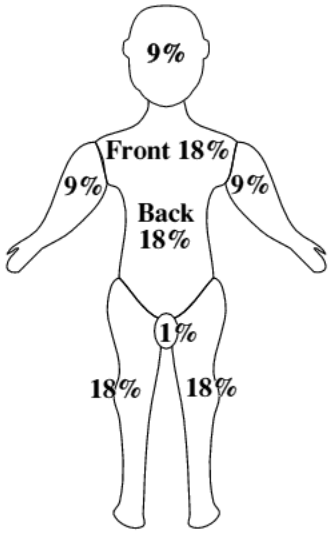

BLS
Remove from environment and Baseline Assessment
O2 via O2 Therapy Guideline (7.02 M.)
Be prepared to assist with ventilations, suctioning
Spinal Motion Restriction if indicated *a
Vital Signs
Type of Burn?
*a Reference 8.04 J. "Spinal Motion Restriction" Guideline
*b See Table 8-2 and Table 8-3. Immediately recheck the patient's vital signs after the fluid bolus.
Thermal
Chemical
Electrical
Remove clothing and jewelry
Remove clothing and jewelry
Remove clothing and jewelry
Cover burns with a dry sterile dressing
If chemical is dry, brush off as much as possible
Flush with copious amounts of water. Eye Irrigation as necessary (Ref. 7.09)
ALS
Basic / Advanced airway management as needed
IV NS x 2 TKO
-- ADULT --
If hypotensive*b, 1000 ml NS bolus and reassess
If hypotensive or poor perfusion for age,*b NS bolus per Pedi Dosing and reassess
-- PEDIATRIC --
Cardiac Monitor
Treat dysrhythmias with appropriate Guidelines
For Pain Control, Ref. 8.04 I. "Pain Management"
Further orders as per on-line physician

8.04 E. Burns Notes

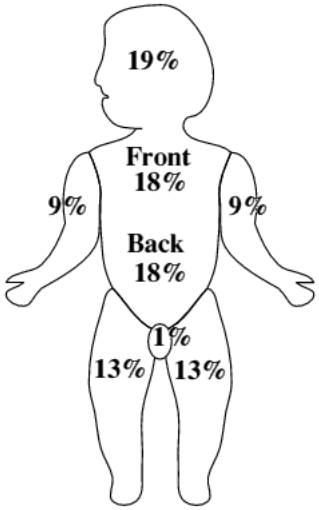
A. Assessment and Treatment Considerations:
   1. Consider early intubation if airway compromise develops from inhalation of superheated gases or smoke. Have a high index of suspicion in cases of facial burns, sooty sputum, singed facial hair and/or hoarse voice.
   2. Percent (%) of Body Surface Area (BSA) burned.
      a) Rule of Nines
      The rule of nines is a method for rapidly estimating the percent of total body surface area affected by a burn. Only second and third degree burns are counted in Total BSA burn percentage.

Table 8-5 : Rule of Nines

Adult



Pediatric

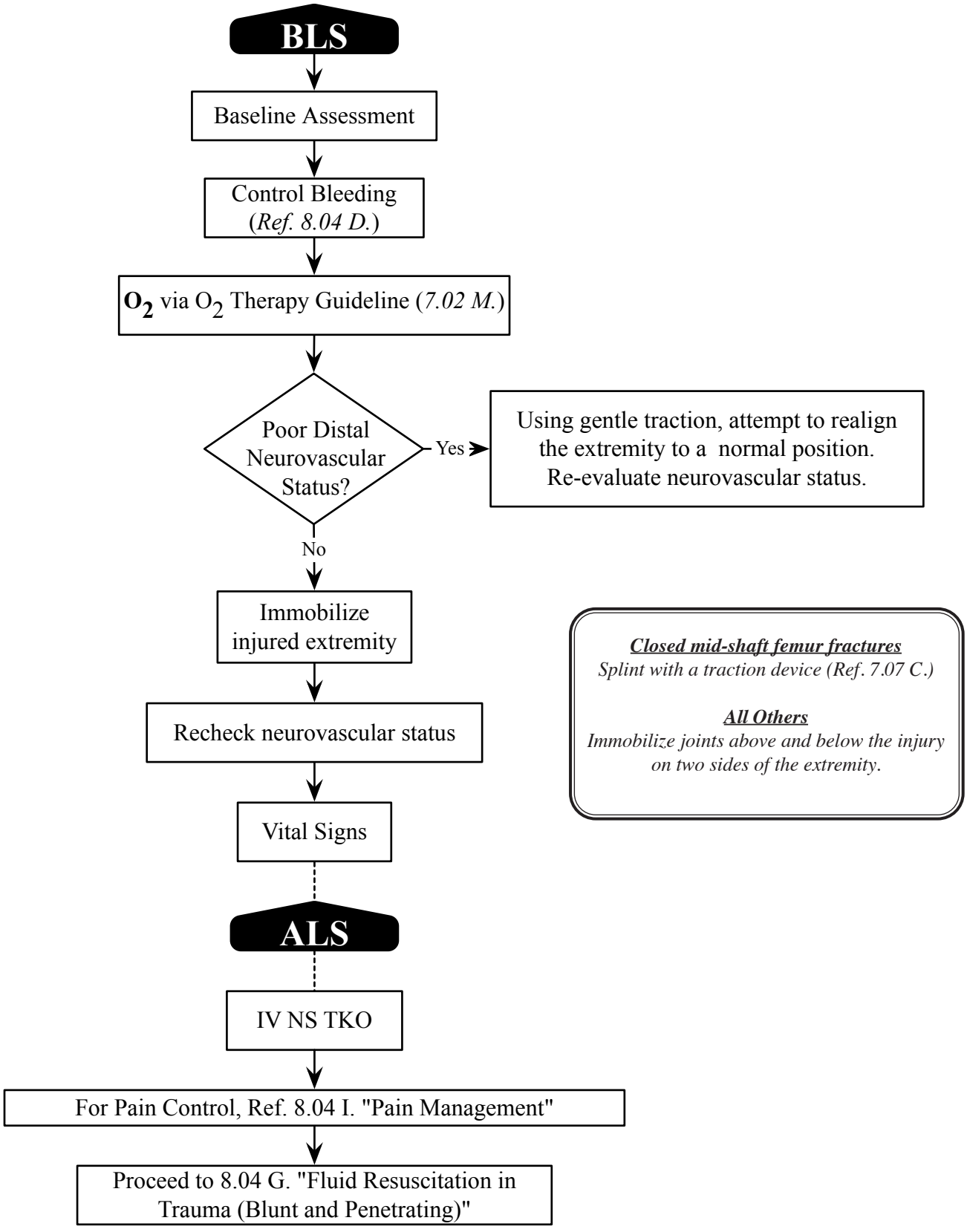


      b) In burn victims, the percent of total body surface area affected is a strong predictor of patient's prognosis. The rule of nines derives its name from the fact that an adult body may be conveniently divided into anatomic regions that have surface area percentages that are all multiples of nine percent.

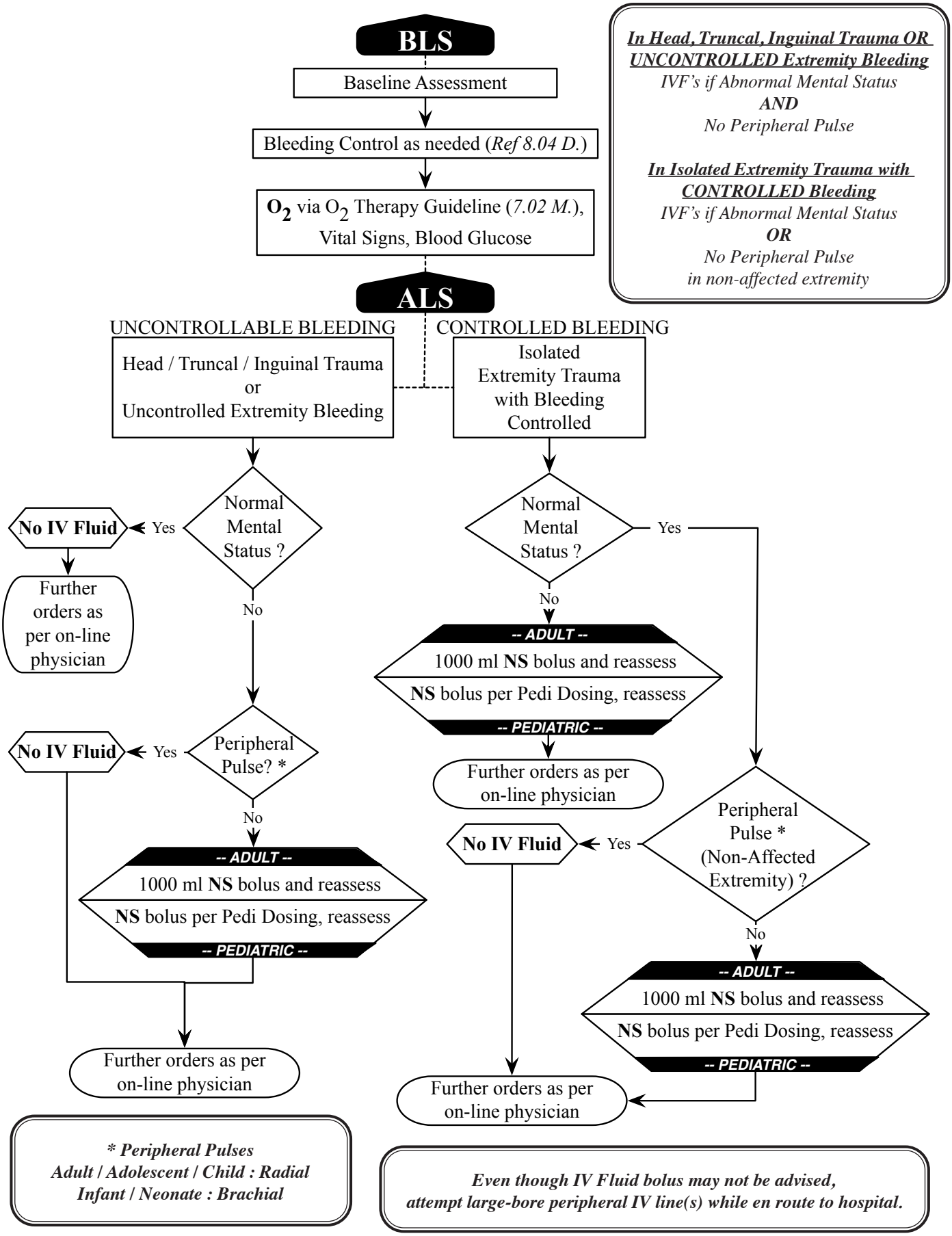
3. Types of Burns
   a) 1st Degree (Superficial Burn): Involves only the epidermis. Skin will appear pink to red and there will not be blisters (e.g., sunburn, minor scald injury). Does not contribute to BSA calculation.
   b) 2nd Degree (Partial Thickness Burn): Involves the epidermis and portions of the dermis. Skin may appear white to cherry red, moist, and mottled and blisters will be present (e.g., thermal flame burns, severe scaldings).
   c) 3rd Degree (Full Thickness Burn): Involves all layers of skin and can extend beyond the subcutaneous layer into muscle, bone or organs. The skin will become dry, hard, tough or leathery and may appear white and waxy to black and charred (e.g., trapped in confined space with flames or high heat source or chemical contact).
4. Major Burns:
   Electrical, chemical and thermal burns which involve:
   - •inhalation injuries,
   - •burns along with other traumatic injuries,
   - •2nd or 3rd degree burns involving the face, hands, feet, genitalia or perineum
   - •2nd or 3rd degree burns with > 20% BSA (Body Surface Area)

   These patients should be transported to a burn center (*Ref. 9.05 Approved Hospitals and Hospitals with Specialized Facilities*).
5. Look for traumatic injuries associated with electrical burns.
6. Avoid IV access in the extremity with a burn injury if at all possible.
7. Avoid IV fluids unless patient is hypotensive.
8. Avoid hypothermia by keeping the patient warm and covered with a dry, sterile burn sheet if needed.

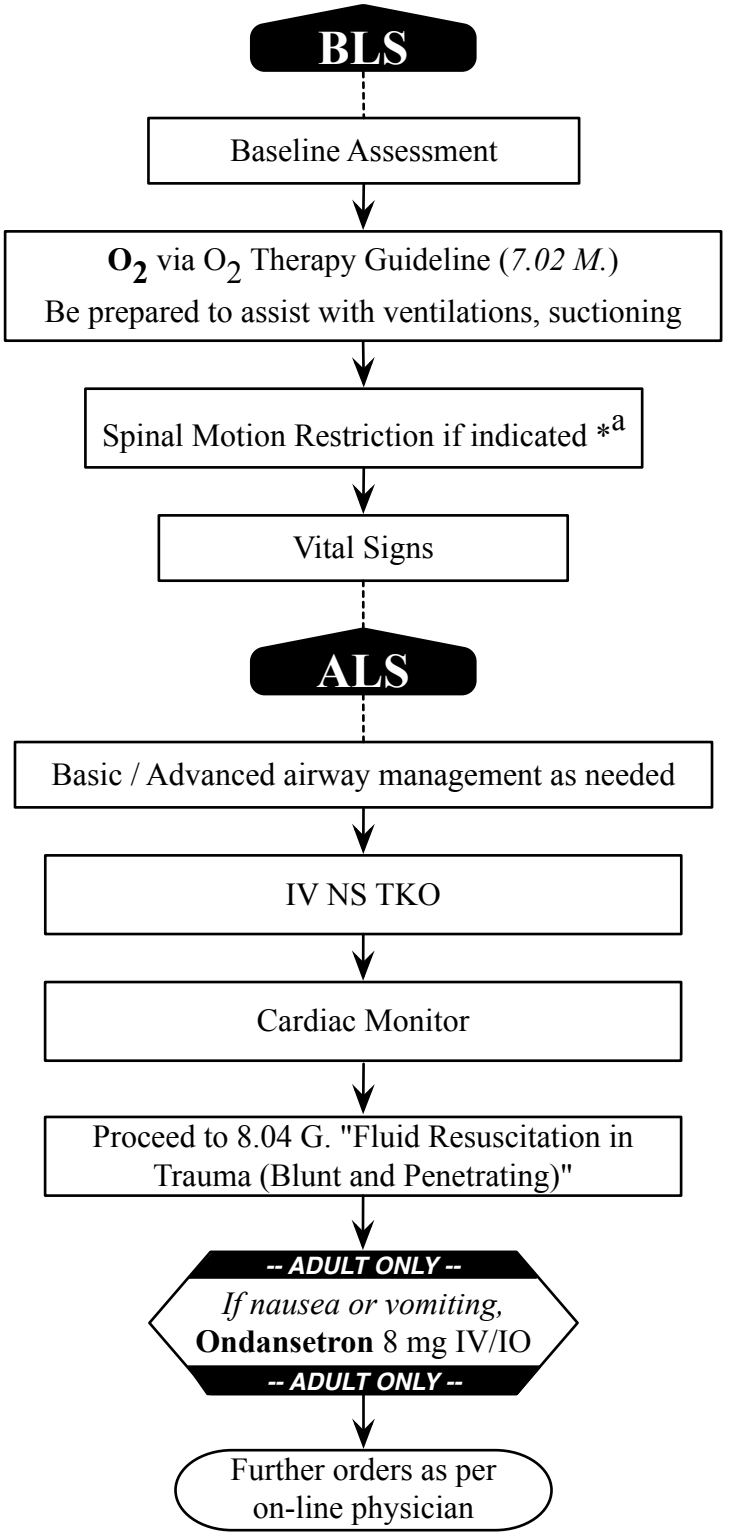
8.04 F. Extremity Trauma (Isolated)



8.04 G. Fluid Resuscitation in Trauma (Blunt and Penetrating)



8.04 H. Head Trauma (Isolated)



[a] Reference 8.04 J. "Spinal Motion Restriction" Guideline

If no indication for Spinal Motion Restriction, Elevate the Head of the Bed/ Stretcher 30°.

8.04 I. Pain Management (Traumatic Pain)

BLS

Baseline Assessment
If in arrest, follow appropriate protocol

O_2 via O_2 Therapy Guideline (*7.02 M.*)
Vital Signs

ALS

Cardiac Monitor / IV Access / Suction

-- ADULT --

Fentanyl 50 mcg - 100 mcg IV/IN/IO *[a]

Fentanyl per Pedi Dosing IV/IN/IO *[a]

-- PEDIATRIC --

$EtCO_2$
Continue to closely monitor for signs of respiratory depression *[b]

-- ADULT --

If pain continues and patient alert and controlling airway, may repeat
Fentanyl 50 - 100 mcg IV/IN/IO *[a]

If pain continues and patient alert and controlling airway, may repeat
Fentanyl per Pedi Dosing *[a]

-- PEDIATRIC --

Further orders as per on-line physician

This guideline is intended for use only for pain control in patients, adult and pediatric, who have traumatic injuries.

DO NOT delay transport of a traumatically injured patient in order to institute this guideline.

If Fentanyl administered, ALS or EMS Supervisor must accompany the patient to the hospital.

*[a] • *Elderly patients, head injuries or intoxicated patients may have more severe respiratory depression from Fentanyl. Consider starting at the lower dose of Fentanyl administration.*

• ***Do not give to children under 1 year of age without obtaining on-line physician approval first.***

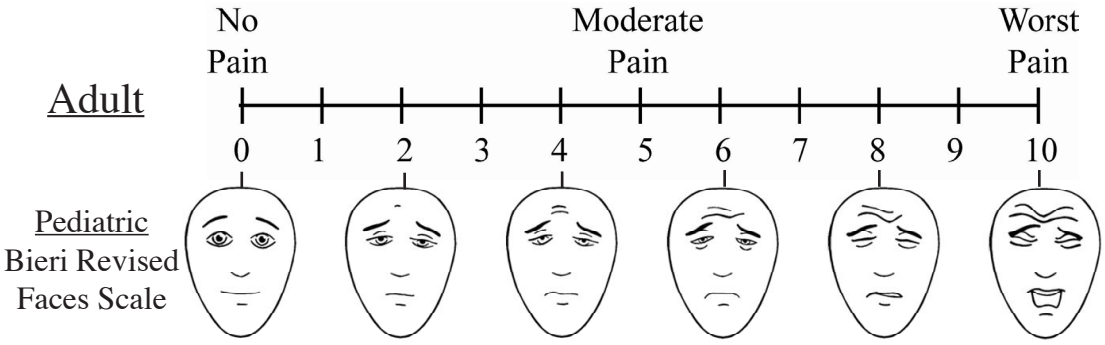
*[b] • *Most common side effect is respiratory depression. The patient must be on oxygen, cardiac monitor and pulse oximetry prior to administration of fentanyl.*

• *Maintain **close** observation of the patient's respiratory status and intervene with stimulation or BVM as necessary. Use $ETCO_2$ to monitor patient.*

• *If respiratory status does not improve with stimulation or BVM, administer Narcan IV titrated as needed and notify on-line medical control.*
*Adult dose : **Narcan** 0.4 - 2 mg IV*
*Pediatric dose : **Narcan** per Pedi Dosing*

• *Be sure to document appropriate Pain Scale both BEFORE and AFTER treatment for pain.*

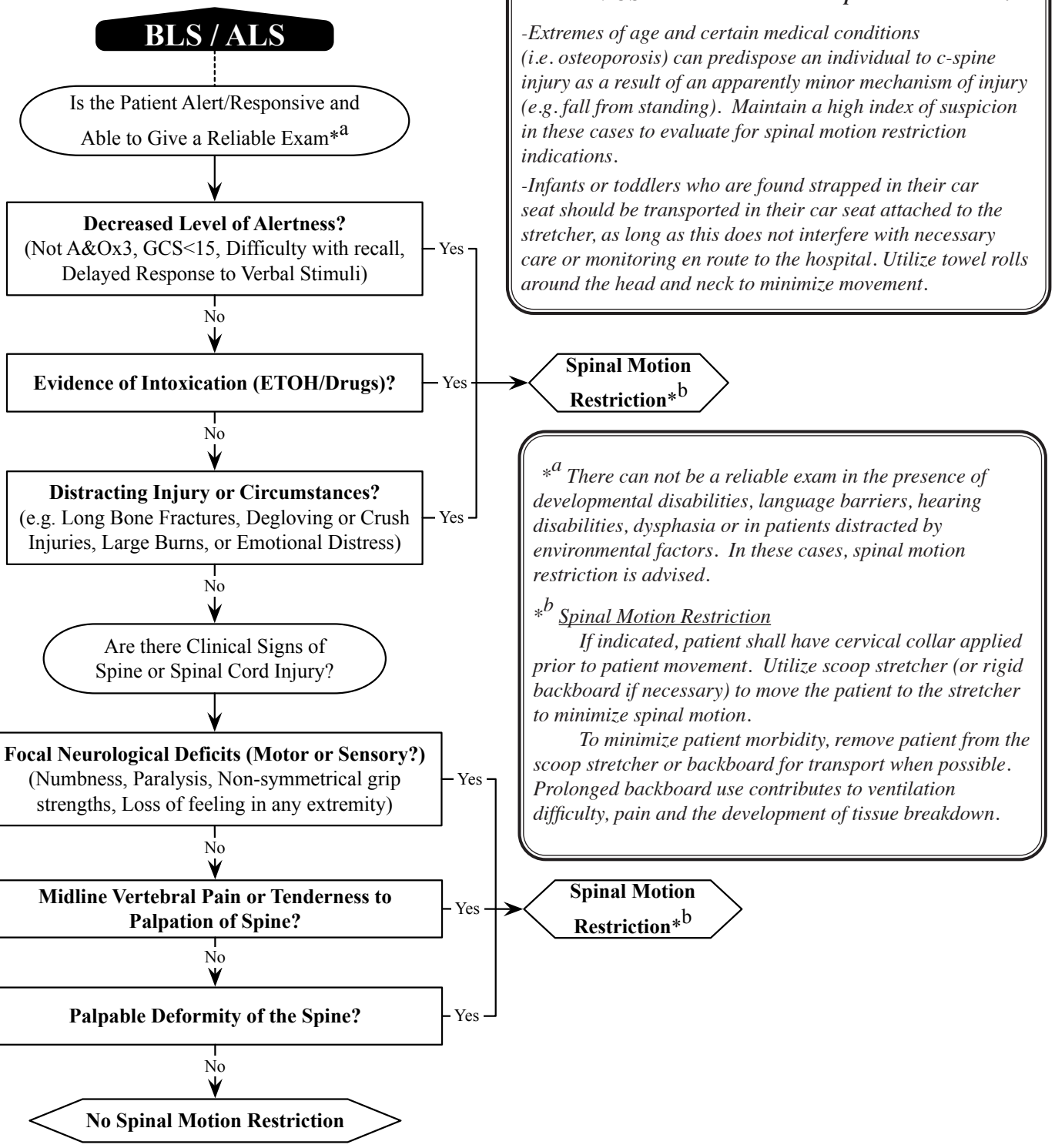
Table 8-6 : Pain Scales



8.04 J. Spinal Motion Restriction in Blunt Trauma

-This guideline is for <u>patients > 3 years old</u> who have suffered an injury and spinal motion restriction is considered.

<u>There is no indication for spinal motion restriction in Penetrating trauma.</u>
The below flowchart is for Blunt trauma.



When this guideline is utilized, ALL 6 aspects of the patient exam MUST be documented in the patient care record.

-Extremes of age and certain medical conditions (i.e. osteoporosis) can predispose an individual to c-spine injury as a result of an apparently minor mechanism of injury (e.g. fall from standing). Maintain a high index of suspicion in these cases to evaluate for spinal motion restriction indications.

-Infants or toddlers who are found strapped in their car seat should be transported in their car seat attached to the stretcher, as long as this does not interfere with necessary care or monitoring en route to the hospital. Utilize towel rolls around the head and neck to minimize movement.

**a There can not be a reliable exam in the presence of developmental disabilities, language barriers, hearing disabilities, dysphasia or in patients distracted by environmental factors. In these cases, spinal motion restriction is advised.*

**b <u>Spinal Motion Restriction</u>*

If indicated, patient shall have cervical collar applied prior to patient movement. Utilize scoop stretcher (or rigid backboard if necessary) to move the patient to the stretcher to minimize spinal motion.

To minimize patient morbidity, remove patient from the scoop stretcher or backboard for transport when possible. Prolonged backboard use contributes to ventilation difficulty, pain and the development of tissue breakdown.

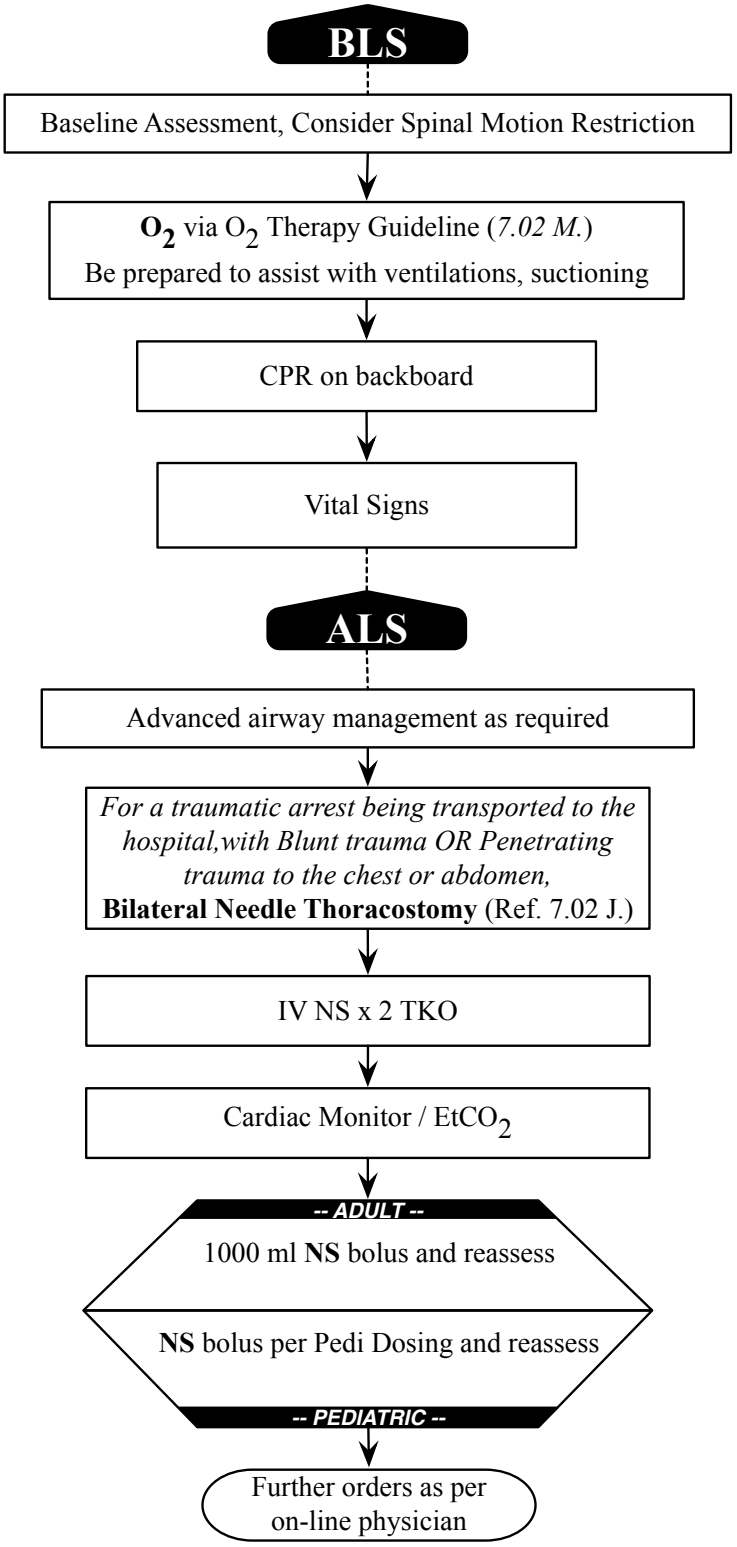
8.04 L. Taser Injury

A. TASER Device
1. A conducted electrical weapon deemed "less than lethal" on the use of force continuum.
2. Although the TASER device uses high voltage (50,000 volts), it uses very low current and energy (0.0021 amps or 0.026 joules to 0.0036 amps or .176 joules). For comparison, HFD's Life Pack 15 defibrillators deliver up to 360 joules of energy. Once the TASER stops generating an electrical current, the individual immediately regains control of skeletal muscle function and the electrical pulse is immediately dissipated.

B. Injuries / Evaluation
1. The most commonly reported injuries are secondary in nature, meaning the TASER did not cause them. The secondary injuries are usually contusions, sprains, fractures and abrasions caused when the individual falls to the ground during muscle "lock up". The TASER devices electrical current should not affect individuals with pacemakers.
2. Simply because an individual received a TASER discharge is not reason enough to warrant hospital transport for evaluation. However, it is important to note that the individual shall receive a medical evaluation from HFD personnel, regardless of TASER use. Keep in mind the TASER device is generally not deployed on cooperative individuals. It is very important to determine why the individual is having that type of behavior. Often, it is because of a medical reason (such as illicit substance abuse, hypoglycemia, mental health issues, delirium with hyperactivity and severe agitation associated with an overdose, etc.). First and foremost, evaluate the individual for a life-threatening emergency.
3. One of the greatest life threats surrounding deployment of a TASER device is when an individual experiences a toxic overdose or are experiencing delirium with hyperactivity and severe agitation. It is important to assess the individual for any signs or symptoms of a toxidrome or delirium requiring treatment. Signs and symptoms include, but are not limited to: fever, vital sign abnormality, uncontrolled and unexpected agitation, diaphoresis, altered mental status, cardiac arrhythmia, acidosis and rhabdomyolysis. Failure to control their agitation will worsen their acidosis and lead to potential death. Any patient who exhibits any signs or symptoms of a medical or traumatic emergency should be transported to the hospital.

C. Removal
1. Individuals with darts embedded in anatomically sensitive locations such as the face, neck, groin, breast and possibly the hand should be transported to a hospital for removal. Removal of darts located in non-sensitive areas is performed simply by grabbing the probe and giving it a quick tug/yank in a direction perpendicular to the plane of the skin. In the rare circumstance a dart embedded in a non-sensitive area cannot be removed by tugging on it, these individuals should be transported to the hospital for dart removal as well. Also, keep in mind that a large number of darts will not penetrate through an individual's clothing and, therefore dart removal is a moot point. Once the dart is removed, inspect it to ensure it is whole. If it is not whole, the retained foreign body needs to be removed at the hospital.
2. The Houston Police Department guidelines allow their officers to remove the TASER darts as long as they are not in the above-mentioned sensitive locations (face, neck, groin or breast). Any patient with darts in these areas should be transported to the hospital for dart removal by a physician. HFD should not be routinely called for dart removal in non-sensitive locations. An HPD supervisor should be contacted if this is a repeated occurrence.
3. Caution should be used when handling darts that have been removed because they now represent a sharp biohazard and should be handled and discarded as such. Keep in mind that HPD may want the removed dart to be saved as evidence and you should inquire about this before discarding it.

8.04 M. Traumatic Arrest



Withhold traumatic arrest resuscitation on those who meet traumatic dead on scene criteria (Ref. 8.04 A.1.e.).

** In settings of minor or low-speed trauma, be aware of a medical arrest precipitating the trauma. If this is likely the case, resuscitate the patient as a 'medical' arrest (Ref. 8.02).*

** In cases of trauma where the vascular system is expected to be intact, resuscitate the patient according to 'medical' arrest guidelines (Ref 8.02)*
This would include cases of :
-Drowning
-Hanging
-Overdose
-Inhalational Injury (Smoke)
-Electrocution

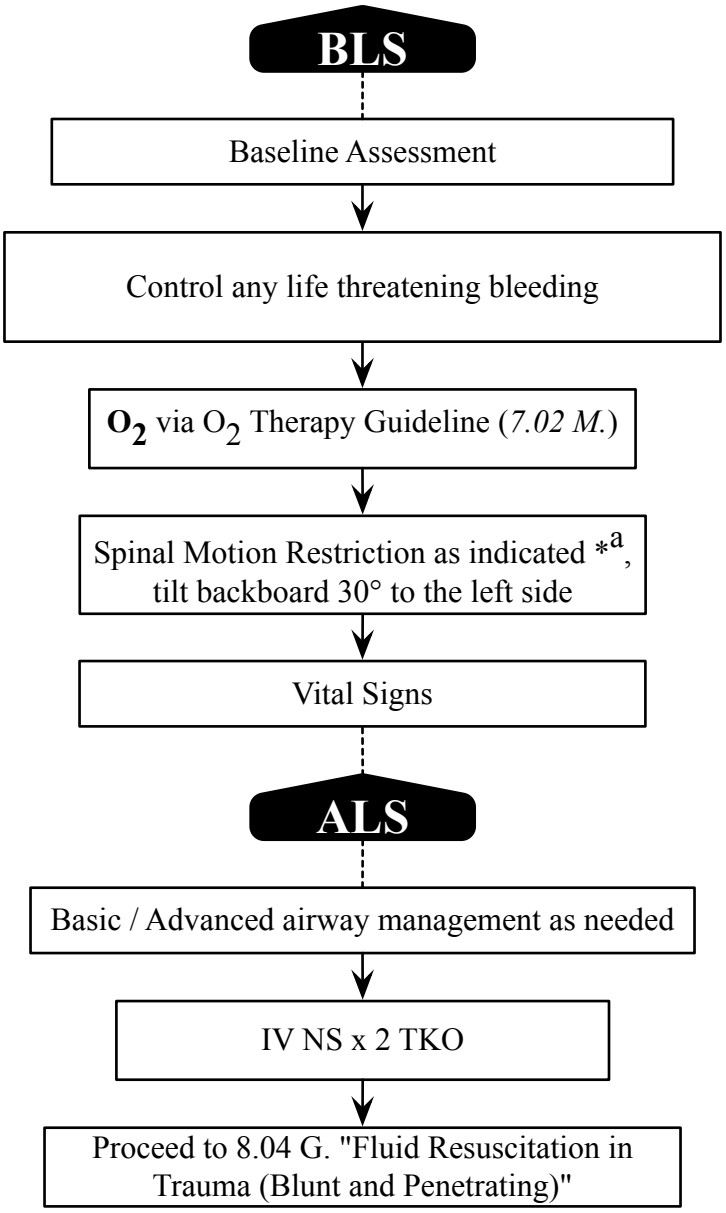
Traumatic Arrests that are being resuscitated should be transported immediately to the nearest Level I/II or III Trauma Center. ALS can be met en route but do not let this delay transport more than minimally.

If at any time a tension pneumothorax is suspected, quickly perform a unilateral needle thoracostomy on the affected side.
-Ref. 7.02 J. Needle Thoracostomy

- *If at any time the patient is in Ventricular Fibrillation, deliver one 360 Joule shock. If the patient does not convert, continue CPR and transporting, attempting defibrillation every 3 minutes at 360 J.*

**[a] Reference 8.04 J. "Spinal Motion Restriction" Guideline*

8.04 N. Trauma in Pregnancy



**a Reference 8.04 J. "Spinal Motion Restriction" Guideline*

During late term of pregnancy (6-9 months), it may be necessary to manually lift the patient's uterus off of the inferior vena cava by maintaining a tilt to the patient's left side. This will help with blood flow to and from the heart.

Pregnancy > 20 weeks is a Level III Trauma Center Criteria (at a minimum).

Table 8-7 : Criteria for Trauma Center Transport

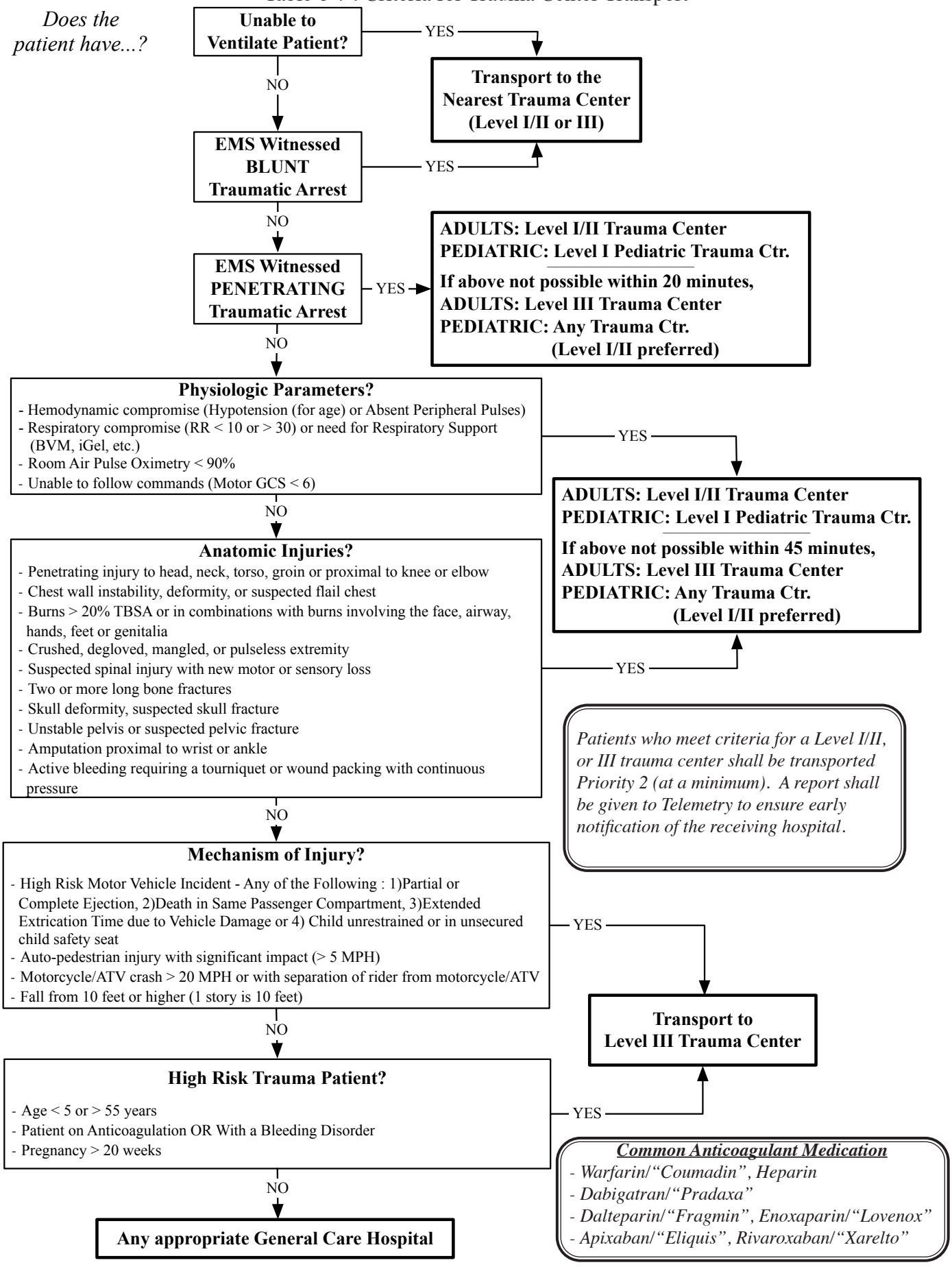


Table 8-8 : Glasgow Coma Scale : Adult and Pediatric

ADULT GLASGOW			**PEDIATRIC GLASGOW**	
Eye Opening (4)			Eye Opening (4)	
Spontaneous	4		Spontaneous	4
To Speech	3		To Speech	3
To Pain	2		To Pain	2
None	1		None	1
Best Motor Response (6)			Best Motor Response (6)	
Obeys Commands	6		Spontaneous Movement	6
Localizes Pain	5		Withdraws to Touch	5
Withdraws From Pain	4		Withdraws from Pain	4
Abnormal Flexion	3		Abnormal Flexion	3
Abnormal Extension	2		Abnormal Extension	2
None	1		None	1
Verbal Response (5)			Verbal Response (5)	
Oriented	5		Coos, Babbles	5
Confused	4		Irritable Cry	4
Inappropriate	3		Cries to Pain	3
Incomprehensible	2		Moans to Pain	2
None	1		None	1
Total			Total	

9.00 REFERENCE SECTION

Tables

Drug Guide Terminology

1. Generic Name: The pharmacological name given to a drug when originally developed.

2. Trade/Brand Name: The drug name used by the manufacturer for marketing purposes. A drug may be marketed by several different manufacturers and may have multiple trade/ brand names.

3. Classification: The therapeutic category to which a drug belongs as determined by the drug's actions.

4. Action: The effect which the drug is intended to produce specific to out-of-hospital care.

5. Indication: The specific condition for which the drug is recommended for out-of-hospital use.

6. Contraindication: Circumstances when the drug should not be administered unless the benefits outweigh the risks. Hypersensitivity is always a contraindication for any drug.

7. Adverse Effect: The predictable, but undesirable effect of the drug. This may be related to the dose and rate of administration. Italic effects indicate the most common effects. Bolded effects indicate possible injurious or life-threatening effects.

8. Administration: Drugs may be administered in a variety of ways. Included are the dose, route(s), and rate of initial administration. This is followed by the repeat dose, the time it can be repeated, and the maximum amount that can be administered.

9. Onset: The period of time required for the drug to begin its physiologic effect.

10. Duration: The period of time that the drug is expected to maintain its physiologic effect.

11. Precaution: Measures to be considered in order to avoid complications related to the administration of a specific drug.

12. Note: Relevant information specific to the use of a particular drug.

A. Adenosine (Adenocard®)

I. Classification
- •Antidysrhythmic agent

II. Actions
- •Depresses automaticity in the sinus node
- •Suppresses AV conduction

III. Indications
- •Perfusing PSVT unresponsive to Valsalva
- •Poorly perfusing PSVT in a conscious patient

IV. Contraindications
- A. History of Sick Sinus Syndrome
- B. Second degree type II or third degree heart block
- C. Asthma patients with wheezing

V. Adverse Effects
- A. Cardiovascular
  - **•Bradycardia/asystole**
  - **•Second/third degree blocks**
  - •*Chest pain/pressure*
  - •*Hypotension*
  - •*PACs/PVCs*
- B. Neurological
  - ***•Seizures***
  - •Headache
  - •Blurred vision
  - •Tingling/numbness
  - •Light-headedness
  - •Dizziness
- C. Respiratory
  - •Dyspnea/shortness of breath
  - **•Bronchoconstriction in asthmatic patients**
- D. Gastrointestinal
  - •*Nausea*
  - •Metallic taste
- E. General
  - •Flushed skin
  - •Throat tightness

VI. Administration
- A. Adult:
  6 or 12 mg **rapid IVP**, within 1-3 seconds, followed by rapid flush of 10-20 ml NS.
  -Patients known to be taking Persantine® (dipyridamole) or Tegretol® (carbamazepine) receive half of the normal dose (3 or 6 mg).

B. Pediatric [by on-line physician order only]:
0.1 mg/kg **rapid IVP** within 1-3 seconds, followed by rapid flush of 10 ml NS. May repeat 0.2 mg/kg IVP in 1-2 minutes one time.

VII. Onset
•Immediate

VIII. Duration
•Less than 10 seconds

IX. Precautions
Adenosine is metabolized in less than 10 seconds. In order to ensure rapid administration into central circulation:
A. Cannulate a large vein (antecubital fossa) using an 18g-20g catheter.
B. Use the IV port closest to patient and immediately flush with 10-20 ml NS to ensure drug is administered as rapidly as possible.

X. Notes
A. It is important to evaluate patient response and document rhythms for follow up care. Monitor patient and run a continuous strip before, during and after administration of adenosine to document the effect of the drug.
B. Patients often have a 10 second period of escape beats or asystole before the sinus node starts up again.
C. Adverse effects of chest pain, hypotension or shortness of breath will resolve spontaneously within 1-2 minutes.
D. Adenosine will not convert sinus tachycardia, atrial flutter or atrial fibrillation to a normal sinus rhythm, but may cause a transient slowing of the heart rate in atrial fibrillation with a rapid ventricular response.
E. Persantine and Tegretol potentiate the actions of adenosine, which may result in second/third degree blocks.
F. Theophylline and xanthine preparations as well as caffeine, may render adenosine ineffective.
G. Signs/symptoms of poor perfusion includes: chest pain, shortness of breath, altered level of consciousness, and hypotension.
H. Definition of paroxysmal supraventricular tachycardia (PSVT): A supraventricular rhythm caused by rapid atrial depolarization, which overrides the SA node. Characterized by a sudden onset and abrupt termination, which is determined by the patient's history. The rhythm is regular with narrow complexes and a rate > 150 beats/minute (pediatric patients >220 beats/minute) and may last from minutes to hours.

B. Albuterol Sulfate (Proventil®, Ventolin®)

I. Classification
- •Bronchodilator

II. Actions
- •Relaxes bronchial smooth muscles (beta 2)
- •Reduces airway resistance
- •Decreases extracellular potassium

III. Indications

Bronchospasm caused by:
- •Acute asthma
- •Anaphylaxis
- •COPD
- •Bronchitis
- •Toxic gas inhalation
- •Near drowning
- •Drug overdose

IV. Contraindications
- •Not significant in above indications

V. Adverse Effects

A. Cardiovascular
- •Tachycardia
- •Hypertension

B. Respiratory
- •Cough
- •Wheezing

C. Neurological
- •*Tremors*
- •*Nervousness*
- •Headache
- •Dizziness

D. Gastrointestinal
- •Nausea

VI. Administration

A. Adult

2.5 mg/3 ml NS administered by nebulizer over 5-15 minutes. Repeat the breathing treatment as many times as needed.

B. Pediatric

Same as adult

VII. Onset
- •Within 5 minutes

VIII. Duration

•4-6 hours

IX. Precautions

•Hypoxic patients may experience dysrhythmias. Monitor the patient's rhythm and provide supplemental O_2 before and after the treatment to decrease hypoxemia.

X. Note

•Do not use a facemask with retaining strap due to the decreased ability to monitor tidal volume and level of consciousness.

•Use with caution in patients with a history of hypertension, heart disease and tachydysrhythmias.

C. Amiodarone (Cordarone®)

I. Classification
- •Antidysrhythmic

II. Actions
- •Sodium, potassium and calcium blockade
- •Prolongs intranodal conduction and refractoriness of the AV node

III. Indications
- •Pulseless, refractory VT and VF
- •Wide-Complex Tachycardia with pulse

IV. Contraindications
- •Second and Third Degree AV Block
- •Cardiogenic Shock
- •Marked Sinus Bradycardia

V. Adverse Effects

A. Cardiovascular
- •*Bradycardia*
- •Congestive heart failure
- •*Hypotension*
- •VT

B. Gastrointestinal
- •Liver function test abnormal
- •Nausea

VI. Administration

A. Adult:
150 mg or 300 mg IV/IO push, flush with 10 to 20 ml NS before and after administration.

B. Pediatric:
5 mg/kg IV/IO, slow push, flush with 5 to 10 ml NS.

C. Drips (Adult):
Mix 150 mg with 50 ml D_5W, and run over 5 to 10 minutes in a 10 drop/ml IV/IO administration set.

VII. Onset
- •Within 1-5 minutes

VIII. Duration
- •Has 20-47 day half-life after return of spontaneous pulses and normal blood pressure.

IX. Precautions
- •Most common side affect is hypotension
- •Torsades de pointes occurs in less than 1% of patients

X. Notes

A. Amiodarone precipitates with Sodium Bicarbonate. Flushing with 10-20 ml of normal saline

prior and after administration should avert this reaction.

B. The medication is very viscous and forms bubbles easily. Do Not Shake vial.

C. After return of spontaneous circulation (ROSC) and extremely long transport times (20 minutes or more), contact on-line physician for possible orders for re-bolus.

D. Aspirin

I. Classification
- •Salicylate
- •Nonsteroidal anti-inflammatory

II. Actions
- •Analgesic, anti-inflammatory effect by inhibition of prostaglandin synthesis, reducing inflammatory response and intensity of pain stimulus
- •Antipyresis produced by effects on the hypothalamus, producing vasodilation and decreasing elevated body temperature
- •Inhibits platelet aggregation

III. Indications
- •Chest pain

IV. Contraindications
- •Allergy
- •GI bleeding or ulcers
- •Pediatric Patients

V. Adverse Effects

A. Cardiovascular
- •Tachycardia

B. Neurological
- •Tinnitus (Ringing in ears)
- •Dizziness
- •**Convulsions** (Severe overdose)

C. Respiratory
- •Hyperventilation

D. Gastrointestinal
- •Dry mouth
- •Cramping

E. General
- •Flushed, sweaty skin
- •Pruritus

VI. Administration

A. Adult

324 mg PO (Chew 4 baby aspirin)

VII. Onset
- •5-10 minutes

VIII. Duration
- •2-3 hours

E. Atropine Sulfate

I. Classification
- •Parasympathetic blocking agent
- •Antidysrhythmic agent

II. Actions
- •Inhibits parasympathetic stimulation by blocking acetylcholine receptors
- •Decreases vagal tone resulting in increased heart rate and AV conduction
- •Allows bronchial dilation and decreases respiratory tract secretions
- •Decreases gastrointestinal secretions

III. Indications
- •Symptomatic bradycardia
- •Organophosphate (pesticide poisoning)
- •Nerve agent poisoning (Sarin, Soman, Tabun, VX)

IV. Contraindications
- •Neonates

V. Adverse Effects

A. Cardiovascular
- **•Tachycardia**
- **•Increased myocardial O_2 demand**

B. Neurological
- **•Seizures**
- •Dizziness
- •Confusion
- •Dilated pupils
- •Blurred vision

C. Respiratory
- •Mucus plugs

D. Gastrointestinal
- •Difficulty swallowing
- •Dry mouth

E. General
- •Hot, dry skin
- •Worsens glaucoma
- •Hyperthermia

VI. Administration

A. Adult

1. Bradycardia (with pulses)
   - •1 mg IV/IO. Maximum cumulative dosage is 3 mg IV/IO.
2. Organophosphate Poisoning
   - •2 mg IV/IO push. Further order as per online physician.

B. Pediatric (by on-line physician order only in neonates)

1. Bradycardia
   - •Minimum single dose 0.1 mg - maximum single dose 0.5 mg

•0.02 mg/kg IV/IO (Maximum overall dose 0.04 mg/kg).

2. Organophosphate Poisoning
   •Minimum single dose 0.1 mg - maximum single dose 2 mg
   •0.05 mg/kg IV/IO.

VII. Onset
   •1-4 minutes

VIII. Duration
   •20 minutes

IX. Precautions
   The increased heart rate may increase myocardial oxygen demand and result in ischemia and dysrhythmias. Administer supplemental oxygen and monitor rhythm frequently.

X. Notes
   A. Atropine is not recommended in asymptomatic bradycardia. The increase in myocardial oxygen demand may cause or extend a myocardial infarction.
   B. May cause paradoxical slowing of heart rate if less than the therapeutic dose is given; 0.3 mg in adults and 0.1 mg in pediatric patients.
   C. Worsens glaucoma due to pupillary dilation.
   D. Pupil reaction may not be a reliable indicator for hypoxic brain damage after atropine administration.
   E. High doses of atropine may be required in organophosphate poisoning.

F. Calcium Chloride

I. Classification
- •Electrolyte

II. Actions
- •Actively competes with potassium at cardiac and neuromuscular receptor sites
- •Restores myocardial conduction in presence of hyperkalemia
- •Increases myocardial contractility (inotropy)

III. Indications
- •Cardiac arrest associated with hyperkalemia (elevated potassium)
- •Calcium channel blocker overdose
- •Bradycardia due to calcium channel blocker overdose or hyperkalemia (i.e. missed dialysis).

IV. Contraindications
- •Cardiac arrest not associated with above indications
- •Should be avoided in patients on digoxin.

V. Adverse Effects
- •Not significant in above indications

VI. Administration

A. Adult
1 gm (1000 mg) slow IV/IO over 60 seconds.

B. Pediatric [by on-line physician order only]
20 mg/kg slow IV/IO over 60 seconds (maximum single dose 1000 mg).

VII. Onset
- •Immediately

VIII. Duration
- •30 minutes - 2 hours

IX. Precautions
- •Calcium precipitates with sodium bicarbonate forming calcium carbonate (chalk) and is incompatible with other drugs. Flush IV tubing before and after administration.
- •Causes tissue necrosis if infused into the interstitial space. Verify IV patency prior to administration.

X. Note
- •Hyperkalemia is common in dialysis patients due to potassium retention and can occur with an overdose of potassium supplements.
- •Common names of calcium channel blocking agents: Adalat® or Procardia® (nifedipine), Calan® or Isoptin® (verapamil) and Cardizem® (diltiazem).

G. Dexamethasone (Decadron®)

I. Classification
- •Corticosteroid

II. Actions
- • Potent synthetic member of the glucocorticoid class of steroid drugs that has anti-inflammatory and immunosuppressant effects. It is 25 times more potent than cortisol in its glucocorticoid effect, while having minimal mineralocorticoid effect.

III. Indications
- •Allergic Reaction / Anaphylaxis
- •Asthma / COPD
- •Croup

IV. Contraindications
- •Hypersensitivity

V. Adverse effects (with systemic use and larger than guideline dosages)

A. Cardiovascular
- •Cardiac arrest, cardiac arrhythmias, hypotension or hypertension.

B. Gastrointestinal
- •Peptic ulcer with possible perforation and hemorrhage, gastric hemorrhage, pancreatitis, esophagitis, perforation of the bowel, transient nausea, vomiting or dysgeusia (with rapid administration of large doses).

C. Musculoskeletal
- •Steroid myopathy, muscle weakness, osteoporosis, pathologic fractures, vertebral compression fractures, aseptic necrosis of femoral and humeral heads, tendon rupture--particularly of the Achilles tendon.

D. Fluid and Electrolyte Disturbances
- •Sodium retention, fluid retention, hypertension, potassium loss, hypokalemic alkalosis, diuresis, sodium excretion, congestive heart failure in susceptible patients.

VI. Administration
- •Adult
  - 10 mg IV/IM/PO
- •Pediatric
  - 0.6 mg/kg PO/IM/IV, Max dosage of 10 mg

H. Dextrose-Oral (Oral Glucose)

I. Classification
- •Hyperglycemic agent (carbohydrate)

II. Actions
- •Immediate source of glucose for cellular metabolism

III. Indications
- •Conscious patient who has signs/symptoms of hypoglycemia

IV. Contraindications
- •Patients with an altered level of consciousness
- •Patients complaining of nausea

V. Adverse Effects

A. Gastrointestinal
- **•Vomiting**

B. Respiratory
- •Aspiration

VI. Administration
- •Paste/Gel 15 Gram tube, liquid paste, PO

VII. Onset
- •Within minutes

VIII. Duration
- •Depends on the degree and cause of hypoglycemia

IX. Precautions
- •There is a risk of vomiting and aspiration if a decrease in consciousness occurs. **Do not administer oral glucose if there is a potential for an altered level of consciousness.** Administer glucose solution only if the patient is able to hold the bottle and drink without assistance.

X. Note
- •The entire amount does not need to be administered if the patient's condition improves.

I. Dextrose in Water ($D_{10}W$ or $D_{50}W$)

I. Classification
- •Hyperglycemic agent (carbohydrate)

II. Actions
- •Immediate source of glucose for cellular metabolism

III. Indications
- •Altered level of consciousness due to hypoglycemia

IV. Contraindications
- •Patients without documented hypoglycemia

V. Adverse Effects
- •None significant in above indications

VI. Administration
- A. Adult
  - •D10W: 250 ml (25 gm) IV/IO drip, may repeat once
  - •D50W: 50 ml (25 gm) IV/IO slow IV push, may repeat once
- B. Pediatric
  - •D10W: 5 ml/kg IV/IO drip, may repeat once
  - •D50W: Dilute to D25W. 2 ml/kg of $D_{25}W$ (0.5 g/kg) slow IV/IO push at 10 ml/min, may repeat once.

VII. Onset
- •30 - 60 seconds

VIII. Duration
- •Depends on the degree and cause of hypoglycemia

IX. Precautions
- A. $D_{50}W$ may increase cerebral ischemia or infarction caused by intracranial hemorrhage or increase cerebral edema in patients with normal or elevated blood glucose levels. Verify hypoglycemia with a blood glucose test prior to the intravenous administration of $D_{50}W$.
- B. Patients may experience pain, warmth or burning at the IV site and can develop phlebitis, sclerosis or thrombosis of the vein. Establish the IV in the largest vein possible and run the IV wide open during the $D_{50}W$ administration.
- C. Concentrated dextrose causes tissue necrosis if it is injected into the interstitial space. Ensure the IV is patent by aspirating blood prior to administration of $D_{50}W$.

X. Note
- A. The entire amount does not need to be administered if the patient's condition improves.
- B. Dilution of $D_{50}W$ to $D_{25}W$
  - •Discard 25 ml of $D_{50}W$ from the preloaded syringe.
  - •Withdraw 25 ml of Normal Saline from an IV bag and inject into the preloaded syringe.
  - •Gently shake the syringe to mix the solution.

J. Diltiazem (Cardizem®)

I. Classification
- •Anti-arrythmic

II. Actions
- •Inhibits the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle.
- •Decreases total peripheral resistance resulting in a decrease in both systolic and diastolic blood pressure.

III. Indications
- •Atrial Fibrillation/Flutter with rapid ventricular response

IV. Contraindications
- • Should not be used in patients with Atrial Fibrillation/Flutter associated with an accessory bypass tract such as in Wolff-Parkinson-White (WPW) syndrome.

V. Adverse effects

A. Cardiovascular
- •Hypotension
- •Vasodilation
- •Arrythmia

B. Neurological
- •Dizziness
- •Parasthesias

C. Gastrointestinal
- •Dry mouth
- •Nausea/vomiting

VI. Administration

A. Adult (by on-line physician order only)
10 - 25 mg slow IV/IO over 2 minutes

VII. Onset
- •IV/IO - 3 minutes

VIII. Duration
- •IV/IO - 1-3 hours

IX. Note

A. The use of Diltiazem for control of ventricular response in patients with atrial fibrillation or atrial flutter should be undertaken with caution when the patient is compromised hemodynamically or is taking other drugs that decrease any or all of the following: peripheral resistance, myocardial filling, myocardial contractility, or electrical impulse propagation in the myocardium.

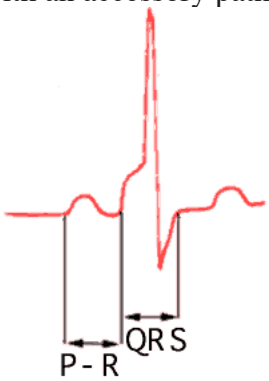
B. When administering Diltiazem, continuous monitoring of the ECG and frequent measurement of blood pressure shall be maintained.

C. Diltiazem and IV beta-blockers should not be administered together or in close proximity (within a few hours).

D. Wolff-Parkinson-White (WPW) Syndrome

•Electrically active muscle fibers bridge the atria and ventricles - and cause pre-excitation of the ventricles. This accessory pathway is able to conduct faster than the AV node.

•WPW is a reentry mechanism with an accessory pathway.



•PR interval is shorter (less than 3 small squares (120 ms))

•Upstroke of the QRS wave is slurred; this is known as a delta wave.

•12 lead ECG is essential as delta wave may not show up in all leads.

K. Diphenhydramine (Benadryl®)

I. Classification
- •Antihistamine

II. Actions
- •Competes with histamines at receptor sites
- •Reverses dystonic reactions

III. Indications
- •Allergic reactions
- •Adjunct to epinephrine in treating anaphylaxis
- •Dystonic reactions (ref. IX. Notes D.)

IV. Contraindications
- •Glaucoma
- •Acute Asthma

V. Adverse effects

A. Cardiovascular
- •Hypotension
- •Palpitations
- •*Tachycardia*

B. Respiratory
- •*Wheezing*
- •Mucus plugs

C. Gastrointestinal
- •Dry mouth
- •Nausea/vomiting

D. Neurological
- •Drowsiness
- •Confusion
- •Dizziness
- •Headache
- •Dilated Pupils
- •*Seizures*

VI. Administration

A. Adult
50 mg slow IVP at 25 mg/minute or deep IM.

B. Pediatric
1 mg/kg slow IVP over several minutes, or deep IM (not to exceed 50 mg).

VII. Onset
- •IV - 5-10 minutes
- •IM - 10-15 minutes

VIII. Duration
- •3-4 hours

IX. Note
- A. May precipitate acute asthma due to drying effect on bronchial mucosa.
- B. May increase ocular pressure in glaucoma due to its atropine-like effect.
- C. Histamines produce the allergic symptoms of hives, laryngeal edema, bronchospasm and vasodilation.
- D. Dystonic reactions are caused by phenothiazine use and are characterized by distorted, twisting movements of the body, face, mouth and tongue.
- E. IM route not recommended for pediatric patients due to limited muscle mass.

L. Epinephrine Hydrochloride (Adrenalin®)

I. Classification
- •Sympathomimetic agent (catecholamine)

II. Actions
- A. Increases cardiac output due to increased inotropy, chronotropy and AV conduction (beta 1)
- B. Increases systolic blood pressure due to increased cardiac output and vasoconstriction (beta 1, alpha)
- C. Alleviates wheezing and dyspnea by relaxing smooth muscles of the respiratory tract (beta 2)
- D. Increases coronary perfusion during CPR due to increased aortic diastolic pressure (alpha)
- E. Prevents hypotension and loss of intravascular fluid in anaphylactic reactions by counteracting vasodilation and decreasing vascular permeability

III. Indications
- A. Cardiopulmonary arrest
  - •Ventricular fibrillation / Pulseless ventricular tachycardia
  - •Pulseless electrical activity (PEA) •Asystole
- B. Acute asthma
- C. Allergic reaction/Anaphylaxis
- D. Symptomatic Bradycardia

IV. Contraindications
- •Hypovolemia •Hypertension

V. Adverse Effects
- A. Cardiovascular
  - **•Tachycardia** •Chest Pain **•Hypertension** **•Ventricular fibrillation**
- B. Neurological
  - •Seizures •Dizziness •Headache •Anxiety •Tremors
- C. Gastrointestinal
  - •Nausea/vomiting

VI. Adult Administration
- A. Cardiac arrest
  - •1 mg (1:10,000) IV/IO initial dose. No more than 8 doses administered in a cardiac arrest.
  - •The second and subsequent doses for patients in VF, pulseless VT, PEA or Asystole is 1 mg (1:1000) IV/IO diluted with 4 ml NS.
- B. Allergic reaction/Anaphylaxis
  - •0.5 mg (0.5 ml) (1:1000) IM.
- C. Breathing Difficulty : Wheezes (Asthma/COPD)
  - •0.3 mg (0.3 ml) (1:1000) IM.
- D. Pressor
  - •2 mg 1:1000/500 ml NS. Manually mix 2mg 1:1000 Epi in 500 ml Normal Saline OR 1 mg 1:1000/250 ml NS. Manually mix 1mg 1:1000 Epi in 250 ml Normal Saline.
  - •Start drip at 30 drops/minute IV/IO (2 mcg/min) with 60 drop/ml chamber. Titrate every 5 min. to SBP of 100 mmHg and signs of adequate perfusion OR a maximum rate of 120 drops/min (8 mcg/min).

E. Certadose Epinephrine Convenience Kit [BLS]
•Determine patient's dosing color by weight or length tape.
•Draw up Epinephrine included in Kit to the level prescribed by the dosing color.
•Inject into anterolateral aspect of thigh, not into the patient's buttocks.

VII. Pediatric Administration

A. Bradycardia / Cardiac Arrest
•Neonate/Infant/Child/Adolescent
0.01 mg/kg (1:10,000) IV/IO. No more than 8 doses administered in a cardiac arrest.

B. Anaphylaxis / Asthma with Impending Respiratory Failure
•0.01 mg/kg (1:1000) IM (maximum single dose 0.3 mg).

C. Croup / Inspiratory Stridor / Bronchiolitis
•3 ml of 1:1000 in nebulizer.

D. Pressor (by on-line physician order only)
•2 mg 1:1000/500 ml NS. Manually mix 2mg 1:1000 Epi in 500 ml Normal Saline OR
1 mg 1:1000/250 ml NS. Manually mix 1mg 1:1000 Epi in 250 ml Normal Saline.
•Start drip at 15 drops/minute IV/IO (1 mcg/min) with 60 drop/ml chamber. Titrate every 5 min. to SBP of 100 mmHg and signs of adequate perfusion OR a maximum rate of 120 drops/min (8 mcg/min) as directed by on-line physician.

E. Certadose Epinephrine Convenience Kit [BLS]
•Determine patient's dosing color by weight or length tape.
•Draw up Epinephrine included in Kit to the level prescribed by the dosing color.
•Inject into anterolateral aspect of thigh, not into the patient's buttocks.

VIII. Onset
•IVP - 1-2 minutes / IM - 5-10 minutes

IX. Duration
•IVP - 3-5 minutes / IM - 20 minutes

X. Precautions

A. Epinephrine is inactivated by sodium bicarbonate. Flush the IV tubing before and after administration of sodium bicarbonate or establish a second venous access site.

B. There is a high incidence of cardiovascular side effects with epinephrine use. Monitor blood pressure, pulse and ECG rhythm frequently after administration.

XI. Note

A. The concentration of epinephrine (1:1000 or 1:10,000) to be used varies depending on patient age, route and indication. (Table 9-1)

B. If using 1:1000 concentration for IVP, it must be diluted with NS to produce a minimum volume of 5 ml for adults and 2 ml for pediatric patients.

Table 9-1 : Epinephrine Concentration Chart

Age/Route	Concentration
Adult IV/IO 1st Dose	1:10,000
Pediatric IV/IO	1:10,000
Adult IV/IO after 1st Dose	1:1000
Adult/Ped. IM (anaphylaxis)	1:1000
Pediatric Nebulizer (Croup/Bronchiolitis)	1:1000

M. Fentanyl

I. Classification
- •Analgesic, opioid agonist. Controlled Substance, Schedule II

II. Actions
- •Binds to opiate receptors as an agonist to alter the patient's perception of painful stimuli

III. Indications
- •Pain secondary to traumatic injury or burn
- •Cardiac Angina in STEMI unresponsive to Nitroglycerin

IV. Contraindications/Cautions
- •Contraindicated in patients allergic to the drug.
- •Use with caution in elderly or debilitated patients and in those with head injuries, increased CSF pressure, COPD, decreased respiratory reserve, compromised respirations, arrhythmias, or hepatic, renal or cardiac disease.

V. Adverse Effects

A. CNS
- •Sedation, clouded sensorium, headache, confusion, hallucinations

B. Cardiovascular
- •Hypotension, hypertension, arrhythmias, chest pain

C. Respiratory
- •Respiratory depression, apnea, hypoventilation

D. Gastrointestinal
- •Nausea, vomiting

E. Other
- •Physical dependence

VI. Administration

A. Adult
- •50-100 micrograms (mcg) slow IV/IO push or 50-100 micrograms IN.

B. Pediatrics (by on-line physician order < 1 year of age)
- •1 mcg/kg slow IV/IO push or 1 mcg/kg IN.

VII. Onset/Duration
- •Onset 1-2 minutes, peak effects 3-5 minutes.
- •Duration of 30-60 minutes

VIII. Notes

A. Contraindicated during pregnancy unless benefits outweigh risk to fetus. Fentanyl is secreted in breast milk, so avoid administration in breast-feeding women.

B. You must pay extremely close attention to your patient's respiratory status and be ready to assist respirations as needed. Monitor with $ETCO_2$.

N. Hydroxocobalamin (Cyanokit®)

I. Classification
- •Cyanide antidote

II. Actions
- •Binds cyanide ions with more affinity than hemoglobin molecule
- •Cyanide ion and hydroxocobalamin form cyanocobalamin (Vitamin B12) which is then excreted in the urine.

III. Indications
- •Known or suspected cyanide poisoning - patients at high risk (industrial accidents, fire victims with smoke inhalation, known overdose, etc) with one more more of the following symptoms:
  - Altered mental status, confusion, seizures, coma
  - Headache
  - Chest pain or tightness
  - Shortness of breath, bradypnea, tachypnea
  - Hypertension (early), hypotension (late), cardiovascular collapse
  - Nausea, vomiting
  - Cardiac arrest
  - Mydriasis (dilated pupils)

IV. Contraindications
- •Known allergic reaction to hydroxocobalamin or cyanocobalamin

V. Adverse effects

A. Cardiovascular
- •Ventricular extrasystoles
- •Tachycardia
- •Transient hypertension

B. Neurological
- •Memory impairment
- •Dizziness
- •Restlessness

C. Respiratory
- •Dyspnea
- •Dry Throat
- •Throat tightness

D. Gastrointestinal
- •Abdominal discomfort
- •Dysphagia
- •Vomiting, diarrhea
- •Hematochezia

E. General
- •Allergic reaction, pruritus, anaphylaxis
- •Hot flush

VI. Administration

A. Do not administer hydroxocobalamin through the same IV site/set as the following medications: **dopamine**, **fentanyl**, dobutamine, diazepam, nitroglycerin, pentobarbital, propofol, thiopental, sodium thiosulfate, sodium nitrite and ascorbic acid. You must start a second IV to administer hydroxocobalamin in patient's receiving these medications.

B. Adult:

•5 grams IV/IO over 15 minutes (Stocked as single 5gm bottle, or two 2.5 gm bottles)

-Single 5 gm Bottle

- Reconstituted with 200 ml Normal Saline.

-Two 2.5 gm Bottles, give over 7.5 minutes each.

- Each vial reconstituted with 100 ml Normal Saline.

C. Pediatric

•100 mg/kg IV/IO of hydroxocobalamin (reconstituted with Normal Saline the same as adults) over 15 minutes.

•Reconstituted hydroxocobalamin is at a concentration of 25 mg/ml.

D. May repeat a full dosage once after 15 minutes if patient is still severely symptomatic.

Table 9-2 : Hydroxocobalamin (Cyanokit®) Pediatric Dosing

(2500 mg in 100 ml)

AGE	KG	MG	ML
Preemie	2	200	8
Newborn	4	400	16
4 MO	6	600	24
6 MO	8	800	32
1 YR	10	1000	40
2 YR	12	1200	48
3 YR	15	1500	60
4 YR	17	1700	68
5 YR	20	2000	80
6 YR	22	2200	88
7 YR	25	2500	100
8 YR	27	2700	108
9 YR	30	3000	120
10 YR	35	3500	140
11 YR	40	4000	160
12 YR	50	5000	200
13-15 YR	60	5000	200

O. Ipratropium Bromide (Atrovent®)

I. Classification
- •Anticholinergic Agent

II. Actions
- • A derivative of atropine, ipratropium bromide has bronchodilatory properties.

III. Indications
- •Bronchodilator for the therapy of acute exacerbations of chronic obstructive pulmonary disease and asthma.

IV. Contraindications/Cautions
- •Contraindicated in patients allergic to the drug.

V. Adverse Effects

A. CNS
- •Headache, blurred vision, dizziness

B. Cardiovascular
- •Palpitations

C. Gastrointestinal
- •Dry mouth / bad taste

D. Other
- •Hypersensitivity reaction (urticaria, angioedema, rash, bronchospasm and oropharyngeal edema)

VI. Administration

A. Adult
- •1 unit dose (0.02% in 2.5ml) combined with Albuterol

B. Pediatric (≥ 2 years of age)
- •1 unit dose (0.02% in 2.5ml) combined with Albuterol

VII. Onset/Duration
- •Onset 5 - 15 minutes, peak effects in 1 - 2 hours.
- •Duration of 2 hours.

VIII. Notes

A. Ipratropium should not be used alone for the abatement of an acute asthmatic attack since the drug has a slower onset of effect than that of an adrenergic beta-2 agonist.

B. Care should be taken to ensure that the nebulizer mask fits the patient's face properly and that nebulized solution does not escape into the eyes. In patients with glaucoma or narrow anterior chambers, the administration by nebulizer of a combined ipratropium / beta-2 agonist solution should be avoided unless measures (e.g., use of swimming goggles or use of a nebulizer with a mouth piece) are taken to ensure that nebulized solution does not reach the eye. There have been isolated reports of ocular complications (i.e., mydriasis, increased intraocular pressure, angle closure glaucoma) when nebulized ipratropium either alone or in combination with an adrenergic beta 2 agonist solution has escaped into the eyes.

P. Labetalol (Trandate®, Normodyne®)

I. Classification
- •Antihypertensive Agent

II. Actions
- •Adrenergic receptor blocking agent possessing both alpha and beta-receptor blocking activity. Its action on beta-receptors is 4 times stronger than that on alpha-receptors. It antagonizes beta 1- and beta 2-receptors equally.
- •The mechanism of the antihypertensive action of labetalol has not been fully established. It is considered that labetalol lowers blood pressure by partially blocking the alpha-adrenoceptors in the peripheral arterioles, thus causing vasodilation and a resulting reduction of peripheral resistance. At the same time, blockade of the beta-adrenoceptors in the myocardium prevents reflex tachycardia and subsequent elevation of cardiac output.

III. Indications
- •For the emergency treatment of hypertensive emergencies.

IV. Contraindications/Cautions
- •Uncontrolled congestive heart failure
- •Asthma or a history of obstructive airway disease
- •Greater than first degree AV block
- •Cardiogenic shock and states of hypoperfusion
- •Sinus bradycardia
- •Known sensitivity to labetalol

V. Adverse Effects

A. CNS
- •Signs of cerebral hypoperfusion may occur if blood pressure is reduced too rapidly. Signs include confusion, somnolence, light headedness, dizziness, nausea, vomiting, pallor, sweating, blurred vision, headache, hallucinations and loss of consciousness
- •Fatigue, malaise

B. Cardiovascular
- •Bradycardia, Severe postural hypotension, Angina pectoris

C. Respiratory
- •Bronchospasm, dyspnea

D. Other
- •Jaundice, Nausea / Vomiting
- •Drug rash, paresthesia (especially “scalp tingling”), pruritus and angioedema

VI. Administration

A. Adult (by on-line physician order)
- •10 - 20 mg slow IVP over 2 minutes

VII. Onset/Duration
- •Onset 5 - 10 minutes

Q. Lidocaine Hydrochloride (Xylocaine®)

I. Classification
- •Antidysrhythmic agent

II. Actions
- •Suppresses ventricular dysrhythmias by stabilizing the myocardial cell membrane

III. Indications
- A. Ventricular dysrhythmias
  - •Symptomatic PVCs
  - •Ventricular tachycardia
- B. Cardiac arrest
  - •Ventricular fibrillation
  - •Pulseless ventricular tachycardia
- C. Post cardioversion/defibrillation of ventricular rhythms

IV. Contraindications
- •Second degree heart block (Mobitz II)
- •Third degree heart block
- •Junctional rhythms
- •Idioventricular rhythm
- •Ventricular ectopy associated with bradycardia

V. Adverse Effects
- A. Cardiovascular
  - **•Bradycardia**
  - **•Hypotension**
  - **•Cardiac arrest**
- B. Neurological
  - •*Light-headedness*
  - •Drowsiness
  - •Paresthesias
  - •Restlessness
  - •*Confusion*
  - •Slurred speech
  - **•Seizures**
  - •Blurred vision
  - •Tinnitus
  - •Muscle twitching
- C. Respiratory
  - •Dyspnea
  - •Respiratory depression
  - •Respiratory arrest
- D. Gastrointestinal
  - •Nausea/vomiting

VI. Adult Administration [by on-line physician order only]

A. Ventricular dysrhythmias, Post cardioversion/defibrillation of ventricular rhythm
   •1.5 mg/kg slow IV/IO at 50 mg/minute (Maximum dose is 3 mg/kg).

B. Cardiac arrest
   •1.5 mg/kg slow IV/IO over 1 minute. Repeat 1.5 mg/kg IVP once if indicated. Maximum dose is 3 mg/kg).

C. Drips
   •Mix 200 mg in a 50 ml bag of NS or D5W (remove 10 cc of fluid prior to addition of lidocaine) and run at a rate of 2 - 4 mg/minute (30 to 60 drops/minute) IV/IO.

D. IO Anesthesia for conscious/semi-conscious patients (*ref. 7.03 B. 5. n.*)
   •40 mg over 60 seconds through IO.

VII. Pediatric Administration [by on-line physician order only]

A. Ventricular dysrhythmias, Cardiac arrest, Post cardioversion/defibrillation of ventricular rhythm
   •1 mg/kg slow IV/IO over 1 minute. If no conversion, repeat 1 mg/kg IV/IO two times. Maximum dose is 3 mg/kg.

B. IO Anesthesia for conscious/semi-conscious patients (*ref. 7.03 B. 5. n.*)
   •0.5 mg/kg (max of 40mg) over 60 seconds through IO.

VIII. Onset
   •30-90 seconds

IX. Duration
   •10 - 20 minutes

X. Note
   •Lidocaine is metabolized in the liver and excreted in the kidneys. A reduced dosage should be considered for patients with suspected liver or kidney disease, cardiogenic shock, congestive heart failure, and in the elderly. The initial dose does not need to be reduced, however, repeat boluses (maintenance dose) should be decreased to 0.25 mg/kg.

R. Magnesium Sulfate

I. Classification
- •Electrolyte

II. Actions
- •Depresses the central nervous system and relaxes smooth muscle, skeletal muscle and cardiac muscle

III. Indications
- •Torsades De Pointes
- •Obstetrical Emergencies - Eclampsia
- •Asthma

IV. Contraindications
- •Heart Block
- •Myocardial damage

V. Adverse effects

A. Cardiovascular
- •Flushing
- •*Hypotension*

B. Respiratory
- •**Depression**
- •Failure

VI. Administration

A. Adult
- •Asthma : 2 Gm (in 50 ml NS or D5W) IV/IO gtt over 10 minutes (10 gtt set)
- •Eclampsia: 4 Gm (in 50 ml NS or D5W) IV/IO gtt over 10 minutes (10 gtt set)
- •Torsades de Pointes: 2 Gm slow IVP. In 10 cc syringe, combine 2 Gm (4 cc) with 6 cc Normal saline for proper dilution of magnesium.

B. Pediatric
- •Asthma : 40 mg/kg (in 50 ml NS or D5W) IV gtt over 10 minutes (10 gtt set)

VII. Onset
- •Immediate

VIII. Duration
- •Variable

IX. Precautions
- •Patients that may require high doses of magnesium, can develop signs/symptoms of toxicity. These signs/symptoms include lethargy, decreased respiratory effort, and decreased reflexes.

S. Midazolam (Versed®)

I. Classification
- •Benzodiazepine (3-4 times as potent as diazepam per mg.)

II. Actions
- •Depresses the central nervous system, Decreases patient recall (amnesic effect)
- •Relaxes skeletal muscles

III. Indications
- •Seizure activity •Sedation prior to cardioversion •Agitated delirium

IV. Contraindications
- •Shock/hypotension •Acute alcohol intoxication •Respiratory distress

V. Adverse Effects

A. Cardiovascular
- **•Tachycardia, Bradycardia, Hypotension**

B. Neurological
- •Agitation, combativeness

C. Respiratory
- ***•Depression*, Apnea**

VI. Administration

A. Adult
- •5-10 mg (3 ml syringe) IV/IO/IM/IN as per protocol.
- •2.5 mg (1 ml syringe) IV for pre-cardioversion sedation (*ref. 8.03 A. 2. d.*)
- •Decreased doses should be administered in patients over 60 years old and debilitated or chronically ill patients. Start with a half dose and observe for effect, giving the second half if necessary (both halves counting as first full dose).

B. Pediatric
- •< 3 years old: IM Only dosing per Pedi Dosing Chart (0.5 ml syringe)
- •3-11 years old: 5 mg IM Only dosing (1.0 ml in 1.0 ml syringe)
- •12-15 years old: 10 mg IM Only dosing (2.0 ml in 3.0 ml syringe)
- •No more than two doses are to be given without on-line physician approval.

VII. Warning

A. IV midazolam is associated with respiratory depression and arrest when used for sedation. Vigilant monitoring with $ETCO_2$ must be maintained when a patient has received midazolam.

B. The respiratory and sedative effect is accentuated if the patient is on narcotics, barbiturates, alcohol or other central nervous system depressants. Be extremely careful.

VIII. Pregnancy

A. Pregnancy class D (There is positive evidence of human fetal risk). If possible, patients should be apprised of the potential hazard to the fetus.

B. Is excreted in breast milk of nursing mothers. Caution should be exercised.

T. Naloxone Hydrochloride (Narcan®)

I. Classification
- •Narcotic antagonist

II. Actions
- •Reverses respiratory depression and CNS sedation by competing with narcotics at opiate receptor sites.

III. Indications
- •Suspected narcotic overdose with a respiratory rate less than age appropriate or decreased tidal volume.

IV. Contraindications
- •Not significant in above indications.

V. Adverse effects

A. Cardiovascular
- •Tachycardia
- •Hypertension
- •Dysrhythmias

B. Gastrointestinal
- •Nausea/vomiting

C. Neurological
- •Tremors
- •Seizures

VI. Administration

A. Adult [BLS]
- •4 mg IN, single dose spray.

B. Adult [ALS]
- •0.4 - 2 mg IV/IO, IN, IM.
- •Titrate the IV/IO dose to an adequate respiratory rate and tidal volume.

C. Pediatric [BLS]
- •4 mg IN, single dose spray.

D. Pediatric [ALS]
- •0.1 mg/kg IV/IO, IN, IM (maximum 2 mg per dose).
- •Titrate the IV/IO dose to an adequate respiratory rate and tidal volume.

VII. Onset
- •IVP - Immediate - 2 minutes
- •IN - 2-5 minutes
- •IM - 5-10 minutes

VIII. Duration
- •20-30 minutes

IX. Precautions

A. Naloxone will not reverse narcotic induced hypotension. Monitor the pulse quality and blood pressure. If the patient is hypotensive, place the patient in a shock position and consider a fluid challenge.
B. Rapid reversal of narcotic overdose may lead to violent or combative behavior or precipitate signs of acute narcotic withdrawal. Prepare to appropriately protect the patient and EMS personnel.
C. Naloxone reverses respiratory depression/arrest in narcotic overdose. Administer naloxone prior to considering endotracheal intubation if an opiate overdose is suspected.
D. Narcotics have a longer duration of action than naloxone. Continue to monitor respirations and level of consciousness. Repeated doses may be necessary.

U. Nitroglycerin

I. Classification
- •Vasodilator

II. Actions
- •Causes venous pooling by dilating arteries and veins
- •Increases myocardial perfusion by dilating coronary arteries and relieving coronary vasospasm
- •Decreases the workload of the heart and myocardial oxygen demand by reducing preload and after load

III. Indications
- •Chest pain of suspected myocardial origin
- •Cardiogenic pulmonary edema

IV. Contraindications
- •Poor systemic perfusion
- •Signs/symptoms of cerebral hemorrhage or increased intracranial pressure

V. Adverse effects

A. Cardiovascular
- •*Hypotension*
- •Bradycardia
- •*Reflex tachycardia*
- •*Rebound hypertension*

B. Gastrointestinal
- •Nausea/vomiting
- •Dry mouth

C. Neurological
- •*Throbbing headache*
- •*Dizziness/faintness*
- •Confusion
- •Blurred vision

D. General
- •Flushed skin
- •*Sublingual burning*

VI. Administration

A. Adult
- • Lingual Spray : 1 spray (0.4 mg) SL. May repeat every 3 minutes if SBP ≥ 120 mmHg.
- • Tablet : 1 tablet (0.4 mg) SL. May repeat every 3 minutes if SBP ≥ 120 mmHg.

B. Pediatric
- •Not recommended for prehospital use.

VII. Onset
- •1 - 3 minutes

VIII. Duration

•30 - 60 minutes

IX. Precautions

A. Nitroglycerin may cause hypotension due to vasodilation or produce a synergistic hypotensive effect with alcohol, beta and calcium channel blockers and phenothiazines. If hypotension does not resolve, place the patient in a shock position and consider a fluid challenge if the breath sounds are clear.

B. All patients (male or female) who receive nitroglycerin must be questioned about taking Viagra® (sildenafil citrate) or similar drugs (ie. Levitra®, Cialis®). Any patient that has taken these medications within the last 24 hours should not receive any form of nitroglycerin as irreversible hypotension may occur. It is imperative that the patient be questioned (in a confidential manner) about the use of these medications. The fact that the patient was questioned as well as their answer must be recorded in the patient care record. Contact on-line physician for further orders in this case.

C. Do not administer nitroglycerin if the blood pressure is below 120 systolic. Always take a blood pressure before and 5 minutes after administrations of nitroglycerin.

D. If unable to establish an IV, patient's with a SBP > 150 can be administered one dose of NTG.

D. One spray delivers 0.4 mg of nitroglycerin. If the container is shaken, it will alter the dose delivered. Do not shake the container.

E. Inhaling the spray affects the absorption rate. Instruct the patient not to inhale spray.

F. Nitroglycerin can precipitously drop the blood pressure in Right Ventricular Infarctions. It is to be given only with On-Line Medical Direction order.

V. Norepinephrine (Levophed®)

I. Classification
- •Sympathomimetic agent, potent vasoconstrictor, inotrope

II. Actions
- •Stimulates alpha receptors in the peripheral vasculature, producing vasoconstriction-related increase in systemic blood pressure and coronary artery blood flow
- •Concurrent beta receptor stimulation may produce increases in heart rate and mild bronchodilation, though norepinephrine is a weaker beta stimulator than dopamine

III. Indications
- •Severe hypotension post cardiac arrest (Cardiogenic shock)
- •Non-traumatic shock (Cardiogenic or distributive shock)
- •Septic Shock

IV. Contraindications
- •Hypovolemia
- •Hypertension

V. Adverse Effects

A. Cardiovascular
- •Palpitations, Arrhythmia exacerbation (tachycardia), Reflex Bradycardia

B. Neurological
- •Headache

C. Other
- •Lactic acidosis, Tissue necrosis

VI. Administration

A. Adult
- •4 mg/250 ml NS : Manually mix 4 mg norepinephrine in 250 ml normal saline (16 mcg/ml) OR 8mg/500 ml NS : Manually mix 8 mg norepinephrine in 500 ml normal saline (16 mcg/ml). Start drip at 30 drops/min IV/IO (8 mcg/min) with 60 drop/ml chamber. Titrate every 5 min to SBP of 100 mmHg and signs of adequate perfusion OR a maximum rate of 60 drops/min (16 mcg/min).

B. Pediatric : No pediatric administration

VII. Warning

A. Use with caution with MAOIs and TCAs, may cause prolonged hypertension.

B. In elderly patients, avoid administration into leg veins if possible.

C. Protect from light.

W. Ondansetron (Zofran®)

I. Classification
- •A selective serotonin 5-HT_3 receptor antagonist.

II. Actions
- •Mechanism of action not fully characterized.

III. Indications
- •Prevention and treatment of nausea and vomiting.

IV. Contraindications
- •Patients known to have hypersensitivity to the drug.

V. Adverse Effects
- •Diarrhea, headache, fever, dizziness

VI. Administration

A. Adults
- •8 mg IV initial dose over 2 - 5 minutes, followed by additional doses of 2 - 4 mg as needed.

B. Pediatric (≥ 6 months of age)
- •0.15 mg/kg IV initial dose over 2 -5 minutes.

VII. Precautions

A. Rarely, transient EKG changes including QT interval prolongation have been reported.

VIII. Note
- •Pregnancy Class B Medication (Presumed safety based on animal studies)
- •Unknown excretion in breast milk, exercise caution when administering to nursing women.

X. Oxygen

I. Classification
- •Gaseous element (21% of room air)

II. Actions
- •Essential element for normal metabolic function (aerobic metabolism)
- •Facilitates the breakdown of glucose into a usable energy form

III. Indications
- •Hypoxemia
- •Increased oxygen demand
- •Chest pain of myocardial origin
- •Respiratory insufficiency
- •Cardiopulmonary arrest

IV. Contraindications
- •Not significant in above indications

V. Adverse Effects
- •Not significant in above indications

VI. Administration
- •Oxygen percentage may vary slightly depending on technique and equipment

VII. Pediatric
- •Same as adult

VIII. Onset
- •1-2 minutes

IX. Duration
- •Up to 30 minutes

X. Precautions

A. In some COPD (CO_2 retaining) patients, oxygen administration may decrease respiratory drive. Observe patient closely for changes in respiratory and mental status. Be prepared to assist ventilations if necessary.

B. Oxygen is not humidified and may dry out or irritate mucus membranes. Do not administer more than 6 L/min via nasal cannula.

XI. Note
- •Never withhold oxygen from a patient in respiratory distress

Table 9-3 : Oxygen Administration

Delivery Device	Flow Rate	O_2 % Delivered
Nasal Cannula	2-6 lpm	23-44%
Face Mask	8-15 lpm	40-60%
Reservoir Face Mask	10-15 lpm	60-95%
BVM with Reservoir	10-15 lpm	40-90%
BV with ET Tube	10-15 lpm	100%

Note : Adult and pediatric delivery is the same

Y. Sodium Bicarbonate

I. Classification
- •Alkalinizing agent (hydrogen ion buffer)

II. Actions
- •Combines with hydrogen ions to form carbonic acid
- •Increases blood pH

III. Indication

A. Cardiopulmonary arrest
- •Unsuccessful drug therapy and defibrillation
- •Suspected hyperkalemia (dialysis patients)
- •Suspected tricyclic overdose (ex: amitriptyline (Elavil®), desipramine (Norpramin®), imipramine (Tofranil®), nortriptyline (Pamelor®), and protriptyline (Vivactil®))
- •Cocaine induced wide complex tachycardias

IV. Contraindications
- •Not significant in above indications

V. Adverse Effects

A. Metabolic
- •**Alkalosis**
- •Hypokalemia
- •Hypocalcemia
- •Increased tissue acidosis

B. Neurological
- •Headache
- •Confusion
- •**Tetany**
- •**Seizures**
- •*Confusion*

C. Respiratory
- •*Pulmonary edema*

VI. Administration

A. Adult

1 mEq/kg IV/IO

B. Pediatric (on-line physician order only)

1 mEq/kg slow IV/IO at 10 ml/minute

VII. Onset
- •Immediate

VIII. Duration
- •Variable

IX. Precautions

A. Precipitates with calcium chloride and Amiodarone, and inactivates catecholamines. Flush IV

tubing before and after administration of sodium bicarbonate.

B. Causes tissue necrosis if infused into the interstitial space. Verify IV patency prior to administration.

C. Bicarbonate produces CO_2 which diffuses across the cell membrane more rapidly than bicarbonate and increases intracellular acidosis. Perform effective CPR and adequate ventilation with 100% O_2 to reverse anaerobic metabolism.

X. Note

•Only use sodium bicarbonate after more appropriate treatment has failed, such as: defibrillation, endotracheal intubation, hyperventilation with 100% O_2 and administration of at least two rounds of resuscitation drugs.

The value of sodium bicarbonate is questionable during cardiac arrest, and is not recommended for the routine arrest sequence. Consideration of its use in a dose of 1 mEq/kg is appropriate after prolonged, unsuccessful resuscitation efforts. Make the decision to use sodium bicarbonate only after consultation with the on-line physician. Sodium Bicarbonate is contraindicated if the patient is not maximally ventilated.

Z. Sodium Chloride (0.9%) (Normal Saline)

I. Classification
- •Isotonic Crystalloid Agent

II. Actions
- •Expands vascular volume.

III. Indication
- •Dehydration

IV. Contraindications
- •Acute Pulmonary Edema / Congestive Heart Failure

V. Adverse Effects

A. Pulmonary
- •Pulmonary Edema

VI. Administration

A. Adult
- •Bolus Therapy : 250-1000 ml IV/IO. Titrate to effect.
- •Hyperthermia : 1000 ml IV/IO chilled saline, wide open initial dose.

B. Pediatric
- •Bolus Therapy : 20 ml/kg IV/IO as per guideline, titrate to effect.

VII. Onset
- •Immediate

AA. Tranexamic Acid (TXA)

I. Classification
- Tranexamic acid is an antifibrinolytic agent, which helps to stop bleeding.

II. Actions
- Tranexamic acid inhibits fibrinolysis by stabilizing formed clots from breaking down.

III. Indication
- Traumatic hemorrhage associated with hypotension
- Postpardum hemorrhage associated with hypotension
- Epistaxis
- Post-tonsillectomy bleeding

IV. Contraindications
- Hypersensitivity to tranexamic acid.
- Isolated head trauma

V. Adverse Effects
- Seizures, headaches, nausea/vomiting

VI. Adult Administration

A. Traumatic or postpartum hemorrhage associated with hypotension
- [BLS] 500 mg IM x 2 (two different sites) to deltoid or lateral thigh
- [ALS] 1 g IV/IO gtt over 10 minutes.
  Manually mix 1 gram TXA in 50 ml normal saline or D5W. Start drip at 1 drop/sec (60 drops/min) with 10 drop/ml chamber.

**Note: If patient partially treated by BLS with only 1 IM 500 mg dose given, ALS to give 500 mg TXA IV/IO to complete the indicated 1 gm dose. Mix 500 mg TXA in 50 ml normal saline or D5W. Start drip at 1 drop/sec (60 drops/min) with 10 drop/ml chamber.

B. Epistaxis
- 100 mg IN

C. Post-tonsillectomy bleeding
- 500 mg Nebulized

VII. Pediatric Administration

A. Post-tonsillectomy bleeding
- 500 mg Nebulized

VIII. Onset
- 5-15 minutes

BB. Pediatric Dosing Guidelines - Medication

Neonate	Infant				Child									* Requires On-Line MD Approval *		Adolescent		
0-28 day	1-2 mo	3-5 mo	6-8 mo	9-11 mo	12-16 mo	17-20 mo	21-23 mo	2 yr	3 yr	4 yr	5 yr	6 yr	7 yr	Drug	Concentration	8-9 yr	10-11 yr	12+ yr
0.1 ml	*0.1 ml*	*0.2 ml*	*0.2 ml*	*0.3 ml*	*0.3 ml*	*0.3 ml*	*0.4 ml*	*0.4 ml*	*0.5 ml*	*0.6 ml*	*0.6 ml*	*0.7 ml*	*0.8 ml*	Adenosine (1st Dose)	3 mg/ml	*0.9 ml*	*1.2 ml*	*1.3 ml*
0.1 ml	*0.3 ml*	*0.4 ml*	*0.5 ml*	*0.5 ml*	*0.6 ml*	*0.7 ml*	*0.7 ml*	*0.8 ml*	*1 ml*	*1.1 ml*	*1.3 ml*	*1.4 ml*	*1.5 ml*	Adenosine (2nd Dose)	3 mg/ml	*1.8 ml*	*2.3 ml*	*2.7 ml*
3 ml	3 ml	3 ml	3 ml	3 ml	3 ml	3 ml	3 ml	3 ml	3 ml	3 ml	3 ml	3 ml	3 ml	Albuterol	2.5 mg/3 ml	3 ml	3 ml	3 ml
0.2 ml	0.4 ml	0.6 ml	0.7 ml	0.8 ml	0.9 ml	1 ml	1.1 ml	1.2 ml	1.5 ml	1.7 ml	1.9 ml	2.1 ml	2.5 ml	Amiodarone IVP	50 mg/ml	2.7 ml	3 ml	3 ml
1 ml	*1 ml*	1.2 ml	1.4 ml	1.6 ml	1.8 ml	2 ml	2.2 ml	2.4 ml	3 ml	3.4 ml	3.8 ml	4.2 ml	4.6 ml	Atropine [bradycardi	0.1 mg/ml	5.4 ml	7 ml	8 ml
XXX	0.5 ml	0.8 ml	0.9 ml	1 ml	1.1 ml	1.3 ml	1.4 ml	1.5 ml	1.9 ml	2.1 ml	2.4 ml	2.6 ml	2.9 ml	[nerve agents]	0.4 ml/ml	3.4 ml	4.4 ml	5 ml
0.4 ml	*0.8 ml*	*1.2 ml*	*1.4 ml*	*1.6 ml*	*1.8 ml*	*2 ml*	*2.2 ml*	*2.4 ml*	*3 ml*	*3.4 ml*	*3.8 ml*	*4.2 ml*	*4.6 ml*	Calcium Chloride	100 mg/ml	*5.4 ml*	*7 ml*	*8 ml*
10 ml	20 ml	30 ml	35 ml	40 ml	45 ml	50 ml	55 ml	60 ml	75 ml	85 ml	95 ml	105 ml	115 ml	D10W	0.1 gm/ml	125 ml	125 ml	125 ml
4 ml	8 ml	12 ml	14 ml	16 ml	18 ml	20 ml	22 ml	24 ml	30 ml	34 ml	36 ml	42 ml	46 ml	D25W	0.25 mg/ml	50 ml	50 ml	50 ml
0.1 ml	0.2 ml	0.4 ml	0.4 ml	0.5 ml	0.5 ml	0.6 ml	0.7 ml	0.7 ml	0.9 ml	1 ml	1 ml	1 ml	1 ml	Dexamethasone	10 mg/ml	1 ml	1 ml	1 ml
XXX	0.1 ml	0.1 ml	0.1 ml	0.2 ml	0.2 ml	0.2 ml	0.2 ml	0.2 ml	0.3 ml	0.3 ml	0.4 ml	0.4 ml	0.5 ml	Diphenhydramine	50 mg/ml	0.5 ml	0.7 ml	0.8 ml
XXX	XXX	XXX	XXX	XXX	0.1 ml	0.1 ml	0.1 ml	0.1 ml	0.15 ml	0.2 ml	0.2 ml	0.2 ml	0.2 ml	Epi 1:1000 IM	1 mg/ml	0.3 ml	0.3 ml	0.3 ml
3 ml	3 ml	3 ml	3 ml	3 ml	3 ml	3 ml	3 ml	3 ml	3 ml	3 ml	3 ml	3 ml	3 ml	Epi 1:1000 Nebulizer	1 mg/ml	3 ml	3 ml	3 ml
0.2 ml	0.4 ml	0.6 ml	0.7 ml	0.8 ml	0.9 ml	1 ml	1.1 ml	1.2 ml	1.5 ml	1.7 ml	1.9 ml	2.1 ml	2.3 ml	Epi 1:10,000 IVP	0.1 mg/ml	2.7 ml	3.5 ml	4 ml
15 gtts	*15 gtts*	*15 gtts*	*15 gtts*	*15 gtts*	*15 gtts*	*15 gtts*	*15 gtts*	*15 gtts*	*15 gtts*	*15 gtts*	*15 gtts*	*15 gtts*	*15 gtts*	Epi 1:1000 gtt	1 mg/250 NS 2 mg/500 NS	*15 gtts*	*15 gtts*	*15 gtts*
XXX	*0.1 ml*	*0.1 ml*	*0.1 ml*	0.2 ml	0.2 ml	0.2 ml	0.2 ml	0.2 ml	0.3 ml	0.3 ml	0.4 ml	0.4 ml	0.5 ml	Fentanyl	50 mcg/ml	0.5 ml	0.7 ml	0.8 ml
XXX	XXX	XXX	XXX	XXX	1 tube	1 tube	1 tube	1 tube	1 tube	1 tube	1 tube	1 tube	1 tube	Glucose Oral	15 g/tube	1 tube	1 tube	1 tube
8 ml	16 ml	24 ml	28 ml	32 ml	36 ml	40 ml	44 ml	48 ml	60 ml	68 ml	76 ml	84 ml	94 ml	Hydroxocobalamin gtt	25 mg/1 ml	108 ml	140 ml	160 ml
XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	2.5 ml	2.5 ml	2.5 ml	2.5 ml	2.5 ml	2.5 ml	Ipratropium	0.5 mg/2.5 ml	2.5 ml	2.5 ml	2.5 ml
0.1 ml	*0.2 ml*	*0.3 ml*	*0.4 ml*	*0.4 ml*	*0.5 ml*	*0.5 ml*	*0.6 ml*	*0.6 ml*	*0.8 ml*	*0.9 ml*	*1 ml*	*1.1 ml*	*1.2 ml*	Lidocaine 2%	20 mg/ml	*1.4 ml*	*1.8 ml*	*2 ml*
XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	1.2 ml	1.5 ml	1.7 ml	1.9 ml	2.1 ml	2.3 ml	Mag Sulfate	5 g/10 ml	2.7 ml	3.5 ml	4 ml
0.1 ml {0.5 cc syr}	0.15 ml {0.5 cc syr}	0.25 ml {0.5 cc syr}	0.25 ml {0.5 cc syr}	0.25 ml {0.5 cc syr}	0.25 ml {0.5 cc syr}	0.5 ml {0.5 cc syr}	0.5 ml {0.5 cc syr}	0.5 ml {0.5 cc syr}	0.5 ml {0.5 cc syr}	0.5 ml {0.5 cc syr}	0.5 ml {0.5 cc syr}	1 ml {1 cc syr}	1 ml {1 cc syr}	Midazolam IM / IN {*syringe size*}	5 mg/ml	1 ml {1 cc syr}	1 ml {1 cc syr}	2 ml {1 cc syr}
0.2 ml	0.4 ml	0.6 ml	0.7 ml	0.8 ml	0.9 ml	1 ml	1.1 ml	1.2 ml	1.5 ml	1.7 ml	1.9 ml	2 ml	2 ml	Naloxone	1 mg/ml	2 ml	2 ml	2 ml
40 ml	80 ml	120 ml	140 ml	160 ml	180 ml	200 ml	220 ml	240 ml	300 ml	340 ml	380 ml	420 ml	460 ml	Normal Saline Bolus	0.9 %	540 ml	700 ml	800 ml
XXX	XXX	XXX	0.5 ml	0.6 ml	0.7 ml	0.8 ml	0.8 ml	0.9 ml	1.1 ml	1.3 ml	1.4 ml	1.6 ml	1.7 ml	Ondansetron	2 mg/ml	2 ml	2 ml	2 ml
2 ml	*4 ml*	*6 ml*	*7 ml*	*8 ml*	*9 ml*	*10 ml*	*11 ml*	*12 ml*	*15 ml*	*17 ml*	*19 ml*	*21 ml*	*23 ml*	Sodium Bicarb	8.4 %	*27 ml*	*35 ml*	*40 ml*
5 ml	5 ml	5 ml	5 ml	5 ml	5 ml	5 ml	5 ml	5 ml	5 ml	5 ml	5 ml	5 ml	5 ml	Tranexamic Acid (TXA) Neb	100 mg/ml	5 ml	5 ml	5 ml
GRAY			PINK		RED	PURPLE		YELLOW			WHITE	BLUE				ORANGE	GREEN	XXX

Length Based Tape Measurements: Regardless of the tape used, only go by the indicated COLOR and the above corresponding dosages.

Doses displayed with asterisks require on-line physician approval. XXX indicates medication is not approved for that age group.

CC. Pediatric Dosing Guidelines - Equipment / Therapies

Neonate	Infant			Child											Adolescent		
0-28 day	1-2 mo	3-5 mo	6-8 mo	9-11 mo	12-16 mo	17-20 mo	21-23 mo	2 yr	3 yr	4 yr	5 yr	6 yr	7 yr	Equipment / Therapies	8-9 yr	10-11 yr	≥ 12 yr
1	1	1.5	1.5	1.5	1.5	1.5	1.5	2	2	2	2	2	2.5	**iGel**	2.5-3	3	3
2.5 UC	3.5 UC	3.5 UC	3.5 UC	3.5 UC	4 UC	4 UC	4 UC	4.5 UC	4.5 UC	5 UC	5 UC	5.5 UC	5.5 UC	**ET Tube size range**	XXX	XXX	XXX
XXX	3 C	3 C	3 C	3 C	3.5 C	3.5 C	3.5 C	4 C	4 C	4.5 C	4.5 C	5 C	5 C	UC=Uncuffed, C=Cuffed	5.5 C	6 C	6.5 - 7 C
XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	2	2	2	2	2	2	ET Blade Size: Macintosh	2	3	3-4
0	1	1	1	1	1-1.5	1-1.5	1-1.5	1-1.5	2	2	2	2	2	ET Blade Size: Miller	2	2	3-4
24	22 - 24	22-24	22-24	22-24	20-24	20-24	20-24	18-22	18-22	18-22	18-20	18-20	18-20	**IV Catheter**	18-20	16-20	16-20
P	P	P	P	P	B	B	B	B	B	B	B	B	B	**EZ-IO [Pink, Blue, Yellow]**	B	B or Y	B or Y
3:1	15:2	15:2	15:2	15:2	15:2	15:2	15:2	15:2	15:2	15:2	15:2	15:2	15:2	**CPR With BVM (CPR Ratio)**	30:2	30:2	30:2
3:1 Ratio	2-3 sec	2-3 sec	2-3 sec	2-3 sec	2-3 sec	2-3 sec	2-3 sec	2-3 sec	2-3 sec	2-3 sec	2-3 sec	2-3 sec	2-3 sec	**Vent. Rate During Continuous CPR**	5-6 sec	5-6 sec	5-6 sec
4	8	15	20	20	20	20	20	30	30	50	50	50	50	**Defibrillation**	# 1 (2 J/kg)	70	100	125
8	20	30	50	50	50	50	50	50	70	70	100	100	100	***(Joules rounded up per monitor capability)***	# 2 (4 J/kg)	125	175	250
15	30	50	50	50	70	70	70	100	100	125	125	150	150		# 3 (6 J/kg)	200	250	360
20	50	50	70	70	100	100	100	100	125	150	175	200	200		# 4 (8 J/kg)	250	300	360
20	50	70	100	100	100	100	100	125	150	175	200	225	250		# 5 and After (10 J/kg)	300	360	360
2	4	6	8	8	10	10	10	10	15	15	20	20	20	**Cardioversion**	# 1 (0.5-1 J/kg)	30	30	50
4	8	15	20	20	20	20	20	30	30	30	50	50	50	***(Joules rounded per monitor capability)***	# 2 and After (2 J/kg)	70	70	125
GRAY			PINK		RED	PURPLE		YELLOW			WHITE	BLUE				ORANGE	GREEN	XXX

Length Based Tape Measurements: Regardless of the tape used, only go by the indicated COLOR and the above corresponding dosages.

XXX indicates equipment is not approved for that age group.

a	before
AAOx3	awake, alert & oriented
AB	abortion
ABD	abdomen or abdominal
ADM	administered
ALS	advanced life support
A.M.	morning
AMA	against medical advice
AMS	alerted mental status
AMT	amount
ANT	anterior
AOS	arrival on scene
ASA	aspirin
BBS	bilateral breath sounds
BBS/CE	bilateral breath sounds/ clear equal
BG	blood glucose
BLS	basic life support
BP	blood pressure
BVM	bag valve mask
c	with
CA	cancer
CC	chief complaint
CHF	congestive heart failure
c/o	complaining of
COPD	chronic obstructive pulmonary disease
CP	chest pain
CT	Computed Tomography Scan (Cat Scan)
CVA	cerebro vascular accident
DC	discontinue
DM	diabetes mellitus
DOA	dead on arrival
DOB	date of birth
DOS	dead on scene
Dx	diagnosis
DZ	disease
ED	Emergency Department
EDC	expected date of confinement (due date)
EOE	engineer/operator EMT
EOP	engineer/operator paramedic
$ETCO_2$	end-tidal carbon dioxide
ETOH	ethyl alcohol
FFE	firefighter EMT
FFP	firefighter paramedic
Fx	fracture
G	Gravida (no. of pregnancies)
GCS	Glasgow Coma Scale
GI	gastrointestinal
Gm	gram
GOA	gone on arrival
GPA	Gravida, Para, Abortions
GSW	gunshot wound
gtt	drip
gtts	drops
GYN	gynecological
HA	headache
HPI	History of Present Illness
HTN	hypertension
Hx	history
H2O	water
ID	infectious disease
IDDM	insulin dependent diabetes mellitus
IV	intravenous
KED	Kendrick's extrication device
LAC	laceration
LLQ	left lower quadrant
LMP	last monthly period
LOC	loss of consciousness
LOSNI	left on scene no injury
LT	left
LUQ	left upper quadrant
MAE	moves all extremities
mg	milligram
MI	myocardial infarction
MVA	motor vehicle accident
NAD	no acute distress
NC	nasal cannula
NDM	no daily medications
NKA	no known allergies
NRB	nonrebreather mask
NTG	nitroglycerin
N/V	nausea/vomiting
N/V/D	nausea/vomiting/diarrhea
OB	obstetrical
OIP	oral airway in place
o.d.	right eye
o.s.	left eye
o.u.	both eyes
O_2	oxygen
P	Para (living children)
p	after
PCN	penicillin
PEDI	pediatric
PERL	pupils equal/reactive to light

P Hx	past history
PID	pelvic inflammatory disease
PMH	past medical history
PMS	pulse, mobility, sensation
POST	posterior
PPE	personal protective equipment
Pt	patient
PTA	prior to arrival
q	every
QD	every day
QH	every hour
QID	4 times a day
QOD	every other day
RLQ	right lower quadrant
RUQ	right upper quadrant
RT	right
Rx	prescription
s	without
SOB	shortness of breath
S/P	status post
S & S	signs/symptoms
SWD	skin warm & dry
Sx	symptoms
SZ	seizure
TDSHS	Texas Department of State Health Services
TID	3 times a day
TPR	temp, pulse, resp
TXD	transported
VAG	vaginal
VS	vital signs
WNL	within normal limits
w/	with
w/o	without
+	positive
Ø	none, no or negative
-	negative
<	less than
>	greater than

9.03 Equipment Requirements

A. Minimum BLS Ambulance Equipment

911 Key (1)
"D" Oxygen Cylinder (2)
"D" Regulator (1)
"H" Oxygen Cylinder w/Regulator (1)
Air Conditioner/Heater
Airway Filter (1)
Albuterol Sulfate 2.5 mg/3 ml NS (3)
Alcohol, Isopropyl (1)
Alcohol Preps (20)
Aspirin, Chewable 81 mg (1)
Automatic External Defibrillator (1)
Automatic External Defibrillator Pads Adult (2)
Automatic External Defibrillator Pads Infant/Child (2)
Automatic External Defibrillator Spare Battery (1)
B/P Cuff, Adult (1)
B/P Cuff, Child (1)
B/P Cuff. Infant (1)
Backboard (long) (1)
Bag-Valve-Mask, Adult with Adult Mask (1)
Bag-Valve-Mask, Child with Child Mask (1)
Bag-Valve-Mask, Neonatal with Infant Mask (1)
Bandage, Elastic (2)
Bandage, Roller Gauze (12)
Bandage, Triangular (12)
Bio-Hazard Bag (2)
Bite Sticks (2)
Blanket (2)
BVM Superset Swivel Ext. Connector (1)
Car Seat or Equivalent (1)
CAT Tourniquet (4)
Cervical Collar, Adult (2)
Cervical Collar, Pediatric (2)
Chest Seal (2)
Cold Pack (2)
Current TDSHS License
Disaster Tags (10)
Disinfectant/Detergent (1)
Dressing, 4x4, Sterile (50)
Dressing, Burn, Sterile (4)
Dressing, Occlusive (6)
Dressing, Trauma, Sterile (2)
Emergency Reflective Triangle (3)
Emergency Response Guide Book (1)
Emesis Bag/Basin (1)
Epinephrine IM : Anaphylaxis Treatment (1)
Extrication Device (KED) (1)
Eyewash (1)
Eyewear, Protective (2)
Fire Extinguisher Mounted and Tagged (1)
Flashlight (1)
Gloves (1 box) each XL, Lg, Med, Sm
Glucometer Kit (Device, Strips, Test Solution, Lancets) (1)
Glucose, Oral (1)
Gown, Protective (2)
Halligan Tool (1)
Head Immobilizer (2)
Heat Packs (2)
Hydrogen Peroxide (1)
Intranasal Mucosal Atomization Device (2)
Masks, N95 or equivalent (2)
Masks, Surgical (2)
Medical Kit, Primary (1)
Medical Treatment Guidelines signed by MD (1)
Multi-Level Stretcher (1)
Naloxone Single Dose Spray (2)
Nasal Cannula, Adult (2)
Nasal Cannula, Pediatric (2)
Nasopharyngeal Airways (1 each: size 14Fr, 22Fr, 32Fr)
Nebulizer, Adult (2)
Nebulizer, Pediatrics (2)
No-Smoking Signs (1 Cab & 1 Patient Area)
O.B. Kit, Sterile (1)
Oropharyngeal Airways (1 each: size 100mm, 90mm, 80mm, 60mm, 40mm)
Oxygen Flowmeter, Wall Mount (1)
Oxygen Mask, Non-Rebreathing, Adult (3)
Oxygen Mask, Non-Rebreathing, Pediatric (3)
Patient Care Record Laptop (1)
Penlight (1)
Portable Radio (2)
Pulse Oximeter (1)
Reflective Vest (2)
Ring Cutter (1)
Scoop Stretcher (1)
Sharps Container (1)
Shoe Covers (2 pair)
Sodium Chloride 1000 ml total (1)
Splint, Malleable (2)

Stair Chair (1)
Stethoscope (1)
Stretcher Sheet (2)
Suction Catheters (1 each: 5Fr, 8Fr, 10Fr, 14Fr, 18Fr)
Suction, Portable with Tubing (1)
Suction, Rigid Catheter (1)
Suction, Spare Canister (1)
Suction, Wall Mount, with Tubing (1)
Supraglottic Airway Device (2)
Syringe, 5cc with Needle (2)
T-Piece (1)
Tape, Adhesive (4)
Thermometer (1)
Thermometer Probes, Disposable (2)
Traction Splint (1)
Tranexamic Acid 1000 mg/ml (2)
Trauma Shears (2)
Triage Pouch with Colored Ribbon (1)
Tubing, Regular (Mini and Maxi) Drip (2 each)

From time to time the drugs on the equipment/supply/medication list may be supplied in concentrations or amounts other than those indicated. Regardless of the particular manner in which drugs are supplied, equivalent total amounts must be present, and it is the member-in-charge's responsibility to be certain that correct dosages are administered to patients.

Effective date: November 10, 2025
Expiration date: September 30, 2026

David Persse, MD
EMS Physician Director

B. Minimum ALS Equipment

All BLS Equipment listed in 9.03 A (Minimum BLS Equipment) excluding AED & its supplies, plus:

14 G. x 1 1/4" IV Catheter (2)
16 G. x 1 1/4" IV Catheter (2)
18 G. x 1 1/4" IV Catheter (2)
20 G. x 1 1/4" IV Catheter (2)
22 G. x 1 1/4" IV Catheter (2)
24 G. x 1 1/4" IV Catheter (2)
Adenosine 6 mg (6)
Amiodarone 150 mg (3)
Atropine 1 mg (4)
Bacteriostatic Water and Sodium Chloride for Injection
Calcium Chloride 1 Gm/10ml (2)
Carbon Monoxide/Rainbow Sensor (1)
CPAP (Mask, Control Unit, Tubing) (1)
D_5W 50ml (2)
Dexamethasone 10 mg (2)
Dextrose: 50% 25g/50ml (2)
OR 10% 25g/250 ml (2)
Diltiazem 20 mg (2)
Diphenhydramine 50 mg (2)
ECG Electrode (10)
ECG Pads (1) Adult
ECG Pads (1) Pedi
ECG Monitor/Defibrillator (1)
ECG Monitor Spare Battery (2)
ECG Paper (1)
Endotracheal Tube Holder, Adult (1)
Endotracheal Tube Holder, Pediatric (1)
End-Tidal CO_2 Filterline, Adult/Pedi (1)
End-Tidal CO_2 Filterline, Infant (1)
End-Tidal CO_2 Nasal Cannula (1)
Epinephrine 1:10,000 1 mg (2)
Epinephrine 1:1000 [1 mg/1 ml] (1)
ET Tube, Cuffed 5.5 - 8.0 w/ stylet (2)
ET Tube, Cuffed or Uncuffed 2.5 - 5.0 w/ stylet (2)
Endotracheal Bougie (1)
EZ-IO (1)
EZ-IO XL Adult Needle (1)
EZ-IO Adult Needle (1)
EZ-IO Pedi Needle (1)
EZ-IO Needle Stabilizer (1)
Fentanyl 100 micrograms (4)
Hypodermic Needle (2)
Ipratropium Bromide 2.5 cc dose vial (3)
IV Flow Regulator (1)
IV Tourniquet (2)
Labetalol 100 mg (2)
Laryngoscope Blade, Adult (1)
Laryngoscope Blade, Infant (1)
Laryngoscope Blade, Pediatric (1)
Laryngoscope Handle (1)
Laryngoscope Handle Spare Battery (2)
Lidocaine 100 mg (2)
Lubricant, Sterile (1)
Magill Forceps, Adult (1)
Magill Forceps, Pediatric (1)
Magnesium Sulfate 5 gm (1)
Midazolam 10 mg (4)
Narcan 2 mg (2)
Nitroglycerin 0.4 mg (1)
Norepinephrine (4)
Ondansetron 4 mg (2)
Pneumothorax Needle Decompression Kit (2)
Pulse Oximetry Sensors, Adult & Pediatric (2)
Sodium Bicarbonate 50 ml (2)
Sodium Chloride, Intravenous Bag (4)
Syringe (2)
Tubing, Mini Drip (2)
Tubing, Regular (Maxi) Drip (2)
Video Laryngoscope (1)

From time to time the drugs on the equipment/supply/medication list may be supplied in concentrations or amounts other than those indicated. Regardless of the particular manner in which drugs are supplied, equivalent total amounts must be present, and it is the member-in-charge's responsibility to be certain that correct dosages are administered to patients.

Effective date: November 10, 2025
Expiration date: September 30, 2026

David Persse, MD
EMS Physician Director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Houston Fire Department
Medication Shortage / Substitution Report

Date Added	Medication Shortage	Substitution
6-6-18	Fentanyl	None
6-6-18	Norepinephrine	Epinephrine
3-30-19	D50	D10
6-15-20	Amiodarone	Lidocaine
9-1-22	Magnesium Sulfate	None
9-1-22	Midazolam	None

- Please consult the Patient Care Guidelines or Orders for proper substitution dosing and other medication details

- Medications on this list are/may be in short supply, and may or may not be present on this individual EMS apparatus. The Houston Fire Department has the above listed medication(s) on order

- Please contact Mr. Sheffield at EMS HQ at 832-394-6800 for any required documentation or questions

9.04 Procedure for Downloading AED and LifePak 15 Data

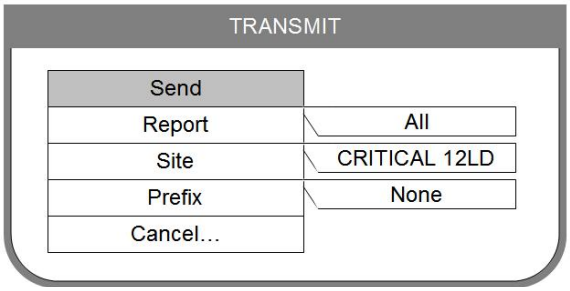
AED (Instructions are also on HFD Desktop)

1. Connect the infrared dongle to USB port on computer and ensure power light is on.
2. Line up AED infrared port (on left side of unit) with infrared dongle. AED is turned off.
3. Open DT Express program on station computer.
4. Click "Next" for Quick-Step transfer process.
5. Ensure the LifePak 1000 AED is selected on the device screen and select "Next".
6. Turn on the AED and connection should be made and data transmitted.
7. Enter the incident number (mandatory) and other patient information on the data entry screen.
8. Click 'Next' and then "Finish" to complete the transmission.

Transmitting 12-Lead to Receiving Hospital : Acute Myocardial Infarction / Hospital

The EKG's will be transmitted to HFD Base Station in addition to the HFD Database. Transmission of 12-Leads that are acute in nature, require physician intervention, are requested by the on-line physician or shall be transmitted to the receiving hospital shall be sent via this method. Note : If the EKG is to be forwarded to a receiving hospital, the HFD Unit must contact Base Station ASAP to inform them of the transport destination decision.

1. Press **TRANSMIT**
2. Select **DATA**
3. Select **Report**. It will automatically default to All. Use All for any transmission.
4. Select **SITE**. The choices include :
   - •CRITICAL 12LD : When utilizing the pre-connected wireless modem.



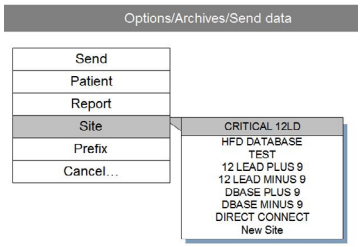
5. Select **SEND**

Procedure for Transmitting Cardiac Arrest Download (Plan A) and 12-Lead For Data Storage Only (HFD Database)

All 12-Leads acquired during any patient assessment or treatment shall be transmitted to the HFD Database. This includes all 12-Lead report(s) acquired from a patient whether they are transported or not. In addition, all cardiac arrest data (Plan A) will be transmitted to the HFD Database:
NOTE: DO NOT SEND CODE SUMMARY

1. Press **ON**
2. Press **Options**
3. Select **Archives…**
4. Select **Yes**
5. Select **Send Data…**
6. Select **Patient***** It will automatically default to All Patients
7. Select patient **ID#:**
8. Select **Report***** It will automatically default to All. You MUST choose between these reports:
   - **All** for Plan A's or
   - **12-Lead** for each individual 12-lead that needs to be transmitted
9. Select **SITE**. It will automatically default to CRITICAL 12LD. However, you MUST NOT choose this site for downloading data. Instead, you MUST choose the following site:
   - HFD DATABASE
10. Select **SEND**

***** If you do not select a patient, the LifePak 15 will transmit EVERY patient that is in its data bank.**



Notes:

- All 12-Leads sent via CRITICAL 12LD method are automatically sent to the HFD Database as well. If a 12-Lead was transmitted via CRITICAL 12LD, a member does not need to resend it via HFD DATA BASE.
- TEST is for testing transmission capability using the modem.
- DIRECT CONNECT and New Site are to be used by the manufacturer.
- The HFD Database computer will receive the 12-lead EKG's and additional information when **All** is selected under Reports. It is designed to be the data depository for all LifePak 15's and AED's.

Any members with questions or who encounter problems with transmitting are to contact EMS Administration at 832-394-6800.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9.05 Approved Hospitals and Hospitals With Specialized Facilities

All patients transported by HFD are presumed to have apparent or suspected medical emergencies that require the services offered only at full service emergency departments within hospitals capable of providing a wide range of consultation services. For that reason, HFD patients will only be transported to a hospital whose emergency department facilities have been approved to receive patients by the City of Houston EMS Physician Director.

Hospital	Hospital Code	Trauma: Level I/II	Trauma: Level III	Pedi: Trauma: Level I	Stroke I: Comprehensive	Stroke II: Advanced	Stroke III: Primary	24 Hour Cardiac Cath	VAD Facility	Burn Care	Hyperbaric Txt	Obstetric Specialty	Pediatric ICU	SAFE Certified
Ben Taub General Hospital	001	X			X			X						X
CHI St. Luke's Patient's Medical Center	319							X						X
CHI St. Luke's TMC Hospital	121				X			X	X					X
CHI St. Luke's The Sugarland Hospital	320							X						X
CHI St. Luke's The Vintage Hospital	322						X	X						X
CHI St. Luke's The Woodlands Hospital	125				X			X						X
HCAH Clear Lake	103	X			X			X					X	X
HCAH Kingwood	211	X			X			X						X
HCAH Med. Ctr. [prev. Park Plaza]	205													X
HCAH N. Cypress	133				X			X						X
HCAH Northwest	107	X			X			X						X
HCAH Pearland	217						X	X						X
HCAH Southeast [prev. Bayshore]	118		X				X	X						X
HCAH Tomball	313		X				X	X						X
HCAH West	100						X	X						X
HCAH Woman's Hospital of Texas	308											X	X	X
Houston Methodist Clear Lake Hospital	119						X	X						X
Houston Methodist Cypress Hospital	215						X	X						X
Houston Methodist Hospital TMC	114				X			X	X					X
Houston Methodist Sugarland Hospital	213				X			X						X
Houston Methodist The Woodlands Hosp.	214				X			X						X
Houston Methodist West Houston Hospital	321						X	X						X
Houston Methodist Willowbrook Hospital	212				X			X						X
LBJ Hospital	130		X											X
M.D. Anderson Medical Center	305													
Memorial Hermann Cypress	106		X				X	X						X
Memorial Hermann Greater Heights	111		X				X	X						X
Memorial Hermann Katy	109	X					X	X						X
Memorial Hermann Memorial City	110		X		X			X						X
Memorial Hermann Northeast	115						X	X						X
Memorial Hermann Pearland	123						X	X						X
Memorial Hermann Southeast	112		X				X	X						X
Memorial Hermann Southwest	113				X			X						X
Memorial Hermann Sugarland	131				X			X						X
Memorial Hermann TMC Children's Hosp.	003			X					X				X	X
Memorial Hermann TMC Hospital	002	X			X			X	X	X	X			X
Memorial Hermann The Woodlands	122	X			X			X						X
St. Joseph Medical Center	120		X				X	X						
Texas Children's Hospital	124			X					X				X	X
Texas Children's Hospital West	126												X	
Texas Children's Hospital Woodlands	184												X	
Texas Children's Pavilion for Women	135											X		
UTMB Clear Lake	108	X			X			X						
UTMB League City	105		X				X							
Veteran's Administration Hospital	127				X			X	X					

Specialized Facility Descriptions

Trauma: Level I/II

Comprehensive regional resource capable of providing total care for every aspect of injury – from prevention through rehabilitation.

•24-hour in-house coverage by general or trauma surgeons, and prompt availability of care in specialties such as orthopedic surgery, neurosurgery, anesthesiology, emergency medicine, radiology, internal medicine, plastic surgery, oral and maxillofacial, pediatric and critical care.

•Referral resource for communities in nearby regions.

Trauma: Level III

Ability to provide prompt assessment, resuscitation, surgery, intensive care and stabilization of injured patients and emergency operations.

• 24-hour coverage by emergency medicine physicians and on-call availability of general surgeons and anesthesiologists.

•Developed transfer agreements for patients requiring more comprehensive care at a Level I or Level II Trauma Center.

Trauma: Pediatric Level I

Hospitals that provide the highest level of comprehensive care for children with traumatic injuries. This includes a dedicated pediatric trauma service, experienced pediatric specialists, and resources such as an intensive care unit.

Stroke: Level I Comprehensive

Hospitals that meet the highest standards for stroke care, including specialized neuro-critical care units, 24/7 on-site neuro-interventional and vascular neurology teams, and advanced neurosurgical capabilities. They provide the most advanced stroke care, including thrombectomy, and have a robust multidisciplinary approach.

Stroke: Level II Advanced

Hospitals that are capable of performing thrombectomy and provide advanced stroke care, but may not have the full suite of resources available at a Level I center.

Stroke: Level III Primary

Hospitals that are equipped to provide emergency care, including clot-busting therapy, and are able to perform initial stroke assessments and stabilize patients.

24 Hour Cardiac Cath

Hospitals that provide 24/7 cardiac catheterization capabilities for STEMI and post-arrest patients.

VAD Facility

Hospitals that treat and manage patients with ventricular assist devices.

Burn Care

Hospitals that provide comprehensive care for patients with burn injuries. These centers offer advanced resources and expertise for managing complex burns, including specialized surgical, critical care, and rehabilitation capabilities.

Hyperbaric Treatment

Hospitals that offer hyperbaric oxygen therapy.

Obstetric Specialty

Hospitals that specialize in providing care for women during pregnancy, labor, delivery, and the postpartum period. They also care for newborn infants.

Pediatric ICU

Hospitals that have a specialized unit dedicated to providing comprehensive and intensive care to critically ill or injured children. It's designed to handle the most severe medical conditions in pediatric patients, ranging from newborns to young adults.

SAFE Certified

Hospitals that employ or contract with a sexual assault forensic examiner to provide consultation when conducting a sexual assault forensic medical examination.

9.06 Revisions to Guideline

11-10-25
3.20 / 3.25 / Table 8-1 Age range for neonate and infant updated
6.03 B. Transport priority definitions adjusted
Table 6-2 and 6-3/8-7. Clarification on ability to ventilate patients
6.19 C. Added additional concerns related to physical restraint
6.21 D.4. Clarification around BLS transport of ALS requiring patient
6.22 Clarification of responsibilities on EMS units
6.23 B. Clarification of timing for termination of resuscitation
7.01 3.e / Table 7-9 / Table 8-2 Ventilation parameters and RR updated
7.04 A. AED pad placement updated
7.04 C. Dual Sequential Defibrillation added
Table 7-8 Oxygen Therapy Guideline updated
8.01 A.8. / 8.01 B.8 Clarification on AED and LP15 downloads
8.02 A.2.c. Updated Obviously dead criteria
8.02 A.4./A.5. Vector Change and Dual Sequential Defibrillation (reflected in 8.02 D./E.)
8.02 F. Updates to Post-Cardiac Arrest Care
8.03 D. Allergic Reaction/Anaphylaxis updated
8.03 E. Altered Mental Status updated
8.03 H. Bradycardia ADULT updated
8.03 K. Breahting Difficulty: Wheezes updated
8.03 L. Breathing Difficulty PEDIATRIC updated
8.03 N. Chest Pain updated
8.03 O. Childbirth – Emergency Mother: TXA added
8.03 U. Hemorrhage – Non-Traumatic: Updated and TXA added
8.03 S. Delirium updated
8.03 X. Hyperthermia updated
8.03 Y. Hypoglycemia updated
8.03 AA. Nausea/Vomiting updated
8.03 DD. Seizure Activity updated
8.03 FF. Stroke updated
8.03 HH. Tachycardia, Narrow Complex updated
8.04 A. General Guideliens for All Trauma Patients Updated and TXA Added
9.01 AA./BB. Updated Pediatric Dosing Guidelines

1-10-26
8.02 F. Post-Cardiac Arrest Care clarification on destination
8.03 LL. VAD Coordinator Contact Phone Number Updated
9.01 AA. TXA ALS administration clarification
9.05 Specialized Facility Updates