

## MEDICAL CARE PROTOCOL GENERAL CONSIDERATIONS

### CHAPTER 24.1.1

Issued: May 2010

Revised: July 12

Submitted By: EMS Branch

Approved By: Medical Director

#### **The following standards of care shall apply to all patients treated by Alachua County Emergency Medical System**

All patients are to be **treated with respect**.

An individual becomes a **patient** when presenting with a chief complaint or evidence of a medical condition or injury or upon discovery of vital signs outside normal values.

Consultation with an on-line medical control physician prior to initiation of non-life threatening therapeutic modalities outside the context of these protocols remains the standard. **The sole exception is being life-saving care.** Life-saving care is defined as any or all measures which having the purpose of immediate preservation of life and/or the establishment of means by which life might be preserved. The Medical Control Physician shall be defined as the emergency department attending physician at Shands Teaching Hospital.

Patient care is by nature unpredictable and patients may require care derived from multiple protocols, or in the absence of these, on-line medical control. The following protocols are written with this reality in mind. Deviations from protocol will be tolerated only when it is intended to further patient care. Such deviations must in no way detract from the high level of patient care expected from pre-hospital care providers associated with Alachua County's EMS system.

The CAB's ( circulation, airway, breathing) will always take priority in patient management. Maneuvers required to secure the airway, ensure adequate gas exchange, and establish adequate tissue perfusion should always supersede specific protocol statements.

Orders communicated directly from the on-line Medical Control Physician to the paramedics caring for the patient may supersede established protocol.

The Company Officer of each unit is responsible for the completion of a patient care report on every patient contact, regardless of treatment administered. Paramedics will complete ALS reports and EMT's may complete BLS reports at the discretion of the Company Officer.

Complications, problems, or requests for additional orders during treatment will be directed to the on-line Medical Control Physician. Additional questions or problems should be directed to the Medical Director after the incident.

Emergency responders functioning at the BLS level will be expected to conform to Alachua County's BLS Medical protocols to the extent that their training and certifications allow.

Although it is our policy and desire to be of assistance to law enforcement, requests by law enforcement for collection of blood samples to screen for alcohol or drug levels will be honored when, in the best judgment of the paramedic in charge of the patient, assisting law enforcement in such a manner would not delay patient transport, care, nor violate the Citizen's rights of refusal.

An Alachua County Fire/Rescue ALS unit may cancel their response by any of the following means:

- The requester calls back and advises that they no longer need EMS to respond,
- Another Advanced Life Support (ALS) unit arrives on the scene and determines additional ALS units are not needed,

- LEA or a Basic Life Support (BLS) unit advises there is no patient.

NOTE: The only recognized reason for cancellation by another Public Safety Agency is for “no patient on the scene”. The Medic unit will continue response for a minor injury or for a patient refusing treatment.

## **MEDICAL CARE PROTOCOL RADIO REPORT**

### **CHAPTER 24.1.2**

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**Approved By: Medical Director**

**It is understood that some pre-hospital situations preclude providing a complete report to the destination facility. However, paramedics should strive to furnish a complete report at the earliest possible opportunity with deviations from this standard being for the benefit of the patient.**

### **MEDICAL COMMUNICATIONS**

**The following information should be communicated on initial contact by the paramedic with the hospital or with the On Line Medical Control Physician (OLMCP).**

1. Unit Identification number
2. Patient's age and gender
3. Patient's chief complaint/Time of onset
4. Brief history relevant to the chief complaint /illness, medications used, allergies
5. Vital signs (as appropriate for circumstances)
6. Description of the mechanism of injury for traumatized patients
7. General appearance, including the Glasgow coma scale
8. Pertinent physical findings
9. Treatment rendered and the response to treatment
10. Request for orders needed and confirmation of any orders given
11. Estimated time of arrival (ETA)

If transported patient is critical and the paramedic is occupied treating the patient, an abbreviated report may be given by either the paramedic or the driver (Driver's Report).

If medical radio contact is not available

1. Attempt contact by phone via the use of a recorded line at the Combined Communication Center (CCC)
2. Route a message through CCC via dispatcher
3. Follow protocol as written

## MEDICAL CARE PROTOCOL INITIATION OF CPR

### CHAPTER 24.1.3

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All patients found in cardiopulmonary arrest by EMS personnel will receive cardiopulmonary resuscitation (CPR). CPR will be initiated using the American Heart Association standards for adults, children or infants.

#### **Exceptions:**

- A patient who has in his or her possession, or at the bedside, a completed, legal, yellow State of Florida Do Not Resuscitate Order (HRS Form 1896).
  - If there is any question about the validity of the DNR document, the Paramedic shall contact the on-line medical control physician at Shands. Until there is a clear understanding as to the validity of the order, CPR will be performed.
- Any patient who presents as obviously dead. (See Determination of Death, Chapter 24.1.4)

#### **Cardiopulmonary resuscitation may be halted when:**

- Effective spontaneous ventilation and circulation have been restored as per 2010 AHA ECC guidelines
- Resuscitation efforts have been transferred to persons of no less skill than the initial providers
- The rescuer is exhausted and physically unable to continue resuscitation.

All criteria has been met per Protocol 24.1.4

## MEDICAL CARE PROTOCOL DETERMINATION OF DEATH

### CHAPTER 24.1.4

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The EMS team does not pronounce death; rather, it is **determined** to exist.

#### What to look for:

Death is determined to be present if all of the following are evident:

- Unresponsive
- Pulseless
- Apneic
- Absence of electrical activity on cardiac monitor in 2 or more leads
- Additionally, **at least one of the following** will be present to determine that death has occurred:
  - Lividity, rigor mortis, or generalized cyanosis
  - Decomposition of body tissue
  - Decapitation, incineration
  - Destruction of brain or heart
- Once it is determined that death has occurred, the EMS team will request/notify LEA.
- The body will not be left unattended until LEA is present.
- If this may be a crime scene, nothing in and around the immediate area should be disturbed.
- Patients who are in a hypothermic environment may respond to resuscitation measures for a longer period of time. Therefore, hypothermic patients should be resuscitated until normal body temperature is achieved.
- **When in doubt, resuscitate and transport.**
- The criteria noted herein **DO NOT** apply in the situation of a **mass casualty incident** [MCI].

### TERMINATION OF CARDIOPULMONARY RESUSCITATION

The Paramedic has the discretion to continue resuscitation efforts in any case despite Termination of Resuscitation criteria being met if scene safety, location, patient's age, time of arrest, or bystander input compels this decision.

When asystole is seen on the cardiac monitor, verification of the rhythm shall include a printed rhythm strip as well as interpretation of the rhythm in more than one lead. Low amplitude V-Fib or PEA may be difficult to distinguish from asystole when using only the cardiac monitor display for interpretation.

#### Medical Control Contact Not Required/Asystole

The Paramedic may terminate resuscitative efforts in non-hypothermic adults provided all 5 of the following criteria

exist after 20 minutes of CPR:

- Initial rhythm is Asystole confirmed in two leads on a printed rhythm strip
- Rhythm remains in Asystole throughout resuscitative efforts
- Secure airway confirmed by digital capnography (ETT or King LTA)
- Medication efforts have been exhausted per protocol 24.3.5

Quantitative ETCO<sub>2</sub> value is <10 mmHG with effective CPR

**Do not terminate resuscitation efforts if transport has been initiated.**

**In the case of extenuating circumstances, contact Medical Control for direction.**

## **MEDICAL CARE PROTOCOL SUSPECTED CHILD/ELDER ABUSE**

### **CHAPTER 24.1.5**

**Issued: May 2010**

**Revised:**

**Submitted By: Technical Services**

**Approved By: Medical Director**

Whenever child or elder abuse is suspected, assess the scene closely.

Record all appropriate information on the patient care report.

Upon arrival at the Emergency Department, a verbal report summarizing your findings should be given to the responsible medical personnel. Complete any appropriate paperwork in compliance with organizational and administrative procedures.

Do not delay transport to obtain the above information.

Do not make accusatory, confrontation, angry, or threatening statements to any parties present.

Any non-transported patient, for whom you have concerns about the possible abuse, will be reported to the appropriate local or state agency (Children and Family Services, LEA). The District Chief/Supervisor will also be notified.

**ABUSE REGISTRY 1-800-962-2873**

## MEDICAL CARE PROTOCOL DETERMINATION OF HOSPITAL DESTINATION

### CHAPTER 24.1.6

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Determine the acuity of the patient's chief complaint, illness, or injury.

Emphasis on delivering patients to the correct destination for definitive treatment on the first transport.

**Any High Acuity and/or critical patient shall be transported to the closest, appropriate hospital-based emergency department.**

Free Standing Emergency Department (FSED) Policy

If Low Acuity Type presentation:

- FSED's may be considered as a transport destination for patients *ONLY* upon their request, and **if they are not excluded by the parameters of this protocol**.
- The Rescue Lt. will document in the narrative of the report that the patient was provided a clear explanation of their requested destination, its inability to provide cardiac catheterization, surgical care, dialysis, etc, and need for double transport for admission.

**Patients exhibiting or complaining of any of the following will be EXCLUDED, and not considered eligible for transport to a Free Standing Emergency Department:**

- Alerts (Trauma, Stroke, Stemi, Sepsis, etc...)
- Chest Pain
- Shortness of Breath/Hypoxia
- Abdominal Pain
- Abnormal Vital Signs
- Altered mental status or Glasgow score <15
- Concern for Open/Angulated Long bone fracture
- Concern for pulseless/ischemic extremity
- Any violent patient
- Any patient *potentially requiring admission* in the paramedics' best judgment.(ex. Elderly, weakness, dizziness, dialysis, etc)

Shands UF Obstetric Patients

- OB patients, who are 16 weeks of gestation or greater and experiencing acute labor related emergencies, including pre-hospital deliveries, should be transported to the Pediatric Emergency Department in the Shands Hospital for Children located in the Shands UF North Tower. Patients SHALL be taken by hospital personnel to the Labor and Delivery Unit in the North Tower.



- OB patients with non-labor related emergencies should be transported to the current Emergency Department in the South Tower
- When transporting an OB patient, notify the ED as early in the call as possible. When the ED gets the radio call from ACFR stating they have an L&D transport, the ED will notify Labor and Delivery. Patient report will be provided and patient care transferred to the hospital representative. Patients SHALL be taken by hospital personnel to the Labor and Delivery Unit in the North Tower.
- If the OB patient is unstable, the ED physician will evaluate and stabilize the patient in the ED.
- If the transport is an inter-facility transfer and the OB physician requests EMS to transport the patient to OB triage, the L&D RN will meet EMS personnel at the designated elevator and both personnel will transport the patient to meet the OB physician in OB triage.
- All Rescues carrying pediatric patients inbound to Shands at UF (less than 18 years old in need of emergency services), shall be routed to the Pediatric Emergency Department in the Shands Hospital for Children located on the north side of Archer Road (North Tower-old ER) except for those meeting trauma alert criteria.
- All patients meeting trauma alert criteria, regardless of age, should be transported to the Shands at UF Trauma Center, located on the south side of Archer Road.
- Transport the patient to the emergency department of the patient's choice unless excluded by the above parameters of destination.

If the patient is unable to make such a judgment (minors, etc.), transport the patient to the emergency department of choice of an appropriate party acting on behalf of the patient (parent, guardian).

If the patient expresses no choice and if no other appropriate party is available or has reason to act on behalf of the patient, transport the patient to the closest appropriate emergency department.

No paramedic is to influence the choice of hospital by the patient nor assume that any hospital cannot offer its usual range of services thereby preferentially re-routing patients to select facilities, however, paramedic personnel may educate those requesting information to the appropriate facility for their specific type and acuteness of emergency consistent with recognized local practice.

## MEDICAL CARE PROTOCOL HOSPITAL EMERGENCY DEPT. EMS BYPASS GUIDELINES

### CHAPTER 24.1.7

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Approved By: Medical Director

*Recognizing that the usual capabilities of a particular department may become acutely and temporally overwhelmed, it may be necessary to temporarily divert patients to other facilities. To promote community cooperation in the delivery of emergency services, we have agreed to the following standards:*

The only **complete hospital bypass** is as a result of a hospital disaster (fire, power failure, HAZMAT incident, flooded ED, etc.) or a security lockdown (armed and dangerous subject in the ED). All patients are subject to hospital bypass.

EMS bypass, as determined only by persons authorized to do so (Hospital designee in cooperation with the ACFR Medical Director), will give the emergency department of that hospital temporary relief from incoming patients via EMS. This status is independent of any temporary change in other hospital capabilities.

Once notified of a hospital's bypass status, EMS crews **will** make every effort to honor that status. Exceptions to this rule include:

- **The patient whose condition is unstable, life threatened, and deteriorating will be taken to the closest appropriate facility, regardless of bypass status. The paramedic attending the patient is the sole arbiter of the patient's status.**
- If the patient (or third party responsible for the patient) insists on patient transport to a facility on bypass for the patient's condition, on-line medical control at the facility requested by the patient (or surrogate) will be contacted for assistance. The directives of the on-line medical control physician will indicate the most appropriate destination for the patient.
- Any hospital placing themselves on EMS bypass status will notify the Combined Communications Center when the ED has been reopened.

Each hospital will develop internal procedures for determining which personnel are authorized to recommend bypass and are authorized to report hospital status to the Alachua County Combined Communications Center (CCC).

Should two or more receiving facilities request bypass status at the same time, all bypasses will be terminated. The administrator's on-call at each facility will be notified (by their respective ED staffs) in this event and the Combined Communications Center will issue an administrative page to ACFR and the Medical Director. In this event, the hospitals involved, ACFR and the Medical Director will determine status and notify the Combined Communications Center.

These guidelines apply to patients transported by Alachua County Fire/Rescue units only. Extension of these guidelines to patients transported by EMS units of other agencies may be permitted.

## MEDICAL CARE PROTOCOL REFUSAL OF SERVICE

### CHAPTER 24.1.8

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Approved By: Medical Director

A written run report is required for any encounter involving an individual expressing a chief complaint and/or an individual presenting with assessment findings outside of normal established values. The written report must include thorough documentation describing the type of situation found, assessment findings, the suspected chief complaint, treatment or care rendered, reactions noted, and disposition of the patient including any instruction given in a case when care is refused.

Dealing with patients who activate the EMS system (or has the system activated on their behalf by a third party) and then declines or refuses care and/or transport is a difficult problem for the field paramedic. Using an ordered approach in these situations will help expedite a satisfactory resolution. **The assumption should ALWAYS be that the patient requires medical care and transport.**

#### **Assess the patient and the scene.**

- Obtain a history from the patient and/or others in the area, including mechanism of injury (if appropriate).
- Obtain the patient's vital signs and document on the run report
- Perform the physical examination, paying particular attention to alterations in mental status or vital signs and consider any traumatic injury, mechanism of injury, or medical illness that may represent a threat to the well being of the patient.
- Document clearly if the patient or surrogate refuses assessment.

#### **Assess the competency of the patient.**

For our purposes, a competent patient shall be defined as one who is:

- Over 18 years of age, or is an emancipated minor (a pregnant woman, a woman who has given birth, or a married person of either gender) and;
- Awake, alert, and fully oriented to time, person, place, and situation and;
- Has no alterations in vital signs, mental status, or level of consciousness and;
- Has no signs of acute injury or illness, and has no signs of chronic illness, either of which may influence the ability to make an informed decision and;
  - Is not exhibiting clinical signs of intoxication by alcohol or drugs, (licit or illicit) **and/ or**
  - Has no history of mental illness that affects their decision-making ability.

#### **If the patient (or parent or guardian) is judged competent to refuse transport:**

- Again emphasize the need for care, the risks of refusal of care (including death), and our wish to transport the patient;
- If patient, parent, or guardian declines care, and the EMS personnel do not feel transport by EMS to the hospital is required, patient, parent, or guardian must sign the appropriate written release form in front of two witnesses. The patient, parent, or guardian who is judged competent, declines care, and then refuses to sign the waiver will prompt the EMS crew to reassess the competency of the individual; if still considered competent

to decline care, a verbal statement **MUST** be documented on the run report and the verbal waiver form completed.

**If the patient (or parent or guardian) is judged not competent to refuse transport:**

- Explain to the patient (or parent/guardian) the need for transport; reassure the patient that no harm will result from transport but that complications, up to and including death, may result from a delay in treatment;
- If patient, parent, or guardian continues to refuse care, enlist the MCP or law enforcement personnel to secure patient for transport.

**Refusal of treatment/ transport of minors:**

- Although care may be refused by a responsible parent or legal guardian if said parent or guardian making the decision qualifies as competent as defined above, every effort will be made to transport minors exhibiting any findings consistent with injury, alteration in mental status, or intoxication. If the parents or guardian are not on scene, they may make the refusal over the telephone. Two witnesses will confirm the telephone conversation by signing the waiver form.
- Where there are historical or physical findings of injury or illness, intoxication, and/or alterations in mental status, level of consciousness, or vital signs, and no parent or guardian is available, the minor will be transported.
- If the minor is a college student, the paramedic will obtain assistance from the MCP prior to obtaining a waiver.
- If the EMS system is summoned to by a third party and either the patient is not found or there is no EMS assistance required, there is "No Patient" and no refusal form is required.
  - If patient contact is made a patient care report must be completed.
  - If patient, parent, or guardian refuses care, and EMS personnel feel transport to the hospital is required, the patient, parent, or guardian must sign the appropriate written release form in front of two witnesses.
  - The patient, parent, or guardian who is judged competent, refuses care, and then refuses to sign the waiver will prompt the EMS crew to reassess the competency if the individual;
  - If the person in question is still considered competent to decline care, a verbal statement **MUST** be documented on the run report and the verbal waiver form completed. It is recommended to contact the medical control physician to help persuade these patients to agree to care and transport.
  - Thank patient, parent, or guardian for signing the release. Emphasize that our EMS system **WILL RETURN** should the patient, parent, or guardian change his or her mind.

All episodes, which involve refusal of care or assessment of competency, must be documented completely on the run report.

- If responding to a call at "The Birthing Center," please transport all of these patients unless the paramedic is advised by the midwife on scene that she has decided there is no need for transport. In these cases, "The Birthing Center" has taken full responsibility of this patient after our departure. This decision will not be based on our "assessment." Please document appropriately why you were called and ask the midwife to sign a refusal waiver.

**Refusal of Transport After Treatment Given**

**Bronchospasm Resolved After Nebulizer Treatment**

- After treatment of bronchospasm, and return to an asymptomatic state, some patients will refuse transport to the hospital.
- The following items should be accounted for and included in the assessment and documentation:
  - The presentation is consistent with a mild exacerbation of asthma

- No severe dyspnea at onset
- No pain, sputum, fever or hemoptysis
- Not initially hypoxic (oxygen saturation < 90%)
- Significant improvement after a single nebulizer treatment
- Complete resolution of symptoms
- Vital signs within normal limits after treatment given
- (BP, pulse, respiratory rate, oxygenation)
- Additional patient safety measures that should be considered:
  - A family member or caregiver should be available to stay with the patient and assist if a relapse occurs
  - Assure the patient understands transport has been offered and subsequently refused

Informed the patient to follow-up with their physician as soon as possible and/or to re-contact 911 if symptoms re-occur

#### **Insulin Induced Hypoglycemia-Resolved**

- This protocol applies only to insulin dependent diabetic patients who are refusing hospital transport after the resolution of insulin-induced hypoglycemia by the administration of intravenous D50. After treatment of hypoglycemia, and return to an asymptomatic state, some patients will refuse transport to the hospital.

The following items should be accounted for and included in the assessment and documentation:

- The patient is on Insulin only (does not take oral diabetic medications)
- The presentation is consistent with hypoglycemia
- Rapid improvement, and complete resolution of symptoms, after D50
- Vital signs within normal limits after glucose given
  - (BP, pulse, respiratory rate, oxygenation, and blood sugar > 70)
- There is no indication of an intentional overdose or dosing error

Additional patient safety measures that should be considered:

- A family member or caregiver should be available to stay with the patient and assist if a relapse occurs
- Assure the patient understands transport has been offered and subsequently refused
- Informed the patient to follow-up with their physician as soon as possible and/or to re-contact 911 if symptoms re-occur

**NO REFUSAL OF CARE WILL OCCUR IN THE PATIENT WHO, AFTER EVALUATION BY RESCUE PERSONNEL, IS JUDGED TO BE AT RISK OF OR SUFFERING FROM A SERIOUS ILLNESS OR INJURY, WITHOUT THE INVOLVEMENT OF THE ON-LINE MEDICAL CONTROL PHYSICIAN (OLMCP).**

Situations deemed high risk include:

- Patients <1, >65
- Trauma Patients
- Intoxicated Patients
- Chest Pain
- Abnormal Vital Signs
- Mental Health Concerns
- Status Post Treatment(seizure, asthma, hypoglycemia)

#### **Termination of Efforts to Obtain Consent –**

There are six situations where efforts to obtain consent from the patient may be discontinued:

- 1) Patient decides to consent
- 2) Patient's level of consciousness deteriorates to the point that they are no longer able to refuse care -- care may now proceed under implied consent.
- 3) Patient continues to refuse and the patient is determined to be capable of making an informed refusal and OLMCP consultation was not required
- 4) Patient continues to refuse, physical restraint with law enforcement assistance is needed, law enforcement refuses to assist (tape document), and OLMCP approves discontinuation of efforts.
- 5) Patient has left the scene and efforts to detain the patient would be inappropriate or dangerous.
- 6) Contact with medical direction has occurred.

**Many times, patients will decide to consent after they hear the consultation with OLMCP, in spite of the sincere efforts of field crews. Therefore, take advantage of that fact to help persuade a patient to seek care as appropriate. You may ask OLMCP to speak directly with the patient. This has also been helpful in getting the patient to consent. If they still refuse, it puts the patient's own voice on the tape log of the radio system as an additional documentation of the system's sincere efforts to have the patient make an informed decision.**

## MEDICAL CARE PROTOCOL PHYSICIAN ON SCENE

### CHAPTER 24.1.9

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**Approved By: Medical Director**

If a physician on scene offers to provide assistance/physician-command for a case requiring Advanced Life Support, the paramedic is to do the following, as long as it may be accomplished without putting the patient at risk for further morbidity or mortality. A "physician" is, for the purposes of this protocol, defined as a health care practitioner with either an MD or DO Degree.

#### **Determination of Qualification:**

- A valid license to practice medicine is required.

#### **Authorization to Paramedics:**

- Paramedics are authorized to proceed under the command of a physician on scene only if the physician has produced a valid license to practice medicine. Any dispute will be referred to the Medical Control Physician [MCP].

#### **Requirements of Physician on Scene:**

- **Assistance:** After determination of qualification, the physician who wishes to assist the Paramedic, but not take physical command, may do so. In this situation, the Paramedic remains in command and the Physician acts as either an extra set of hands or as a resource for selected procedures (i.e., Endotracheal Intubation) or both.
- **Command:** Physical command may be accepted ONLY if the physician on scene agrees to sign the narrative section at the bottom right corner of the run report **AND** agrees to accompany the patient to the hospital.
- **Any conflicts will be referred to the MCP for resolution.**
- The physician who offers assistance at a scene call is doing so for reasons of humanity. A professional and respectful attitude toward the physician-volunteer will be maintained.

## MEDICAL CARE PROTOCOL UNIVERSAL PRECAUTIONS

### CHAPTER 24.1.10

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**All blood and bodily fluids will be considered infectious.**

Appropriate Personal Protective Equipment (PPE) will be worn when treating patients where blood and/or OPIM (Other Potentially Infectious Materials) are evident or suspected.

Appropriate respiratory protection will be used if it is documented or suspected that the patient may have infectious Tuberculosis or any other respiratory spread infection.

**General Practices:**

- Sharps will be disposed of in appropriate sharps container(s).
- Sharps will not be recapped.
- Hands will be cleaned, preferably with soap and water after patient contact or contact with OPIM; however, waterless hand cleaners may be used until soap and water are available.
- Contaminated equipment will be cleaned and then disinfected.
- PPE should be used to cover any areas on an employee's person that could provide a route for contamination.

**Universal Precautions Categories:**

**Mechanical Devices:**

- Sharps containers and biomedical waste red bags.
- Sharps Safety Devices.

**Personal Protective Equipment (PPE)**

Gloves, Gowns, Eyewear, Fluid Shields, N95 Respirators.

**Housekeeping:**

- Cleaning and disinfecting products.
- Waterless hand cleaner.



## MEDICAL CARE PROTOCOL QUALITY ASSURANCE PROGRAM

### CHAPTER 24.1.11

**Issued: May 2010**

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**Purpose:** To establish the review of field incident reports and on scene care to identify and continually measure the quality of emergency medical care being provided to the citizens of Alachua County. It is the intent of these guidelines to meet, and or exceed the requirements of Florida Statute 401 and 64E (section 8) as well as the current Protocols developed by the Medical Director.

**Scope:** The guidelines prescribed are applicable to all employees of the Fire Rescue department and may not be deviated from without the expressed, written permission of the current Medical Director.

**General:** Information received through the review of medical field incident reports and on-scene observation of care provided will be used in focused studies and education, benchmarking, and performance outcomes which will improve the overall quality of service provided by the Alachua County Fire Rescue..

#### **Quality Assurance Categories to Be Reviewed Each Shift:**

- Cardiac Alert/Cardiac Arrest
- Stroke Alert
- Chest Pain (30%)
- Unconscious Patient GCS <8
- Pregnancy/OB
- Patient Refusal of Care (30%)
- Alternating Protocol as assigned by Technical Services

#### **Quality Assurance Categories to Be Reviewed Monthly:**

- Trauma Alert/Trauma Arrest
- Drowning
- Death Scene
- Airway Techniques including CPAP
- Administration of Medications (All uses of Morphine and Versed)

#### **Components of the EMS Quality Management Program:**

- Review of the Standard of Care as set forth in Florida Statute and the current Protocols developed by the Medical Director in the following areas:
- EMS Report Documentation
- Performance Standards and Skill Evaluation
- Patient Outcome

The above areas will be reviewed for:

- Call time date/Completion time date
- Quality of Care Delivered
- Process Improvement Needs
- System-wide Remediation Requirements
- Individual Remediation Requirements

The following areas of the EMS Run Report document shall be reviewed as basic criteria for all reports:

- Patient Identification on ALL pages
- Biographical and Personal Data
- Paramedic/EMT Identification
- Entry Date
- Identification of Chief Complaint
- Patient History/Pertinent
- Physical Examination Results
- Diagnosis
- Documentation of ALL treatment
- Medically Appropriate Care
- Narrative which documents all pertinent patient care along with any unusual occurrences.

#### **Data Collection:**

*Electronic Reports* are completed in the County Reporting Management System (RMS). Upon completion of the incident, the Paramedic/EMT is responsible for the completion of the electronic report. All screens requiring data should be completed as soon as possible so that the most accurate information is collected on each patient.

Each electronic report is reviewed by the Rescue Lieutenant assigned to QA for adherence to protocols and completion of required data. Any discrepancies will be forwarded to Technical Services for review. After review by Technical Services, any discrepancies will be returned to the individual paramedic for correction.

All report data is used to develop future training needs for the Department.

#### **Patient Care Review Process**

In order to provide consistent and constant review of our procedures, the following steps shall be followed for each patient who receives care according to the QA review categories:

- EMS report is generated by field personnel for any EMS response by Fire and/or Rescue Unit where patient contact is made.
- After the report is completed, it is reviewed by the Rescue Lieutenant assigned to QA for compliance to practice parameters. The goal is to review qualifying EMS reports, based upon the QA categories, by the completion of the next duty shift. (72 hours)
- The Rescue Lieutenants assigned to QA will be the Rescue Lieutenants assigned to Rescue 8 and Rescue 25. They will split the categories and review the reports of the shift prior to their assigned shift. The categories will be split as follows:

#### **Rescue 8**

- Patient refusal of Care (30%)
- Administration of Medications (All uses of Morphine and Versed)
- Airway Techniques (CPAP, Cric, King Tube, NTI, OTI, ETCO2/Capnography)
- Basic Medical Care (10 calls per shift)
- Stroke Alert
- Chest Pain (30%)
- Trauma Alert
- Alternating Protocol as assigned by EMS Branch

**Rescue 25**

- Pregnancy/OB
- Cardiac Arrest
- Death at Scene
- Sepsis Alert
- Stemi Alert
- Basic Medical Care (10 calls per shift)

**Training**

- Unconscious Patient GCS <8
- Drowning

Technical Services will determine when rotation of categories is necessary.

All reports reflecting a high degree of quality in patient care or which may have questions regarding compliance with current protocols will be flagged for further review by the Technical Services Branch.

The Rescue Lieutenant assigned to QA will advise Technical Services via email of the recognition of excellent care, as well as any non-compliance issue.

The Technical Services Branch will track all trends in service to determine future needs for training and or changes in the protocols.

Technical Services will notify the assigned District Chief of trends, need for remedial training, and any issue being removed from the QA process for discipline.

The Technical Services Branch shall prepare a report of data on a quarterly basis. This report shall include all significant responses along with any possible changes in trends.

**See EMS Quality Assurance Matrix Attachment****EMS Review Guidelines:**

The following guidelines shall be used for the review of EMS reports.

**Trauma Alert/Cardiac Arrest/Drowning Treatment Parameters:**

- On Scene Time < 10 minutes or documentation of reason for prolonged scene time
- Protocol Adherence
- Advanced Skills Utilized
- Accurate ECG Interpretation

**Patient Outcome:**

- Restoration of Vital Signs
- Maintenance of Vital Signs
- Improvement in Vital Signs

**Patient Transportation:**

- Ground transportation used to appropriate facility
- Air-Medical Transportation (requested)

***Medical Cardiac Arrest/Cardiac Alert/Stroke Alert/Unconscious Patient*****Treatment Parameters:**

- On Scene Time < 20 minutes or documentation of reason for prolonged scene time
- Protocol Adherence
- Advanced Skills Utilized
- Accurate ECG Interpretation

**Patient Outcome:**

- Restoration of Vital Signs
- Maintenance of Vital Signs
- Improvement in Vital Signs

**Patient Transportation:**

- Ground transportation used to appropriate facility

***Pregnancy/OB*****Treatment Parameters:**

- On Scene Time < 10 minutes or documentation of reason for prolonged scene time
- Protocol Adherence
- Advanced Skills Utilized
- Accurate ECG Interpretation

**Patient Outcome:**

- Restoration of Vital Signs
- Maintenance of Vital Signs
- Improvement in Vital Signs

**Patient Transportation:**

- Ground transportation used to appropriate facility

***Pediatric ALS/Cardiac Arrest*****Treatment Parameters:**

- On Scene Time < 20 minutes or documentation of reason for prolonged scene time
- Protocol Adherence
- Advanced Skills Utilized
- Accurate ECG Interpretation

**Patient Outcome:**

- Restoration of Vital Signs
- Maintenance of Vital Signs
- Improvement in Vital Signs

**Patient Transportation:**

- Ground transportation used to appropriate facility

***Pediatric Trauma*****Treatment Parameters:**

- On Scene Time < 10 minutes or documentation of reason for prolonged scene time
- Protocol Adherence
- Advanced Skills Utilized
- Accurate ECG Interpretation

**Patient Outcome:**

- Restoration of Vital Signs
- Maintenance of Vital Signs
- Improvement in Vital Signs

**Patient Transportation:**

- Ground transportation used to appropriate facility
- Air-Medical Transportation (requested)

***Death Scenes*****Treatment Parameters:**

- Determination of Death Parameter adherence
- Documentation of Parameter met
- Documentation of Contact with the Medical Director (IF REQUIRED)
- Documentation of Acceptable DNR form or Order (if applicable)
- Documentation of applicable scene assessment
- Documentation of notification of appropriate agencies / law enforcement
- Accurate ECG interpretation

***Patient Refusal*****Treatment Parameters:**

- Protocol Adherence
- Patient's Chief Complaint
- Assessment which includes at least one (1) set of Vital Signs
- Working diagnosis, if able to obtain
- Statement of level of consciousness
- Attempts to convince patient to seek treatment if applicable
- Reason given for refusal documented

- Medical Direction if required

### ***Invasive Airway Techniques***

#### **Oral, Nasal or Digital Intubation**

- Treatment parameters per Standards of Care
- Documentation
- Performed per Standards of Care
- Bilateral breath sounds present
- Oxygen Supplementation
- Changes in Patient after Assessment

#### **Cricothyrotomy**

- Performed within Standards of Care
- Documentation
- Performed per Standards of Care
- Amount of bleeding
- Bilateral Breath sounds present
- Oxygen Supplementation

#### **Patient Disposition**

- Patent airway on first attempt
- Patent airway on second attempt
- Patent airway on greater than two (2) attempts
- Patient without successful airway patency

### ***Medication Administration***

#### **Treatment Parameters**

- Per Standard of Care
- Appropriate medication for working diagnosis

#### **Documentation**

- Medication delivered
- Dosage and amount
- Delivery route
- Response of patient to medication
- Any reactions or complications

#### **Patient Disposition**

- Expected, positive response to medication
- Untoward reaction

### ***Alternating Protocol***

A rotation of all protocol that is not already listed in this SOG will be on a monthly rotation. The rotation will be

scheduled by Technical Services. Technical Services will email the QA Rescue Lieutenants by the 1<sup>st</sup> of the month specifying the protocol to be reviewed.

### ***Probationary Rescue Lieutenants and Newly Cleared Paramedics***

All EMS reports for Probationary Rescue Lieutenants and newly cleared Paramedics will be reviewed for completeness and adherence to MCP during their first three months. The need for further review will be determined by Technical Services and the assigned District Chief at the end of the three month period.

#### **Treatment**

##### Exceptional

- A call that exceeds expectations

##### Acceptable

- Typical call with no deviation from protocol

##### Minor

- Deviation from MCP without MC Contract justification or without patient compromise
- Transfer of patient not documented
- No documentation of ETOH, Drugs, or Competency on Refusals

##### Major

- Missing "alert" notifications per MCP
- Improper rhythm recognition with concurrent treatment or non-treatment
- Incorrect medications or dosage
- Treatment without justification
- Lack of documented treatment that hindered patient care
- Waiver without MC contact or justification
- Failure to obtain waiver without justification

#### **Written**

##### Class 1

- Missing signature
- Grammar and spelling errors
- Times missing from treatment section

##### Class 2

- Missing EKG
- Incorrect Protocol used

##### Class 3

- Poorly written narrative

##### Class 4

- Incomplete Report

#### Good

- Report is complete and has all required information

#### Outstanding

- All required information
  - Narrative is very clear as to this situation
  - All required signatures

Training Captains will be responsible for reviewing EMS Reports for new Rescue Lieutenants during their first three months after completing the orientation process. Those Rescue Lieutenants responsible for the QA Process at Rescue 8 and 25 will be notified when new Rescue Lieutenants have completed those three months.

Rescue Lieutenants assigned to Q/A will send an e-mail to their District Chief on a weekly basis; reporting the number of medical reports reviewed during that time period. Deficiencies shall be reviewed by the District Chief to ensure compliance to the policy.

**click to view → [Quality Assurance Matrix](#)**



## **MEDICAL CARE PROTOCOLS** **BAKER/MARCHMAN ACT**

### **CHAPTER 24.1.12**

**Issued: June 2010**

**Revised: Nov 12**

**Submitted by: EMS Branch**

**Approved by: Chief Ed Bailey**

### **Purpose**

To establish standard guidelines and procedures that will serve to provide a safe working environment for all employees and patients during the treatment and transportation of patients placed under the Baker /Marchman Acts.

### **Policy**

These policies aim to create an understanding of the unique challenges posed by patients confined under these Acts and seek to create a guideline for treatment and transportation of these patients with an emphasis on crew, patient, and citizen safety.

### **Definitions**

Baker Act Florida Statutes Chapter 394 Mental Health.

In 1971, the Florida Legislature enacted the Florida Mental Health Act, a comprehensive revision of the state's mental health commitment laws. The law is widely referred to as the "Baker Act" in honor of Maxine Baker, the former state representative who sponsored the Act. Since the Baker Act became effective in 1972, multiple legislative amendments have been enacted to protect individuals' civil and due process rights.

The **Florida Mental Health Act of 1971** (commonly known as the "**Baker Act**") allows involuntary examination of an individual who presents with:

- A. A mental illness (as defined in the Baker Act) and
- B. Who is a harm to self, harm to others, or is at risk for self-neglect (as defined in the Baker Act).

This examination must be performed within 72 hours.  
Can only be initiated by:

- Judges,
- Law Enforcement Officers,
- Physicians or
- Mental Health professionals

The **Marchman Act** is a part of the Florida statutes that allows for voluntary or involuntary assessment of anyone who is suspected of being under the influence of drugs or alcohol and because of this has lost the power of self-control with respect to substance use and is a danger to themselves or others. This act is filed with the court system.

### **Procedures**

The Florida Mental Health Act, section FSS-394.462(1.) (Transportation) sets out the provision of transportation service of involuntary Baker Act Patients. The "County has designated" the Alachua County Sheriff's Office (ACSO) as one of the transportation providers for Baker Act patients within Alachua County. The Sheriff's Office is responsible for transporting to the nearest receiving facility. Thus, this Standard Operating Guideline seeks to provide examples and courses of actions that should be taken for the transportation of these patients to a receiving facility. This same section also states that once at a receiving facility it is unlawful for law enforcement to transport to a medical facility, "County or municipal law enforcement and correctional personnel and equipment shall not be used

to transport patients adjudicated incapacitated or found by the court to meet the criteria for involuntary placement pursuant to s. 394.467 ". This does not eliminate the need for common sense and a practical approach to handling these individuals.

The ACSO or Law Enforcement Agency (LEA) will transport all Baker Act and Marchman Act patients to the nearest receiving facility unless an exception listed below is present:

1. The patient is undergoing a medical emergency which requires the treatment abilities of an EMS unit.
2. The patient has a physical limitation which precludes the transportation by a law enforcement vehicle such as being confined to a stretcher or unable to sit.

**In cases where a patient is under the provision of the involuntary Baker Act/Marchman Act and requires transportation or transfer to a medical facility by EMS.**

1. The cases where the transferring facility is willing to provide a patient advocate, the advocate will be responsible for the enforcement of the Baker /Marchman Act during transport.
2. In cases where the transferring facility does not provide custodial care, should the patient present the crew with an imminent threat or an appearance of violent behavior, the Alachua County Sheriff's Office will be contacted for assistance with securing the patient and protecting the crew. The sheriff's Office cannot be used as a regular component of transfers.
  - A. In the spirit of inter-agency cooperation, should the patient not present the crew with an imminent threat or an appearance of violent behavior, the patient will be transported as any other patient would.
  - B. The EMS crew is not to enforce the restraint order and should the patient seek to exit the vehicle it will be up to law enforcement to secure the patient. A new evaluation of the patient will have to be conducted by law enforcement to see if the patient still meets the criteria for a Baker Act involuntary examination. If the patient does meet the criteria then they will be taken to the nearest receiving facility with medical care.
  - C. Should the deputy restrain a patient that is being transported by EMS through the use of handcuffs or other methods, the deputy may need to ride in the EMS unit to provide access to the patient in the event that the patient becomes unstable. EMS providers will not transport patients who have been placed in the "hogtie or hobble position." This can cause asphyxia and will not be tolerated.
  - D. Should the Rescue Lieutenant feel threatened or uncomfortable from the patient's imminent violent behavior, they may request a deputy to ride along with the unit to provide security for the crew. The assisting ACSO Deputy (LEA) on scene will evaluate the patient's demeanor, and contact their Shift Commander. A determination will be made if it's necessary for an (LEA) to ride inside or follow the EMS vehicle with the patient to the receiving facility. If the patient should become violent, the EMS vehicle will pull over and the Deputy will contact the ACSO Shift Commander for approval to ride in the EMS vehicle for the remainder of the transport. In those instances when other law enforcement agencies are involved, their appropriate Shift Commander should be contacted regarding this request. Should the deputy refuse, the crew should contact their on-duty District Chief for direction.
  - E. In the rare event of an immediate life threatening condition, where waiting for an appropriate law enforcement officer would cause the injury/death of the patient, the EMS crew will notify their District Chief and request personnel from additional units until there is sufficient manpower to mitigate any possible threat posed by the patient, should they become combative.

**In cases where inter-facility transfers are requested for a patient to a facility outside Alachua County.**

1. The transferring facility shall provide a bonded law enforcement officer to maintain the Baker/Marchman Act provision.
  - F. In the case where the facility refuses to provide this agent, the EMS crew will contact the on-duty District Chief. If the facility is unable and or unwilling to provide the security agent at the request of the DC, the DC will refuse the transfer.
  - G. In the spirit of professional cooperation, ACFR will provide return transportation for the security agent as

long as the time constraints are deemed reasonable.

**The following state statute pertains to those patients not qualifying for Baker or Marchman Act but are not competent to make rational decision.**

401.445 Emergency examination and treatment of incapacitated persons.—

1. No recovery shall be allowed in any court in this state against any emergency medical technician, paramedic, or physician as defined in this chapter, any advanced registered nurse practitioner certified under s. 464.012< or any physician assistant licensed under s. 459.022<, or any person acting under the direct medical supervision of a physician, in an action brought for examining or treating a patient without his or her informed consent if:
  - a. The patient at the time of examination or treatment is intoxicated, under the influence of drugs, or otherwise incapable of providing informed consent as provided in s. 766.103<
  - b. The patient at the time of examination or treatment is experiencing an emergency medical condition; and
  - c. The patient would reasonably, under all the surrounding circumstances, undergo such examination, treatment, or procedure if he or she were advised by the emergency medical technician, paramedic, physician, advanced registered nurse practitioner, or physician assistant in accordance with s. 766.103.

Examination and treatment provided under this subsection shall be limited to reasonable examination of the patient to determine the medical condition of the patient and treatment reasonably necessary to alleviate the emergency medical condition or to stabilize the patient.

2. In examining and treating a person who is apparently intoxicated, under the influence of drugs, or otherwise incapable of providing informed consent, the emergency medical technician, paramedic, physician, advanced registered nurse practitioner, or physician assistant, or any person acting under the direct medical supervision of a physician, shall proceed wherever possible with the consent of the person. If the person reasonably appears to be incapacitated and refuses his or her consent, the person may be examined, treated, or taken to a hospital or other appropriate treatment resource if he or she is in need of emergency attention, without his or her consent, but unreasonable force shall not be used.
3. This section does not limit medical treatment provided pursuant to court order or treatment provided in accordance with chapter 394 or chapter 397..

## **MEDICAL CARE PROTOCOL** **Rapid Extrication**

### **CHAPTER 24.1.14**

**Issued: January 15, 2013**

**Revised:**

**Submitted By: Technical Services**

**Approved by: Medical Director**

#### **Purpose:**

To establish a written guideline documenting conditions where physical or environmental conditions exist which preclude the initiation of most, if not all other medical care guidelines for the wellbeing of all personnel involved. The scope of the guideline is not to list every possible condition where rapid extrication would be required, but rather to set the parameters which could elicit the use of rapid extrication.

The field of emergency services by its very nature is unpredictable and often times places the lives of patients, caregivers and bystanders in harm's way. Occasionally, there are incidents where the situation and or conditions are so volatile that it places the wellbeing of the personnel involved at greater risk if basic medical care is provided. These occasions are rare but require definitive action to ensure the safety of all involved.

#### **Examples of Situations and Conditions which may require the use of rapid extrication techniques to lower the risk to all involved.**

- Environmental Conditions

Fires, floods, civil unrest, animal/insect and weather all can sometimes present a condition where patients must be moved to a safe location prior to the initiation of basic medical care.

- Physical Situations

Patient position, location and situation have to be measured when decisions regarding the initiation of medical care are considered. Patients in positions where care is not practical or possible must be moved with all expediency to a location where proper medical care can be provided. Examples of such situations may include high angles, confined space rescues, entrapment within burning/sinking vehicles, locations such as the stands during a university of Florida home game where access to the patient is limited. Under these situations dangers to patient, caregivers and bystander may be lessened by moving the patient prior to the initiation of care.

Once the decision is made, that moving the patient to a safe location prior to the initiation of care poses a better treatment option or threat to the patient or caregiver than the dangers of their current location, several considerations are needed.

1. Risk vs. benefit must be weighed to determine if a rescue is possible.
2. If the determination is made that a rescue is possible the move needs to be rapidly undertaken and completed as soon as possible to allow for the initiation of needed care.
3. Other injuries such as C-spine and occluded airways may exist and if at all possible these considerations should be addressed.

## BASIC MEDICAL CARE PROTOCOL

### CHAPTER 24.2.1

**Issued: May 2010**

**Revised: June 2011**

**Submitted By: Technical Services**

**Approved By: Medical Director**

The phrase "Basic Medical Care" is used throughout the entire protocol as the first direction in patient care. This phrase will encompass all of the following and includes all of the BLS care protocols that are appropriate to the patient.

#### Scene size up:

- Utilize Personal Protective Equipment
- Assess the scene for hazards
- Park unit in a safe place
- Protect yourself and crew members
- Assess for the number of patients
- Assess the need for additional resources
- Assess the general condition of the patient(s)

#### Establish responsiveness:

If unresponsive;

- Basic Life Support
  - Establish patent airway, open airway if necessary protecting cervical spine when indicated
  - Supplemental oxygen if any respiratory signs or symptoms present
  - Record and monitor vital signs
  - Control bleeding when indicated
  - Record Blood Glucose Level if any weakness, altered mental status or history of diabetes
  - Nothing by mouth, unless patient is a known diabetic with hypoglycemia and is able to self-administer oral Glucose Paste, or a glucose containing beverage
- Advanced Life Support
  - When condition warrants (specified as "Full ALS Assessment and Treatment" in individual protocols):
  - Advanced airway/ventilatory management as needed
  - Perform cardiac monitoring
  - Evaluate 12-lead ECG if chest pain, abdominal pain above the umbilicus or ischemic equivalent symptoms (dizziness, weakness, shortness of breath)
  - Obtain vital signs
  - Obtain history and perform physical exam
  - Record & monitor continuous O<sub>2</sub> saturation and microstream capnography
  - IV 0.9% NaCl KVO or IV lock
- If evidence of dehydration (tachycardia, dry mucous membranes, poor skin turgor) administer boluses of 0.9% NaCl at 250 ml (hold at 500 ml total if no hypotension)
- If BP < 90 mm Hg systolic, administer boluses of 0.9% NaCl at 250 ml until systolic BP > 90 mm Hg
  - Contraindicated if evidence of congestive heart failure (e.g. rales)
- If Hypoglycemic (Blood glucose < 70 mg/dL [ $< 50$  mg/dL if stroke]) with IV access
  - Dextrose 50% 25 gm slow IVP • Repeat Dextrose 50% 25 gm once if blood glucose < 70 mg/dl after 10 minutes
- If Hypoglycemic (Blood glucose < 70 mg/dL, [ $< 50$  mg/dL if stroke]) without IV access
  - Glucose paste or other oral glucose containing agent (e.g. orange juice) if patient alert enough to self

- administer oral agent
  - If unable to take oral glucose administer Glucagon 1 mg IM
- Transport patient to nearest appropriate Emergency Department
- Minimize on scene time when possible
- Frequently reassess patient
- Contact Medical Control for any additional orders or questions

Click to view → [BLS for Healthcare Providers' Chart](#)

## BASIC MEDICAL CARE PROTOCOL AIRWAY MANAGEMENT

### CHAPTER 24.2.2

Issued: May 2010

Revised:

Submitted By: Technical Services

Approved By: Medical Director

**Management of a patient's airway is paramount to life support.**

The management of a patient's airway shall include the following in order from BLS to ALS:

- Position the head using the head tilt-chin lift method unless trauma is suspected
- The airway of a suspected trauma patient should be opened using the modified jaw thrust maneuver
- Use suction as needed to clear airway
- Use oral or nasal pharyngeal airway adjuncts
- Consider King LT tube
- Request ALS intervention

#### **Assisted Ventilations:**

- Adult patients with a respiratory rate less than 12 or greater than 28 breaths per minute and/or exhibiting signs of hypoxemia may require assisted ventilations. This shall include use of any of the following methods:
  - Utilizing Bag Valve Mask (BVM) and basic airway maneuvers, with supplemental **Oxygen**.
  - Deliver enough volume to make the chest rise.
  - Mouth-to-mouth, mouth-to-nose, mouth-to-stoma (at provider option when adjuncts are not available). If any of these methods are employed an incident report **MUST** be filled out because of the exposure.
- Pediatric patients with signs of hypoxemia and or respiratory distress (including bradycardia, abnormal breath sounds, increased work of breathing, nasal flaring, retractions, stridor or abnormal positioning) should have ventilations assisted with a mask that covers both mouth and nose, but not eyes. This can be accomplished utilizing:
  - Pediatric Bag Valve Mask (BVM) and reservoir with supplemental **Oxygen** at 10-25 LPM.
  - Mouth-to-mouth, mouth-to-nose, mouth-to-stoma (at provider option when adjuncts are not available.) If any of these methods are employed an incident report **MUST** be filled out because of the exposure.

#### **Advanced Skills**

Endotracheal Intubation (see protocol)

Cricothyrotomy (see protocol)

## BASIC MEDICAL CARE PROTOCOL OXYGEN THERAPY

### CHAPTER 24.2.3

Issued: May 2010

Revised: July 12

Submitted By: EMS Branch

Approved By: Medical Director

#### Oxygen should be administered to patients who:

- Display signs and symptoms of hypoxia
- Present in hypotensive states
- Have suffered major trauma
- Present as acutely ill
- Are suspected of carbon monoxide inhalation (regardless of **SaO2** reading)
- Are pregnant and may have reason for fetal hypoxia
- **Any patient who you suspect may become hypoxic due to mechanism of injury or nature of illness regardless of oxygen saturation level.**
- If patient is able to maintain SaO2 greater than 94% you may elect not to administer O2.

#### Methods of administration include:

- |                                 |           |           |
|---------------------------------|-----------|-----------|
| • Nasal cannula                 | 1-6 LPM   | = 24-40%  |
| • Non re-breather mask          | 12-15 LPM | = 90-95%  |
| • Bag Valve Mask with reservoir | 10-25 LPM | = 90-100% |
| • Oxygen powered Ventilator     | N/A       | = 100%    |
| • Ventilator                    | 40-60 LPM | = 21-100% |

Oxygen therapy should never be withheld from any patient who displays a need for it.



## BASIC MEDICAL CARE PROTOCOL CONTROL OF EXTERNAL BLEEDING

### CHAPTER 24.2.4

**Issued: May 2010**

**Revised:**

**Submitted By: Technical Services**

**Approved By: Medical Director**

Whenever the term “**Control external bleeding**” is used throughout these protocols, the following elements must be considered:

- Application of **direct pressure** with a sterile dressing
- **Elevation** of the injured part above the level of the heart
- Application of a **pressure dressing**
- Application of pressure to proper arterial **pressure point**
- Application of a **Tourniquet**
- Should be applied early when there is SEVERE arterial bleeding present.

Studies show considerable increase in survival rate when applied prior to the onset of shock.

## BASIC MEDICAL CARE PROTOCOL SHOCK

### CHAPTER 24.2.5

**Issued: May 2010**

**Revised:**

**Submitted By: Technical Services**

**Approved By: Medical Director**

#### **Decompensated Shock:**

Any adult patient exhibiting signs of inadequate perfusion, which may include:

- Altered mental status (e.g. lethargy, coma)
- Tachycardia
- Pallor
- Diaphoresis
- Pale conjunctiva
- Delayed capillary refill
- Orthostatic vital sign changes
- Low Blood Pressure
- Thirst

Any pediatric patient having a systolic blood pressure BELOW normal [ $(\text{patient age} \times 2) + 70$ ] or the following signs of inadequate central (proximal) perfusion:

- Altered mental status (e.g. lethargy, coma)
- Profound tachycardia or bradycardia
- Delayed capillary refill time (greater than 2 seconds)
- Any of the adult signs listed above

#### **Protocol:**

- Place patient in supine position
- **Oxygen** via NRBM @ 10-25 liters/minute
- Maintain body temperature
- Request ALS assistance

## BASIC MEDICAL CARE PROTOCOL MCI AND TRIAGE SYSTEM

### CHAPTER 24.2.6

Issued: May 2010

Revised:

Submitted By: Technical Services

Approved By: Medical Director

#### Definition:

- A Mass Casualty incident or "MCI" is defined as any event that overwhelms the resources of the EMS system.
- Alachua County's EMS system resources may vary at different times. (IE: such as fall during college football games).

#### Protocol:

- The need for an organized and orderly approach to an MCI can not be over stressed.
- The Department's SOG has an established guide for implementation of the incident command system which should be active for any MCI.
- Triage of patients at the scene of an MCI should be accomplished using the START/JUMPSTART triage system as listed below
- Patients injury/illness severity will be identified as one of the following four categories:
  - Red – Requires immediate transportation.
  - Yellow – Requires transportation but can be delayed.
  - Green – Ambulatory "walking wounded" with minor injuries.
  - Black – Deceased- not transported
  - Coordination of patients with area hospitals must be accomplished through the incident command system.
  - The steps of the Start triage systems are as follows.

**STEP ONE:** Loudly ask anyone within the sound of your voice to move to a designated area if they are able. This will automatically help you sort out the walking wounded and these patients should be tagged **green**.

**STEP TWO:** In an orderly fashion, move to each patient checking for the status of Airway, Breathing, Circulation and Mental status and tag them using the following rules

#### **Breathing:**

- Yes, if respirations less than 30 then check circulation.
- Yes, if respirations greater than 30 =triage RED.
- No, open and clear airway- if breathing begins =triage RED
- No, after clearing airway the patient is not breathing =triage Black

#### **CIRCULATION:** (Check pulse)

- Control bleeding
- Weak pulse=triage **RED**
- Strong Pulse= go to mental status check or check capillary refill time (CRT)

- CRT: If less than 2 seconds go to mental status check
- CRT: If greater than 2 seconds=triage **RED**

**Mental Status:** (Commands “open your eyes, squeeze my hand, etc.)

- Patient follows commands = triage **Yellow**
- Fails to follow simple commands =triage **RED**

A simple flow chart below will demonstrate the progression of triage with each individual, including pediatric patients.

Click to view → [Triage Algorithm](#)

## CARDIOVASCULAR PROTOCOL CHEST PAIN-SUSPECTED CARDIAC

### CHAPTER 24.3.1

Issued: May 2010

Revised: April 12, July 12, Dec 13,  
Feb 14

Submitted By: EMS Branch

Approved By: Medical Director

#### Protocol:

- Basic Medical Care
- Airway management
- Define pain response using **OPQRST**:
  - Onset, Provocation, Quality, Radiation, Severity, Time
  - If patient has a history of Diabetes, consider symptoms other than pain to evaluate for a silent MI
  - Cardiac monitor -Treat dysrhythmias as indicated
  - **Cardiac rhythm and the presence of a blood pressure must be assessed prior to and between each therapeutic measure when treating cardiac dysrhythmias with a pulse.**
  - Obtain a 12-lead EKG as soon as possible (See 12-lead protocol)
    - Repeat 12-lead EKG after treatment or changes in patient condition (as time permits).
  - Vascular Access

#### If chest pain is considered cardiac in origin

- Administer supplemental oxygen if the patient is dyspneic, hypoxemic, or has obvious signs of heart failure. Providers should titrate therapy, based on monitoring of oxy-hemoglobin saturation, to greater than or equal to 94%.
- Administer **Nitroglycerin\***
- Spray/tablet SL every 5 minutes **until pain relieved**
- After administration of **Nitroglycerin** re-check vital signs to ensure the patient is hemodynamically stable
- Apply Nitroglycerin paste, ½” – 2” to the anterior chest wall

**\*Patients who are suffering an inferior infarct or ischemia should not receive nitrates in any form.**

**\*Patients who have ingested Viagra, Levitra or Cialis within the last 48 hours should not receive nitrates in any form.**

- If patient is not allergic and has not consumed aspirin in the past 6 hours
  - Administer **4 chewable baby Aspirin** (total 324mg)
- Patients on coumadin, plavix or aspirin daily will still benefit from aspirin during their cardiac event.
- If pain persists and systolic BP is greater than 100mmHg
- **Morphine Sulfate** 1-5 mg IVP/IO. May repeat in 2 mg increments up to a total 10 mg. For additional pain management contact medical control.

- If hypotensive and lungs are clear
- Refer to Hypotension protocol

If runs of Ventricular Tachycardia occur

- Amiodarone 150mg IV Piggyback over 10 minutes
- Isolated PVC's do not require treatment

For patients with severe nausea and vomiting

- Zofran 4mg slow IV

## CARDIOVASCULAR PROTOCOL CHEST PAIN NON-CARDIAC

### CHAPTER 24.3.2

**Issued: May 2010**

**Revised: July 12**

**Submitted By: EMS Branch**

**Approved By: Medical Director**

#### **Protocol:**

- Basic Medical Care
- Airway management

Define pain response using **OPQRST**:

- **O**nset, **P**rovocation, **Q**uality, **R**adiation, **S**everity, **T**ime
- Cardiac monitor
- Treat dysrhythmias per protocol

Vascular Access Obtain and document a 12-lead EKG to aid in recognition of a cardiac event  
**If chest pain is still considered non-cardiac in origin**

- Focused physical exam for chest injury
- Ascertain if movement, drinking fluids, eating, deep inspiration, or other changes pain
- Continually re-evaluate for cardiac or respiratory distress
- If patient develops shortness of breath go to respiratory distress protocol
- Administer oxygen if saturation is less than 94%

Click to view → [Chest Pain Differential Diagnosis Chart](#)

## CARDIOVASCULAR PROTOCOL CONGESTIVE HEART FAILURE PULMONARY EDEMA

### CHAPTER 24.3.3

**Issued: May 2010**

**Revised: July 12, Dec 13, Feb 14**

**Submitted By: EMS Branch**

**Approved By: Medical Director**

#### **Protocol:**

- Basic Medical Care
- Airway management
- Vascular Access
- Administer **Nitroglycerin 0.4 mg** sublingual
- Administer **Nitropaste** ½" – 2" on anterior chest
  - Remove if systolic B/P drops less than 100

**Patients who have ingested Viagra (sildenafil) or other erectile dysfunction medications within 48 hours should not receive nitrates in any form**

- **Morphine** Sulfate 1-5 mg IVP/IO
- May administer **Albuterol** 2.5 mg in 3 ml **Normal Saline** via nebulizer if wheezing
- If hypotensive refer to Shock Protocol
- **Severe respiratory distress, CPAP** in addition to the above
  - If respiratory failure is imminent, be prepared to intubate and provide positive pressure ventilation.

#### **MEDICAL CONTROL OPTIONS:**

- Repeat any of the above Standing Orders



## CARDIOVASCULAR PROTOCOL CARDIAC ARREST MANAGEMENT

### CHAPTER 24.3.4

Issued: May 2010

Revised: June 11, Aug 11

Submitted By: Technical Services

Approved By: Medical Director

#### 1. CPR

- Compressions at a rate of 100/min.
  - Avoid interruption
  - Minimize delays between delivery of shock(s)
- Ratio of 30:2 (15:2 for infants and Children with 2 rescuers).
- Compressions should not be interrupted for any reason not even to give breaths
  - Chest compressions are then delivered continuously at 100/ min for 2 minutes intervals.
  - Ventilations are provided once every 6-8 seconds. Avoid excessive ventilations
  - Ventilate with enough volume to make chest rise.
- Rescuers should switch roles (ventilator and compressor) every two minutes to minimize compressor fatigue and deterioration of quality of compressions.
- Apply pads and monitor as soon as possible to identify a shockable rhythm, then follow protocols according to rhythm

#### 2. Airway management:

- Basic: oral or nasopharyngeal airways should be used to maintain a patent airway with BVM
- Advanced: place an advanced airway when needed, minimizing interruptions in CPR during placement. Examples include endotracheal tube, King LT tube, and LMA.
- Continuous ETCO<sub>2</sub> Waveform Capnography is required on every patient with an ETT or King LTD in place because this provides the most reliable means of confirming proper tube placement and assuring adequate CPR (i.e. you will see a CO<sub>2</sub> waveform and measurements of at least 20 mm/Hg if CPR is adequate)

#### 3. Work flow of the cardiac arrest:

- A team leader should assign roles to each member of the rescue team to make sure everyone knows what tasks they are responsible for completing.
- Team Roles include an airway manager, compressor, IV/Drug administration person and team leader.
- The sequences of tasks that are to be accomplished during a cardiac arrest are demonstrated in the 2 pictures below. The V-Fib/Pulseless VT protocol has the specific details of each two minute segment. For all others follow this sequence as it applies.

Click to view → [AHA Circular Cardiac Arrest Algorithm](#)

## CARDIOVASCULAR PROTOCOL DYSRHYTHMIA ASYSTOLE/PULSELESS ELECTRICAL ACTIVITY(PEA)

### CHAPTER 24.3.5

**Issued: May 2010**

**Revised: June 11, July 12, May 13**

**Submitted By: EMS Branch**

**Approved By: Medical Director**

#### Protocol

Note: When Asystole is seen on the cardiac monitor confirmation of the rhythm shall include a printed rhythm strip, as well as interpretation of the rhythm in more than one lead. Low amplitude V-Fib may be difficult to distinguish from Asystole/PEA when using only the cardiac monitor display for interpretation.

- Advanced Life Support
- Follow Cardiac Arrest Management protocol
- Consider and treat possible causes:
  - Epinephrine 1 mg IV/IO every 3-5 min during arrest
    - Strong consideration to replacement of 2nd dose of Epi with 40 units Vasopressin.
  - Drug overdoses (see specific drug OD/toxicology section)
    - Glucagon 3 mg IV/IO for calcium channel and B blocker OD
    - Calcium Chloride 1 gram IV/IO for calcium channel blocker OD
      - Avoid if patient on Digoxin / Lanoxin
    - Sodium Bicarbonate 1 mEq/kg IV/IO for Tricyclic antidepressant OD
  - Naloxone (Narcan) 2 mg IV/IO/IN for possible narcotic OD
    - May be given IM/IN if no IV/IO available
- If no response to resuscitative efforts after 20 minutes refer to Termination of CPR Protocol, 24.1.4.

Potential causes if Asystole	Treatment
• Hypovolemia (most common)	• Normal Saline 1-2 liters IV/IO
• Hypoxia	• Secure airway and ventilate
• Hydrogen Ion- acidosis	• Sodium Bicarbonate 1 mEq/kg IV/IO
• Hyperkalemia (end stage renal disease)	• Sodium Bicarbonate 1 mEq/kg IV/IO • Calcium Chloride 1 Gram IV/IO slow
• Hypothermia	• Active rewarming
• Tablets (drug overdose)	• See above
• Tamponade, cardiac	• Normal Saline 1-2 liters IV/IO
• Tension pneumothorax	• Needle Thoracostomy
• Thrombosis, coronary (MI)	• Expedite transport

<ul style="list-style-type: none"><li>• Thrombosis, pulmonary (clot in lung)</li></ul>	<ul style="list-style-type: none"><li>• Expedite transport</li></ul>
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Contact Medical Control for any additional orders or questions

## **CARDIOVASCULAR PROTOCOL TACHYCARDIC DYRHYTHMIAS WITH A PULSE**

### **CHAPTER 24.3.6**

**Issued: May 2010**

**Revised: June 11, Aug 11, May 13**

**Submitted By: EMS Branch**

**Approved By: Medical Director**

### **Protocol**

#### Basic Life Support

- Supplemental Oxygen if O2 Saturation is <94%
- Obtain Blood Pressure

#### Advanced Life Support

- Full ALS Assessment and Treatment including IV/IO access
- Apply Monitor and identify rhythm
- Always consider other underlying causes and treat accordingly (dehydration, sepsis/fever, alcohol withdrawal)
- Do not delay treatment if patient is unstable by obtaining 12 lead ECG unless diagnosis is in question
- Defined by rate >150 bpm

#### Unstable Tachycardia Dysrhythmias

- Hypotension (Systolic BP <90)
- Acutely Altered Mental Status, Ischemic Chest pain
- Signs of Shock
- Dyspnea
- Acute Heart Failure

#### If Unstable: Synchronized Cardioversion

- Narrow Regular : 50-100J
- Narrow Irregular: 120-200J
- Wide Regular: 100J
- Wide Irregular, (Torsades De Pointes): defibrillate at 200J, unsynchronized

\*\* If Rhythm does not convert on first shock, increase energy dose in a stepwise fashion based on original energy setting, for example if first shock delivered was 50J increase to 100J, from 100J increase to 120J, 150J then 200J.

\*\*Consider sedation prior to Cardioversion with 2-5 mg of Versed. Do not delay cardioversion if patient is extremely unstable

\*\*If a pediatric patient please use the Broselow tape

\*\*If patient is unstable, but has a regular and narrow complex tachycardia adenosine can be used prior to cardioversion.

If Stable, narrow QRS<0.12 seconds

- Perform Vagal maneuvers
- (If regular) Adenosine 6mg rapid IVP followed by a flush of Normal Saline
- If no response in 2 minutes, 12mg rapid IVP followed a flush of Normal Saline
- If no response in 2 minutes, Diltiazem 0.25 mg/kg (20 mg in normal adult) IV over 2 minutes
- If no response in 15 minutes, Diltiazem 0.35 mg/kg (25 mg in normal adult) IV over 2 minutes.
- If no response consider synchronized cardioversion
- If patient is allergic to Diltiazem, or no response, contact medical control.

If stable, wide QRS >0.12 seconds

- Start by placing defibrillation pads on the patient
- (ONLY If regular and monomorphic) Adenosine 6mg rapid IVP followed by a flush of Normal Saline
- If no response in 2 minutes, Adenosine 12mg rapid IVP followed by a flush of Normal Saline
- If no response, Amiodarone 150 mg over 10-15 minutes in 50 ML Normal Saline using a Macro Drip infusion set to run at no more than 1 drop per second.
- If Amiodarone is not available, Lidocaine 1-1.5mg/kg over 1-2min can be used and if ectopy is depressed start a 2mg/min infusion

If hyperkalemia is suspected in any wide complex tachycardias (e.g. renal failure patient) administer the following medications:

- Calcium Chloride 1 gram IV-Contraindicated if patient is on Digoxin/Lanoxin
- Sodium Bicarbonate 1mEq/kg IV.

If patient presents with Stable, polymorphic wide QRS >0.12 seconds (Torsades)

- Magnesium Sulfate 2-4 g slow IV in 10 ml NS over 1-2 minutes
- If no response, **Amiodarone** 150 mg over 10-15 minutes. 150 mg in 50 ml NS using a MACRO drip infusion set run at no more than 1 drop/second
- Repeat **Amiodarone** 150 mg infusion as above over 10 minutes every 10-15 minutes (Maximum of 450 mg total)

If Unstable or if no response to the above measures

- **Unsynchronized** Cardioversion as noted above

If patient becomes unstable at any time, revert to synchronized cardioversion.

Any questions or additional orders needed call medical control

## CARDIOVASCULAR PROTOCOL DYSRHYTHMIAS-BRADYCARDIA

### CHAPTER 24.3.7

Issued: May 2010

Revised: June 11, Aug 11, Sept11,  
May 13, Feb 14

Submitted By: EMS Branch

Approved By: Medical Director

#### Protocol:

##### Basic Life Support

- Supplemental oxygen

##### Advanced Life Support

- Full ALS Assessment and Treatment noted in basic medical care protocol
- Do not delay treatment if patient is unstable by obtaining 12 lead ECG unless diagnosis is in question

**Note: The following therapies are indicated only when serious signs and symptoms are present. If symptoms are mild, provide supportive care and expedite transport.**

Symptomatic (SBP < 90 mm Hg, altered mental status or severe chest pain)

- Atropine 0.5 mg IVP Repeat every 3 minutes as needed
  - (Maximum 0.04 mg/kg)

If symptoms persist after Atropine

- For the treatment of adults with symptomatic and unstable bradycardia, chronotropic drug infusions (dopamine) are recommended as an alternative to pacing.
- Dopamine infusion at 10-20 mcg/kg/min titrated to maintain systolic BP > 90 mm Hg

Note if there is any delay in establishing an IV can move onto transcutaneous pacing

If symptoms persist or patient found to be in 2nd or 3rd degree AV block.

- Initiate transcutaneous pacing (do not use Asynchronous Pacing)
- Start at lowest milliamps(mA); increase until electrical capture with pulses achieved
- Start rate at 70 and increase rate to achieve systolic BP ≥ 90 mm Hg (Max 80 beats/minute)
- Sedate if patient condition and time allows (hold if SBP < 90 mmHg)
  - Versed 1 mg, slow IV/IN

If above unsuccessful

- Epinephrine infusion at 2-10 mcg/minute IV

If drug induced, treat for specific drug overdose

- Calcium Chloride 1 gram IV for calcium channel blocker OD

- Contraindicated if patient on Digoxin/Lanoxin
- Glucagon 3 mg IV/IN for calcium channel blocker OD if no response to Calcium Chloride
- Glucagon 3mg IV/IN for Beta blocker OD
- Naloxone (Narcan) 2 mg IVP every 3 min (Maximum 8 mg) for possible narcotic overdose
  - Naloxone (Narcan) can be given in 0.4 mg increments titrated to level of consciousness and respiratory drive
  - If IV access has not been established, Naloxone (Narcan) 2 mg IM/IN
  - Sodium bicarbonate 1 mEq/kg IV for Tricyclic antidepressant OD

**Contact Medical Control for any additional orders or questions**



## CARDIOVASCULAR PROTOCOL DYSRHYTHMIAS-VENTRICULAR FIBRILLATION PULSELESS VENTRICULAR TACHYCARDIA

### CHAPTER 24.3.12

Issued: May 2010

Revised: June 11, Feb 14

Submitted By: Technical Services

Approved By: Medical Director

#### Protocol

- Advanced Life Support
  - Follow Cardiac Arrest Management protocol
  - Assure **CPR** is initiated and performed effectively
- Assess the rhythm, if shockable, Defibrillate at 200J biphasic
  - **Peds: see Broselow tape**
  - CPR should be continued through the charging of the Defibrillator
- Continue CPR immediately after shock (do not stop to check pulse or rhythm)
- Analyze rhythm after 2 minutes of good CPR
  - If VF/VT persists: then **Defibrillate at 200J biphasic**
- Continue CPR immediately after shock (do not stop to check pulse or rhythm)
  - **Epinephrine** 1 mg IV/IO every 3-5 min during arrest
    - May replace 1st or 2nd dose of Epi with 40 units **Vasopressin IVP**.
- Analyze rhythm after 2 minutes of good CPR
  - If VF/VT persists: **Defibrillate at 200 J biphasic**
- Continue CPR immediately after shock (do not stop to check pulse or rhythm)
  - Administer **Amiodarone** 300 mg IV/IO bolus

#### If Amiodarone unavailable or patient has Amiodarone allergy

- **Lidocaine** 1-1.5 mg/kg up to 3 mg/kg IVP is an acceptable alternative if amiodarone is not available.
  - (The use of Lidocaine and Amiodarone in the same patient is contraindicated)
- For persistent VF/VT administer
  - **Amiodarone** 150 mg IV/IO bolus
- **Defibrillate for persistent VF/VT at 200J biphasic**
- A shock should be delivered about once every 2 minutes if the patient remains in Ventricular Fibrillation.
- Continue cycle of
  - CPR and Drugè Rhythm Checkè CPRè Shockè
  - CPR and Drugè Rhythm Checkè CPRè Shock as needed
- When dysrhythmia resolves, initiate **Amiodarone or Lidocaine** infusion
  - unless contraindicated (i.e.: allergies, bradycardia, etc.).
- **Antidysrhythmic Infusions**
  - **Amiodarone** Infusion
    - Administer Amiodarone 150 mg over 10-15 minutes. 150 mg in 50 ml NS using a MACRO drip infusion set run at no more than 1 drop/second
  - **Lidocaine** Infusion
    - Use premixed bag that yields 4mg/1ml
      - **OR** mix 200mg (2-100mg prefilled vials) into 50ml bag of NS (4mg/ml)
    - Start rate at 2 mg/min using micro drip
- Additional interventions to consider in special circumstances
  - **Magnesium Sulfate** 2-4 gm IV/IO push over 1-2 minutes only if suspected Polymorphous VT (torsades de pointes) or hypomagnesemic state (chronic alcohol, diuretic use)
  - **Sodium bicarbonate** 1 mEq/kg IV/IO if suspected Hyperkalemia (e.g. dialysis patient) or Tricyclic

antidepressant OD

## CEREBROVASCULAR PROTOCOL CEREBROVASCULAR ACCIDENT (CVA, STROKE)

### CHAPTER 24.3.13

Issued: May 2010

Revised: May 2012

Submitted By: Technical Services

Approved By: Medical Director

### Protocol

#### Basic Life Support

- Administer OXYGEN at 2-3 L/min via nasal cannula if oxygen saturation <95%
- Keep head of stretcher 30-45 degrees
- Give nothing by mouth
- Transport expeditiously

#### Advanced Life Support

- Full ALS Assessment and Treatment
- Obtain Vascular Access
- For hypotension (systolic BP <90 mmHg) not improved by fluid boluses or when fluid boluses are contraindicated\*
  - Dopamine infusion at 5-20mcg/kg/min titrated to maintain a systolic pressure of 90 mmHg
- Check blood glucose level (BGL)
  - Administer Dextrose 50% as needed to maintain a blood glucose between 60 and 200 mg/dl
- Complete Stroke Alert Checklist
- If all of the following criteria are met initiate Stroke Alert:
  - The patient has no evidence of trauma
  - The stroke symptoms are new and onset less than or equal to 8 hours (this is inclusive of patients who awoke with symptoms as long as they still fall within 8hr window from last time seen normal)
  - Initial Glucose is greater than 50
  - If patient currently has an abnormal stroke assessment as listed below
- **If patient meets stroke alert criteria immediately notify the appropriate receiving facility**
  - When patients present 0-3.5 hours from onset of symptoms they can be transported to the closest stroke center (NFR or Shands)
  - When patients present 3.5-8hours from onset of symptoms they should be transported to Shands
- Obtain a good history from the family or witnesses as to onset of symptoms. Be specific.
- Obtain name and contact number of witnesses if they do not accompany the patient to the hospital.
- Do not treat elevated blood pressure without consultation with MCP control, as this may be a compensatory mechanism for maintaining cerebral perfusion pressure.
- If seizure activity, refer to seizure protocol

- If patient is intubated, ventilate to CO2 level of 30 mmHg monitored by electronic ETCO2 capnography.

**REMEMBER: Even though the patient meets tPa exclusion criteria(taking ASA, Coumadin, past CVA, etc.), he/she is still considered a STROKE ALERT patient if assessment is positive.**

### **STROKE ASSESSMENT**

<b><u>Facial Droop:</u></b>	Have patient show teeth or smile
<b>Normal</b>	both sides of face move equally
<b>Abnormal</b>	one side of face does not move as well
<b><u>Arm Drift:</u></b>	Patient closes eyes and holds arms outright for 10 seconds
<b>Normal</b>	both arms move the same <b>or</b> both arms do not move at all
<b>Abnormal</b>	one arm does not move <b>or</b> one arm drifts down compared with other
<b><u>Abnormal Speech:</u></b>	Have the patient say the words: <b>"You can't teach an old dog new tricks"</b>
<b>Normal</b>	patient uses correct words with no slurring
<b>Abnormal</b>	patient slurs words, uses the wrong words, or is unable to speak

## CARDIOVASCULAR PROTOCOLS

### LVAD

#### CHAPTER 24.3.14

Issued: July 2012

Revised:

Submitted By: EMS Branch

Approved By: Medical Director

This protocol applies to the management of all patients who have a left ventricular assist device (LVAD) implanted. A ventricular assist device is a mechanical pump that is used to support heart function and blood flow in people who have weakened hearts. The device takes blood from the lower chamber of the heart and helps pump it to the body and vital organs just as a healthy heart would.

#### **Basic Life Support**

- Establish patent airway
- Supplemental oxygen if any respiratory signs or symptoms are present
- Listen to heart sounds. In a functioning device you should hear a continuous whirling sound.
- Locate the device usually found at the patient's waist. Look at the controller and identify which device is in place. Locate the colored sticker and match this to the color coded EMS guide found in the Medical protocol appendices.
- Using this guide, intervene appropriately based on the type of alarm and device.
- Record and monitor vital signs.

**Note\*** In a majority of these patients a pulse will not be palpable. This occurs because the LVAD unloads the ventricle in a continuous fashion and therefore the aortic valve may not open with each contraction.

A manual blood pressure may not be obtainable, but with an automated cuff you will be able to obtain a pressure with a narrow pulse pressure. Your treatment of the patient will be based on the mean arterial pressure. In these patients, the normal range for mean arterial pressure is greater than 60 and less than 90.

Pulse oximetry may not be accurate due to the continuous flow nature of the LVAD.

- If the patient is unconscious, unresponsive to stimuli, and pulseless listen to the patient's chest. If you hear the whirling sound of the LVAD, DO NOT PERFORM CPR. The LVAD device has been surgically placed into the left ventricle and CPR could dislodge this device, causing death. If you cannot hear the device then CPR should be performed per cardiac arrest protocol.
- Record blood glucose level if any weakness, altered mental status or history of diabetes.
- Nothing by mouth, unless patient is known diabetic with hypoglycemia and is able to self-administer oral glucose paste, or a glucose containing beverage.
- Above all else please remember that these patients, along with their families, have been well trained in the care of themselves and their devices. LISTEN TO THEM!
- Call the number on the device for the LVAD coordinator on call.
- Patients always carry a "backup bag" which contains 2 extra fully charged batteries, and a second controller. Please make sure to always bring this emergency backup equipment with them to the hospital.

**Advanced Life Support**

If advanced airway/ventilation management is needed, perform these interventions:

- Perform cardiac monitoring
- Evaluate a 12 lead ECG if chest pain or ischemic equivalent symptoms (i.e. abdominal pain above the umbilicus, nausea, dizziness, chest tightness or shortness of breath.)
- If patient meets Stemi criteria on 12 lead ECG, follow Protocol 24.7.15.
- All dysrhythmia's should be treated in accordance with appropriate Dysrhythmia Protocol.
- For conscious electrical defibrillation, the patient may be sedated with Versed 1mg if the MAP is greater than 65mmHg.
- Record and monitor continuous O2 saturation, sometimes not obtainable with LVAD patients. In addition you may utilize End Tidal Co2 capnography.
- IV normal saline, KVO or IV lock.
- If evidence of dehydration, bolus 250 ml of Normal Saline with a max of 500 ml of NS until patient is normotensive, (= or > 65 MAP). If patient shows signs of Congestive Heart Failure (crackles on auscultation of lungs, JVD or peripheral edema) withhold fluid bolus.
- If hypoglycemic follow Protocol 24.4.5
- If patient suffering from severe nausea or vomiting, follow Protocol 24.4.11.
- Transport patient to nearest appropriate Emergency Department
- Minimize on scene time when possible

Transport these patients to the closest LVAD center. Bring the significant other or caretaker if possible to act as an expert on the device, especially if the patient is unconscious or unreliable.

Please refer to the LVAD EMS guide located in the appendix for further information on field care of these devices.

Click below to view

[LVAD 2012 FIELD GUIDE](#)

## CARDIOVASCULAR PROTOCOL SynCardia Device

### CHAPTER 24.3.15

**Issued: March 2014**

**Revised:**

**Submitted By: EMS Branch    Approved By: Medical Director**

This protocol applies to the management of all patients who have a SynCardia device implanted. The SynCardia device is a total artificial heart pump that is used to completely support heart function and blood flow in people who have nonfunctional hearts. The SynCardia device is temporary and is used as a bridge for patients awaiting heart transplants.

#### Basic Life Support

- Establish patent airway
- Supplemental oxygen if any respiratory signs or symptoms are present
- In a functioning device you will hear a continuous whirling sound upon first approaching the patient.
- Locate the device usually found at the patient's waist
- Record and monitor vital signs.

**Note\*** In a majority of these patients a pulse will be palpable. A pulse rate and oxygen saturation will register if patient is attached to pulse oximetry. Do not attach a cardiac monitor, these patients do not have any meaningful electrical activity.

A manual blood pressure will be obtainable and with an automated cuff you will also be able to obtain a pressure.

If the patient is unconscious, unresponsive to stimuli, and pulseless, **DO NOT PERFORM CPR**. The SynCardia device has been surgically placed and CPR could dislodge this device, causing further damage to the tissue.

- Record blood glucose level if any weakness, altered mental status or history of diabetes.
- Nothing by mouth, unless patient is known diabetic with hypoglycemia and is able to self-administer oral glucose paste, or a glucose containing beverage.
- If found to be hypoglycemic please refer to hypoglycemia protocol
- Above all else please remember that these patients, along with their families, have been well trained in the care of themselves and their devices. LISTEN TO THEM!
- The caretaker may have already placed the patient on the backup device. It will be necessary to also bring the main SynCardia device that has likely malfunctioned with the patient.
- Patients always carry a "backup bag" which contains 2 extra fully charged batteries, and a second controller. Please make sure to always bring this emergency backup equipment with them to the hospital

#### Advanced Life Support

If advanced airway/ventilation management is needed, perform these interventions:

- Record and monitor continuous O2 saturation. In addition you may utilize End Tidal Co2 capnography.
- IV or IO access should be obtained if the patient is unstable
- Do not delay transport to obtain intravenous access
- If patient suffering from severe nausea or vomiting, follow Protocol 24.4.11.
- Upon arrival a **SynCardia ALERT** (Adult or Pediatric) will be initiated every time this patient call 911
- Transport patient to UF Health Emergency Department
- If pediatric (<18), transport to UF Health Pediatric Emergency Department in the north tower
- Minimize on scene time as much as possible

**NOTE: PATIENTS ON THE SYNCARDIA DEVICE ARE LOAD AND GO SITUATIONS**

Transport these patients to the closest SynCardia center. Bring the significant other or caretaker if possible to act as an expert on the device, especially if the patient is unconscious or unreliable.

Please refer to the Syncardia EMS guide located in the appendix for further information on field care of these devices.



## MEDICAL EMERGENCY PROTOCOL ALLERGIC REACTIONS-ANAPHYLAXIS

### CHAPTER 24.4.1

**Issued: May 2010**

**Revised: June 11, Aug 11**

**Submitted By: Technical Services**

**Approved By: Medical Director**

#### Protocol

- Basic Medical Care
- Airway management
- Vascular Access
- If simple allergic reaction (urticaria):
  - Place and transport patient in position of comfort
- If allergic reaction with itching, swelling and urticaria:
  - Administer **Diphenhydramine** 25-50 mg IVP/IM (Peds: 1 mg/kg IVP)

**Or**

**Phenergan** 12.5 mg diluted in 10ml of Normal Saline slow IV/IO or 25mg IM

- Consider Methylprednisolone 125 mg IVP (Peds: 1 mg/kg IVP)
- If anaphylaxis without hypotension (shortness of breath, wheezing, urticaria):
  - Administer **Epinephrine** 0.3 ml of 1:1,000 IM in the anterolateral thigh\*\*
  - Administer **Diphenhydramine** 25-50 mg IVP/IM (Peds: 1 mg/kg IVP)

**Or**

- **Phenergan** 12.5 mg diluted in 10ml of Normal Saline slow IV/IO or 25mg IM
- Consider **Methylprednisolone** 125 mg IVP (Peds: 1 mg/kg IVP)
- If wheezing, administer **Albuterol 2.5 - 5 mg via nebulizer**
- If anaphylaxis with hypotension:
  - Administer **Normal Saline bolus** of 20 ml/kg to maintain systolic BP greater than 90 mmhg. Adults may require volumes in excess of 2-3 liters
  - Administer **Epinephrine** 1:10,000-0.5 - 1mg IVP/IO
  - If wheezing, administer **Albuterol** 2.5 - 5 mg via nebulizer and repeat PRN
  - If hypotension **persists**, administer **Epinephrine** 1:10,000-1 mg IVP q3-5 mins
  - Administer **Diphenhydramine** 25-50 mg IVP/IM (Peds: 1 mg/kg IVP)

**Or**

- **Phenergan** 12.5 mg diluted in 10ml of Normal Saline slow IV/IO or 25mg IM

Antihistamines and corticosteroids are second line agents for the treatment of anaphylactic shock. Antihistamines should be administered after the airway is secured and hypotension is resolved

\*\* If the thigh cannot be rapidly accessed, administer epinephrine into the deltoid. Do not administer into the subcutaneous area as we have in the past- absorption may be significantly delayed in shock.

#### MEDICAL CONTROL OPTIONS

- Repeat any of the above Standing Orders
- Consider administration of one of the following infusions. Titrate the infusion to maintain a systolic BP greater than 90 mmHg

- Dopamine infusion - 400 mg in 250ml. Normal Saline

OR

- Epinephrine infusion - 1 mg in 250ml Normal Saline
- **\*Precaution:** Epinephrine is relatively contraindicated in patients with known coronary artery disease, angina, or previous MI except in life-threatening circumstances.
- **\*\*Promethazine:** Unless patients are allergic to diphenhydramine, avoid Promethazine in pediatric patients. Promethazine is not recommended for patients less than 16 years of age.

## MEDICAL EMERGENCY PROTOCOL ABDOMINAL PAIN

### CHAPTER 24.4.2

Issued: May 2010

Revised: April 2012

Submitted By: EMS Branch

Approved By: Medical Director

#### Protocol

Basic Medical Care

Vascular Access

Use a large bore IV

#### **Special assessment considerations:**

- Assess the patient closely for possible cardiac etiology, as many patients may present with abdominal pain during an acute M.I. This should include a 12 lead ECG if available. Pay close attention to diabetics and the elderly
- Assess for orthostatic blood pressure changes.

#### **Life threatening problems that may present with abdominal pain include:**

- Acute Myocardial Infarction (AMI)
- Perforated abdominal organs
- G.I. bleeding ( ask about blood in stool or emesis)
- Diabetic Ketoacidosis (DKA)
- Ruptured Appendicitis
- Dissecting Abdominal Aortic Aneurysm
- Ectopic Pregnancy (ask about menstrual history)
- Certain toxic ingestions (including mushrooms and poisons)
- Abdominal pain emergencies are likely to lead to death through hypovolemic shock (either blood or fluid loss). This may also lead to electrolyte imbalances that can cause dysrhythmias.

If patient presents in **Shock** refer to Shock protocol.

- Patient should have nothing to eat or drink.
- Consider **Toradol** 30mg IVP for pain management
- If patient is pregnant, history of renal dysfunction, or concerns for internal bleeding withhold administration of Toradol

**If patient presents with severe nausea and vomiting:**

- May administer Zofran 4mg iv or po,
- If symptoms continue at 10 min repeat 4mg iv or po x 1

OR

- May administer Phenergan 12.5 mg diluted in 10ml of Normal Saline **slow** IV/IO (if patient is 16 years or older)
- Transport patient in position of comfort if not in shock

## MEDICAL EMERGENCY PROTOCOL ALTERED MENTAL STATUS

### CHAPTER 24.4.3

Issued: May 2010

Revised: May 13

Submitted By: EMS Branch

Approved By: Medical Director

(SYNCOPE/NEAR SYNCOPE)

#### Protocol

Basic Medical Care  
Airway management  
Vascular Access  
Spinal immobilization if history is unknown or trauma is suspected  
Check **Blood Glucose Level (BGL)**

- If blood glucose level **less than 60** mg/dl
- Administer Dextrose 50% IVP ½ - 1 amp (12.5-25 gm)
  - May be repeated x2 PRN
- Repeat BGL should be obtained after each **Dextrose 50%** bolus

If a change in Level Of Consciousness is suspected from **narcotic use**: (respiratory rate less than 12, pinpoint pupils, history of opiate use/abuse, etc)

- Administer **Narcan** 0.4 mg IV/IN
- If no effect, may administer **Narcan** 2 mg IV/IN
- If patient returns to baseline after **Narcan**, further boluses may be necessary
- Be prepared for a combative patient if reversal of opiate abuse (e.g. heroin addict)
- Be prepared for acute narcotic withdrawal syndrome if patient opiate dependent (as this may precipitate seizures or delirium)

Assess patient for **seizure** history and medications

Look for **underlying causes** (e.g. fever, cardiac, stroke, infections, etc.)

If patient presents with **hypotension**

- Refer to hypotension protocol

## MEDICAL EMERGENCY PROTOCOL CARBON MONOXIDE INTOXICATION

### CHAPTER 24.4.4

**Issued: May 2010**

**Revised:**

**Submitted By: Technical Services**

**Approved By: Medical Director**

#### **Protocol**

Basic Medical Care

Airway management

- Give **100% OXYGEN** via NRBM irrespective of **SaO<sub>2</sub>**

Vascular Access

If Unconscious

- Altered Mental Status Protocol

Minimize patient motion

Transport to hyperbaric facility

- Shands Hospital at the University of Florida
- Baptist Hospital Jacksonville

#### **Consider:**

CPAP at 5 cm/H<sub>2</sub>O

Note: Remember that patients may not experience severe respiratory distress with this disorder. Use CPAP Prophylactic, for patients that have been exposed to carbon monoxide and show signs and symptoms of intoxication (headache, erythemia, slow capillary refill, shortness of breath)

## MEDICAL EMERGENCY PROTOCOL DIABETIC EMERGENCIES

### CHAPTER 24.4.5

Issued: May 2010

Revised: June 11, Aug 11, May 13

Submitted By: EMS Branch

Approved By: Medical Director

#### Protocol

Basic Medical Care

Airway management

Assess Blood Glucose Level (BGL)

#### If BGL is between 60-80 mg/dl and patient is verbally responsive

- May administer oral glucose 1 tube.

#### If BGL less than 60 mg/dl or patient is unresponsive:

- Vascular Access
- Administer **Dextrose 50%** 25 gm IVP.
  - Dose may be repeated x2 PRN.
- Repeat Blood Glucose Level should be obtained 5 minutes after each **Dextrose 50%** bolus.

#### If vascular access is not available;

- Administer Glucagon 1mg IM, (Preferably in the anterolateral thigh) or IN

#### If suspected hyperglycemia (BGL greater than 400 mg/dl)

- Vascular Access
- Administer **Normal Saline** - fluid bolus (20ml/Kg) and then decrease rate to KVO.
- Monitor closely for fluid overload
- Recheck BGL intermittently

#### NOTE:

1. If diabetic patient with nausea, diaphoresis, pallor or unspecified pain consider cardiac in origin and refer to the Chest Pain/Cardiac protocol.
2. After treatment with Glucose/Glucagon, the paramedic should investigate the cause of the hypoglycemic episode. This might suggest an underlying medical problem and a need for transport.
3. Once the patient has returned to baseline mental status, is not on oral diabetic medications, and is deemed competent with no underlying medical problem, the patient may refuse further treatment and/or transport (without Medical Control Physician contact). It is advised for patient to be left in the company of another competent adult. If patient admits to usage of oral diabetic medications (metformin/glucofage, glyburide, glipizide, glimepiride/amaryl, pioglitazone or rosiglitazone) and they still refuse transport call

medical control to further attempt to change their decision.



## MEDICAL EMERGENCY PROTOCOL DYSBARISM-DIVING ACCIDENTS

### CHAPTER 24.4.6

Issued: May 2010

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Submitted By: Technical Services

Approved By: Medical Director

#### Protocol

Basic Medical Care  
Airway management  
Vascular Access

Obtain C-spine control if mechanism of injury suggests C-spine injury or if patient is unresponsive

Administer 100% **OXYGEN** by NRBM

- **Caution** should be taken with any positive pressure (BVM, intubation) as this may worsen a pneumothorax.

Transport in **left lateral** position

- Keep patient warm

Transport to the closest appropriate facility ED.

Monitor for possible/developing tension pneumothorax.

#### Medical Control Options:

- **Morphine Sulfate 1-5 mg IVP/IO**

## MEDICAL EMERGENCY PROTOCOL GASTROINTESTINAL BLEEDING

### CHAPTER 24.4.7

Issued: May 2010

Revised: April 2012

Submitted By: EMS Branch

Approved By: Medical Director

#### Protocol

Basic Medical Care

Airway management

- Monitor airway for emesis

Vascular Access

- 2 large bore IV's suggested

#### **Transport expeditiously**

Refer to shock protocol

**If patient is vomiting blood**, may place nasogastric tube for suction of stomach contents (see appropriate protocol)

#### **If patient presents with severe nausea and vomiting:**

- May administer Zofran 4mg iv or po,
- If symptoms continue at 10 min repeat 4mg iv or po x 1

OR

- May administer Phenergan 12.5 mg diluted in 10ml of Normal Saline **slow** IV/IO (if patient is 16 years or older)
- Monitor for hypotension

## MEDICAL EMERGENCY PROTOCOL HEAT ILLNESS

### CHAPTER 24.4.8

**Issued: May 2010**

**Revised:**

**Submitted By: Technical Services**

**Approved By: Medical Director**

#### **Protocol**

Basic Medical Care

Airway management

Evacuate patient from heat environment

Determine if patient suffers from fever, heat cramps, heat exhaustion, or heat stroke.

#### **If fever:**

- May sponge patient with room temperature water or Normal Saline
- **If heat cramps or heat exhaustion** (skin ambient temperature, diaphoretic):
  - Remove outer layers of clothing
  - May cool patient with water or Normal Saline
  - Vascular Access
  - Fluid bolus **Normal Saline** as needed (20ml/Kg)
- **If heat stroke** (skin hot and dry, elevated core temperature):
  - Remove outer layers of clothing
  - Cool patient with water, Normal Saline and/or cold packs to axilla and/or groin
  - Vascular Access
  - Fluid bolus **Normal Saline** as needed (20ml/Kg)
  - Monitor patient closely
  - Rapid Transport

## MEDICAL EMERGENCY PROTOCOL HYPERTENSION

### CHAPTER 24.4.9

Issued: May 2010

Revised: May 13

Submitted By: EMS Branch

Approved By: Medical Director

#### (Hypertensive Crisis/Urgency)

Definition: SBP  $\geq$  180 mm Hg, DBP  $\geq$  120 mm Hg

#### Protocol

##### Basic Medical Care

- Assess and document severity of hypertension
- Check BP every 5 minutes.

##### Airway management

- Vascular Access

##### Asymptomatic:

- Monitor for blood pressure and symptomatic changes

**Mildly symptomatic:** headache, dizziness, etc., or asymptomatic with diastolic BP  $\geq$  120 mmHg:

- Administer **Nitroglycerin** spray/ tablet SL every 5 minutes
- Place 1" **Nitroglycerin** paste on chest
- Remove **Nitroglycerin** paste if systolic BP drops to 140-150 mmHg.

**Severely symptomatic** and/or hypertensive emergency (chest pain, dyspnea, pulmonary edema, mental status change, etc.) and patient's condition not improving with the above therapy:

- For a 70 Kg adult [bracketed dose is in mg/Kg ideal body weight] administer IV **Labetalol** as follows:
  - 15 mg [0.2 mg/Kg] IV push;
  - Re-check blood pressure, if goal not reached within 5 minutes...
  - 30 mg [0.4 mg/Kg] IV push;
  - Re-check blood pressure, if goal not reached within 5 minutes...
  - 60 mg [0.8 mg/Kg] IV push;
  - Re-check blood pressure, if goal not reached within 5 minutes...
  - 120 mg [1.6 mg/Kg] IV push;
  - Re-check blood pressure, if goal not reached within 5 minutes...
  - May repeat 120 mg [1.6 mg/Kg] dose 2 more times;

- Observe closely for progression of symptoms. If noted, continue with protocol.
- Hypertension associated with cocaine or other drug use may be difficult to control, consider Versed 1-2 mg SIV/IO/IM/IN. May repeat once.
- In patients suspected of having a CVA/transient ischemic attack/reversible ischemic neurologic deficit, the blood pressure should **not** be treated unless directed by medical control [i.e., use less drug and/or allow the BP to remain in the high end of Goal BP], as cerebral autoregulation may be impaired.

## MEDICAL EMERGENCY PROTOCOL HYPOTHERMIA

### CHAPTER 24.4.10

Issued: May 2010

Revised:

Submitted By: Technical Services

Approved By: Medical Director

#### Protocol

##### Basic Medical Care

- Assess vital signs over one minute before declaring them absent.

##### Airway management

Evacuate patient from cold environment. Handle the patient very gently as the hypothermic heart is irritable and ventricular arrhythmias may result from rough treatment.

Warm patient compartment

##### If core temperature > 95 degrees F:

- Vascular Access
- Utilize warm fluids if possible
  - Administer **Normal Saline** at 250ml/hr unless otherwise indicated
  - Remove wet or cold clothing; wrap patient in blankets

##### If core temperature < 95 degrees F:

- Obtain 12 lead if available
- Treat dysrhythmias per cardiac protocols
  - **Warming is the priority.** Maintain core temperature with blankets
  - If patient exhibits a decreased level of consciousness, incorporate that protocol into your treatment plan.

##### If hypothermia injury is local (frostbite):

- Handle injured part gently; leave uncovered.
- Do not allow the injured part to thaw if chance exists for the part to refreeze before arrival at a definitive care facility.

## MEDICAL EMERGENCY PROTOCOL NAUSEA & VOMITING

### CHAPTER 24.4.11

Issued: May 2010

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Submitted By: EMS Branch

Approved By: Medical Director

#### Protocol

Basic Medical Care  
Vascular Access

- Use a large bore IV

#### **Special assessment considerations:**

- Assess the patient closely for possible cardiac etiology, as many patients may present with sudden nausea and vomiting during an acute M.I. This should include a 12 lead ECG if available. Pay close attention to diabetics and the elderly
- Assess for orthostatic blood pressure changes.

#### **Life threatening problems that may present with nausea and vomiting include:**

- Acute Myocardial Infarction(AMI)
- G.I. bleeding ( ask about blood in stool or emesis)
- Diabetic Ketoacidosis (DKA)
- Ruptured Appendicitis
- Certain toxic ingestions ( including mushrooms and poisons)
- Nausea and vomiting can lead to death through hypovolemic shock (either blood or fluid loss) especially in infants and the elderly. This may also lead to electrolyte imbalances that can cause dysrhythmias.

#### **If patient presents in Shock refer to Shock protocol.**

- Patient should have nothing to eat or drink.

#### **If patient presents with severe nausea and vomiting:**

- May administer Zofran 4mg iv or po
- If symptoms continue at 10 min repeat 4mg iv or po x 1

OR

- May administer Phenergan 12.5mg diluted in 10ml of Normal Saline **slow** IV/IO (if patient is 16 years or older)
- Monitor for hypotension
- Transport patient in position of comfort if not in shock

## MEDICAL EMERGENCY PROTOCOL OVERDOSE & POISON INGESTION

### CHAPTER 24.4.12

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May 13

Submitted By: EMS Branch

Approved By: Medical Director

#### Protocol

- Basic Medical Care
- Airway management
- Determine agent, time and amount of ingestion, circumstances of the event, and retain for transport any pill bottles, containers, or other identifying material
  - Notify CCC to contact Poison Control and to advise of your destination hospital
- Vascular Access
- For hypotension (systolic BP < 90 mmHg) not improved by fluid boluses, or when fluid boluses are contraindicated:
  - Dopamine infusion at 10-20 mcg/kg/min titrated to maintain systolic BP > 90 mm Hg
  - If wide QRS complex ( $\geq 0.10$ sec), hypotension, or any arrhythmias:
    - Sodium Bicarbonate 1 mEq/kg IV, Repeat Sodium Bicarbonate 1 mEq/kg IV in 5 to 10 minutes
      - If any of the following conditions occur, refer to the appropriate protocols:
        - Polymorphous Ventricular Tachycardia
        - Altered mental status
        - Seizures
- **If patient awake, alert:**
  - Transport patient
- **If patient with decreased level of consciousness:**
  - Perform blood glucose check
  - Refer to altered mental status protocol
- **Several ingestions may have antidotes or effective countermeasures. Consult with Medical Control if you have any questions and concerns.**
- Tricyclic Antidepressants:
  - Cardiotoxicity may manifest as tachycardia, wide QRS, or hypotension;
  - Alkalinization may be accomplished with hyperventilation and/or administration of **Sodium Bicarb** 50-100 mEq IVP, and an infusion of **Sodium Bicarb** 100 mEq in **Normal Saline** 1000 ml TRA 150 ml/hour.
- Cholinergic Poisoning (organophosphate or carbamate insecticides):
  - Toxicity to crew may result from inhalation or topical exposure. Any patient with dermal exposure **MUST** be adequately decontaminated prior to transport. Crew should wear protective clothing including masks, gloves, and eye protection;
  - Initiate Hazmat alert if indicated
  - Remove all patients clothing and contain run off toxic chemicals when flushing



- Use supplemental O2
- If symptoms severe (blurred vision, nausea, vomiting, diarrhea, salivation, lacrimation, bradycardia, diaphoresis, wheezing, fasciculations, confusion, and seizures, etc):
  - Administer **Atropine** 2 mg IVP every 5 minutes titrate dosing by assessing improvement in respiratory/bronchial secretions.
  - For hypotension (systolic bp<90mmHg) not improving by fluid boluses or when contraindicated use Dopamine 10-20mcg/kg/min titrate to maintain sbp >90mmHg.
- Acetaminophen:
  - If patient has a known toxic acetaminophen level or ingestion of potential toxic dose (calculated greater than 140 mg/Kg or 7.5 gm), transport to receiving facility expeditiously.
- Digoxin (symptomatic):
  - Administer **Magnesium Sulfate** 2 gm slow IVP.
- Cyanide (symptomatic):
  - Transport expeditiously
  - Administer Cyanokit 5 grams IVP
- Methanol, Ethylene Glycol:
  - Transport expeditiously
- Antipsychotics/Acute dystonic reaction: (common offenders: haloperidol, prolixin, thorazine, prochlorazine/compazine, promethazine/phenergan
  - Administer **Diphenhydramine** 50 mg IVP.
- Calcium Channel Blockers:(examples: amlodipine/norvasc, nifedipine/procardia/adalat, felodipine/pendil/renedil, verapamil/calan, isradipine/dynacirc/, diltiazem/cardizem, nicardipine/cardene)
  - Toxicity may manifest as bradycardia, hypotension, bronchospasm, and/or altered mental status;
  - For those patients with cardiovascular toxicity, (defined by: sbp< 90mmHg altered mental status and bradycardia) administer the following:
    - Atropine 0.5mg IV repeat every 3 min as needed with a max of 3mg
    - If no response administer **Calcium Chloride 10%** solution 1gm IV slow (adults only, contraindicated with digoxin use), this can be repeated x1
    - If no response Glucagon 3mg IV/IN x 1
    - If no response, or patient presenting with 2nd or 3rd degree heart blocks, begin transcutaneous pacing
- Beta Blockers:(examples: propranolol, atenolol/tenormin, metoprolol/lopressor, nadolol/corgard, timolol/blocadren, labetalol/trandate, esmolol/brevibloc)
  - Toxicity may manifest as bradycardia, hypotension, bronchospasm, and/or altered mental status;
  - For those patients with cardiovascular toxicity, defined by: sbp< 90mmHg, AMS, bradycardia, 2nd or 3rd degree heart blocks administer the following:
    - Atropine 0.5mg IV repeat every 3 min as needed with a max of 3mg
    - If no response administer **Calcium Chloride 10%** solution 1gm IV slow (adults only, contraindicated with digoxin use), this can be repeated x1
    - If no response glucagon 3mg IV/IN x 1
    - If no response begin transcutaneous pacing
- Benzodiazepines:
  - Support airway and transport.
- Cocaine:
  - Toxicity may manifest as tachycardia, hypertension, agitation, and mental status changes;
  - Administer **Versed 1-2 mg SIV/IN**. May repeat once.
- Carbon Monoxide
  - Remove patient from the contamination source

- Supplemental 100% oxygen; document time started
- For smoke inhalation patients consider cyanide poisoning
- Opiates:
  - Toxicity may manifest as altered mental status, pinpoint pupils, slow respirations, and hypotension;
    - Administer **Narcan**.
      - **ADULT** - 0.4 - 2mg IVP, IO,IM, IN, SQ, or via ETT, repeat as necessary.
      - **PED**- 0.1 mg/Kg IVP,IO,IM, IN every 2 minutes; titrate to respiratory increase or to a maximum dose of 2mg

See “Drug Overdose Chart” on next page for more information.

#### MEDICAL CONTROL OPTIONS

- **OPTION A:** Repeat any of the above Standing Orders
- **OPTION B:** Administer Activated Charcoal 50-100 gm P.O. or NG tube
- **OPTION C: HAZMAT Unit: Cyanide Ingestion**
  - Open **amyl nitrite** pearl under the nose; encourage forceful inhalation.
  - Administer **Sodium Nitrite 3%** 5-10 ml slow IVP (contact MCA for Pediatric dosing).
  - Administer **Sodium thiosulfate 25%** 50 ml slow IVP over 10-15 minutes (contact MCA for Pediatric dosing).

Click to view → [Drug Overdose Chart](#)

## **MEDICAL EMERGENCY PROTOCOL PSYCHIATRIC DISTURBANCES/EXCITED DELIRIUM**

### **CHAPTER 24.4.13**

**Issued: May 2010**

**Revised: Nov 12, May 13**

**Submitted By: EMS Branch**

**Approved By: Medical Director**

### **Purpose**

A psychiatric disturbance is defined by an individual who is presenting with acute mental distress or disability not associated with a medical condition.

Excited delirium is defined by any of the following: agitation, anxiety, hallucination, disorientation, violent and bizarre behavior, insensitivity to pain, elevated body temperature and super human strength. Excited delirium arises commonly in male subjects with a history of mental illness, drug abuse (particularly stimulants), alcohol withdrawal and/or head injury.

Left untreated, patients can progress to excited delirium resulting in death from cardiac/respiratory arrest, sometimes associated with the use of physical restraints or tasers.

### **Protocol**

#### Basic Medical Care

- **Safety for both the EMS crew and the patient are of paramount concern. Take no actions that may endanger EMS personnel or the patient.**
- **Always involve law enforcement if the patient may present a significant danger to him/herself, bystanders, to yourself, or your partner.**
- Determine if patient is awake and alert, if possibility of traumatic injury exists, or if underlying medical problems (e.g. hypoglycemia, hypoxia, drug or alcohol intoxication), might cause patient's behavioral difficulties. Refer to appropriate protocol.
- If possible, establish collegial rapport with patient.
- Avoid escalating the situation.
- Remove all loose objects or potential weapons from the patient care area.
- It would be prudent to secure any personal equipment (scissors, etc.) at a distance from the patient.
- If patient becomes violent before transport, enlist assistance of patient's family, friends, and/or law enforcement personnel.
- EMS personnel should not transport the overly hostile patient alone.
- If patient becomes violent at any time during care and becomes a danger to him/herself or the medical team, attempt to control patient using reassurance and, if needed, mechanical restraints.
- If restraints are used the receiving facility shall be notified.
- If unable to restrain, request driver to stop vehicle immediately and notify law enforcement personnel for assistance.

- Restrain patients in supine or lateral recumbent position only, using no excessive force.
- Never allow patients to be restrained in the “hog-tied” position.
- **Versed 1-2 mg SIVP/IM OR IN** for control of agitated patient. May repeat once.
- **Haldol 2.5 - 5 mg IV** slowly, for patients exhibiting agitation. May repeat up to total dose of 10 mg.

**Any patient who is psychotic or could present a danger to personnel will be transported with 2 personnel in the patient compartment.**

## MEDICAL EMERGENCY PROTOCOL RESPIRATORY DISTRESS

### CHAPTER 24.4.14

Issued: May 2010

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Submitted By: Technical Services

Approved By: Medical Director

#### Protocol

##### Basic Medical Care Airway management

- Determine site of respiratory impairment
- Allow patient to sit in position of comfort

##### If infectious upper airway obstruction (croup or epiglottitis):

- Administer 100% **Oxygen** via NRBM or “blow-by” technique
- Attempt to calm patient; allow to sit in position of comfort
- **Parent may be allowed to hold the pediatric patient**
- Transport expeditiously
- Vascular Access, if at all, after airway control established
- If suspected epiglottitis, avoid agitation

##### If lower airway obstruction (Asthma, COPD, Wheezing):

\*\*\*For severe respiratory distress apply CPAP (see procedural) before continuing treatment

Administer **Albuterol** 2.5-5 mg in 3ml **Normal Saline** via nebulizer

**Albuterol** therapy may be repeated as necessary during transport while heart rate remains below 160

Vascular Access

If patient **does not improve** or has **self-administered** albuterol prior to requesting EMS:

- Consider a mixed **Albuterol** 2.5 mg / **Atrovent** 0.5 mg treatment
- Consider Solumedrol 125 mg IVP
- If bronchospasm worsens despite treatment, **respiratory failure may be imminent** (as documented by falling oxyhemoglobin saturations, tachycardia, increased work of breathing, lethargy, apnea, etc ;).
  - Refer to Advanced Airway Protocol

Patients with chronic obstructive pulmonary disease may have a decrease in respiratory effort and/or mental status when placed on high concentrations of Oxygen. Thus, a SaO<sub>2</sub> of 91% to 95% is acceptable.

#### Medical Control Options

- For Croup/ epiglottitis: If breathing becomes labored and **SaO<sub>2</sub>** consistently decreases below 90%
  - Gently assist ventilations with BVM with 100% **Oxygen**
- Administer **Epinephrine** .5 mg in 2ml **Normal Saline** via nebulizer
- **Magnesium Sulfate** 1-2 gm slow IV push over 5 minutes

## MEDICAL EMERGENCY PROTOCOL SEIZURES

### CHAPTER 24.4.15

Issued: May 2010

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Submitted By: EMS Branch

Approved By: Medical Director

#### Protocol

Basic Medical Care  
Airway management  
Immobilize if indicated  
Protect patient from injuring him/herself  
Vascular Access  
Obtain Blood Glucose Level

#### For repeated seizures or seizures lasting longer than 2 minutes:

- Administer **Versed 1-2 mg SIVP** , IO or IM or IN
- Repeat dose once every 2 minutes up to 10 mg if seizure activity continues
- Be prepared to support a decreased respiratory status
- If seizure occurs in the setting of poisoning, overdose or eclampsia refer to the appropriate protocol for additional management

#### MEDICAL CONTROL OPTIONS:

- If seizure is refractory to other therapy, consider **Lidocaine** up to 3 mg/Kg IVP.
- Consider Versed 1-2 mg IM/IO/IN if unable to obtain vascular.

## MEDICAL EMERGENCY PROTOCOL SHOCK-ALS

### CHAPTER 24.4.16

**Issued: May 2010**

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#### Protocol

Basic Medical Care  
Airway management  
BLS Shock Protocol  
Vascular Access  
Determine the etiology of shock  
Continually reassess

#### **Anaphylaxis: refer to anaphylaxis protocol**

#### **Hypovolemia:** (i.e. trauma, ruptured aorta, ectopic pregnancy, etc)

- If bleeding is controlled or hypovolemia is from other fluid loss (i.e. vomiting, diarrhea)
- Administer Normal Saline fluid bolus of 20 ml/Kg over 15 minutes
- Reassess lung sounds
- May repeat 20ml/Kg fluid bolus

#### **Hypovolemic from uncontrolled bleeding:**

- Initiate 2nd IV
- Titrate fluid administration to maintain peripheral pulses

#### **Septic (sepsis):**

- Administer **Normal Saline** fluid bolus of 20 ml/Kg over 15 minutes
- Reassess lung sounds
- May repeat fluid bolus x2 prn

#### **Hypotension refractory to IV fluids, or development of pulmonary edema develop**

- Administer **Dopamine** infusion.
- Titrate to systolic BP greater than 100 mmHg

#### **Cardiogenic (CHF)**

- Position patient upright if tolerated
- Manage Airway and support ventilations if needed
- Administer **Normal Saline** fluid bolus of 100 ml
- Reassess patient
- If systolic BP improves, continue cautious fluid boluses until no further improvement noted or systolic BP 90-100 mmHg.
- If hypotension refractory to fluids, consider administration of one of the following infusions. Titrate infusion to maintain a systolic BP greater than 90 mmHg

- **Dopamine infusion** - 400 mg in 250ml Normal Saline

**OR**

- **Epinephrine infusion** - 1 mg in 250ml Normal Saline

**Neurogenic (spinal cord injury):**

- Secure airway while maintaining cervical spine immobilization
- Administer **OXYGEN** irrespective of Saturation level
- Keep patient warm
- Administer fluid bolus of **Normal Saline** 20 ml/Kg

**Refractory hypotension:**

- Consider administration of one of the following infusions. Titrate infusion to maintain a systolic BP greater than 90 mmHg
- **Dopamine infusion** - 400 mg in 250ml Normal Saline

**OR**

- **Epinephrine infusion** - 1 mg in 250ml Normal Saline



## MEDICAL EMERGENCY PROTOCOL SNAKE BITE

### CHAPTER 24.4.17

**Issued: May 2010**

**Revised: June 11, Aug 11**

**Submitted By: Technical Services**

**Approved By: Medical Director**

#### **Protocol:**

- Basic Medical Care
- Airway management
- Vascular Access:
  - Two IV's preferred.
- Immobilize area and minimize all movement
- Cardiac monitor
  - Treat dysrhythmias per protocol
- Assess degree of envenomation, type of snake, and advise MCP
- Outline edematous, erythremic, ecchymotic area with a pen and note the time
- Follow hypotension/anaphylaxis protocol as needed

#### **MEDICAL CONTROL OPTIONS:**

- **Morphine Sulfate** 1 - 5 mg IVP/IO for pain

## MEDICAL CARE PROTOCOL TASER REMOVAL

### CHAPTER 24.4.18

**Issued: November 2012**

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**Submitted By: EMS Branch**

**Approved by: Medical Director**

#### Protocol

For patients that have been controlled by law enforcement using a Taser Device. All patients should be evaluated for underlying medical, substance abuse and/or psychiatric emergencies. All patients shall either be **transported** or a **waiver obtained**.

- Confirm scene safety with LEA and approach the patient with caution.
- Most sworn Law Enforcement personnel have been trained to remove Taser Probes. Probes that have penetrated a "sensitive area" such as the head, neck, spinal column and groin or breast tissue in a female will not be removed by LEA and will require transport.
- If the probes are embedded in an area not specified above and the patient appears stable; they may be removed in the following manner:
  1. Place one hand on the patient in the area where the probe is embedded to stabilize the skin around the puncture site.
  2. Place second hand firmly around the probe.
  3. In one fluid motion, pull the probe straight out of the puncture site, if resistance is met, leave probe in place and transport.
  4. Repeat procedure on remaining probe(s).
  5. Handle probes as a bio-hazard sharp with the exception that the officer may request that the probe be turned over to him/her for entry as evidence.

#### Considerations

Do not delay transport if the one or more of the following exist.

- Unconscious patient
- Evidence of progressing excited delirium (Chapter 24.4.13)
- Persistent abnormal vital signs
- History/Physical findings consistent with amphetamine/hallucinogenic drug use
- Altered level of consciousness, aggressive or violent behavior
- Evidence of hyperthermia

## APPARENT LIFE-THREATENING EVENT (ALTE)

### CHAPTER 24.4.19

Issued: Feb 2014

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Submitted by: EMS Branch

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#### Background:

An Apparent Life-Threatening Event (ALTE) is any episode in which an infant or young child has an appearance that concerns observers that the child may be dying or at risk of death. The patient typically displays apnea, choking, change in color (cyanosis or pallor), or change in muscle tone (typically limp). Incidence peaks at 10-12 weeks old, and premature infants and children at less than 1 year old are considered high-risk.

There are many causes of ALTEs, including airway obstruction, cardiac abnormalities, hypoglycemia, sepsis, meningitis, respiratory tract infection, seizure, metabolic syndromes, and trauma (including non-accidental). Patients may have no further symptoms but still remain at high risk for sudden death, including from Sudden Infant Death Syndrome (SIDS). It is thus important to stress the need for full ED evaluation, even in well-appearing children, and be ready to provide supportive care or Pediatric Advanced Life Support (PALS) as needed.

#### Basic Life Support

- Initiate basic medical care.
- Establish patent airway, use jaw thrust and bag-valve-mask ventilation as needed
- Administer oxygen as needed to maintain O<sub>2</sub> >94%.
- Record and monitor vital signs
- Obtain a SAMPLE history from parents
  - Signs and Symptoms, Allergies, Medicines, Pertinent history, Last meal, Events leading up to incident
- Check blood glucose in all patients

#### Advanced Life Support

- IV access or IO line as necessary
- Cardiac monitor
- Management
- Airway management
- Seizure: Versed (0.1 mg/kg IV)
  - Hypoglycemia: correct with dextrose as needed for finger stick Glucose < 50 or if symptomatic
  - 0.5-1 g/kg total dose
  - Infant/neonate: 5 ml/kg D10
  - Peds: 2 ml/kg D25
- See Pediatric normal vitals and neonatal appendices for further management

#### Notes

Frequently reassess patients as they remain at risk for apnea, aspiration, seizure, and sepsis.

ALTE patients are at high risk for morbidity and mortality even if well-appearing at time of EMS contact. If parents or caregivers refuse emergency transport, explain the child remains at high risk and needs further evaluation. If they still refuse, contact medical control.

#### Med Control

Contact medical control for additional orders or questions.

## TRAUMA PROTOCOL TRAUMA

### CHAPTER 24.5.1

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Jan 13, Dec 13

Submitted By: Technical Services

Approved By: Medical Director

#### Protocol

**EARLY TRANSPORT OF THE CRITICAL TRAUMA PATIENT OFFERS THE BEST CHANCE OF SURVIVAL. FIELD TIME SHOULD NOT BE PROLONGED IN ORDER TO PERFORM PROCEDURES NOT ABSOLUTELY CRITICAL TO THE WELL-BEING OF THE PATIENT DURING TRANSPORT.**

Basic Medical Care

#### **AIRWAY**

Assess airway patency

- If intact, administer **OXYGEN** by most appropriate method

If patency in question:

- If patient exhibits increased respiratory compromise perform jaw thrust maneuver to open the airway making sure to maintain cervical spine position and immobilization.

Reassess the respiratory effort:

- If adequate, ensure **SaO<sub>2</sub>**  $\geq$  95%

If unsuccessful, consider placement of a nasal trumpet or oral airway to maintain airway patency. The individual controlling cervical immobilization must maintain the jaw thrust maneuver until airway is placed.

Assist ventilation with 100% **OXYGEN** via bag-valve-mask as needed

#### **Perform endotracheal intubation as needed**

The **nasal intubation can be** used on the trauma victim. Contraindications to this route include:

- Apnea
- The presence of mid-face fractures
- Significant neck trauma with possible disruption of the airway
- Known bleeding disorders
- Oral intubation may be performed with assistance in maintaining neutral head position

**If intubation is unsuccessful (including placement of King LTD airway) or mechanical obstruction prevents intubation and ventilating via bag valve mask, perform surgical cricothyrotomy.**

**BREATHING**

Assess respiratory exchange

**If adequacy of ventilation is in question:**

- Support ventilation at a rate of 12-14 breaths/minute with 100% oxygen via Bag Valve Mask
- **If evidence of herniation** such as decerebrate or decorticate posturing, abnormal pupil, seizure, or bradycardia **Hyperventilate** at 20-22 breaths per minute.
- **If patient is intubated, ventilate to CO2 of 30 mmHg** utilizing electronic ETCO2 waveform capnography
- Assess for signs of chest trauma
- **Open chest wound** - cover with a gloved hand, place 4x4 Vaseline gauze dressing over wound, and tape on three sides only.
- **Flail chest** - Support chest wall with chest wall by taping or manual support.
- **Tension pneumothorax** - perform chest decompression per protocol
- **Oxygen** via BVM.

**CIRCULATORY**

Assess circulatory status (pulse, skin temperature, capillary refill, blood pressure as indicated)

- Vascular Access
- The goal is to support a systolic blood pressure of 90-100 mmHg.
- If circulatory status is in question, refer to shock protocol
- Intra Osseous infusions prior to IV attempts are acceptable for patients that are unstable with difficult peripheral access.

**DISABILITY**

Assess neurologic status using AVPU

- Alert
- Responds to voice
- Responds to pain

If unresponsive

- Immobilize patient with backboard and cervical collar as indicated
- Patient should be immobilized as soon as possible; however, immobilization should not take priority over assessment and management of the **ABCs**.

If patient exhibits decreased level of consciousness, follow altered level of consciousness protocol

**SPINAL IMMOBALIZATION**

Determining the need for spinal immobilization requires a careful assessment of the mechanism of injury, the patient's complaints, overall condition and the patient's ability to recognize and convey the presence of spinal injury

symptoms. Spinal immobilization should always be applied when any concern exists as to the possibility of spinal trauma.

Any patient who has an altered mental status (GCS <15, significant intoxication, Dementia) who is the victim of blunt trauma as listed below shall be immobilized.

- Any mechanism that produces a violent impact to the head, neck, torso or pelvis
- Incidents with sudden acceleration or deceleration.
- Any fall, especially in the elderly
- Ejection
- Shallow-water drowning or diving accidents
- High-voltage electrical injuries

Symptoms such as spinal tenderness, neurological deficits or complaints, paralysis, weakness or anatomical deformities of the spine shall be documented.

For patients who cannot tolerate supine position due to clinical condition:

- Apply all elements of spinal immobilization that the patient will tolerate
- Maintain spinal alignment as best as can be achieved during transport
- Clearly document the clinical condition that interfered with full immobilization.

For patients who refuse spinal immobilization

- Advise the patient of the indication for immobilization and the risks of refusing the intervention
- If the patient allows, apply the cervical collar even if backboard is refused
- Maintain spinal alignment as best as can be achieved during transport
- Clearly document refusal of immobilization

**“Clearing” of the spine shall not take place in the pre-hospital setting.**

#### **EXPOSURE**

- Undress patient completely to facilitate a thorough, focused survey.
- Cover with blankets to prevent loss of body heat and preserve modesty.
- To facilitate rapid transport; the patient should be evacuated to the ambulance for the focused survey.

#### **Assess extremities**

- Splint suspected fracture sites in most appropriate fashion after checking **pulses, motor function and sensation.**
- If the patient is critically injured, utilization of the long spine board as a total body splint is a time and resource efficient procedure.

- Femur fractures may be immobilized with traction splints.
- Fractures may be immobilized with air splints, ladder splints, or board splints in order to immobilize the joint above and below the injured area.
- Place cold pack on suspected fracture sites if time and resources allow.
- If distal vascular deficits noted, reduce fracture in anatomical alignment and splint in most appropriate fashion.

**Recheck pulse, motor function and sensation after reduction and immobilization.**

**If partial amputation:**

- Place in a dressing moistened with **Normal Saline** and splint in line with associated extremity.
- Avoid torsion or traction of severed part;

**If complete amputation:**

- Apply direct pressure to bleeding sites.
- Elevate above the level of the heart as able.
- If bleeding profuse despite elevation and direct pressure, place blood pressure cuff just proximal to amputation site and inflate to just above systolic pressure. Maintain cuff pressure during transport. Do not place cuff over joints.
- Consider applying a **Tourniquet** prior to shock and notify hospital immediately upon arrival.
- Wrap amputated part in a dressing moistened with **Normal Saline**.
- Secure in watertight container and place container in cool water.
- Transport amputated part with patient to definitive care facility.
- **Placing the amputated part on ice or a similar environment may further damage the tissue and prevent its use.**

**Special considerations in the pregnant trauma victim:**

- A trauma alert shall be called along with transportation to the closest trauma center for any pregnant female, >20 weeks gestation that has been involved in an MVC at >35 mph and/or rollover, ejection, steering wheel deformity or if the patient was involved in trauma with a significant mechanism of injury that leads to a high index of suspicion.
- The most common cause of fetal mortality is maternal mortality. Treatment of the mother **ALWAYS** comes first.
- Assess patient for uterine contractions, vaginal bleeding, and amniotic rupture.
- **Place patient in left lateral recovery position** to decrease pressure on the mother's vena cava and increase blood return to her heart. Support backboard with pillows placed under the right side of the board in the immobilized patient.
- If unable to place mother in recovery position, you may manually displace the uterus to the left to relieve pressure on the vena cava.

**Re-assess**



- Reassess any of the above critical injuries identified and perform necessary interventions during the focused survey. Treatment of life threatening injuries identified during the initial survey take priority over a complete subsequent survey.
- Notify the receiving hospital early regarding critical patients or those patients meeting trauma alert criteria.
- Report revised trauma score and mechanism of injury.

**All Trauma patients should be evaluated using the state trauma scorecard methodology.**

**Pain Management Options**

- **Morphine Sulfate** 1-5 mg IVP/IO may be administered for isolated extremity pain

## TRAUMA PROTOCOL BURNS

### CHAPTER 24.5.2

Issued: May 2010

Revised: June 11, Feb 14

Submitted By: Technical Services

Approved By: Medical Director

#### Protocol

- Basic Medical Care
- Airway management
  - Patients with known inhalation injury or with signs of potential airway burns (singled nasal hair, soot in the pharynx, etc.) in respiratory distress should be intubated with the largest endotracheal tube possible.
- Remove all clothing from patient and expose all burned areas
- Assess type, depth, and extent of burn
- If indicated cool burn for 1-2 minutes
  
- If burning agent still in contact with skin
  - Remove gently after cooling with sterile water or Normal Saline.
- If burning agent is **chemical**:
  - Brush away loose, dry agent and irrigate burned area with copious amounts (2 or more liters) of Normal Saline or sterile water.
- If an **explosion** is involved:
  - Follow trauma protocol
- For **Radiation** Burn: decontamination is paramount.
  - Utilize bunker gear for protection; remember time, distance, shielding and quantity relating to the exposure. Treat burns the same.
- In all cases avoid recontamination or cross contamination
- **If patient has > 5% body surface area (BSA) second degree or any third degree burn:**
  - Vascular Access
    - Avoid starting lines in burned areas if possible
  - Run IVF at the rate using the following formula:
  - Adults receive 500ml/hr
  - Children receive 250ml/hr
  - Infants receive 100ml/hr

#### Do not delay transport to establish IV

- **Dress burns:**
  - Transport patient in **dry** non-sterile sheets or bandages regardless of extent of burn
  - Document area involved on chart using "**Rule of Nines.**"
  - Maintain temperature control.
    - Keep patient warm
    - Wrap in blankets as needed
    - DO NOT ALLOW PATIENT TO BECOME HYPOTHERMIC
- **For Pain relief:**
  - Administer **Morphine Sulfate** 1-5 mg IVP/IO if patient hemodynamically stable
  - Dose may be repeated every 5 minutes prn
- Transport to Shands @ UF (Burn Center):

- Partial thickness burn involving > 20% BSA
- Full thickness burn involving > 5% BSA
- Burns of the hands, face, feet, or perineum
- Burns associated with inhalation injuries
- Burns associated with multiple trauma
  - Electrical injuries

**MEDICAL CONTROL OPTION:****Repeat any of the above Standing Orders**Click link to view [BURN REVIEW](#)

## TRAUMA PROTOCOL EYE EMERGENCIES

### CHAPTER 24.5.3

Issued: May 2010

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Approved By: Medical Director

#### Protocol

- Basic Medical Care
- Assess the nature of eye emergency - **blunt vs. penetrating, chemical, glaucoma (by history)**, or others
  - Briefly check visual fields and visual acuity
  - Transport with head of bed elevated at 60 degrees
  - Trivial injuries to eyelids may hide significant injury to the globe
- **Penetrating Trauma:**
  - Avoid any pressure on the affected globe
  - Carefully secure penetrating objects
  - If possible, cover the affected eye with a metal eye shield
  - Patch both eyes to prevent conjugate movement
    - Explain to the patient why it is necessary to patch both eyes
  - If possible, transport patient in supine position
- **Blunt Trauma:**
  - If no contraindications, elevate head of bed.
  - Avoid bright lights (Dim compartment lights, allow patient to wear sunglasses, keep eyes closed, etc). In cases of facial trauma, note the ability or loss of ability to move the eyes in any particular direction.
- **Chemical trauma:**
  - Irrigate affected eye with a minimum of 2 liters **Normal Saline**.
  - Continue irrigation throughout transport if the chemical was an alkali agent, or if symptoms persist.
  - Dim cabin lights for patient comfort.
- **If patient is being transported for treatment of diagnosed central retinal artery occlusion:** (This is an Eye emergency that presents as acute painless persistent loss of vision ranging from seeing fingers to only seeing light. Many may describe a prior episode of amaurosis fugax = which is vision loss described as a curtain falling over visual field lasting seconds to minutes then vision returning to normal)
  - Administer **100% OXYGEN** via NRBM.
  - **Place patient in supine position.**
  - Transport emergently to the receiving hospital.

#### MEDICAL CONTROL OPTIONS:

- **Morphine Sulfate** 1-5 mg IVP/IO for pain

## OB/GYN PROTOCOL SUSPECTED ECTOPIC PREGNANCY

### CHAPTER 24.6.2

Issued: May 2010

Revised:

Submitted By: Technical Services

Approved By: Medical Director

#### Protocol

Basic Medical Care

Airway management

Vascular Access x 2

Keep accurate count of used perineal pads

Save any clots or tissue expelled for examination by physician upon arrival at receiving facility

If signs of shock are noted:

- Refer to Shock protocol

#### Physical Exam:

- Abdominal bruising, distention, tenderness, guarding, rebound tenderness, rigidity, bowel sounds, distension, presence of a pulsating mass
- Are peripheral pulses equal?
- Emesis: amount and type [ingested food, bloody, bilious, feculent (looks and smells like stool)]
- Ruptured Ectopic Pregnancy:
  - May present as a pale, diaphoretic, distressed woman with a weak, fast pulse.
  - May have orthostatic hypotension
  - Refer to shock protocol

#### **Warning signs of an undiagnosed ectopic pregnancy:**

- Previous **recent** visits to the ED or physician's office with menstrual irregularity and/or mild abdominal pain with no diagnosis being made.
- May complain of abdominal pain and/or vaginal bleeding.

#### **Warning signs of a ruptured ectopic pregnancy:**

- Increased abdominal or pelvic pain
- Dizziness, fainting
- Pain radiating to the shoulder from pelvic area

## OB/GYN PROTOCOL VAGINAL BLEEDING

### CHAPTER 24.6.1

Issued: May 2010

Revised: May 13

Submitted By: EMS Branch

Approved By: Medical Director

#### Protocol

Basic Medical Care

Airway management

Ascertain patient history specifically for:

- Date of **Last Menstrual Period (LMP)**
  - Position patient tilted right side up 10-15 degrees
  - Vascular Access
  - Attempt to obtain fetal heart tones if pregnancy is estimated greater than 10-12 weeks
  - If hypotensive
    - See Shock protocol
  - If in active labor
    - See Emergency Delivery protocol
  - Keep accurate count of used perineal pads
  - Save any clots or tissue expelled for examination by physician upon arrival at receiving facility

#### Transport expeditiously

**NOTE:** Monitor pad usage - Two saturated pads are equivalent to one pint (~ 250ml) of fluid/blood loss.

**DO NOT** let anyone perform vaginal or rectal examination on the patient. Vaginal bleeding may markedly increase and hypovolemia may result.

#### MEDICAL CONTROL OPTIONS:

- **Morphine Sulfate** 1-5 mg IVP/IO.
- Versed 1-2 mg SIVP/IM/IN for anxiety.

#### Differential Diagnosis:

Ruptured ectopic pregnancy ruptured ovarian cyst, abortion, threatened abortion, appendicitis, cholecystitis, diverticulitis, colitis, and kidney stones.

## OB/GYN PROTOCOL PRE-ECLAMPSIA

### CHAPTER 24.6.3

Issued: May 2010

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Approved By: Medical Director

**Third Trimester Pregnancy with B/P greater than 140/90 Hg/mm, proteinuria, and peripheral edema. May progress to eclampsia.**

#### Protocol

Basic Medical Care  
Airway management  
Position patient tilted right side up 10-15 degrees  
Vascular Access

#### Physical Examination:

- Mild hypertension (diastolic BP < 100 mmHg) usually no symptoms
- Severe Hypertension (diastolic BP  $\geq$  110 mmHg) may cause:
  - Headache
  - Visual disturbance
  - Upper abdominal pain
  - Jaundice
  - Bruises
  - Pulmonary edema

#### Transport expeditiously

**If seizures occur, refer to ECLAMPSIA protocol**

#### MEDICAL CONTROL OPTIONS

If hypertensive and symptomatic, contact medical control for possible Magnesium **sulfate** order.

Monitor blood pressure, fetal heart rate, respiratory rate and, if possible, urine output before and during Magnesium sulfate therapy.

If hypertension (systolic BP  $\geq$  170 or diastolic BP  $\geq$  120) and symptoms persists after administration of **Magnesium sulfate**, refer to hypertension protocol.

**NOTE: LOWERING BLOOD PRESSURE TO LESS THAN 150/100 IN SEVERE PRE-ECLAMPSIA MAY COMPROMISE FETOPLACENTAL BLOOD FLOW.**

## OB/GYN PROTOCOL ECLAMPSIA

### CHAPTER 24.6.4

Issued: May 2010

Revised: May 13

Submitted By: Technical Services

Approved By: Medical Director

#### Pre-eclampsia with seizure activity

#### Protocol

Basic Medical Care  
Airway management  
Position patient tilted right side up 10-15 degrees  
Vascular Access

Seizure precautions and attempt to prevent maternal injury

- Administer **Magnesium sulfate** 2 gm IVP over 5 minutes
- Initiate **Magnesium** infusion (10 gm in 250ml of **Normal Saline**) @ 50 ml/hr
- If already receiving **Magnesium sulfate** infusion when seizure occurs, give an additional 2 gm bolus of **Magnesium sulfate**.
- If severe hypertension (systolic BP  $\geq$  170 or diastolic BP  $\geq$  120) persists after administration of Magnesium sulfate:
  - See Hypertension protocol
  - If unresponsive to therapy, call MCP.

#### Transport expeditiously

#### MEDICAL CONTROL OPTIONS:

- For seizures that continue despite Magnesium sulfate:
  - Use **Versed 1-2 mg SIVP/IM/IN**
  - Repeat in 2 minutes if seizures do not resolve.

**Lowering diastolic blood pressure to less than 90-100 mm/hg may compromise fetoplacental blood flow.**



## OB/GYN PROTOCOL PROLAPSED UMBILICAL CORD

### CHAPTER 24.6.5

Issued: May 2010

Revised:

Submitted By: Technical Services

Approved By: Medical Director

#### Protocol

Basic Medical Care

Airway management

Shock protocol

Monitor Fetal Heart Rate abdominally and indicate time accurately

**Transport expeditiously**

- Position the patient in Shock Position or on **left lateral side** with knees flexed
- Instruct mother to pant, and **not** to push during contractions
- Insert sterile gloved hand into vagina and elevate the presenting fetal part to prevent cord compression. Leave hand in place and avoid touching cord.
- Cover exposed cord with sterile saline gauze
- If crowning noted, prepare to assist with vaginal delivery
- If delivery is inevitable prior to arrival at the hospital, attempt gentle manual replacement of cord into the uterus. This should only be done just prior to actual delivery, or on advice of medical control.

#### MEDICAL CONTROL OPTIONS:

**Magnesium sulfate** 1-5 gm IVP over 30 minutes

## OB/GYN PROTOCOL EMERGENCY DELIVERY

### CHAPTER 24.6.6

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Submitted By: Technical Services

Approved By: Medical Director

#### History

- Time when contractions began
- Has "water broken"
- Obstetrical History
- Number of previous deliveries
- Complications in previous pregnancies, abnormal presentation, multiple pregnancy, hemorrhage
- Known complications in this pregnancy
- Due Date, Date of last period (i.e. is this a premature delivery?)
- Has there been meconium staining of amniotic fluid?

#### Physical Examination

Determine that delivery is imminent by assessing for the following signs:

- Bulging perineum
- Crowning (top of baby's head visible)
- Contractions less than 2 minutes apart and reported as strong by mother

#### Delivery

- Prep mother and delivery area with drapes.
- As the infant's head delivers, use the palm of your hand to gently apply pressure to his/her head preventing a rapid, uncontrolled delivery.
- Support the infant's head as it emerges from the vagina.
- Allow the head to rotate to one side.
- Aspirate mouth and then nose with bulb syringe.
- Wipe any mucous from the infant's face with gauze.
- After delivery of the head, examine the neck for a looped umbilical cord.
- If found, gently remove it by slipping it over the head of the infant.
- If wrapped tightly, clamp the cord in two places.
- Using scissors cut between the clamps.
- Begin to deliver the infant's shoulder.
- Position your hands on either side of the infant's head.
- Exert **gentle** downward pressure as you deliver the anterior shoulder, then guide the head upwards and deliver the posterior shoulder.
- Be careful to securely grasp the infant, as he/she will be slippery.
- Keep the baby at a level below or equal to the mother until the umbilical cord is clamped.
- Clamp the cord in two locations (minimum of 6-8 inches from baby).
- Position the clamps one-inch apart.
- Cut cord with scalpel or scissors.

**CAUTION:** Remember not to cut the cord too close to the infant. It can always be made shorter later.

#### After the Delivery

Keep the mother and infant warm.

Evaluate infant.  
Obtain APGAR score at 1 and 5 minute marks.

**Placenta delivery**

- The placenta will deliver spontaneously usually within 15 minutes of the infant. Do not force the placenta to deliver.
- Signs of separation include: gush of blood from the vagina, lengthening of the umbilical cord, uterine fundus rising upward in the patient's abdomen, or uterus becoming firmer.
- Massaging the uterus and/ or allowing baby to nurse may facilitate uterine contractions and delivery of the placenta.
- Massage uterine fundus as soon as it shows signs of relaxing;
- Check the patient's vaginal and perineal area for excessive bleeding.
- If patient becomes hypotensive, refer to shock protocol

**Meconium (fetal fecal material) aspiration:**

- When there is thick meconium staining of the amniotic the infants mouth then nose should be suctioned with a meconium aspirator until secretions are cleared or appear thin and watery.
- Suctioning should be preformed after the head emerges but prior to the delivery of the body.

**If infant requires resuscitation, refer to NEONATAL RESUSCITATION PROTOCOL**

- Indications for neonatal resuscitation include: meconium staining, lack of spontaneous breathing, pulse rate less than 100 BPM after birth despite **Oxygen** and **stimulation**.

**Document the following:**

- Presentation
- Date and time of birth of baby and placenta
- Gender of infant
- Position of cord at delivery
- Appearance of amniotic fluid (brown, green, clear)
- Complications

## OB/GYN PROTOCOL NEONATAL RESUSCITATION

### CHAPTER 24.6.7

Issued: May 2010

Revised: May 13, Dec 13

Submitted By: EMS Branch

Approved By: Medical Director

#### Protocol

Deliver infant in method consistent with emergency childbirth protocol  
Suction mouth and nose of infant with bulb syringe or appropriate suction device

- In the infant with thick, particulate meconium, suctioning should be performed upon delivery of the head, **PRIOR TO** delivery of the body.
- Upon delivery of the body and prior to ventilation, Infants should be **immediately intubated** and meconium suctioned through the ET tube until no more meconium is present
- The infant may **then** be ventilated with positive pressure as indicate.
- Failure to clear the trachea before assisted or spontaneous ventilation will disseminate meconium through airways, severely impairing chances for survival.
- Warm and dry infant
- Apply tactile stimulus to feet and back of infant to stimulate a vigorous respiratory effort
- Assess APGAR

#### If respiratory effort adequate:

- Place infant in slight Shock position.
- Turn head of infant to side

#### If respiratory effort inadequate:

- Manage Airway and support ventilations
- Assess heart rate and respiratory status frequently
- If spontaneous respirations return and patient has not been intubated, continue to provide 100% **OXYGEN** to patient via facemask.
- If infant remains apneic or bradycardic, continue with protocol

#### If brachial pulse less than 80 bpm:

- Assist ventilations with 100% **OXYGEN** via BVM or ETT
- If pulse remains less than 80, perform endotracheal intubation and ventilate

- Perform chest compressions at 120/min.
- Follow infant BLS protocols

**If heart rate climbs greater than 80 bpm**

- Cease compressions, maintain ventilation, and continue to administer 100% **Oxygen**

If no change in heart rate, continue with protocol.

**If heart rate remains less than 80 bpm:**

- CPR
- Vascular Access
  - If peripheral IV is unobtainable, IO access with pediatric IO needle can be inserted manually (Use of IO drill is contraindicated).
- Administer fluid bolus - **Normal Saline** 20ml/Kg
- Administer **Epinephrine** 0.01 mg/Kg IV.
  - May repeat every 5 minutes at higher dose of 0.1 mg/Kg
- Repeat fluid bolus of 20ml/Kg
- Consider 2 mEq/Kg 4.2% **Sodium Bicarb** if bradycardia prolonged
- Consider **Narcan** 0.1 mg/Kg IVP/IO/IN
- May repeat dose every 2 min as needed to avoid respiratory depression.
- Check BGL. IF less than 40 mg/dl, consider **Dextrose 10%** solution, 0.25 to 0.50 mg/Kg IVP

<b>Apgar Scoring</b>	0 points	1 point	2 points
Heart Rate	Absent	<100	>100
Respiratory Effort	Absent	Slow irregular	Strong Cry
Muscle tone	Flaccid	Some flexion	Action motion
Irritability	No response	Some response	Vigorous
Color	Blue, Pale	Body: Pink Ext: blue	

- Calculate **one** and **five** minute APGAR scores as time permits

## PROCEDURAL PROTOCOL 12 LEAD EKG

### CHAPTER 24.7.1

Issued: May 2010

Revised: October 2010

Submitted By: Technical Services

Approved By: Medical Director

### Protocol

#### Indications for performing a 12-lead

- Non-traumatic chest pain/thoracic back pain
  - Epigastric pain where no evidence of GI cause
  - Sudden onset of SOB, diaphoresis, syncope (non-traumatic)
  - CHF/ Acute PE
  - Any diabetic with signs/symptoms suggesting cardiac etiology
  - Any overdose with potential cardiac effects (tricyclics, Beta blockers, calcium channel blockers, etc.)
  - Whenever physician or paramedic deems it necessary
- Obtain rhythm strip prior to 12-lead EKG
- Assess and treat any life threatening conditions or arrhythmias
- Perform assesment and obtain baseline vital signs
- If patient meets criteria, clean site and attach chest leads
- Obtain 12 Lead EKG
- Print 2 copies of 12-lead #1) for hospital, #2) for EMS reports

#### Suspect MI if:

- **1 mm of ST segment elevation** is seen in 2 or more contiguous V-leads or limb leads
- **If evidence of inferior AMI is present (leads II, III, and AVF) obtain right side chest lead EKG utilizing V4R. Treat patient accordingly.**
- A 12-lead EKG is not recommended for trauma or unstable patients.
- In patients meeting criteria for STEMI Alert notification, notify the receiving hospital and transmit 12 Lead EKG for verification as soon as possible (see STEMI Alert SOG 24.7.15)
- Deliver radio report to the receiving facility en route and advise them that a 12 Lead EKG has been transmitted.

**NOTE: Medications may alter the patients EKG; therefore, it is preferred that a 12 Lead EKG be obtained prior to the administration of medications and/or transport.**

## PROCEDURAL PROTOCOL AUTOMATIC EXTERNAL DEFIBRILLATION

### CHAPTER 24.7.2

**Issued: May 2010**

**Revised:**

**Submitted By: Technical Services**

**Approved By: Medical Director**

#### Protocol

The AED is to be used to treat patients of non-traumatic cardiac arrest who are greater than 8 years old.

The AED operator is in charge of patient care until ALS arrives on scene  
The sequence of events:

- Establish unresponsiveness
- ABCs and CPR until defibrillator arrives
- If the arrest is not witnessed, perform 5 cycles of CPR prior to having AED analyze rhythm.
- Power on defibrillator and attach electrodes as directed
- State a brief situation report aloud (the AED will be recording sound)
- Analyze the patient's rhythm
- Do not allow anyone to touch the patient (including yourself)
- If "shock" is advised, state "I'm clear, you're clear, we're all clear" as you scan the patient from head to toe, to insure no one is touching the patient
- The AED will deliver a shock then immediately perform CPR for 2 minutes, check for signs of circulation.
- Re-analyze the patient's rhythm
- Deliver 1 more shock if directed to do so by the AED
- If patient is still pulseless, perform CPR for 2 minutes
- Re-analyze the patient's rhythm
- The operator may deliver 1 more shock
- If the patient remains pulseless, continue CPR until ALS arrives emphasizing on "Hard and Fast" compressions and enough ventilations to see the chest rise.
- If at any time the patient has a return of spontaneous circulation, but is not breathing, correct ABC's as needed
- If patient returns to spontaneous circulation, with breathing, place in recovery position and monitor ABC's until transport arrives.
- If the AED prompts rescuer to deliver shocks consecutively, the AED may be turned off until the end of 5<sup>th</sup> cycle of CPR or leave AED powered on and be prepared to listen to "motion detected" throughout CPR cycles.

## PROCEDURAL PROTOCOL BLOOD DRAW

### CHAPTER 24.7.3

**Issued: May 2010**

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**Submitted By: EMS Branch**

**Approved By: Medical Director**

#### Protocol

- Utilize Universal precautions
- Select vein and prep site as you would for IV cannulation
- Gather appropriate drawing devices
- Apply tourniquet
- Clean site with alcohol or betadine (do not use alcohol for cleansing site while drawing for LEA and blood alcohol levels.
- Insert needle or cannula
- Attach blood tubes to vacutainer and draw blood
  - All blood draw supplies will be provided by and collected from local receiving hospitals.
- Release tourniquet
- Withdraw needle and vacutainer
- Bandage site
- Label blood sample
  - Patient's Name
  - Date and Time
  - Drawer's initials



## PROCEDURAL PROTOCOL CHEST DECOMPRESSION

### CHAPTER 24.7.4

**Issued: May 2010**

**Revised: June 2011**

**Submitted By: Technical Branch**

**Approved By: Medical Director**

#### Protocol

- Determine need for chest decompression by clinical presentation of the patient (decreased breath sounds with signs and symptoms consistent with tension pneumothorax)
- Identify puncture site
  - Second intercostal space on affected side in the midclavicular line (strongly preferred);
  - Fourth intercostal space on affected side in midaxillary line
- Prepare skin at puncture site with Betadine or alcohol swabs
- Insert 14-16 gauge catheter perpendicular to the skin and over of inferior rib.
- Remove any parts from the catheter/needle assembly which may occlude the lumen)
- Listen for a rush of air. If noted, the diagnosis of pneumothorax and proper needle placement is confirmed.
- Alert receiving hospital personnel on arrival to the presence of this catheter.
- DO NOT UNDER ANY CIRCUMSTANCES remove this catheter from the patient.
- If Symptoms reoccur, there would be a concern for catheter displacement. In this case, place another catheter adjacent to the first catheter following the steps above.

## PROCEDURAL PROTOCOL CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

### CHAPTER 24.7.5

**Issued: May 2010**

**Revised: Nov 12, Feb 14**

**Submitted By: EMS Branch**

**Approved By: Medical Director**

#### **Protocol**

#### **Indications:**

For patients with Acute Bronchospastic Disorders (acute or chronic bronchitis, emphysema, or asthma) or Acute Pulmonary Edema, who have hypoxemia and/or respiratory distress that do not or would not quickly improve with pharmaceutical treatment.

#### **Contraindications:**

- Respiratory arrest
- Agonal respirations
- Unconsciousness or obtunded
- Shock associated with cardiac insufficiency
- Trauma
- Persistent nausea and vomiting
- Facial anomalies
- Inability to cooperate with the procedure
- CPAP should not be used in children under 12 years of age
- Pneumothorax
- Active upper GI bleeding or history of recent gastric surgery

#### **Equipment:**

- Medical Director approved Continuous Positive Airway Pressure (CPAP) device

#### **Procedure:**

- Perform primary and secondary surveys
- Attach cardiac monitor, capnography, and pulse oximetry
- If indications present and systolic blood pressure >100, proceed with CPAP; if systolic blood pressure <100, contact Medical Control prior to beginning CPAP
- Verbally instruct patient (this is a critical item)

- Patient requires “verbal sedation” to use this device effectively
  - "You are going to feel some pressure from the mask but this will help you breathe easier."
- Setup CPAP device as per manufacturer’s instructions
- Instruct patient to slowly breathe in through the nose and exhale through the mouth (exhalation phase should be about 4 seconds)
- For CHF/ACPE use a CPAP setting of 10cm H<sub>2</sub>O
- For COPD use a CPAP setting of 5cm H<sub>2</sub>O
- Continue treatment throughout transport to the ED
- Record and monitor vital signs, ETCO<sub>2</sub>, and O<sub>2</sub> saturation as needed
- In the event of progressive respiratory and/or consciousness deterioration
  - Offer reassurance
  - Stop treatment if necessary
  - Apply bag valve mask to patient
  - Document adverse reactions, and reasons why CPAP was discontinued, in patient care report

The following items should be documented:

- CPAP level used
- Vital Signs every 5 minutes
- SpO<sub>2</sub> every 5 minutes
- Response to treatment

## PROCEDURAL PROTOCOL CRICOTHYROTOMY

### CHAPTER 24.7.6

**Issued: May 2010**

**Revised:**

**Submitted By: Technical Services**

**Approved By: Medical Director**

#### Protocol

- Surgical Cricothyrotomy (Adults only)
- Identify and prepare cricothyroid area
- Grasp the tracheal cartilage (Adam's apple) with the non-dominant hand to secure it
- Using a #11 scalpel, make a midline **vertical** incision approximately 3 cm long, centered over the cricothyroid membrane
- Using the blade handle or hemostats, move the strap muscles out of the way
- Once the cricothyroid membrane is reached, make a **horizontal** stab incision in the inferior third of the membrane
- Open the incision by spreading clamps or by inserting the handle of the scalpel and rotating to the vertical position
- Insert ETT until the balloon is just inside the trachea
- Secure the tube and ventilate the patient
- Follow intubation protocol
  
- Note: The preferred method for GFR crews will be utilization of the Melker Wire-guided Cricothyrotomy Kit.

#### Alternate method:

- Make a stab/puncture into the trachea through the cricoid membrane with a #11 blade.
- Extend the incision laterally or use the blunt end of the scalpel to open an area able to place a small ET tube within the trachea.
- Proceed as above to secure the tube

## PROCEDURAL PROTOCOLS

### CYANOKIT (Hydroxocobalamin for injection)

#### CHAPTER 24.7.7

**Issued: May 2010**

**Revised:**

**Submitted By: Technical Services**

**Approved By: Medical Director**

#### Protocol:

**Indication:** Cyanokit is indicated for the treatment of known or suspected cyanid poisoning.

**Identifying Patients with Cyanide Poisoning:** Cyanide poisoning may result from inhalation, ingestion, or dermal exposure to various cyanide-containing compounds, including smoke from closed-space fires. These agents may present with an almond odor yet this cannot be a reliable indicator. Sources of cyanide poisoning include hydrogen cyanide and its salts, cyanogenic plants, aliphatic nitriles, and prolonged exposure to sodium nitroprusside. Most plastics, glues, and fabrics contain cyanide agents.

The presence and extent of cyanide poisoning are often unknown. There is no widely available, rapid, confirmatory cyanide blood test. Treatment decisions must be made on the basis of clinical history and signs and symptoms of cyanide intoxication. If clinical suspicion of cyanide poisoning is high, Cyanokit should be administered without delay.

#### Symptoms

- \*Headache
- \* Confusion
- \* Dyspnea
- \* Chest discomfort
- \* Nausea

#### Signs

- \* Altered Mental Status
- \* Seizures or Coma
- \* Mydriasis (dilated pupils)
- \* Tachypnea / Hyperpnea (early)
- \* Bradypnea / Apnea (late)
- \* Hypertension (early) / Hypotension (late)
- \* Vomiting

**Contraindication:** *NONE*

#### Warnings and Precautions:

- *Emergency Patient Management-* In addition to Cyanokit, treatment of cyanide poisoning must include immediate attention to airway patency, adequacy of oxygenation and hydration, cardiovascular support, and management of any seizure activity. Consideration should be given to decontamination measures based on route of exposure.
- *Allergic Reaction-* Use caution in the management of patients with known anaphylactic reactions to hydroxocobalamin. Consideration should be given to use of alternative therapies if available. Allergic reactions may include anaphylaxis, chest discomfort, edema, urticaria, pruritus, dyspnea, and rash. Always treat any allergic reaction appropriately to the protocol.
- *Hypertension-* Many patients with cyanide poisoning will be hypotensive; however, elevations in blood pressure have also been observed in known or suspected cyanide poisoning victims. Although there has been no significant studies done on hydroxocobalamin and the effects on cyanide victims, there were elevations in blood pressure  $\geq 180$  mmHg systolic or  $\geq 110$  mmHg diastolic) in approximately 18% of healthy subjects (not exposed to cyanide) receiving hydroxocobalamin 5 g. Most affects were noticed in first 30 minutes of administering hydroxocobalamin.
- *Erythemia-* Non life threatening, yet a redness of the skin may proceed the administration of hydroxocobalamin along with red tint to urine.

**Dosage and Administration:**

- *Recommended Dosing-* The starting dose of hydroxocobalamin for adults is 5 g (i.e. both 2.5 g vials) administered as an intravenous (IV) infusion over 15 minutes (total 5 g). There can be a second dose of 5g depending on severity of the poisoning. There have been no safety or efficacy studies performed in pediatric patients. Contact medical control for consultation about pediatric administration.
- *Preparation of Solution for Infusion-* Each 2.5 g vial of hydroxocobalamin for injection is to be reconstituted with 100 ml of Normal Saline (not typically supplied by manufacture) that will be supplied with injection kit. The line on each vial label represents 100 ml volume of diluent. After NS is mixed with lyophilized powder, each vial should be repeatedly inverted or rocked, not shaken, for at least 30 seconds prior to infusion. This solution should be visually inspected for particular matter and color prior to administration. If the reconstituted solution is not dark or if particular matter is seen after the solution has been appropriately mixed, the solution should be discarded.
- *Incompatibility Information-* **DO NOT** administer any drug simultaneously through same IV line as hydroxocobalamin.

Click to view → [Cyanokit Antidote Administration](#)

## PROCEDURAL PROTOCOLS

### End Tidal CO<sub>2</sub> Monitoring

#### CHAPTER 24.7.8

Issued: May 2010

Revised:

Submitted By: Technical Services

Approved By: Medical Director

#### Protocol

#### ELECTRIC WAVEFORM CAPNOGRAPHY

- Power on the Zoll E Series Cardiac Monitor and assure the ETCO<sub>2</sub> cable is attached (The ETCO<sub>2</sub> device takes approximately one minute to warm up when the monitor is powered on)
- Secure airway via endotracheal (ET) intubation. Be sure to follow manual confirmation techniques (ie. Visualization of tube passing vocal chords, negative sounds over the epigastrium, fogging of the ET tube, etc.)
- Place ETCO<sub>2</sub> device with adapter on the end of ET tube between the ET tube and BVM.
- Press the "Wave 2" soft key until the CO<sub>2</sub> waveform is displayed. (The default color will be in YELLOW)
- Attach the BVM to the open end of ETCO<sub>2</sub> device and administer ventilations
- Note the reading of patient CO<sub>2</sub> levels on cardiac monitor
- Look for rhythmic and consistent waveform ETCO<sub>2</sub> capnography on the display screen. (See examples below of normal and abnormal waveforms)
- If placement of tube is in question, remove the tube, ventilate patient for 30 seconds and attempt to intubate again
- If tube placement confirmed, consider possible causes of low end-tidal CO<sub>2</sub> (low cardiac output secondary to hypovolemia or cardiac failure, or cardiac arrest) and treat appropriately

Click to view → [NORMAL CAPNOGRAM - ESOPHAGEAL INTUBATION - DISLODGED ET TUBE](#)

#### **DIPOSABLE CO<sub>2</sub> DETECTION DEVICE**

\*\*( intended for use only when there is electronic equipment failure or early access cannot be made to patient with the Zoll E Series Cardiac Monitor)\*\*

- Secure airway via endotracheal (ET) intubation
- Place CO<sub>2</sub> device on adapter end of ET tube
- Attach the BVM to the open end of ETCO<sub>2</sub> device and administer ventilations
- Complete at least **3 ventilations** before the electric ETCO<sub>2</sub> device will register a color change or **6 ventilations** before the disposable device will register a color change
- If either device turns yellow with exhalation, tube placement is confirmed
- If the device remains purple
  - Reconfirm ET tube placement by direct visualization and auscultation
- If placement of tube is in question, remove the tube, ventilate patient for 30 seconds and attempt to intubate again
- If tube placement confirmed, consider possible causes of low end-tidal CO<sub>2</sub> (low cardiac output secondary to hypovolemia or cardiac failure, or cardiac arrest) and treat appropriately
- If device changes to Tan, consider low cardiac output from poor CPR or poor patient perfusion. Recheck tube placement by visualization, and correct as necessary
- If device is yellow, but changes to purple during transport, recheck placement using steps as above
- The disposable devices are ineffective if they become wet
- Recheck placement of tube each time you move the patient or there is a change in his/her condition
- As soon as possible, apply electronic ETCO<sub>2</sub> monitoring.

## PROCEDURAL PROTOCOLS ENDOTRACHEAL INTUBATION (NASAL & ORAL)

### CHAPTER 24.7.9

Issued: May 2010

Revised: June 11, Aug 11, July 12  
Jany 15, 2013

Submitted By: EMS Branch

Approved BY: Medical Director

#### Protocol

- Select route of intubation
- Have all airway supplies and suction nearby

#### Orotacheal Intubation

- Hyper oxygenate patient with 100% O<sub>2</sub> using BVM prior to intubation attempt
- Attempts should be limited to 10 seconds
- Insert laryngoscope blade into oropharynx and visualize vocal cords
  - Miller blade (straight) is used to lift the epiglottis
    - Macintosh (curved) is placed in the vallecula and used to raise the larynx and therefore the epiglottis
- Remove any obstructing secretions or foreign bodies with suction and/or Magill forceps
- Insert endotracheal tube past vocal cords by visually confirming the placement before removing the laryngoscope
- If a stylet is used, remove it after the tube has passed the cords
- Inflate the cuff
- If no cervical spine injury is suspected, cricoid pressure may be used to reduce the risk of vomiting and to assists in visualization of the cords.
  - **Cricoid pressure is contraindicated in the placement of the King LTD Airway**
- After 2 failed attempts at endotracheal intubation (not 2 attempts per provider) a King LTD airway shall be immediately placed.
- In patients who have sustained trauma after any 2 failed attempts (even if done by a paramedic student) it is required that a King LTD airway then be placed by a cleared paramedic.
- If the King LTD airway is unsuccessful, utilize a BVM with an OPA to oxygenate and ventilate this patient until arrival at the hospital.
- If unable to oxygenate, consider surgical cricothyrotomy.
- If endotracheal intubation or King LTD Airway is unsuccessful, the paramedic shall document and justify the failed attempts.

At any time the paramedic believes the patient would benefit from the King Tube device he/she may elect to not attempt Endotracheal Intubation.

#### Nasotracheal Intubation



**\*\*Contraindicated in patients with facial fractures and/or a closed head injury\*\***

- Patient must have spontaneous respirations
- Maintain cervical spine immobilization if trauma is known or suspected
- Place patient on high flow **OXYGEN** via NRB prior to nasal intubation
- Consider use of 4ml of 2% Lidocaine via nebulizer mask. This will result in the complete or near complete loss of the gag reflex and facilitate patient compliance with the passage of the ET tube.
- Anesthesia can also be achieved by the placement of an NPA coated with 4% lidocaine jelly 3-5 minutes prior to intubation. Coat external nares and tip of endotracheal tube with 4% lidocaine jelly
- Apply the Beck Airway Airflow Monitor (BAAM) device on the end of the ET tube
- Insert tube with bevel side facing the septum. The tube should be advanced along the floor of the nose. Endotrol<sup>®</sup> tubes are helpful in controlling the position of the tip of the tube, **stylets cannot be used**. As the tube enters the pharynx, listen for breathing sounds to get louder (whistle with the BAAM device) as you advance closer to the trachea
- The patient is likely to cough or gag. Suction must be ready for use
- Listen for patient breathing and/or vocalizations. The vocal cords are widest apart upon inspiration
- Ask patient to take a deep, slow breath or when the patient inhales, advance tube quickly through cords
- Success is noted by an absence of further vocalizations and continued airflow through the tube
- Inflate balloon
- Verify tube placement as you would with oral intubation
- Ventilate patient via ET tube with 100% O<sub>2</sub> using BVM
- Secure ET tube in place using locking device or tape
- Reassess and document tube placement after moving patient
- Continue with ventilation during transport with BVM or use a mechanical ventilation device

All intubations will be confirmed by the absence of breath sounds over the epigastrium and the presence of breath sounds over the right and left lung field. This shall be documented in the run report.

Electronic ETCO<sub>2</sub> shall be measured **continually** on all intubations to verify tube placement. This information shall be documented in the run report as a separate intervention and shall include waveform capnography. If electronic ETCO<sub>2</sub> is unavailable the use of a colorimetric device is acceptable.

**Considerations**

It is strongly suggested that the patient's head and neck be immobilized using a cervical collar and CID to prevent tube dislodgement during patient movement

**To manage the airway of a patient with known or suspected trauma who vomits during airway procedures:**

- Turn AS A UNIT on side and suction oral cavity. Maintain spinal immobilization throughout the turning maneuver

- If the patient becomes combative, consider Versed 1-2mg IV push to facilitate intubation. May repeat in 2 minutes. Closely monitor the patient who has received Versed for respiratory depression or arrest

On occasions when a patient has been intubated prior to arrival, confirmation of the airway placement shall be made by the presence of lung sounds and ETCO<sub>2</sub> prior to acceptance. It is acceptable to manage airways that have been secured with alternate devices (LMA).

**Any airway device shall be removed that is not properly ventilating (i.e. absent breath sounds, cyanosis or loss of waveform capnography) device shall be removed immediately.**

**REMEMBER:**

The goal of airway management is to VENTILATE and OXYGENATE the patient, not necessarily to intubate the patient.

## PROCEDURAL PROTOCOL EXTERNAL CARDIAC PACING

### CHAPTER 24.7.10

Issued: May 2010

Revised: May 13

Submitted By: EMS Branch

Approved By: Medical Director

#### Protocol

- Place cardiac monitor limb leads on the patient
- Place defibrillator pads on patient (anterior and posterior)
- Turn Central Control Knob to **PACER** (Green)
- Set the Pacer Rate at 20-30 ppm higher than the patient's intrinsic rate. Default Pacer Rate is 70 ppm. **DO NOT EXCEED 80 ppm.**
- Turn Pacer Output (mA) until there is a defined "QRS" behind each pacer spike (**Electrical Capture**).
- Next, confirm mechanical capture by palpating a carotid and/or radial pulse.
- Once electrical and mechanical capture is obtained, increase the current (mA) by 10% to exceed the impedance threshold.
- Turn the Pacer Rate dial to adjust the patient's heart rate. This should be done to maintain a systolic BP > 100 mmHg. Do not exceed paced rate of 80 ppm
- To view the underlying rhythm, press and hold the 4:1 button (not recommended to prevent loss of mechanical capture)
- Administer **Versed 1-2 mg SIV/IO/IM/IN**, titrate to patient comfort to a maximum dose of 10 mg and a systolic blood pressure greater than 100 mmHg.

#### \*\*\*THINGS TO REMEMBER\*\*\*

- The Pacer will continue to pace if a limb lead is inadvertently removed or displaced
- If the monitor is turned off, the pacing function will resume if monitor is turned back on within 10 seconds
- The Zoll Eseries Monitor paces in the "Demand" function unless unsynchronized pacing is selected via the soft key.
- If the pacer stops due to the underlying rhythm rate exceeding that of the pacer (demand mode), be sure to check for presence of a correlating carotid and/or radial pulse.

## PROCEDURAL PROTOCOL EZ-IO INFUSION SYSTEM

### CHAPTER 24.7.11

Issued: May 2010

Revised: Dec 13

Submitted By: Technical Services

Approved By: Medical Director

#### Protocol

If the patient is conscious, advise of EMERGENT NEED for this procedure and obtain verbal consent

- Wear approved Body Substance Isolation Equipment (BSI)
- Determine EZ-IO AD® or EZ-IO PD® Indications
- Rule out Contraindications
- Locate appropriate insertion site, SEE (Location Sites)
- Prepare insertion site using aseptic technique (Alcohol Prep)
- Prepare the EZ-IO® driver and appropriate needle set
- Stabilize site and insert appropriate needle set
- Remove EZ-IO® driver from needle set while stabilizing catheter hub
- Remove stylette from catheter, place stylette in shuttle or approved sharps container Confirm placement
- Connect primed tubing
- Slowly administer appropriate dose of Lidocaine 2% (Preservative Free) IO to conscious patients
- Syringe bolus (flush) the EZ-IO® catheter with the appropriate amount of normal saline.
- Rapid syringe bolus (flush) the EZ-IO AD® with 10 ml of normal saline
- Rapid syringe bolus (flush) the EZ-IO AD® with 5 ml of normal saline
- Utilize pressure (pressure bag or infusion pump) for continuous infusions where applicable for hemodynamically unstable adults, repeat flush as needed for pediatrics
- Begin infusion
- Dress site, secure tubing and apply wristband as directed
- Monitor EZ-IO® site and patient condition

#### APPROVED SITE LOCATIONS:

- **Proximal Tibial Tuberosity (*preferred site*):** One index finger (1-2 cm) distal from tip of the medial aspect of tibia tuberosity.
- **Distal Tibial Tuberosity:** Two fingers (2-4 cm) proximal to the tip of most distal aspect of tibia (medial

malleolus), insertion of IO being medial aspect of distal tibial anatomy.

- **Proximal Humerus:** Locate greater tubercle (flat portion of proximal humerus, 1-2 cm inferior to proximal tip), slightly anterior to humerus lateral midline. Arm is to be adducted with elbow posteriorly placed. Needle set should never enter or be medial to the intertubercular groove.

#### INDICATIONS:

- EZ-IO AD® (40 kg and over) & EZ-IO PD® (3 -39 kg)
- Intravenous fluids or medications are needed and a peripheral IV cannot be established in 2 attempts or 90 seconds AND the patient exhibits one or more of the following:
  - An altered mental status
  - Respiratory compromise
  - Hemodynamic instability
- EZ-IO AD® & EZ-IO PD® may be considered PRIOR to peripheral IV attempts in the following situations:
  - Cardiac arrest (medical or traumatic)
  - Profound hypovolemia with alteration of mental status
  - Patient in extremis with immediate need for delivery of medications and/or fluids.

#### CONTRAINDICATIONS:

- Fracture of the bone selected for IO infusion (*consider alternate site*)
- Excessive tissue at insertion site with the absence of anatomical landmarks (*consider alternate site*)
- Previous significant orthopedic procedures (*IO within 24 hours, prosthesis -consider alternate site*)
- Infection at the site selected for insertion (*consider alternate site*)
- Neonates, 0-30 days, (manual insertion without the use of the drill).

#### CONSIDERATIONS:

- Flow rate: With the anatomy of the IO space you will note flow rates to be slower than those achieved with IV catheters.
- Ensure the administration of an appropriate rapid syringe bolus (flush) prior to infusion NO FLUSH = NO FLOW
- Rapid syringe bolus (flush) the EZ-IO AD® with 10 ml of normal saline
- Rapid syringe bolus (flush) the EZ-IO PD® with 5 ml of normal saline
- Repeat syringe bolus (flush) as needed
- To improve continuous infusion flow rates always use a syringe, pressure bag (with maximum pressure of 300 mm) or infusion pump if available.
- Pressure Infusion in adults only

- Pain: Insertion of the EZ-IO AD® & EZ-IO PD® in conscious patients has been noted to cause mild to moderate discomfort (usually no more painful than a large bore IV). However, IO infusion for conscious patients has been noted to cause severe discomfort
- Prior to 10 ml syringe bolus (flush) or continuous infusion in alert patients:
- **EZ-IO** Slowly administer Lidocaine 2% (Preservative Free ie. cardiac Lidocaine) through the hub over 15 - 20 seconds.
- **EZ-IO AD®** Slowly administer 20 - 40 mg Lidocaine 2% (Preservative Free)
- **EZ-IO PD®** Slowly administer .5 mg / kg Lidocaine 2% (Preservative Free)
- May use flush after 1 minute.

**EQUIPMENT:**

- EZ-IO® Driver
- EZ-IO AD®
- EZ-IO PD® Needle Set Alcohol
- Betadine Swab
- EZ-Connect®
- Standard Extension Set 10 ml Syringe Normal Saline (or suitable sterile fluid)
- Pressure Bag
- Infusion Pump
- 2 % Lidocaine (preservative free)
- EZ-IO® Yellow wristband
- 3-way stop clock

**PROCEDURAL PROTOCOL  
INTRAVENOUS ACCESS/SALINE LOC  
MUCOSAL ATOMIZATION DEVICE**

**CHAPTER 24.7.12****Issued: May 2010****Revised: June 11, Aug 11, May 13****Submitted By: Technical Services****Approved By: Medical Director****IV Access/Saline Lock****Protocol**

- Select site for IV placement
- Select appropriate size catheter for patient, things to consider:
  - Patient age/size
  - Vein size or integrity
  - Location of IV
  - Need for fluid replacement (i.e. hypovolemia, trauma, unstable B/P, Cardiac arrest, etc.)
  - Only use needle/catheter sizes that are available from ACFR supply
- Apply tourniquet snugly to area just proximal to intended puncture site
- Peripheral catheterization procedure
- Prepare skin with Betadine or alcohol swabs
- Secure vein with fingers ask patient or assistant to secure extremity
- Insert needle and catheter assembly into vein, bevel up; watch for free blood return
- When placement confirmed by blood return, advance catheter into the vein until you reach the hub
- Attach blood collection device and draw blood samples for hospital use as appropriate
- Remove tourniquet
- Saline Lock:
  - Attach Saline Lock to catheter hub
  - Insure patency by briefly flushing with fluid
- For IV:
  - Attach drip solution set to IV catheter and administer a small amount of fluid to ensure patency
  - Fluid should then continue to run at a rate indicated by the patient's condition and related protocol

\*Secure catheter/saline lock with tape or occlusive dressing

\*Do not place an IV on same side as an AV fistula or same side after a mastectomy with lymph node resection.

**Mucosal Atomization Device:**

**Purpose:** The nasal route is an attractive method of drug delivery due to the rich vascular plexus that is present within the nasal cavity and the easy accessibility of this vascular bed. Because of the easily accessed vascular bed, nasal administration of medications is a promising method of delivering medications directly to the blood stream.

**Indications:**

For use on patients with suspicion of opiate overdose, patients with ongoing generalized tonic-clonic seizures and Hypoglycemia.

1. Intranasal Narcan
2. Intranasal Versed
3. Intranasal Glucagon

**Administration:**

To maximize medication usage, no more than 1 ml of fluid should be atomized in the nostril at a time.

**Technique:**

1. Draw up medication with provided syringe vial adapter or needle.
2. Remove the syringe vial adapter or needle
3. Attached the atomizing tip
4. Using the free hand to hold the occiput of the head stable, place the tip of the MAD snugly against the nostril aiming slightly up and outward (toward the top of the ear)
5. Briskly compress the syringe plunger to deliver half of the medication into the nostril.
6. Move the device over to the opposite nostril and administer the remaining into the nostril if indicated.

**The Atomizer device shall not be utilized as a replacement of IV access.**

**[ATOMIZER INSTRUCTIONAL GUIDE](#)**



## PROCEDURAL PROTOCOL NASOGASTRIC TUBE PLACEMENT

### CHAPTER 24.7.13

Issued: May 2010

Revised:

Submitted By: Technical Services

Approved By: Medical Director

#### Protocol

- Explain the procedure to the patient and/or parent if appropriate;
- Select the proper size tube:
  - Premature - newborn infant # 8 french
  - 1 - 6 months # 8 - # 10 french
  - 6 months - 2 years # 10 french
  - 2 years - 8 years # 10 - 12 french
  - 8 years and older # 14 - # 16 french
  - Adults # 16 - # 18 french

Mark the distance the tube should be inserted:

- **For pediatric patients**, measure the tube by holding distal end of tube at patient's nose and extending tube to the tip of the earlobe and down to the xiphoid process. Mark the point on the tube
- **For adult patients**, measure the distance from the earlobe to the bridge of the nose and then from the bridge of the nose to below the xiphoid process.
- To aid in tube insertion, curl tube tightly around index finger and then release. Lubricate distal end of tube with water-soluble lubricant
- Place the patient in a semi-upright position if condition permits
- Gently insert tube into nare. When resistance is felt, apply gentle downward pressure to advance tube
- With the tube just above the oropharynx, instruct the patient to swallow (if able) to facilitate advancement of the tube. Offer the patient water to drink if appropriate (Only if the head is not restrained and suction is ready)
- If cervicle spine injury is not suspected, the patient may be asked to flex the neck toward the chin
- If the patient begins to cough, gag, or choke, procedure should be stopped and the patient be given an opportunity to recover. If patient begins to vomit, place in lateral decubitus position
- Continue to pass the tube until the marked spot is reached
- Check tube placement by auscultating over stomach as air is introduced through the tube - or by aspirating gastric contents
- Tape tube in place (Tube may be left open to gravity drainage or may be hooked to suction if ordered)
- Restrain patient as needed to prevent dislocation of the tube
- Document procedure, including tube size, which nare it was placed in, amount of stomach contents aspirated, and the patient's tolerance of the procedure
- The EGTA may be used to facilitate the placement of the NG tube in the unconscious overdose patient. The tube should be passed as above but through the lumen of the EGTA.

## PROCEDURAL PROTOCOL OXYGEN SATURATION MONITORING

### CHAPTER 24.7.14

**Issued: May 2010**

**Revised:**

**Submitted By: Technical Services**

**Approved By: Medical Director**

#### **Protocol**

- Switch power to the “on” position of the oxyhemoglobin saturation monitor, (or just clip the unit on the finger using the portable devices)
- Place oxyhemoglobin sensor on digit or earlobe of patient; secure to finger with tape if necessary. Avoid attaching sensor to hand or arm where IV has been initiated
- Allow sensor to “capture” pulse and determine oxyhemoglobin saturation (approximately 15-20 seconds).
- In order to ensure that the saturation reading is correct, the patient’s pulse rate obtained from the Pulse Oximeter **MUST** match the pulse manually. If these pulse rates do not match within several beats, the saturation reading you have is incorrect
- Continue to monitor O<sub>2</sub> saturation during transport

#### **NOTE:**

Use of the pulse oximeter distal to the blood pressure cuff may give brief inaccuracies when the cuff is inflated.

## PROCEDURAL PROTOCOL STEMI ALERT (ST MYOCARDIAL INFARCTION)

### CHAPTER 24.7.15

Issued: May 2010

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Submitted By: Technical Services

Approved By: Medical Director

#### Protocol:

- ST segment elevation, measured at the J-point, of 1 mm or more is considered an abnormal finding. When that elevation is found in two anatomically contiguous leads, it is considered presumptive evidence of acute myocardial infarction (Injury). Patients who display ST segment elevation in two contiguous leads and display symptoms should be transported to one of the listed facilities:
  - Shands at UF
  - North Florida Regional Medical Center
  - Veterans Administration Medical Center of Gainesville
- Paramedics should group the patient with ST elevation in two contiguous leads into one of the following anatomic groups:
  - Leads I,AVL, V5, V6= suspected lateral wall injury
  - Leads II,III,AVF =suspected inferior wall injury
  - Leads V1 thru V4=suspected anterior or septal wall injury
- If the patient displays injury patterns on the 12 lead EKG, the Combined Communication Center (CCC) shall be contacted by the treating paramedic and a “**STEMI ALERT**” issued to the receiving facility as soon as possible.
- The 12 Lead EKG(s) shall be transmitted to the receiving facility as soon as possible to allow EKG review by attending physician in the Emergency Department.

#### Paramedic Recognition/ of “STEMI” in the Field:

- Criteria for “STEMI Alert”
  - (+) ACS Symptoms
  - (+) Characteristic cardiac presentation
  - (+) 12 Lead ECG Printout
  - (+) ST Segment elevation >1mm in two or more contiguous leads
  - (+) Paramedic interpretation for “STEMI”
- The patient’s 12 Lead EKG shall be transmitted to the receiving facility as soon as available. (This may not be available until Rescue Unit arrives)
  - **NO NAMES SHALL BE PLACED ON 12 LEAD EKG**
  - Age and gender are acceptable and needed for accurate interpretation by EKG monitor
  - No other identifiers will be used other than Unit ID and Time/Date stamp generated by EKG Monitor
- En route to the ED, the treating paramedic shall assure the following is completed:
  - Full patient assessment
  - Treatment via appropriate Medical Care Protocol
  - 12 Lead EKG transmitted successfully
  - Radio report given to receiving facility including the following:
    - **Notification of EKG transmission**
    - Patient status/condition
    - Treatments rendered
    - Current vital signs

#### Currently there are three hospitals with interventional cath labs

- Shands at UF
- North Florida Regional Medical Center
- Veterans Administration Medical Center of Gainesville

### **BYPASS of Emergency Department directly to the Cardiac Cath Lab**

- Done only at North Florida Regional Medical Center
- Done only if the Cath Lab is staffed and ready for the patient
- Patient must be seen by the attending ED Physician in order to affirm patient's stability and ability to Bypass the ED
- Receiving hospital staff (minimum of an RN) must accompany ACFR personnel to the Cath Lab and assume patient care responsibility within the hospital.
- ACFR crews shall assist the hospital staff within their scope of practice should an emergency event take place during the bypass process
- ACFR crews shall notify CCC when bypassing the ED and proceeding directly to the Cardiac Cath Lab. The Rescue Lieutenant shall place their unit on a 10 minute delayed response.

### **Situations Not Categorized as STEMI ALERTS:**

- Conditions and situations exist which may mask or mimic the criteria for EKG categorization of "injury patterns". Some of these conditions are Left Bundle Branch Block (LBBB), Left Ventricular Hypertrophy (LVH), Pericarditis and Benign Early Repolarization. Examples of these follow:
- Left Bundle Branch Block (LBBB) can produce ST elevation in leads V1, V2, and V3. It will also display a QRS of abnormal duration. (>.12 sec) and a QS complex or negative terminal force in V1. Electrophysiology: LBBB alters depolarization (affects QRS), which alters repolarization (affects ST-T wave). Therefore, LBBB can produce changes in the QRS-ST-T waves that are identical to those produced by injury. A BBB widens the QRS (.12 sec or more). This widening is due to the fact that the ventricles are forced to contract sequentially, thus requiring more time. Therefore, when a QRS of .12 sec or more is produced by a supraventricular rhythm, think BBB. This rule applies in all leads. Differentiation of LBBB from RBBB comes from evaluation of lead V1 on the 12-lead ECG. The "classic" pattern of LBBB in V1 is a QS complex or negative terminal force.

**Note: \*\*\*New onset LBBB with STEMI characteristics will be classified as a STEMI Alert. If Unknown, consider it new onset.**

- Left Ventricular Hypertrophy (LVH) can produce ST elevation in leads V1, V2, and V3. The formula to use to look for LVH is as follows:
  - Compare V1 and V2 and determine which lead has the deepest S wave. Then determine the depth of the deepest S wave.
  - Compare V5 and V6 and determine which lead has the tallest R wave. Then determine the depth of the R wave.
  - Add the height of the R wave and the depth of the S wave. If the number is > 35mm suspect LVH (each box = 1 mm).

Electrophysiology: There are many causes of LVH. Most are the result of either the left ventricle working harder over a long period of time or the result of chronic overfilling. For ACS management, it is NOT critical to determine the cause of the LVH. Simply suspecting the presence of LVH is sufficient. LVH can mimic "injury" patterns on the 12-Lead EKG. Unlike BBB, LVH does NOT usually widen the QRS to .12 sec or more. Instead of abnormally widening the QRS, LVH increases amplitude. LVH can produce ST segment elevation in early V leads.

- Pericarditis -There are numerous causes of pericarditis. These patients often complain of chest pain, which is an indication for a 12-Lead EKG. Pericarditis is capable of producing diffuse ST segment elevation across the EKG. The ST segment elevation of pericarditis is caused by inflammation of the epicardium secondary to inflammation of the pericardium. This process is not related to coronary artery disease and, therefore, ST segment changes do not tend to follow anatomical groups typically seen with AMI. Pericarditis may produce notching of the J-point and a "fish hook" shaped ST and J-Point. The "classic" pericarditis presentation has some distinguishing features. Listed below are the differentiating characteristics of AMI vs. Pericarditis. The purpose is not to rule out AMI, but help the care provider suspect the possibility of pericarditis.
- Benign Early Repolarization can produce ST elevation in the anterior or anteriolateral leads and tall T waves. In some respects it closely resembles pericarditis on the 12 lead EKG with notching of the J point. Electrophysiology: It has been theorized that the cause of Benign Early Repolarization is due to one region of

myocardium repolarizing early. This produces a difference in electrical potential, and thus causes ST and T wave changes. Changes can occur in any lead. But are more common in the lateral and anterior chest leads. Benign Early Repolarization, like pericarditis, may produce notching of the J-point and a “fish hook” shaped ST and J-Point. Patients with Benign Early Repolarization often meet the voltage criteria for LVH. However, no true hypertrophy may exist. Anyone, male or female, of any ethnic background can have this pattern on his or her EKG. However, this pattern is most commonly seen in young adult African-American males.

## PROCEDURAL PROTOCOL VENTILATOR

### CHAPTER 24.7.16

Issued: May 2010

Revised: March 2014

Submitted By: EMS Branch

Approved By: Medical Director

#### Procedure:

##### Newport HT 70 Plus Transport Ventilator

Turn on ventilator

Attach circuit to ventilator

Perform circuit check before continuing

Make Sure "Blue" tile in lower right hand corner reads **TRANS**

If transport will be > 1 hour, bring humidifier with patient.

#### Protocol:

Ventilator Transport

Review transfer paperwork

Meet with Respiratory Therapist and RN in charge of patient

- Auscultate patients breath sounds
- Assess security of ETT placement (if not secure with Thomas Tube holder)
- View and document tube size and placement at teeth
- Estimate oxygen needed and plan ahead with extra O<sub>2</sub> tanks if necessary
- Review and document patient's ventilator settings.
- Vital signs every 15 minutes for a stable patient with transport time > 1 hour, every 10 minutes for local transport and every 5 minutes for an unstable patient local transport.

Document ventilator setting on ACFR Ventilator settings form

Set Ventilator Parameters to the same settings the patient is currently receiving.

- Additional Equipment Needed for Ventilator Transfer
- SPO2 monitor with Capnography
- Cardiac monitor
- Full O2 bottle
- Suction
- Kelly Clamp

#### Transfer of patient to ACFR Ventilator

Patient should be placed on ACFR Vent prior to being moved to transport stretcher.

This will allow patient to be acclimated to ACFR Vent. If adjustments need to be made, make them one at a time.

**REMEMBER; OCCLUDE ET TUBE WITH KELLY CLAMP ON EXPIRATION WHEN READY TO SWITCH VENTILATORS IF PEEP >10. REMOVE KELLY CLAMP AFTER BEGINNING VENTILATIONS WITH HT70.**

**Consider transporting patient with inline suction attached to reduce loss of PEEP.**

**INFECTIOUS PATIENTS: Remember to do circuit check before applying filters.**

Obtain bacteriostatic filter from hospital staff and apply between ventilator and circuit.

Place N95 mask at exhalation port on circuit.

Clamp ET Tube with Kelly clamp just before exhalations starts.

Place patient on ACFR vent circuit, begin ventilations, remove Kelly clamp.

**SETTINGS (Adult)**

These are parameters to use should changes be necessary on the ventilator for patient comfort.

- RR = 8 – 16 (Watch ETCO<sub>2</sub>)
- PEEP = 5 – 10 (to keep the alveoli inflated and prevent atelectasis)
- PS = 10 – 20
- Flow = 30 – 40 \*\*\*\*\*Watch I-time\*\*\*\*\*
- I-time 1 – 1.5 sec. for adults, 1.0 sec. for toddlers, 0.5 sec. for infants 1yr and less (how long the inflations of the ventilation is held)
- Tidal Volume (V<sub>t</sub>) 6 – 8 L x KG
- P –trig = set at 2 (amount of pressure from the patient it takes to initiate a breath), (If ventilator is auto cycling, it may be necessary to increase P-trig to 4)
- If patient is not tolerating the ventilator it may be necessary to change settings (one at a time) or alarm adjustments may need to be made

**BVM**

Many conscious/alert patients that are being transferred from hospital vents to transport vents will experience agitation. It is important to advise patient of the challenge of adjustment and to relax. **BE PATIENT!!!!** There are physiological reasons for patients to become agitated including: pain, hypoxia, fever, and nervousness about transfer.

**Rule out hypoxia**

Allow 10-15 minutes for patient to acclimate to Newport HT70, if no change the Paramedic may administer Versed 1-2mg SIVP. Repeat as needed, after ruling out hypoxia. This should be considered in patients whom are not already on sedation.

Remember to complete the "Settings for mechanical Ventilation" form on all patients where the Newport HT70 Ventilator is used. Form will need to be scanned and attached to the Patient Care Report.

**SETTINGS FOR MECHANICAL VENTILATION  
NEWPORT HT70 PLUS**

## PROCEDURAL PROTOCOL ZOLL® E SERIES™ REFERENCE GUIDE

### CHAPTER 24.7.17

Issued: May 2010

Revised: June 11, Aug 11

Submitted By: Technical Services

Approved By: Medical Director

#### Universal Dial (Central Control Knob)

- One universal dial is used for all therapies (defib/monitoring/pacing). Turn the dial to the therapy you wish to use. Additional options will appear at the bottom of the screen. Soft keys will be used often and the options at the bottom of the screen will change based on which therapy you are utilizing.

#### Defib (ALS) (biphasic is 200J for each shock)

- #1 Turn Central Control knob to **DEFIB** (Red)
- #2 Press **CHARGE**
- #3 Press **SHOCK**
- Pediatric - 2 J/kg 1<sup>st</sup> Shock -> 4 J/kg 2<sup>nd</sup> and subsequent shocks (See Broselow Tape)
  - You will need to manually set the Joule settings for Pediatric patients
  - The default setting is 200J

#### Cardioversion

- Turn Central Control knob to **DEFIB** (Red)
- Press **SYNC ON/OFF** soft key
- White arrows will sync on "R-wave"
- Energy Settings are:
  - SVT : 50 to 100 → 120 → 150 → 200 Joules
  - Atrial fibrillation/Flutter: 50 to 100 → 120 → 150 → 200 Joules
  - Wide Complex Tachycardias: 50 to 100 → 200 → 300 → 360 Joules
- Pediatric- 1 J/kg 1<sup>st</sup> dose -> 2 J/kg 2<sup>nd</sup> dose (See Broselow Tape)
- **\*\*You must manually select the energy you wish to use. The energy will not automatically increase once manually changed\*\***
- Press **CHARGE** → Push and hold **SHOCK** to shock on "R-wave"
- **You must press SYNC ON/OFF key between each cardioversion attempt.** It is automatically turned off when charge is delivered in case of rhythm change to VFib

#### Pacing

- Turn Central Control Knob to **PACER** (Green)
- Turn Pacer Output (mA) until "QRS" appears after each pacer spike (**Electrical Capture**).
- Confirm mechanical capture by checking Carotid and/or Radial pulse.
- Once you get mechanical/electrical capture, increase the current by 10% to make sure you don't lose capture.
- Set the Pacer at 20-30 ppm higher than the patient's intrinsic rate. Default pacer rate is 70 ppm. **Do not exceed 80 ppm**
- Turn the Pacer Rate dial to change the patients heart rate
- Press and hold the 4:1 button to view the underlying rhythm (Not recommended)

#### Blood Pressure (NIBP)



- Select proper cuff size and apply to patient, making sure that the cuff is tight and properly aligned.
- Press blue **NIBP** button to take a single pressure. The cuff will inflate to 180, if a pressure is not obtained at 180, the cuff will re-inflate until a pressure is obtained. Push **NIBP** button again to abort measurement.
- Push and hold NIBP button to Auto inflate every 5 min. Press and hold again to shut off
- Auto NIBP.
- Change interval – Press “Param” → Enter NIBP → select Auto Interval → Increase or Decrease
- To take a single pressure in between Auto Interval, Press the NIBP button again. This will take a single pressure, but not change your Auto Interval.
- To get a list of all your vitals (Trends), press “Summary” → Trend → It will highlight NIBP → Enter → Print
- You will receive trending of all blood pressures, heart rate, SPO<sub>2</sub>, and EtCO<sub>2</sub>.

### 12-Lead ECG

- Turn Central Control to “Monitor” and make sure Lead II not PADS is displayed.
- Prep patients skin as appropriate and attach 4 Lead cable to torso → Press and hold the recorder button to print leads I, II, III, aVR, aVL, aVF → Connect V leads to chest → Plug V lead cable into 4 lead cable block. Press and hold the RECORDER button to obtain a quick look real time 12-lead.
- Press 12 Lead → PT Info → Gender (m/f) → Age → Press arrows on top of monitor & Enter → Return → Return again
- Make sure patient is still for a full 10 seconds when acquiring. → Press Acquire

### 12 Lead Transmission

- After 12 lead has been performed, monitor will be in EKG Transmission mode
- Select transmission destination ( Hospital Choice or TEST)
- Press “Transmit Now” when in proximity of mobile router located in unit

### ETCO<sub>2</sub>

- Plug the ETCO<sub>2</sub> adapter (clear piece) into the ETCO<sub>2</sub> module and place airway adapter between ET tube and BVM
- The CO<sub>2</sub> module takes about 1 min. to warm-up after you turn on the monitor and should already be zeroed.
- If you have to re-zero, place the sensor into the module → Press Param (soft key) → Select ETCO<sub>2</sub> → Enter → Press Zero. Make sure nothing is attached to the patient when re-zeroing
- Press soft key labeled **Wave 2** to view the wave form

### Lead Button

- Your monitor will “power up” in Lead II. You may press the “Lead” button to change leads

### Recorder Button

- Press “Recorder” button once to print what you see on the screen. Press “Recorder” button again to stop printing.
- Press and hold “Recorder” button with 4 Lead cable and it will print I, II, III, aVR, aVL, aVF in Diagnostic Mode.
- Press and hold “Recorder” button with 12 Lead cable and it will print a Diagnostic 12 lead with no interpretation

### Code Markers

- Press the Code Marker button, you will see a list of drugs that follow protocols → Press Enter Marker
- Once you press the Enter Marker it will automatically highlight the next drug in your protocol. To move through the list of drugs use the arrows on top of the monitor. If you deviate from the protocol use the arrows on top of

- the monitor to move through the list.
- If you want to mark a generic event, press the Code Marker button once

### **Printing a Summary**

- There are three main uses in the Summary section
- Trend: (see NIBP above)
- Print Chart → Print Range: allows you to print a range of events. A log of events will appear on screen. Use arrow keys to scroll down to highlight the first event that you want to print. Press "Print Record". Allow the machine to print off the information you want, press "Record" to stop recorder.
- Printing a complete summary: press "Summary" → Print Call → Select Call with arrows on top of the monitor → Print Record

### **Shift Check - Do in the following order**

- Rotate Batteries 1. Unit to Charger 2. Spare to Unit 3. Charger to Spare (this should be done daily)
- Plug red end of defib cable into the black test port that is attached to the cable. Turn central dial to red (Defib). Select 30 Joules → Press Charge → Press Shock → "Test OK" will appear on screen. If you get an "Error code" contact the Duty Supervisor.

### **Adjusting the Screen for Bright Light**

- Press and hold the button in the lower left that is a half shaded circle

### **Uploading Data into Tablet PCR**

- Information to be released in the future

### **Battery and Charger Maintenance**

- Batteries need to be conditioned once a month
- This should be done on the first day of every month when expired drugs are checked
- Notate battery conditioned with date and initials/id # on the tag on the side of the battery
- Charger should be tested every 3<sup>rd</sup> month (quarterly)
- Notate the charger test on the tag on the charger with date and initials/id #

## PROCEDURAL PROTOCOL SEPSIS ALERT WITH LACTATE SCOUT

### CHAPTER 24.7.18

**Issued:** March 2013

**Revised:**

**Submitted By:** EMS Branch

**Approved By:** Medical Director

**Purpose:**

To actively assist in the early identification of SIRS/Sepsis patients to decrease morbidity and mortality.

**Background:**

Systemic Inflammatory Response Syndrome, (SIRS) refers to the inflammation that is the body's response to a nonspecific insult, consisting of a complex cascade of events. SIRS can be caused by ischemia, inflammation, infection, trauma or a combination of insults. Sepsis is the systemic response to infection with presence of SIRS, with a documented or presumed infection.

SIRS is defined as two or more of the following criteria:

- Temperature of less than or equal to 96.8 degrees Fahrenheit or greater than or equal to 100.4 degrees Fahrenheit.
- Heart rate of greater than or equal to 90 beats per minute.
- Respiratory rate of greater than or equal to 24 breaths per minute
- White blood cell count of greater than 12,000 or less than 4,000; or greater than 10% bands (if lab result available)

Common infections include pneumonia, urinary tract infection, cellulitis/abscess (skin infection), or bacterium (blood infection).

Patients whom are immunosuppressed are at a higher risk for developing an infection. These patients may include those with cancer, are on steroidal treatments, have recently undergone a surgical procedure, have indwelling foreign body (Foley catheters, IV line, external fixator), or patients who have comorbidities such as diabetes or bed bound.

A **Sepsis Alert** shall be activated when a patient presents with two or more criteria for SIRS listed above plus a systolic blood pressure less than 90mmhg or signs of end organ damage.

Signs of end organ damage include:

- Neurological changes (altered mental status, coma, agitation or lethargy)
- Respiratory changes (hypoxia, dyspnea)
- Circulatory changes (poor capillary refill, ECG changes, pulmonary edema)
- Renal changes (decreased urination, an acute rise in creatinine)

**Procedure:**

**Basic Life Support**

- Perform a full history and physical assessment searching for evidence of infection.

- Ensure patent airway
- Apply supplemental oxygen if any respiratory signs or symptoms present with an oxygen saturation less than 94%
- Record and monitor vital signs
- BGL

**Advanced Life Support**

- Advanced airway (if needed)
- 12 Lead ECG
- IV and if evidence of dehydration and hypotension, administer 250 ml bolus. Repeat if necessary, until systolic pressure reaches 100 mm Hg. Withhold bolus in patients who present in CHF (presence of rales, rhonchi or crackles).
- Continuous monitoring of non-invasive ETCO<sub>2</sub>

**A Sepsis Alert** may also be called based on Paramedic Discretion.

\*\*\* Alachua County Fire Rescue and Shands Health Care have entered into a research partnership in obtaining Lactate Levels for patients that are suspected to be Septic. The Lactate Scout Monitor is not FDA approved, cannot be utilized to diagnose Sepsis and will only be utilized for research purposes. A Lactate Level shall be obtained for all patients who meet the criteria for a Sepsis Alert. This value SHALL NOT be passed onto the receiving facility. It will be documented in the EMS Run Report for research purposes only.

## PROCEDURAL PROTOCOL ZOLL® AUTOPULSE BATTERY CONDITIONING

### CHAPTER 24.7.19

**Issued: March 2013**

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**Submitted By: EMS Branch**

**Approved BY: Medical Director**

#### **About this Procedure:**

The information in this User Guide applies to the ZOLL Circulation AutoPulse® Battery Charger designed for the AutoPulse Resuscitation System Model 100. The AutoPulse Power System consists of two main components: the AutoPulse Battery Charger and the AutoPulse Battery.

Proper use of the AutoPulse Power System requires a thorough understanding of the Power System, and appropriate training and practice using the Power System.

Always charge a stored Battery before placing the Battery in active operation. Battery may self-discharge when not in use. Failure to charge a Battery before use may cause device power failure.

#### **Introduction of the AutoPulse Power System:**

The AutoPulse Power System represents a state-of-the-art breakthrough in battery technology and one of the breakthroughs that make the AutoPulse Resuscitation System possible. The AutoPulse Battery communicates with the AutoPulse Battery Charger or with the AutoPulse Platform when it is plugged into each respectively.

The Battery is intended to operate for a minimum of 30 minutes at a rate of 80 compressions per minute.

The Battery uses a lithium ion (Li-Ion) technology because Li-Ion delivers one of the highest power outputs of any battery technology. At the same time, Li-Ion does not have the limiting memory effect inherent with nickel-cadmium (NiCd) batteries or the higher weight associated with the higher mass-to-power ratio of lead-acid batteries. The Battery automatically monitors its readiness state. Finally, the Battery is mechanically keyed to the AutoPulse Platform and Battery Charger to facilitate correct installation.

Checking the Battery's status allows you to determine the need for a charge to ensure adequate battery capacity (run time). A green LED ensures that the Battery has the capacity for a minimum run time of 30 minutes on a typical patient. Batteries self-discharge when not in use. Recharge the Battery before use if the amber LED illuminates.

#### **Performing a Battery Status Check:**

To determine if an AutoPulse Battery needs to be charged, press the white Status Check button on the Battery.

**Green LED** – Battery charged and ready for use.

**Amber LED** – Battery is partially discharged and remaining runtime is unknown.

**Red LED** – Battery has exceeded its service life or failed a test-cycle.

When a Battery is in the Battery Charger and the READY LED illuminates, leave the Battery in the Battery in the Battery Charger to maintain peak capacity.

#### **Battery Charger Status LEDs:**

**Yellow LED** – Battery is charging.

**Yellow LED on Charger and Amber on Battery** – indicates that battery is in the Test-Cycle mode. Test/Cycle last approximately 12 hours. At completion of the Test-Cycle the Battery Charger will indicate READY or FAIL.

**Green LED** – Battery is charged and ready to use.

**Red LED** – Battery has failed or the Battery Charger is currently unable to charge the Battery. Try reinserting the

battery again. If **Red LED** still illuminates then battery has failed and needs to be replaced.

### **Understanding Test-Cycles:**

A test-cycle measures the Battery's charge holding capability by cycling the Battery through a charge- discharge-recharge sequence. Batteries with a high charge holding capability pass the test cycle and remain available for continued use. Batteries that no longer accept a charge will fail the test-cycle and must be replaced as they can no longer be used in the AutoPulse System.

**Note:** The AutoPulse Battery Charger will automatically perform a Test-Cycle every 10th charge/discharge cycle or at a minimum of every 30 days. When a battery is placed in the battery charger under those conditions, the Test-Cycle Yellow LED will illuminate and the charger will automatically begin the Test-Cycle. The normal Test-Cycle requires up to 12 hours and the battery cannot be removed during the Test-Cycle. Documentation will be noted on the Battery Test-Cycle attached to the bottom of each Battery.

The Battery Charger will automatically perform a test-cycle:

- Every 10th charge/discharge cycle.
- When the Battery Charger detects that the Battery has been severely discharged (no status LEDs will illuminate when you press the Battery's Status Check button).

**Note:** Do not remove a Battery during a test-cycle or the Battery's runtime will be unknown.

Removing a Battery during a test-cycle may cause the Battery Charger to automatically enter a test-cycle mode the next time a Battery is inserted into the Battery Charger.

At the end of one full test-cycle, if the Battery Charger's TEST (amber) LED remains illuminated, the Battery Charger has determined that the Battery's charge capacity remains compromised. In an attempt to restore the Battery, the Battery Charger will perform a second test-cycle (another six hours). If the Battery Charger's TEST LED remains illuminated, the Battery Charger will attempt to perform a third test-cycle (another six hours). Following the third test-cycle, the Battery will either be ready for operation (green READY LED illuminated) or the Battery will have failed the test-cycle and must be replaced (red FAIL LED illuminated).

A Battery will fail a test-cycle following 100 charge-discharge cycles.

Note: Discontinue use of any failed Battery as it will no longer hold an appropriate charge. Notify the appropriate District Chief so that a replacement Battery can be obtained.

### **Battery Management:**

The AutoPulse System is intended to be deployed on emergency vehicles in a state of high-readiness. Therefore, regular AutoPulse System checks should be integrated into Emergency Medical Service (EMS) rig-check procedures. Regular monitoring of AutoPulse Battery status is vital to ensure adequate run time. Discharged Batteries (amber status light-emitting diode (LED) on the Battery or less than four bars seen on the AutoPulse Platform's display panel screen when the AutoPulse Platform is powered up) will result in shorter Battery run times. Discharged Batteries should be replaced with charged Batteries (green status LED or four bars seen on the AutoPulse Platform's display panel screen).

The following essential elements of AutoPulse Battery management should be incorporated into a regular routine:

- Leave a fully-charged Battery installed in the AutoPulse Platform at all times.
- Leave a fully-charged spare Battery in the case that carries the AutoPulse System.
- Maintain one fully-charged Battery in the AutoPulse Battery Charger.

The Battery rotation performed at the beginning of each shift is;

- Battery in Battery Charger becomes the spare.
- Battery that is spare in case goes into the AutoPulse platform.
- Battery in AutoPulse Platform goes into the Battery Charger.

## PROCEDURAL PROTOCOL ZOLL® AUTOPULSE® MODEL 100

### CHAPTER 24.7.20

**Issued: March 2013**

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**Approved By: Medical Director**

#### **Indication for Use:**

The AutoPulse is intended to be used as an adjunct to manual CPR, on adult patients (> 18 years of age) only, in cases of non-traumatic cardiopulmonary arrest defined by a lack of spontaneous breathing and pulse.

#### **Description of the System:**

The AutoPulse is an automated, portable, battery-powered chest compressor, which provides chest compressions as an adjunct to performing manual CPR. Use of the AutoPulse is intended to reduce the impact of rescuer fatigue and will enable the rescuer to address additional patient needs.

#### **AutoPulse Platform:**

The AutoPulse Platform contains the mechanical drive mechanism, control system, and electronics necessary to generate and control the force required to perform mechanical chest compressions. User controls and indicators are contained in the User Control Panel.

#### **LifeBand Load-distributing Band (LDB):**

The LifeBand is a load-distributing band (LDB) that consists of a cover plate and two bands integrated with a compression pad with a Velcro® fastener. Attached to the AutoPulse Platform, the LifeBand is automatically adjusted to the patient and provides compressions to the patient's chest in the region of the heart. The latex-free LifeBand is a single-use component that is attached to the AutoPulse Platform before each use.

#### **AutoPulse Power System Battery:**

The AutoPulse Battery is a removable component that supplies power for the AutoPulse operation. The Battery is a proprietary, rechargeable, Lithium Ion (Li-Ion) battery that is the exclusive power source for the AutoPulse.

The Battery is mechanically keyed to the AutoPulse Platform and Battery Charger to facilitate correct installation. The Battery's back end contains connections for power and communications to the Battery Charger and to the AutoPulse Platform. A Battery Status Check button illuminates the Battery's status light-emitting diodes (LEDs).

#### **Using the AutoPulse:**

Before deploying the AutoPulse, note the following warnings and precautions:

##### **Warning:**

- The AutoPulse is intended for use on adults, 18 years of age or older.
- The AutoPulse is not intended for patients with traumatic injury (wounds resulting from sudden physical injury or violence).
- When CPR is indicated, manual compressions should be initiated immediately, while AutoPulse is prepared for application.
- The AutoPulse must be used only in cases that manual CPR would normally be initiated.
- Personnel certified in manual CPR must always be present during the AutoPulse operation.

**Caution:** Use care while using sharp instruments around the LifeBand.

**Caution:** Do not block the vents of the AutoPulse Platform.

### **Deploying the AutoPulse System:**

In order to deploy the AutoPulse quickly and with the least interruption in cardiac compressions, a pit crew model - similar to that which is used in auto racing - is suggested for roles and positions of the staff involved in performing defibrillation and using the AutoPulse.

CPR must be initiated and interruptions kept to a minimum when deploying the Auto Pulse.

1. Power up the AutoPulse. The ON/OFF button is located on the top ("head") edge of the AutoPulse Platform.
2. The AutoPulse illuminates the green Power light-emitting diode (LED) on the User Control Panel and performs a self-test. Refer to the User Control Panel and its display panel during the operation of the AutoPulse. All operating information is available on the User Control Panel.

**NOTE:** Make sure that no User Advisory, Fault or System Error messages display.

3. The AutoPulse indicates that it is ready for use.
4. After assessing the patient's condition and monitoring pads are in place, sit the patient up and remove the remainder of the upper torso clothing.
5. Slide the AutoPulse Platform into position behind the sitting patient and lay the patient down onto the Platform.
6. Position the patient so that he/she is centered laterally (from left to right) and that the armpits are aligned with the AutoPulse using the yellow line positioning guides on the platform.
7. Close the LifeBand around the patient's chest.

To properly align the two sides of the LifeBand:

- a. Place band with yellow alignment tab on top of patient's chest.
- b. Locate mating slot of the other band placing it over the alignment tab.
- c. Press the bands together to engage and secure the Velcro® fastener
- d. Lift up the LifeBand to its fullest, ensuring that the side bands are at a 90 degree angle to the platform, that they are not twisted and that there are no obstructions.
- e. Center the LifeBand on the patient's chest, placing it such that its center is over the area upon which manual compressions are conducted.

**NOTE:** If the bands cannot be closed or any other difficulty with the device is found, continue with manual CPR.

### **Starting Chest Compressions:**

1. Make sure that the yellow upper edge of the LifeBand is aligned with the patient's armpits, and is directly over the yellow line on the AutoPulse Platform. Also make sure that there are no obstructions, such as clothing or equipment, with the bands.
2. Press and release the Start/Continue button once. The AutoPulse automatically adjusts the bands to the patient's chest.
3. The AutoPulse will pause for 3 seconds to allow you to verify that the patient is properly aligned and that the LifeBand has taken up any slack in the bands. (indicated on the Display Panel Screen)

**NOTE:** If the patient is not properly aligned, press the Stop/Cancel button, realign the patient, and begin compressions again.

4. After the 3 second pause to verify patient alignment is complete, compressions will automatically begin. You may press the Start/Continue button to immediately initiate compressions ahead of that time.
5. **WARNING:**
  - Do not lean on the patient after pressing the Start/Continue button.
  - If you must move or realign the patient, you must press the Stop/Cancel button before adjustment.
  - Do not place your hands or any objects on or under the LifeBand while the AutoPulse is analyzing the patient or during active operation.



6. The pre-set mode compression operation will be Continuous Compressions. In the Continuous Compression mode, it performs compressions with no pauses. In Continuous mode, an audio cue tone for ventilation will sound 8 times per minute.
7. To access the patient or to pause the AutoPulse for any reason, press the Stop/Cancel button. The AutoPulse Platform releases the tension on the LifeBand, allowing the user to pull the bands to the maximum extended position. 10 seconds after the Stop/Cancel button has been pressed a single audio alert tone will sound. Three audio alert tones will sound 20 seconds after the pause was initiated. Audio alert tones will sound continuously after 30 seconds into the pause.

**NOTE:** Opening the bands during active operation will cause the AutoPulse to stop operation immediately. To restart compressions, re-fasten the Velcro® fastener, clear the Fault by pulling up on the LifeBand and pressing Start/Continue and then follow the normal operating steps.

8. To restart compressions, press the CONTINUE button.

#### **Ending Active Device Use:**

1. After either successful resuscitation or termination of activities, press the Stop/Cancel button followed by the ON/OFF button. The Stop/Cancel button action will cease the compression cycles and relax the LifeBand. The ON/OFF button action will power down the AutoPulse.
2. Open the Velcro® fastener and lift or log roll off the patient from the AutoPulse Platform, as necessary.

#### **Preparing the AutoPulse for Its Next Use:**

1. Remove the LifeBand from the AutoPulse Platform.
2. Discard the LifeBand as it is a single-use component. Treat the LifeBand as contaminated medical waste and dispose of it accordingly.
3. Clean the AutoPulse Platform before its next use.
4. Replace the LifeBand before returning the AutoPulse to service.
5. Remove the AutoPulse Battery.

**NOTE:** Ensure that the AutoPulse is powered down before removing and replacing the Battery.

6. Replace the Battery with a fully charged Battery before returning the AutoPulse to service.
7. Recharge the used Battery as necessary for future use.

#### **Periodic Electrocardiogram (ECG) Monitoring and/or Defibrillation/ETCO2:**

When the AutoPulse is used in conjunction with defibrillators or with other therapeutic devices that must monitor an ECG signal or to continuously evaluate to determine when ROSC has occurred (ie jump in ETCO2 level ex- 10-20), interruption of the compression cycles may be required to avoid ECG motion artifact associated with mechanical chest compressions, need for defibrillation and/ or determine if ROSC has occurred.

To temporarily interrupt the AutoPulse's active operation, press the Stop/Cancel button.

To restart the AutoPulse press the Continue button.

#### **Patient Alignment and Securing for Transport:**

**WARNING:** The AutoPulse is not intended for carrying or transporting a patient. The AutoPulse should be placed on the soft stretcher to carry or transport the patient, if necessary. During transport, regular checks of the patient's alignment should be

performed.

The AutoPulse does not require any patient restraints to perform compressions while the patient is lying on a flat surface. However, patient restraints should be used to maintain alignment of the patient to the AutoPulse.

- If the AutoPulse cannot be set on a flat level surface
- If the AutoPulse is used during extrication or during transport

The AutoPulse is designed to accept standard restraints to maintain patient alignment. The rescuer can secure a patient of up to 300 pounds, chest circumference not to exceed 51.2 inches or chest depth not to exceed 15 inches.

**Caution:** Motion can cause the patient to shift and restraints to loosen, so care should be given to the initial strapping for alignment of the patient to the AutoPulse. Regular checks of patient alignment to the AutoPulse and alignment of the LifeBand to the patient's mid-axillary line should be made if the AutoPulse is performing active compressions, or before active compressions are restarted.

When transporting the patient, lift by supporting the patient and the AutoPulse onto the stretcher utilizing the soft stretcher and place the AutoPulse and patient within the vehicle during AutoPulse operation. Secure the AutoPulse and patient to the stretcher.

**Caution:** Straps or restraints used for transportation purposes must not interfere with the operation of the AutoPulse. Specifically, straps across the patient's chest may restrict the compression/ decompression of the chest. In general, strapping schemes must not alter the alignment of the patient to the AutoPulse.

Remember to attach the included combination AutoPulse Shoulder Restraint/Head Immobilizer before moving.

1. Attach the Shoulder Restraint to keep the patient properly aligned on the AutoPulse Platform, therefore making for easier transport.
2. The Head Immobilizer assists in keeping the patient's head from moving, especially when combined with a cervical collar. A cloth may also be placed under the patient's head.
3. When lifted, the Soft Stretcher has a cradling effect that helps maintain alignment of the patient on the AutoPulse. Users can also allow the patient's lower legs to bend freely at the knees, facilitating moving around tight corners, elevators, and stairwells.

Always ensure the following:

1. Make sure that the patient's armpits and the upper edge of the LifeBand are aligned with the yellow line on the AutoPulse.
2. Make sure that the LifeBand is not twisted and properly mated with the Velcro®.
3. Maintain the LifeBand at 90 degrees with the AutoPulse Platform. Ensure that the LifeBand is not impeded by anything such as the patient's arms, clothing, straps, and buckles that may interfere with the movement of the LifeBand.

## **AUTOPULSE DAILY BATTERY ROTATION AND CHECKOFF**

Batteries for the AutoPulse will be rotated on a daily basis utilizing the following battery rotation procedure.

- Battery in Battery Charger becomes the spare
- Battery that is spare in case goes into AutoPulse platform
- Battery in AutoPulse bag platform goes into the Battery Charger

Once a new battery from charger is placed in AutoPulse, the AutoPulse needs to be powered on using the ON/OFF button. This allows the AutoPulse to run an analysis of the battery. The screen will advise if the battery needs to be recharged/replaced.

**Cleaning the AutoPulse Platform:**

1. Remove and dispose of the LifeBand.
2. Wipe all the surfaces of the AutoPulse Platform free of foreign matter and spills with a disinfectant or bactericidal wipe. Check the vents to ensure that they are free and clear of any obstructive matter.
3. Install new LifeBand and ensure that the AutoPulse is dry before storing.

**Click to view Flow Chart below**

**[AUTOPULSE PIT CREW DEPLOYMENT](#)**

## PROCEDURAL PROTOCOLS KING LTD SUPRAGLOTTIC AIRWAY

### CHAPTER 24.7.21

**Issued:** May 2013

**Revised:**

**Submitted By:** Technical Services

**Approved By:** Medical Director

#### **Indication for Use:**

- Patient who is apneic or unconscious without an intact gag reflex, requiring airway management.
- Rescue airway if unable to intubate a patient in need of airway protection.
- Primary airway if intubation anticipated to be difficult and rapid airway control is necessary.
- Primary airway in pulseless arrest, when attempts at intubation are likely to interrupt CPR.

#### **Contraindications:**

- Intact gag reflex
- Caustic ingestion
- Known esophageal disease (varicies, alcoholism, cirrhosis, etc.)

#### **Technique:**

1. Initiate BLS airway sequence to include pre-oxygenating patient with O<sub>2</sub> via NRBM or BVM as needed.
2. Select the appropriate size King airway based on patient height:
  - a. 3' – 4' tall = #2
  - b. 3.5' – 4.5'tall = #2.5
  - c. 4' – 5' tall = #3
  - d. 5' – 6' tall = #4
  - e. > 6' tall = #5
3. Assemble equipment, note correct volume for inflation marked on tube itself, test balloon for leaks, lubricate posterior aspect distal tip with water-soluble lubricant.(included)
4. If trauma, make sure someone is holding in-line spinal immobilization in neutral position.
5. If no trauma, sniffing position or slight cervical hyperextension is preferred.
6. Hold King Tube in dominant hand at the connector. With other hand, open mouth and lift chin.
7. Advance tip under base of tongue, while rotating tube back to midline.
8. Without exerting excessive force, advance tube until base of connector is aligned with teeth or gums.
9. Using supplied syringe, inflate cuff balloon with correct volume of air (marked on King Tube)
  - a. #2 = 25 – 35 mL
  - b. #2.5 = 30 – 40 mL
  - c. #3 = 45 – 60 mL
  - d. #4 = 60 – 80 mL
  - e. #5 = 70 – 90 mL

10. Attach BVM, while gently bagging, slowly withdraw tube until ventilation is easy and free flowing.
11. After inflation of the mask, look for signs of correct placement;
  - Slight outward movement of the tube on inflation.
  - Presence of smooth oval swelling in the neck around the thyroid or cricoid area.
  - No cuff visible in the oropharynx.
  - Good waveform on ETCO<sub>2</sub> monitor
  - Positive bilateral breath sounds with adequate chest rise.
  - Negative sounds auscultated over the epigastric area.
  - Increased oxygen saturation and skin color improvement.
  - Change of color on the CO<sub>2</sub> detector.
  - Fogging of tube with breathing
  - Change of color on the CO<sub>2</sub> detector. (Only to be used if waveform ETCO<sub>2</sub> monitor not working or available)
12. After placement is verified, secure tube using available tube holder.
13. Monitor patient for vomiting and aspiration.

**Precautions:**

- Use with caution in patients with broken teeth, which may lacerate balloon.
- Do not remove a properly functioning King tube in order to attempt intubation.
- If ventilations become compromised with the King tube, including lack of ETCO<sub>2</sub> waveform, remove King tube and provide ventilations with a BVM.

## APPENDICIES PEDIATRIC TRAUMA SCORE

### CHAPTER 24.8.1

**Issued: May 2010**

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COMPONENT	2 POINTS	1 POINT	-1 POINT
Size	>20 Kg	10-20 Kg	<10 Kg
Airway	Normal	Maintainable	Un-maintainable
Systolic BP	>90 mm HG	90-50 mm Hg	<50 mm Hg
CNS	AWAKE	OBTUNDED	COMATOSE
Open Wound	None	Minor	Major/penetrating
Skeletal	None	Closed FX	Open/multiple FX

(If proper size BP cuff not available, BP can be assessed by assigning 2 points for a palpable pulse at the wrist, 1 point for a palpable pulse at the groin, and -1 point if no pulse palpable.)

- I. **SIZE:** When a given amount of energy is imparted to a smaller child (with less reserve), the potential for severe injury is much greater, so smaller children have high injury potential.
- II. **AIRWAY:** Airway management is more difficult in children because of size and anatomy and the greater difficulty in obtaining a surgical airway when needed, requiring the skills which probably only reside at a trauma center.
- III. **SYSTOLIC BLOOD PRESSURE:** Systolic blood pressure is assessed to provide an initial evaluation of cardiovascular status; "low" blood pressure may reflect normal physiology for a small infant, or reflect Decompensated shock with impending arrest in an older child.
- IV. **CNS:** Level of consciousness is the most important factor in determining neurologic status, and any deviation from totally awake and normal with no history of abnormality demands heightened attention.
- V. **OPEN WOUND:** Any abrasion may reflect internal injury or fracture more often than in adults; certainly, any penetrating injury or major avulsion/laceration may reflect such an injury.
- VI. **SKELETAL:** Children with skeletal trauma are more likely than adults to have associated blunt trauma to the trunk area, and this adds greatly to general morbidity.

The score range is -6 (injured worst) to +12 (injured least).

Studies have shown that no children with PTS of greater than 8 died; though they certainly may have been seriously injured. All children with PTS of less than 1 died. 3% of those who had PTS of 7-8 died. Therefore, any child with PTS of 8 or less should be taken to the highest-level trauma center available.

## APPENDICIES REVISED TRAUMA SCORE

### CHAPTER 24.8.2

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The Revised Trauma Score (RTS) is a standardized method of reporting the severity of injury of the trauma patient in the pre-hospital setting, because of its reliance solely on objective parameters, its use is to be preferred to that of the Trauma Score in patient care conducted by ACFR/GFR/ShandsCair personnel.

<u>Parameter</u>	<u>Revised Trauma Score Point</u>	
Glasgow Coma Score:	13-15	4
	9-12	3
	6-8	2
	4-5	1
	3	0
<b>Systolic Blood Pressure</b>	>89 mm Hg	4
	76-89 mm Hg	3
	50-75 mm Hg	2
	1-49 mm Hg	1
	None	0
<b>Respiratory Rate</b>	10-29/min	4
	>29/min	3
	6-9/min	2
	1-5/min	0
<b>Total Revised Trauma Score</b>	<b>0-12</b>	

**NOTE:** A lower Total Revised Trauma Score reflects an increased severity of injury and mandates consideration of patient transport to a trauma center or the closest appropriate facility.

**APPENDICIES  
PEDIATRIC TRAUMA ASSESSMENT METHODOLOGY**

**CHAPTER 24.8.3**

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**Click to view**



[Pediatric Trauma Assessment Methodology](#)



**APPENDICIES  
ADULT TRAUMA TRIAGE CRITERIA & METHODOLOGY**

**CHAPTER 24.8.4**

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**Click to view**



**[ADULT TRAUMA TRIAGE CRITERIA & METHODOLOGY](#)**

## APPENDICIES NORMAL PEDIATRIC VITAL SIGNS

### CHAPTER 24.8.5

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Age	Weight (kg)	Pulse	Respirations	B/P
Newborn	3	140	40	80/50
6 months	6	140	30	90/60
1 year	10	120	25	90/60
5 years	20	100	20	100/60
15 years	50	80	14	120/80

(Adult values are applicable from age 15 on)

To estimate **pediatric weight**:

Estimated **wt (Kg) = 2 x (age) + 10**

Example:

For 7 year old child, wt = (2 x 7) + 10 = 24 Kg

To estimate **pediatric endotracheal tube size**:

Use diameter of patient's little finger as gauge of needed tube size; OR

$$\text{Tube size} = \frac{(16 + \text{age})}{4}$$

Example: For 7-year-old child, tube size

$$\frac{16 + 7}{4} = 5.75$$

(Approx. a 5.5 or 6.0 ETT)

**Pediatric defibrillation dose:**

**2 joules/Kg**, followed by 4 joules/Kg, followed by 4 joules/Kg

**Pediatric major ACLS drug doses:**

Epinephrine	0.01 mg/Kg
Atropine	0.02 mg/Kg (min. dose 0.2 mg)
Lidocaine	1 mg/Kg
Dextrose	0.5 - 1 gm/Kg
Naloxone	0.4 - 2 mg
NaHCO <sub>3</sub>	0.5 - 1 mEq/Kg
Versed	0.1 - 0.5 mg/Kg max 5 mg total

**Pediatric Blood Sugar Values**

0-2 years: 40-60 gm/dl

2-8 years: 60-80 gm/dl

## APPENDICIES

### ALTERNATE ROUTES OF DRUG ADMINISTRATION

#### CHAPTER 24.8.6

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The preferred route of drug administration shall be intravenous when not otherwise specified in operational protocols. However, providers must be aware of alternate routes of drug administration and make this information available to base station physicians when difficulties arise in giving required fluids and/or medications.

#### **INTRAOSSSEOUS**

Any drug given IV may be given via the intraosseous route:

#### **ENDOTRACHEAL**

The following drugs may be given via the endotracheal route:

- Naloxone
- Atropine
- Epinephrine
- Lidocaine
- Vasopressin

When drugs are given endotracheally, they should be diluted with 10-15 cc NS prior to administration; administration must be followed by hyper-insufflation of the lungs to promote optimal drug absorption. Use 2-2.5 X recommended dosage, preferably done by administering through IV tubing past the end of the ETT.

#### **SUBLINGUAL**

The following drugs may be given sublingually (injected into the venous plexus at the base of the tongue):

- Nitroglycerin
- Glucose paste
- Zofran

#### **INTRAMUSCULARLY**

The following drugs may be administered intramuscularly:

Atropine	Morphine sulfate	Naloxone
Haldol	Phenergan	Glucagon
Toradol	Versed	Diphenhydramine
Furosemide	Lidocaine	

Use of the IM route is to be highly discouraged due to slow and erratic absorption of drugs from deep IM sites.

#### **INTRANASAL**

The following medications can be given Intranasal via the Mucosal Atomizer Device:

- Narcan
- Versed
- Glucagon

**TRANSCUTANEOUS**

The following drugs may be administered transcutaneous:

- Nitroglycerin paste

## APPENDICIES APGAR SCORING

### CHAPTER 24.8.7

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The Apgar score provides a measure of the well being of the newly delivered infant. It is composed of the parameters of appearance, pulse, irritability (grimace), muscle tone (activity), and respirations. The scores may be from 0 to 10; higher scores are more indicative of neonatal well being. APGAR scores should be determined both one and five minutes after delivery; the five minute score is most significant.

Parameter	0 points	1 point	2 points
Heart Rate	0	<100	>100
Respirations	absent	slow, irregular	good, crying
Irritability to slap	0	grimace	cry
Muscle Tone	Flaccid	some reflex	active motion
Color	blue/pale	body pink	all pink

Total score = sum of each parameter score