

# DEPARTMENT OF HEALTH AND HUMAN SERVICES

*Larry Meredith, Ph.D., Director*

DIVISION OF HEALTH SERVICES  
**EMERGENCY MEDICAL SERVICES**  
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**Date:** January 2, 2006  
**To:** Holders of Policy and Procedure Manuals  
**From:** Diane Claytor RN MS  
EMS Program Administrator  
**Subject: Update to Policy Manual, Change Notice #24**

Enclosed please find Update # 24 to the EMS Policy and Procedure Manual. Please add the new signature page and replace the Table of Contents. Log the Change Notice on the appropriate page.

If any change was made in the policy, the complete policy is included in the packet. This is to decrease the potential for error that might be caused by replacing single pages.

The packet includes the following policies:

- 3200 – EMT-I Certification/Recertification
- 4120 – Public Access Early Defibrillation – Program (new)
- 7003 – Radio Communications Policy
- 7005 – Reddinet Policy (new)
- 8104 – Refusal of Care Against Medical Advice and Release at Scene
- 8104a – AMA and RAS form
- 8115 – Pre-hospital Field Transfer Form (FTF)
- 8206 - Spinal Immobilization
- 8300 – ALS Adult Medications
- 8301 – ALS Routine Medical Care
- 8302 – Cardiac Emergencies
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- 8309 – Adult Pain Management
- 8312 – Pediatric Medications
- 8412 – External Cardiac Pacing

8416 – Adult Oral Intubation (new)

8417 – Continuous Positive Airway Pressure (CPAP) (new)

8418 – Endotracheal Tube Introducer (ETII) (new)

Items contained in the **Patient Care Manual** are indicated with a (\*), should you choose to update those manuals.

If you have not received training on these changes, please contact your CQI Liaison or Training Officer. Please assure that the changes are made in your manual.

Thank you.

**MARIN COUNTY**  
**EMS Program Policies and Procedures**  
**DISTRIBUTION LIST**  
**January, 2006**

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Marin County EMS Program, Randy Saxe, EMS Specialist	one
Marin County EMS Program, Trauma Coordinator	one
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Marin County Counsel, Byron Toma	one
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<b>HOSPITALS:</b>	
Kaiser Hospital, Emergency Department, Vincent Reed, RN	one
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Marin County Fire Department, Batt. Chief Brian Meuser	one
Novato Fire Protection District, Batt. Chief Ted Peterson, EMT-P	one
San Rafael Fire Department, Chief. Jon Montenero	one
SMEMPS, Chief, Richard Pearce	one
Ross Valley Paramedic Authority, Chief Robert Sinnott	one
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CHP - Helicopter Unit.(Napa Airport), Sgt. Brad Elder	one
Life Flight - Stanford	one
REACH - Santa Rosa, Sean Russell, EMT-P	one
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George Rygg, MD, Novato Community Hospital	one
Kaiser Hospital, Administrator, Patricia Kendall, RN	one
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Stinson Beach Fire Protection District, Chief Kenny Stevens	one
American Medical Response, (AMR) Dean Andreson, EMT-P	one
Sonoma Life Support (AMR), Eric Polan, EMT-P	one
St. Joseph's Ambulance Service, Richard Angotti, CEO	one
Marinwood Fire Department, John Bagala, EMT-P	one
Southern Marin Fire Protection District, Chief Michael Stone	one
Bolinas Fire Protection District, Chief Kevin Hicks	one
Total	30

***COUNTY OF MARIN***

***DEPARTMENT OF HEALTH AND HUMAN SERVICES***

Division of Health Services

*Emergency Medical Services Program*

**Policy and Procedure Manual**

**January, 2006**

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*Diane Claytor, RN, MS, EMS Program Administrator*

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*Frima Stewart, Director of Health Services*

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*William L. Teufel, MD, EMS Program, Medical Director*

## *EMS Program Policy & Procedure Manual*

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# *EMS Policy & Procedures Manual*

## *Record of Change*

**Keep your policy manual current.** After receiving and filing additional or revised policies/protocols, initial and date the block following the appropriate change.

There should not be any blank boxes between initialed blocks; this means you either failed to record the CHANGE NOTICE or have not received it. Notify the Marin County EMS Office if you did not receive a CHANGE NOTICE.

<b>No.</b>	<b>Initial</b>	<b>Date</b>	<b>No.</b>	<b>Initial</b>	<b>Date</b>	<b>No.</b>	<b>Initial</b>	<b>Date</b>
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## **EMT-I CERTIFICATION/ CONTINUOUS CERTIFICATION POLICY**

### **I. PURPOSE**

To delineate the process for EMT-I Certification and Continuous Certification.

Related Policies: ( 3200 et.sec. )

California Code of Regulations Title 22, Div. 9, Chapter 2 (C.C.R. Title 22,9,2)

Portions of this policy are derived from (C.C.R. Title 22,9,2) and should be referred to for the complete regulation.

### **II. INITIAL CERTIFICATION**

A. To be eligible for certification in the State of California an individual must:

1. Have an EMT-I course completion record or other documented proof of successful completion of an approved EMT-I course, or
2. Have documentation of successful completion of an approved out-of-state EMT-1 training course, within the last two years which meets the requirements of (C.C.R. Title 22,9,2).
3. Apply for certification within two (2) years of the date of course completion. Application includes:
  - a. Completed application form
  - b. Check or money order payable to "County of Marin" in the amount as per fee schedule
  - c. Copy of Healthcare Provider BLS CPR card or equivalent, front and back
  - d. Furnish a current photograph I.D.
4. Prior to January 1, 2006, pass by pre-established standards the written and skills examination approved by the EMS Program. After January 1, 2006 pass by pre-established standards the written and skills examinations approved by the EMS Authority.
5. Furnish a live scan or criminal background check from the California Department of Justice.
6. Be eighteen years of age or older.

B. Certification procedure

1. The local EMS Agency shall certify the individual as an EMT-I for a period of two (2) years from the last day of the month in which a complete application is submitted.
2. Certification is indicated by issuance of a wallet-sized certificate to eligible individuals.

**III. CHALLENGE CERTIFICATION**

A. An individual may obtain an EMT-I course completion record by successfully passing by pre-established standards, developed and/or approved by the EMT-I approving authority pursuant to Section 100066 Title 22, California Code of Regulations, a course challenge examination if s/he meets one of the following eligibility requirements:

1. The person is a currently licensed physician, registered nurse, physician assistant, vocational nurse or paramedic
2. Persons trained in an Armed Forces or Coast Guard training program within the last two years that meets DOT standards; persons active in the last two years in a pre-hospital emergency medical classification in the military, without having formal certification if approved by Medical Director may be required to take a refresher course or complete continuing education courses as a condition of certification

B. Eligible persons will be permitted to take the challenge exam one time. If an applicant fails the exam, completion of a basic EMT-I course is required.

C. All individuals choosing to challenge certification will furnish a live scan or criminal background check from the California Department of Justice.

**IV. CONTINUING CERTIFICATION**

Individuals who have let their EMT-I certificate expire may not work as an EMT-I until they have furnished a live scan or criminal background check from the California Department of Justice *and* one of the following requirements are met:

- A. In order to be eligible for EMT-I continuous certification, an individual shall meet the requirements of State regulations.
  1. Possess current and valid EMT-I certification
  2. Proof of completion of 24 hours of approved continuing education.
  3. Proof of skills competency verification, form EMSA-SCV (07-03)
  4. Complete an application form

5. Furnish a current photograph I.D.
  6. Possess a current and valid CPR card (Health Care Provider or Equivalent)
  7. Pay the established fee
- B. In order to be eligible for EMT-I continuous certification after expiration, an individual shall meet the requirements of State regulations:
1. Expired less than 6 months:
    - a. Must meet the above stated requirements
  2. Expired more than 6 months but less than 12 months
    - a. Must meet the above stated requirements
    - b. Provide proof of completion of 36 hours of approved continuing education
  3. Expired more than 12 months but less than 24 months
    - a. Must meet the above stated requirements
    - b. Provide proof of completion of 48 hours of approved continuing education
    - c. Pass an approved written and skills examination
  4. Expired more than 24 months
    - a. Not eligible for continuous certification. Must retake complete EMT training program
- C. An individual currently licensed in California as a Paramedic or currently certified in California as an EMT-II is deemed to be certified as an EMT-I except when the paramedic license or EMT-II certification is under suspension, with no further testing required. In the case of a paramedic license under suspension, the paramedic shall apply to a local EMS agency for EMT-I certification.
- D. An individual who meets one of the following criteria shall be eligible for certification upon fulfilling the requirements of subsections (A), (3), (5), and (6) of this section.
1. Possesses a current and valid National Registry EMT-Basic certificate,
  2. Possesses a current and valid out-of-state or National Registry EMT-Intermediate or Paramedic certificate.

- E. An individual who possesses a current and valid out-of-state EMT-I certificate, shall be eligible for certification upon fulfilling the requirements of subsections (A), (3), (4), (5) and (6) of this section.
- F. Prior to January 1, 2006 the certifying examination shall include:
  - 1. A competency-based written examination;
  - 2. A Skills examination, State Form EMSA-SCV (07-03)
- G. After January 1, 2006 the single written and skills certifying examination shall be approved by the EMS Authority.
- H. Each EMT-I certifying authority shall provide for adequate certification examinations to accommodate the eligible individuals requesting certifications in the certifying authority's jurisdiction, but in no case less than once per year, unless otherwise specified by the EMT-I approving authority.
- I. EMT-I certifying authority shall issue a wallet-size certificate to eligible individuals. The certificate shall conform to specifications of C.C.R. Title 22, Div. 9, Chapter 2.
- J. Certification as an EMT-I shall be for a maximum of two years except in the following cases:
  - 1. A person who possesses a current and valid out-of-state EMT-I, EMT-Intermediate or Paramedic certification or a current and valid National Registry EMT-Basic, EMT-Intermediate or Paramedic certification, the expiration date shall be the same expiration date as stated on the out-of-state or National Registry certification.
  - 2. That an individual currently certified or licensed as a Paramedic, pursuant to subsection (3), shall have an EMT-I expiration date that is the same as the current Paramedic certificate or license.
  - 3. The effective date of certification, as used in this Chapter, shall be the date the individual satisfactorily completes all certification requirements and has applied for certification. The certification expiration date will be the final day of the final month of the two year period.

## **PUBLIC ACCESS EARLY DEFIBRILLATION PROGRAM**

### **1. PURPOSE**

To delineate requirements and practices for the provision of Public Access Early Defibrillation in Marin County with the goal of increasing the survival rate from cardiac arrest.

Related Policies: (4100 et.sec., 4104)

California Code of Regulations Title 22, Div. 9, Chapter 1.8 (C.C.R. Title 22,9,1.8)

Portions of this policy are derived from (C.C.R. Title 22,9,1.8) and should be referred to for the complete regulation.

### **II. DEFINITIONS**

- A. Public Access Early Defibrillation - the practice of using non-medical personnel, with specified training, to administer defibrillatory shocks with an automated defibrillator to apneic, pulseless patients prior to the arrival of medical personnel.
- B. Automated Defibrillator - external defibrillator capable of cardiac rhythm analysis that will charge and deliver a shock, either automatically or by user interaction, after electronically detecting and assessing ventricular fibrillation or rapid ventricular tachycardia.
- C. AED Service Provider - an agency, business, organization or individual who obtains an AED for use in a medical emergency involving an unconscious person who has no signs of circulation. This definition does not apply to individuals who have been prescribed an AED for use on a specifically identified individual. Policy governing the use of AED by trained, licensed or certified medical personnel is described elsewhere (Policy #4100).

### **III. POLICY**

- A. This policy outlines the procedures that a responder must use in order to comply with state regulations governing the use of automatic or semi-automatic defibrillators.
- B. Provision of early defibrillation is an optional adjunct to basic cardiopulmonary resuscitation that may be provided by any responder wishing to do so.

- C. Policy/procedure related to training program approval, maintenance of skill proficiency, treatment guidelines, and quality assurance will be monitored by the EMS Office in conjunction with the AED service provider, and the medical director. (C.C.R. Title 22,9,1.8)
- D. Any persons so choosing will function in this capacity only following completion of an approved early defibrillation class, maintenance of the required skills refresher training and compliance with the applicable policies and procedures. (C.C.R. Title 22,9,1.8)
- E. Medical Director Requirements:  
Any AED training course for non-licensed or non-certified personnel shall have a physician medical director who:
1. Meets the qualifications of a prescribing physician.
  2. Shall approve a process to ensure instructors are properly qualified to the AED instructor standards established by the American Heart Association or the American Red Cross and ensure that instructors are trained to the course content.
  3. Shall ensure that all courses meet the requirements of (C.C.R. Title 22,9,1.8).
  4. May also serve as the “prescribing physician.”
- F. Operational Requirements:

An AED Service Provider shall ensure their internal AED programs include all of the following:

1. Development of an Internal Emergency Response System which complies with the regulations contained in (C.C.R. Title 22,9,1.8).
2. Notification of the local EMS agency of the existence, location and type of AED at the time it is acquired. This notification shall be submitted on the “County of Marin AED Provider Information” form.
3. That all applicable local EMS policies and procedures are followed.
4. That expected AED users complete a training course in CPR and AED use that complies with requirements of (C.C.R. Title 22,9,1.8) and the standards of the American Heart Association or the American Red Cross.

5. That the defibrillator is maintained and regularly tested according to the operation and maintenance guidelines set forth by the manufacturer, and according to any applicable rules and regulations set forth by the governmental authority under the federal Food and Drug Administration and any other applicable state and federal authority.
6. That the defibrillator is checked for readiness after each use and at least once every 30 days if the AED has not been used in the previous 30 days. Records of these periodic checks shall be maintained.
7. That a mechanism exists to ensure that any person, either an employee or agent of the AED service provider, or member of the general public who renders emergency care or treatment on a person in cardiac arrest by using the service provider's AED activates the emergency medical services system as soon as possible, and reports any use of the AED to the local EMS agency. Reports shall be submitted to the EMS agency on the "CPR or AED Usage Report" form.
8. That there is involvement of a California licensed physician and surgeon in developing an Internal Emergency Response System and to ensure compliance with these regulations and requirements for training, notification and maintenance.
9. That a mechanism exists that will assure the continued competency of the authorized individuals in the AED Service Provider's employ to include periodic training and skills proficiency demonstrations.

G. Performance Standards

The performance standard set fourth in policy #4104 shall be used as a guide for the Public Access Defibrillation performance standard.

## **RADIO COMMUNICATION POLICY**

### **I. PURPOSE**

To provide guidance for the use of the MERA radio system

### **II. RELATED POLICIES**

- A. Communications Failure, #7002
- B. MERA Mutual Aid and Communications Policy

### **III. Policy**

#### A. Available Communications Resources

1. **MERA Policy:** Users should refer to the MERA Communications Policy for general directions for the use of the MERA system.
2. **Templates:** Users should refer to their Agency Templates or Fleetmap for the locations of specific talkgroups on their console, back-up control stations, mobile and portable radios. The Templates also contain the correct name (alias) for that talkgroup.
3. **Permissions:** Users shall only use talkgroups that have been assigned for their use. Users may use talkgroups that are assigned for temporary use by a Marin communications center or incident commander "I.C.". Before users can use any talkgroup (other than those stated above) provided by another agency they must have a written agreement with that agency.
4. **MERA Radio System:** Field units can communicate directly to the hospital using the designated talkgroups on their mobile or portable MERA radio. On all EMS/ Fire radios, Zone A contains the EMS talkgroups; "mode" channels contain the following alias' or talkgroup names:

**EMS** is to communicate with the County EMS Dispatcher

**HOSP** is the MERA "All Hospital" talkgroup for large-scale incidents

**MGH 1** is for Marin General Hospital "MARIN REPORT"

**MGH 2** is for Marin General Hospital "MARIN CONSULT"

**KSR 1** is for Kaiser San Rafael Hospital "KAISER REPORT"

**KSR 2** is for Kaiser San Rafael Hospital “KAISER CONSULT”

**NCH 1** is for Novato Community Hospital “NOVATO REPORT”

**NCH 2** is for Novato Community Hospital “NOVATO CONSULT”

**EMS 10** is for EMS tactical operations and shall be assigned by the IC or Comm. Center

**LG CLL** is for hailing a local government agency or units. Once contact is made, then go to LG TLK

**LG TLK** is for conversations with local government agencies

**PD CLL** is for hailing law enforcement units. Once contact is made go to PD TLK

**PD TLK** is for conversations with law enforcement

**KNOX** is not used by EMS providers

**911** is for emergency communications with a communications center

- a. **Paging:** The Field units will be responsible to set the Page function on their radio for initial contact with the hospitals. Other units may be using the channel at the same time, please listen for broadcast traffic before beginning your transmission. A page may not be needed if the receiving hospital radio is staffed due to other broadcast traffic.
- b. **Initiating Communications:** When making initial contact with a communications center, unit or hospital you should state the name of the entity you are calling first, then your identifier followed by the “alias” of the talkgroup you are on, i.e. “Marin Comm., Medic-1 on EMS Dispatch” or “Marin General Hospital, Medic-1 on MGH Consult.”
- c. **Consult:** “Consult” talkgroups shall be used for Physician consults and policy required consultations.
- d. **Report:** “Report” talkgroups shall be used for routine hospital reports.

- e. **Hosp:** The “All Hospital” talkgroup shall be used for hospital communications during large scale incidents or other urgent communications that may require multiple hospitals to share information simultaneously and during failures of normal communications systems.
  - f. **Emergency Button Activations:** Emergency Button Activations are authorized when an EMS Field Unit needs urgent or emergency assistance. It is not to be used for routine assistance requests. Field Units should expect an emergency response from other public safety units following an Emergency Button Activation. Please see the MERA Communications Policy for further information. **Due to the system configuration the Emergency Buttons are not active for private EMS providers or hospitals.**
  - g. **Hospital Systems:** Marin County hospitals are equipped with three radios. Console set 1 is for hospital reports and is labeled with the initials of the hospital -1, i.e. MGH 1. Console set 2 is for hospital consults and is labeled with the initials of the hospital -2, i.e. MGH 2. Console set 3 is for the all hospital talkgroup and is labeled HOSP this consol should be left on this talkgroup at all times. Console 3 is also able to receive and transmit on other talkgroups; hospitals should review their Templates and Trouble Shooting Guide for use of other talkgroups if urgent communications are required, i.e. using the 911 channel to request law enforcement during an emergency and no other forms of communication are available.
  - h. **ALS / BLS Use:** ALS and BLS users should both use the system in the same manner for hospital consultations, reports and multiple casualty incident activities.
- 5. **Cellular telephone service:** Field units can use the cellular telephone to communicate directly with the hospital emergency department. Cell phones should be a second choice during MCI operations due to the loss of information to other units involved in the incident.
  - 7. **Contact an alternative hospital:** If contact cannot be made with the receiving hospital field units may contact an alternative hospital via the listed methods and request the information be relayed to the appropriate hospital by telephone.
  - 8. **If contact cannot be established:** If contact cannot be established with any hospital emergency department, the Paramedic shall rely on the EMS Agency “Communication Failure Protocol”, EMS Policy #7002 (7/1/98).

- During the first year of operation any MERA radio failure or inability to contact the hospital shall be reported to the EMS Office using the EMS System Notification Form; please fully explain the event and provide contact information. Any major system failure should be reported to the Marin Communications Center and the Marin County Radio Shop. Hospitals should consult their Trouble Shooting Guide before calling for outside assistance; requests for repairs should be made by an authorized employee of the hospital or agency.

## **REDDINET POLICY**

### **I. PURPOSE**

- A. To provide guidance for the use of the ReddiNet Communications system

### **II. RELATED POLICIES**

- A. Ambulance Diversion Policy, #5400
- B. Medical Mutual Aid Policy, #5200
- C. Communications Policy, #7000 et. sec.

### **III. POLICY**

#### **A. Facility information and status**

1. Each facility using the ReddiNet system shall complete and update daily their facility information and status screens as outlined on the facility information form
2. Each facility shall complete and maintain the password request form provided by ReddiNet and is responsible for maintenance of authorized licensed users

#### **B. MCI Operations**

1. When a MCI is declared the facility that would be least impacted by the event will assume the lead role in coordinating the event, the lead facility will be determined in consultation with the Level III Trauma Center
2. The ReddiNet Internet Shortcut Instructions shall serve as the guidance for ReddiNet operations and is attached as Appendix A
3. Policy #5200, Medical Mutual Aid and the Emergency Medical Response Plan shall serve as the overall guidance for operations during an MCI

#### **C. Ambulance Diversion**

1. Policy #5400 shall be used as the guidance for ambulance diversions
2. The ReddiNet Internet Shortcut Instructions shall serve as the guidance for ReddiNet operations and is attached as Appendix A

#### **D. Memo**

1. Memos may be completed by any facility and must be written in a professional manner.
2. The memo feature is for urgent communications that can be sent to several facilities simultaneously
3. The ReddiNet Internet Shortcut Instructions shall serve as the guidance for ReddiNet operations and is attached as Appendix A

#### **E. Bed Availability**

1. Bed Availability is the number of empty staffed beds that are available
2. The facility may choose to have any department in the hospital input the information
3. The ReddiNet Internet Shortcut Instructions shall serve as the guidance for ReddiNet operations and is attached as Appendix A

#### **F. Assessment Polls**

1. Assessment polls may be initiated from several different departments in the facility that is licensed to do so.
2. Assessment Polls must be written in a professional manner
3. Assessment Polls That are to be used on an ongoing basis shall be approved by the EMS Program and done in consultation with the participating facilities
4. The ReddiNet Internet Shortcut Instructions shall serve as the guidance for ReddiNet operations and is attached as Appendix A

#### **G. Drills**

1. The document "ReddiNet Drilling 101" shall serve as the guidance for ReddiNet drills and is attached as Appendix B
2. Drills shall be coordinated in consultation with all system users

#### **H. Licenses**

1. Each facility will be issued up to 5 user licenses
2. Licenses may be used in the ER, Lab, Pharmacy, Infection Control and the HEICS Command Center
3. All licenses will be used in accordance with the contracts provided by HASC and the policies set forth by the EMS Program

## SPINAL IMMOBILIZATION

### I. PURPOSE

To establish guidelines for the application of spinal immobilization devices whenever there is potential for injury to the spine.

### II. POLICY

- A. In general, the application of spinal immobilization devices is indicated any time the chief complaint or the mechanism of injury indicates potential for injury to the spine. This includes patients with blunt trauma, head trauma or axial spine trauma (ex: moving vehicle crash, adult fall from standing height, fall > 3 feet).
- B. The application of spinal immobilization devices, when appropriate, will be applied by first responders, EMT-1 and EMT-P personnel.
- C. All EMT-1 and EMT-P personnel must successfully complete the Marin County Spinal Immobilization Training program in order to omit cervical spine immobilization.
- D. After the training program has been successfully completed, spinal immobilization may be omitted by trained first responders (EMT-1, EMT-P) when **ALL** of the following conditions apply:
  1. Normal neurological examination. Patient is:
    - a. Alert and cooperative;
    - b. Fully oriented to person, place, time and situation;
    - c. Demonstrating normal sensory and motor function in extremities;
    - d. Without complaints or history of tingling, numbness or paresthesias.
  2. There is no neck, spinal, or upper back pain by patient report (see Section V. for description).
  3. There is no evidence of intoxication or impairment from medication, alcohol or other drugs.
  4. There are no distracting painful injuries or emotional conditions.
  5. There is no neck or spinal tenderness elicited on palpation (see Section V. for description).
  6. There is no neck or spinal pain with *active* movement (*i.e., patient should be instructed to gently move head and neck and should have no complaint of pain. Neck should not be moved by provider.*)

### **III. EVALUATION OF SPINAL TENDERNESS AND MOTOR/SENSORY FUNCTION IN EXTREMITIES**

- A. Spinal tenderness is determined by a stairstep exam over the spinous processes from top to bottom.
- B. Motor exam
  - 1. Upper Extremity
    - a. Test abduction/adduction of the 4<sup>th</sup> and 2<sup>nd</sup> fingers together
    - b. Test finger/hand extension by pushing down on the extended wrist
  - 2. Lower Extremities
    - a. Test plantar flexion by pressing against the soles of the feet (with patient resistance)
    - b. Test dorsiflexion by pressing against the top of the feet (with patient resistance)
- C. Sensory Exam – Upper and Lower Extremities  
Use a broken wooden q-tip (or equivalent) on 1 or 2 sites, upper and lower extremities. Ask the patient to distinguish between “sharp” (the broken end of the q-tip) and “dull” (the cotton end of the q-tip)

### **IV. PROCEDURE**

Application of spinal immobilization:

- A. Maintain spinal axial alignment throughout application.
- B. Check sensation and motor function of all extremities.
- C. Perform detailed (secondary) examination on neck area and apply appropriate size of rigid cervical collar.
- D. Place patient on spinal immobilization device with as little movement as possible, assessing back during move.
- E. Immobilize chest, hips and knees in a manner to prevent movement during any unforeseen circumstances or position changes.
- F. Apply head immobilization (towel rolls, foam head blocks, or equivalent) to prevent movement of head.
  - 1. Secure head to the board at the forehead and chin.
  - 2. Recheck sensory and motor function of all extremities.

**V. DOCUMENTATION FOR ADHERENCE TO PROTOCOL**

The following shall be included on the Patient Care Record of the application or omission of spinal immobilization:

- A. Sensation and motor function of all extremities prior and subsequent to application of immobilization.
- B. If unable to apply immobilization due to injuries or other medical reasons, document same. For example, "Unable to adequately immobilize patient due to extent of chest injuries," and describe what modifications you made in the normal procedure.
- C. If application of spinal immobilization devices is indicated and patient refuses same, the transport unit should document patient refusal and attempts made to apply immobilization.
- D. If patient qualifies for omission of spinal immobilization by meeting all of the criteria in II -D, the presence of all criteria must be documented.

**ADULT MEDICATIONS:  
AUTHORIZED/STANDARD INITIAL DOSE**

<b>Drug</b>	<b>Concentration</b>	<b>Standard Dosage</b>
<b>Activated Charcoal</b>	25 gm/bottle or 50 gm/bottle	1 gm/kg PO (not to exceed 50 Gm)
<b>Adenosine (Adenocard)</b>	6 mg/2cc	6mg 1 <sup>st</sup> dose, 12 mg 2 <sup>nd</sup> and 3 <sup>rd</sup> doses (rapid IVP)
<b>Albuterol</b>	2.5 mg/3cc NS	5mg/6cc NS
<b>Aspirin</b>	variable	162-325 mg PO (tablet or chewable – not enteric coated)
<b>Atropine</b>	1 mg/10cc	<b>Cardiac Arrest:</b> 1 mg (10cc) IVP or 2 mg ETT q3-5 min to max of 3 mg IV or 6 mg ETT <b>Bradycardia:</b> 0.5mg IVP, MR q3-5 min. to max of 2 mg <b>Insecticide Poisoning:</b> 2.0 mg slow IV; MR 2-5 minutes until drying of secretions
<b>Calcium Chloride 10%</b>	1 Gm/10 cc	1 Gm IV slowly over 5 min
<b>Dextrose 50%</b>	25 gms/50cc	25 Gm IVP
<b>Diazepam (Valium)</b>	10mg/2cc	<b>Seizures:</b> 5mg (1cc) IV slowly; MR x 2 q 5 min. to max. dose of 15mg and BP > 100
<b>Diphenhydramine (Benadryl)</b>	50 mg/1cc	1 mg/kg IV / IM to max of 50 mg
<b>Dopamine</b>	400mg/250cc NS or 800mg/500 cc NS	5mcg/kg/min; increased to 10 mcg/kg/min if SBP <100
<b>Epinephrine 1:1000</b>	1 mg/1 cc  Auto-Injector Epi-Pen	<b>Allergic reaction/anaphylaxis:</b> 0.01 mg/kg SQ to max 0.5 mg (if >50 yrs give ½ dose, max 0.25 mg (0.25 cc)) or Auto-Injector Epi-Pen (MR in 5 min., Physician Consult if > 65 yrs) <b>Cardiac Arrest :</b> 2mg ETT (flush tube with 8cc NS) <b>Bronchospasm/Asthma/COPD:</b> 0.3 mg (0.3cc)SQ, MR in 5 min.
<b>Epinephrine 1:10,000</b>	1 mg/10 cc	<b>Anaphylaxis:</b> if unresponsive and no palp. BP, give 0.01 mg/kg to max of 0.5 mg (5 cc) IV <b>Cardiac Arrest:</b> 1 mg (10cc)IVP
<b>Furosemide (Lasix)</b>	<b>variable</b>	0.5 mg/kg IV
<b>Glucagon</b>	1 mg/1 cc	1 mg IM
<b>Glucose Paste</b>	30 Gm/tube	30 Gms PO
<b>Ipratropium (Atrovent)</b>	500 mcg per unit dose (2.5cc)	Unit dose

<b>Lidocaine</b>	100 mg/ 5 cc	<b>Cardiac Arrest/Stable or Unstable Ventricular Tachycardia:</b> 1-1.5 mg/kg IVP or 2-3 mg/kg ETT <b>Intubation:</b> consider 100 mg IV prior to attempts <b>Symptomatic Ectopy:</b> 1-1.5 mg/kg IVP; if ectopy continues MR with 0.5 mg/kg q 5-10 minutes to max of 3 mg/kg
<b>Midazolam (Versed)</b>	2 mg/2cc	<b>Cardioversion/ Pacing:</b> 2 mg slow IVP; MR 1-2mg q 3 min. to a max. dose 0.1mg/kg <b>Seizures:</b> 1-2 mg slow IV or deep IM, MR q 5 minutes (max. dose of 5 mg)
<b>Morphine Sulfate</b>	10 mg/1 cc	<b>Chest Pain:</b> 2-5 mg slow IVP, MR q 2-3 min. to total of 10 mg <b>Analgesia for Cardiac Pacing:</b> 2-4 mg slow IVP <b>Pain Management:</b> 4 mg slow IVP, MR every 5 min. if SBP>100 to a total dose of 16mg <b>Trauma Patients:</b> see specifics in adult pain management protocol <b>Pulmonary Edema:</b> 2-5 mg IV ( <i>Physician consult</i> )
<b>Naloxone (Narcan)</b>	2 mg/5 cc	0.4mg-2mg IVP if narcotic OD suspected; if no IV, administer IM or SL
<b>Neosynephrine spray</b>	½ % solution	2 “squirts” in each nostril prior to nasotracheal intubation
<b>Nitroglycerine</b>	0.4 mg/tablet or spray	1 tab or spray SL; repeat q 5min. if SBP>100
<b>Sodium Bicarbonate</b>	50 mEq/50 cc	<b>Crush Syndrome or known Hyperkalemia:</b> 1 mEq/kg up to 100 mEq IVP <b>Cyclic Antidepressant OD with significant dysrhythmias:</b> 1mEq/kg IVP

*\*If the above concentrations become unavailable, providers may use alternate available concentrations or packaging.*

**ALS ROUTINE MEDICAL CARE**  
(replaces 8301 and 8301A)

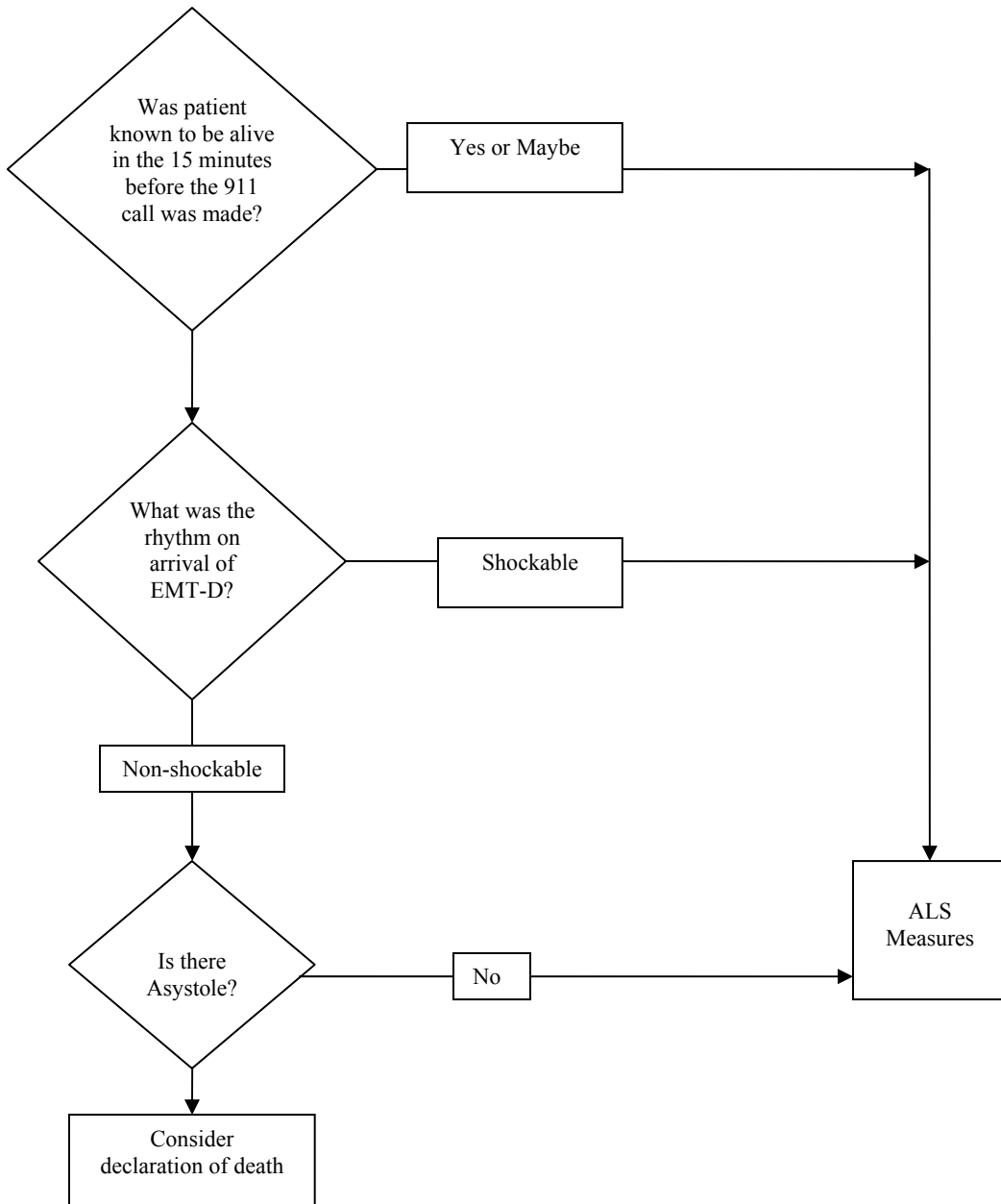
1. Routine Medical Care (RMC) – see Policy 8202
2. Oxygen therapy as recommended in BLS Treatment Guidelines, Oxygen Therapy Guidelines – see Policy 8203
3. Cardiac Monitor
4. Pulse Oximeter
5. Consider IV NS TKO
6. Consider blood glucose reading

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**CARDIAC EMERGENCIES**

**CARDIOPULMONARY ARREST C1**

**Algorithm**



## CARDIAC EMERGENCIES

### CARDIOPULMONARY ARREST C1

#### Ventricular Fibrillation/Pulseless Ventricular Tachycardia

1. CPR First for 90 seconds (except primary respiratory based arrest, i.e. pediatrics, etc) - If unwitnessed & downtime > 5 minutes, or unlikely primary respiratory based situations (peds or young adults/drowning/trauma/allergic/overdose).
2. If witnessed and/or primary respiratory arrest scenario (as above), use defibrillator to check patient for a shockable rhythm (\*).  
Defibrillate (or biphasic equivalent)
  - a) 200 joules
  - b) 200-300 joules
  - c) 360 joules

\* Precordial thump by First Responder/EMT if witnessed and defibrillator not available
3. Continue CPR
4. Intubate and establish IV NS wide-open rate. Begin transport if both are not accomplished, continue treatment while transporting.
5. **Epinephrine** 1.0 mg IVP or 2.0 mg ETT
  - a) Circulate for 1 minute and defibrillate 360 joules
  - b) If no results, continue CPR
  - c) Repeat above steps every 3-5 minutes
6. **Lidocaine**
  - a) 1.0-1.5 mg/kg IVP or 3.0 mg/kg ETT
  - b) Circulate for 1 minute and defibrillate 360 joules
  - c) Repeat above every 3-5 minutes to maximum of 3.0 mg/kg (IV or equivalent ETT dose)
7. Begin transport.

- (\*) CPR first has been shown to lead to better survival and neurologic outcome in presumed arrest patients of cardiac etiology. Respiratory patients can be shocked without delay (CPR).

### **Pulseless Electrical Activity**

Definition: Includes rhythms previously known as electromechanical dissociation (EMD), idioventricular, ventricular escape and bradyasystole

Consider: hypovolemia, hypoxemia, tension pneumothorax, acidosis, cardiac tamponade, pulmonary embolism, anaphylaxis

1. Continue CPR
2. Intubate and establish IV NS wide-open rate. Begin transport if both are not accomplished, continue treatment while transporting
3. **Epinephrine** 1.0 mg IVP or 2 mg ETT
  - a. Continue CPR and evaluate in 1 minute
  - b. If no response, repeat Epinephrine every 3-5 minutes
4. **Atropine** 1.0 mg IV or 2.0 mg ETT if rate < 60, MR every 3-5 min to max of 0.04 mg/kg
5. **Sodium bicarbonate** 1.0 mEq/kg IVP if known hyperkalemia, or suspected cyclic antidepressant overdose.
6. Begin transport.

### **Asystole**

Consider: If arrest was unwitnessed and asystole has been confirmed, criteria for field determination of death have been met according to Policy #8110

If first responders or paramedics detect a pulse that proceeds to asystole, external pacing should be instituted and treatment provided according to the asystole treatment guideline.

1. Continue CPR. If rhythm is unclear and possibly ventricular fibrillation, defibrillate as for ventricular fibrillation
2. Intubate and start IV NS wide-open rate. Begin transport if both not accomplished, continue treatment while transporting.
3. **Epinephrine** 1.0 mg IVP or 2 mg ETT
  - a. Continue CPR and evaluate in 1 minute
  - b. If no response, repeat epinephrine every 3-5 minutes.
4. **Atropine** 1.0 mg IVP or 2.0 mg ETT every 3-5 minutes to maximum of 0.04 mg/kg.
5. Death may be declared if patient has remained in asystole (documented in 2 leads for one (1) minute), without capture if on pacing, pulseless and apneic for 10 minutes of above interventions.

**DYSRHYTHMIAS C2**  
**Bradycardia**

Definition: Symptomatic bradycardia - Heart rate below 50/minute with associated decreasing perfusion, chest pain, shortness of breath, decreased level of consciousness, pulmonary congestion, or congestive heart failure.

**SBP > 100**

1. High flow oxygen
2. Cardiac monitor
3. IV
4. Transport

**SBP <100**

1. High flow oxygen
2. Cardiac monitor
3. IV
4. **Atropine** 0.5 mg IV, MR every 3-5 minutes to max of 0.04mg/kg
  - a. Begin transport after first dose given
5. If hypovolemia is suspected, give fluid challenge 250 cc, may repeat
6. If no improvement following initial dose of Atropine, institute external pacing at 80 per minute (refer to policy 8412).
7. **Dopamine** 5mcg/kg/min, increase to 20 mcg/kg/min if SBP remains < 100.
8. Consider Physician Consult if patient remains symptomatic.

### Ventricular Ectopy

Reminder: Considerations for acute suppressive therapy include: PVCs **only** in presence of ischemic chest pain, multifocal, couplets or runs of ventricular tachycardia; restoration of organized rhythm following conversion from VT or defibrillation

1. High flow oxygen
2. Cardiac monitor
3. IV
4. **Lidocaine**
  - a. 1.0-1.5 mg/kg IVP
  - b. If ectopy continues, 0.5 mg/kg every 5-10 minutes to max of 3.0 mg/kg

### Sustained Ventricular Tachycardia Pulse Present

**Stable:** (awake, perfusing)

1. High flow oxygen
2. Cardiac monitor
3. IV
4. **Lidocaine** 1.0-1.5 mg/kg IVP
  - a. If VT resolves, repeat Lidocaine at 1/2 initial dose every 10 min to total of 3.0 mg/kg
  - b. If VT persists, repeat Lidocaine at 1/2 initial dose every 5 min to total of 3.0 mg/kg
5. Begin transport after initial Lidocaine dose
6. Consider synchronized cardioversion (see UNSTABLE, below)

### Sustained Ventricular Tachycardia Pulse Present

**Unstable:** (low blood pressure, shortness of breath, chest pain, altered consciousness or CHF/pulmonary edema)

1. High flow oxygen
2. Cardiac monitor
3. IV, consider fluid challenge NS 250cc if hypotensive
4. Consider sedation with **Diazepam (Valium)** 0.1 mg/kg to maximum of 5 mg IV or **Midazolam (Versed)** 2 mg. Higher dose requires receiving hospital contact.
5. If HR > 150, synchronized cardioversion (If synchronized cardioversion not possible due to shape of QRS, perform unsynchronized cardioversion/biphasic equivalent.)
  - a. 100 joules; if unsuccessful,
  - b. 200 joules; if unsuccessful,
  - c. 300 joules; if unsuccessful,
  - d. 360 joules.
6. **Lidocaine** 1.0-1.5 mg/kg IVP or 3.0 mg/kg ETT
  - a. If VT resolves, repeat Lidocaine 1/2 initial dose every 10 min to total of 3.0 mg/kg
  - b. If VT persists, repeat Lidocaine at 1/2 initial dose every 5 min to total of 3.0 mg/kg
  - c. After full loading dose is achieved, Lidocaine 0.5 mg/kg every 10 minutes to maintain blood level

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### Supra Ventricular Tachycardia (SVT)

Definition: Rate of > 150/min, regular rhythm. Verify QRS duration of < 0.12 by documenting rhythm in two leads. If > 0.12, go to Ventricular Tachycardia protocol.

**Stable** (awake, perfusing)

1. Oxygen
2. Cardiac monitor
3. IV - use antecubital or more proximal site
4. Consider valsalva maneuver
5. **Adenosine (Adenocard)**
  - a. 6 mg rapid IVP followed by saline flush
  - b. If no response after 2 min: 12 mg rapid IVP followed by saline flush
  - c. If no response after 2 min: 12 mg rapid IVP followed by saline flush
6. Transport

**Unstable** (presence of significant chest pain, significant dyspnea, low BP, indications of low perfusion, altered level of consciousness)

1. High flow oxygen
  2. Cardiac monitor
  3. IV
  4. Consider sedation with **Midazolam (Versed)** 2 mg slow IVP
  5. Synchronized cardioversion (or biphasic equivalent)
    - a. 100 joules
    - b. 200 joules
    - c. 300 joules
    - d. 360 joules
  6. Transport
- If unstable atrial fibrillation perform steps 1-3 (unstable), then contact receiving facility physician and anticipate cardioversion.

### CHEST PAIN UNLIKELY TO BE OF CARDIAC ORIGIN C3

Definition: Chest pain that is, by history, location and character deemed to not be related to cardiac ischemia.

1. Consider BLS care.
2. If not BLS:
  - a. Oxygen
  - b. Cardiac Monitor
  - c. Saline lock.

## CHEST PAIN/ACUTE CORONARY SYNDROME C4

### INFORMATION NEEDED

- Discomfort or pain: OPQRST, Previous episodes
- Associated symptoms: Weakness, nausea, vomiting, diaphoresis, dyspnea, dizziness, palpitations, “indigestion”
- Medical history (cardiac history, other medical problems, including hypertension, diabetes or stroke)

### OBJECTIVE FINDINGS

- General appearance: level of distress, skin color, diaphoresis
- Signs of CHF (peripheral edema, respiratory distress, distended neck veins)
- Lung sounds
- EKG rhythm
- Assessment of pain on a 0-10 scale

<b>BLS Treatment</b>	<b>ALS Treatment</b>
<ul style="list-style-type: none"> <li>• Reassure patient and place in position of comfort, or supine if patient is hypotensive</li> <li>• Oxygen</li> <li>• Assess patient: primary, detailed physical assessment, and history</li> <li>• Assist patient with taking their own <b>NTG</b> if SBP &gt; 100; repeat q 5 min. Stop if BP becomes less than or equal to 100. If the patient has taken erectile dysfunction (ED) medication within the last 24 hrs (Viagra/Levitra) or 36 hrs (Cialis) <b>withhold the Nitroglycerin</b></li> <li>• RMC</li> </ul>	<ul style="list-style-type: none"> <li>• High flow oxygen</li> <li>• IV access and cardiac monitor</li> <li>• <b>NTG</b> 0.4 mg SL, repeat q 5 min. if systolic BP &gt; 100.            Note: If the patient has taken erectile dysfunction (ED) medication within the last 24 hrs (Viagra/Levitra) or 36 hrs (Cialis) <b>withhold the Nitroglycerin</b></li> <li>• <b>ASA</b> 162-325 mg PO (chew)</li> <li>• <b>Morphine Sulfate</b> 2-5 mg slowly IV to relieve persistent discomfort, repeat q 2-3 min. to a total of 10 mg.</li> </ul>
<b>ALS Optional Scope</b>	<b>Receiving Hospital Contact Criteria</b>
<ul style="list-style-type: none"> <li>• 12-lead ECG, if available. If positive for STEMI, refer to policy #8413 for destination guidelines.</li> </ul>	<ul style="list-style-type: none"> <li>• Additional treatment for ongoing pain when BP&lt;100</li> <li>• Verbal report of positive 12-lead ECG findings</li> </ul>

**Documentation for Adherence to Protocols:**

- Presence of PQRST history
- Vital signs before/after NTG administration
- Cardiac rhythm documentation and ST $\uparrow$  if using 12-lead ECG
- IV/O<sub>2</sub>
- NTG given, unless hypotension or erectile dysfunction (ED) medication taken within the last 24 hours (Viagra/Levitra) or 36 hours (Cialis).
- ASA unless allergy documented

**PRECAUTIONS AND COMMENTS**

- Minimize scene time and notify the receiving hospital
  - IV access before NTG if systolic BP <100
  - Suspicion of Acute Coronary Syndrome (ACS) is based upon patient history. Be alert to patients likely to present with atypical symptoms or “silent AMI’s”: women, elderly and diabetics
  - Administer **Morphine** slowly IV to avoid respiratory depression and /or hypotension; be ready to support ventilations and have **Naloxone** available.
  - Consider other potential causes of chest pain: pulmonary embolus, pneumonia, aortic aneurysm and pneumothorax.
  - **NTG** is contraindicated in patients who have taken erectile dysfunction (ED) medications within the last 24 hours (Viagra/Levitra) or 36 hours (Cialis).
  - Encourage pre-hospital **ASA** administration even if patient has taken daily **ASA** dose.
- \* Inquire about erectile dysfunction (ED) medications taken within the last 24 hrs (Viagra/Levitra) or 36 hrs (Cialis).

## **AIRWAY OBSTRUCTION R1**

Definition: Mechanical upper airway obstruction with history of food aspiration (especially if elderly), alcohol abuse

### **Conscious patient-able to speak**

1. Offer reassurance; intervention is usually not necessary
2. Encourage coughing
3. Offer oxygen via cannula
4. Cardiac monitor
5. Suctioning if needed to control secretions
6. Begin transport; avoid agitating patient

### **Conscious patient-unable to cough or speak**

1. Ask the patient if he/she is choking
2. Administer abdominal thrusts/Heimlich maneuver until the foreign body is expelled or the patient becomes unconscious
3. After obstruction is relieved, reassess airway, lung sounds, skin color and vital signs
4. Oxygen therapy as indicated by clinical condition
5. Cardiac monitor

### **Unconscious Patient**

1. Perform a tongue-jaw lift followed by finger sweep to remove object
2. Open airway and try to ventilate
3. Administer abdominal thrusts and follow as above

## **EPIGLOTTITIS R2**

Definition: Presence of upper respiratory infection, sore throat, fever, stridor or drooling

1. High flow oxygen
2. Transport
3. If patient deteriorates or becomes completely obstructed, attempt positive pressure ventilation via BVM. Endotracheal intubation should be performed **only** if BVM is inadequate.

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**BRONCHOSPASM / ASTHMA / COPD R3**

**INFORMATION REQUIRED**

- History: Previous episodes, hospitalizations, and intubations, fever, sputum production, medications (bronchodilators/steroids), exposure (allergens, toxins, fire/smoke), trauma
- Symptoms: chest pain, shortness of breath

**OBJECTIVE FINDINGS**

<b><u>MILD</u></b>	<b><u>MODERATE</u></b>	<b><u>SEVERE</u></b>
<ul style="list-style-type: none"> <li>▪ Alert</li> <li>▪ Dyspnea</li> <li>▪ Mild wheeze</li> <li>▪ Speaking full sentences</li> </ul>	<ul style="list-style-type: none"> <li>▪ Moderate wheeze</li> <li>▪ Moderate dyspnea</li> <li>▪ Accessory muscle use</li> <li>▪ Limited speaking</li> <li>▪ Mild - Mod. desaturation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Altered mental status</li> <li>▪ Minimal air movement</li> <li>▪ Inability to speak</li> <li>▪ Cyanosis</li> <li>▪ Significant. Desaturation (&lt;90%)</li> <li>▪ Increasing ET<sub>CO</sub>2 (&gt;40)</li> </ul>

**BLS TREATMENT**

- |  |
|--|
| <ul style="list-style-type: none"> <li>• Ensure patent airway, Administer O<sub>2</sub></li> <li>• BVM, suction prn</li> <li>• For severe asthma, administer <b>Auto Injector Epi-Pen</b></li> </ul> |
|--|

**ALS TREATMENT**

<b><u>MILD</u></b>	<b><u>MODERATE</u></b>	<b><u>SEVERE</u></b>
<ul style="list-style-type: none"> <li>▪ <b>Albuterol</b> 5 mg in 6 cc NS nebulizer, repeat if indicated</li> </ul>	<ul style="list-style-type: none"> <li>▪ IV</li> <li>▪ Cardiac monitor</li> <li>▪ <b>Albuterol</b></li> <li>▪ <b>Ipratropium</b> 500 mcg. (2.5cc) nebulizer or via BVM</li> <li>▪ If bronchospasm worsens, consider <b>Epinephrine</b>(1:1000) 0.3 mg (0.3c) SQ, may repeat in 5 min.</li> </ul>	<ul style="list-style-type: none"> <li>▪ IV</li> <li>▪ Cardiac monitor</li> <li>▪ <b>Albuterol</b></li> <li>▪ <b>Ipratropium</b></li> <li>▪ <b>Epinephrine</b> (1:1000) 0.3 mg (0.3cc) SQ, may repeat in 5 min. Advanced airway prn</li> </ul>

**Documentation for Adherence to Protocol:**

- Physical finding of wheezing, decreased lung sounds
- Administration of oxygen, O<sub>2</sub> saturation
- Administration of Albuterol, Ipratropium, Epinephrine, Auto-Injector Epi-Pen
- IV placement in moderate/severe distress

### **PRECAUTIONS AND COMMENTS**

- Administer Oxygen to all patients with respiratory distress, knowing that O<sub>2</sub> may decrease respiratory rate in the patient with COPD
- Withhold repeat dosing Albuterol / Ipratropium (Atrovent) if significant tachycardia or chest pain
- Epinephrine may cause anxiety, tremor, palpitation, tachycardia, hypertension and headache. In elderly patients, epinephrine administration may precipitate AMI, hypertensive crisis, intracranial hemorrhage and /or dysrhythmias
- Consider use of patient actuated nebulizer with prolonged scene times and/or transport times over 10 minutes

## **ACUTE PULMONARY EDEMA R4**

Definition: Acute onset of respiratory difficulty; may have history of cardiac disease, rales, occasional wheezes, or near drowning

1. 100% oxygen/NRB mask; consider ventilatory assist with appropriate airway adjuncts
2. Position patient in a sitting position, if tolerated, to aid respirations
3. Cardiac monitor; perform 12-lead ECG if available
4. IV
5. Continuous pulse oximetry
6. **If SBP < 100**
  - a. Consider NS 250cc IV fluid challenge`
  - b. **Dopamine** 400ccg/250 NS (or premix), begin infusion at 5 mcg/kg/min, and increase to 10 mcg/kg/min, if BP <100. Monitor BP q 3-5 min. **Physician order only.**
7. **If SBP > 100**
  - a. Apply CPAP if available
  - b. **Nitroglycerin** 0.4 mg SL, MR every 5 min if needed.  
**(Do not give nitroglycerin if patient has taken erectile dysfunction medication (ED) within the previous 24 hours (Levitra/Viagra) or 36 hours (Cialis).**
  - c. **Lasix** 0.5 mg/kg IV
  - d. If no response, consider physician consult for **Morphine** 2-5 mg IV

## **ACUTE RESPIRATORY DISTRESS-OTHER R5**

Definition: Increased respiratory rate, sensation of difficulty breathing not clearly due to the clinical entities specified in other guidelines. Symptoms may be due to pneumonia, inhalation of toxic substances, pulmonary embolus

1. Position of comfort
2. Ventilatory support with appropriate airway adjuncts
3. Cardiac monitor
4. Continuous pulse oximetry
5. IV

## **PNEUMOTHORAX R6**

### **Simple Pneumothorax**

Definition: Normotensive, absent or diminished breath sounds on one side with no tracheal deviation or distended neck veins

1. High flow oxygen. Ventilatory support with appropriate airway adjuncts
2. Cardiac monitor
3. Continuous pulse oximetry
4. Rapid transport
5. IV
6. Continuous monitoring for signs of tension pneumothorax

### **Tension Pneumothorax**

Definition: Absent or diminished breath sounds on one side with a combination of falling blood pressure, O<sub>2</sub> desaturation, cyanosis, distended neck veins, hyper-resonance on side without breath sounds with tracheal deviation to the other side

1. High flow oxygen. Ventilatory support with appropriate airway adjuncts
2. Needle thoracostomy on affected side (**only for patients in extremis**)
3. Cardiac monitor
4. Continuous pulse oximetry
5. IV
6. Urgent transport

## TOXIC GAS INHALATION R7

Definition: Respiratory distress caused by inhalation of toxic gases by history. Suspect carbon monoxide in cases of exposure to fire in an enclosed space, symptoms of headache, dizziness which may be associated with cherry-red color of mucous membranes (late sign)

1. Rapid removal of patient from toxic environment with attention to safety of rescue personnel
2. High flow oxygen
3. Cardiac monitor
4. Continuous pulse oximetry
5. IV
6. If wheezing - bronchodilator therapy, **Albuterol** 5 mg in 6 cc NS via nebulizer, repeat as indicated

## RESPIRATORY ARREST R8

Definition: Absence of spontaneous ventilations without cardiac arrest. Consider narcotic overdose.

1. Ventilation with 100% oxygen. Support ventilations with appropriate airway adjuncts
2. Cardiac monitor
3. IV NS TKO
4. Continuous pulse oximetry
5. **Narcan** 0.4mg-2.0 mg IV/IM/SL if narcotic overdose is suspected
6. Oral intubation if no response to Narcan
7. Rapid transport

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## **MAJOR TRAUMATIC INJURIES T1**

### **I. PURPOSE**

To outline appropriate ALS treatment for adult patients with traumatic injuries.

### **II. RELATED POLICIES**

- A. Trauma Triage and Destination Guidelines, #4613
- B. Suspected Child Abuse, #8113
- C. Suspected Elder and/or Dependent Adult Abuse, #8114
- D. Spinal Immobilization, #8106
- E. Adult Pain Management, #8309

### **III. ADDITIONAL CONSIDERATIONS**

- A. Patients meeting identified criteria on the Marin County Trauma Triage Tool should be transported with ALS level of care.
- B. Early trauma notification to receiving hospitals is required for all patients meeting trauma triage criteria.
- C. A consideration with all traumatic injuries should be the possibility that the injury has resulted from abuse, neglect, assaultive or abusive behavior, suicide, homicide, and/or is the scene of a crime. Refer to the appropriate abuse/neglect reporting policy (Suspected Child Abuse, Suspected Elder and/or Dependent Adult Abuse) for reporting instructions.

### **IV. STANDARD OF CARE**

- A. Secure airway, maintaining C-spine precautions as per policy #8106
  - 1. Spinal immobilization (BLS)
  - 2. Airway adjuncts as appropriate
  - 3. Pulse oximeter for monitoring trends only
- B. Adequate breathing/oxygenation per Oxygen Therapy Guidelines
- C. Circulatory support:
  - 1. Control of bleeding
  - 2. Normal saline IV at TKO: consider 2 large bore IVs if patient meets anatomic or physiologic criteria
  - 3. Fluid challenge 250-500cc IV; maintain systolic b/p of 100 mmHg.
- D. Cardiac monitor
- E. Treat secondary injuries

- F. Prevent further injuries
- G. Implement pain management as appropriate
- H. Prepare for early and rapid transport to the appropriate trauma center

## HEAD TRAUMA T2

### I. PURPOSE

To outline appropriate ALS treatment for head trauma patients.

### II. RELATED POLICIES

- A. Trauma Triage and Destination Guidelines, #4613
- B. ALS Trauma Treatment Guideline, #8306
- C. Spinal Immobilization, #8206

### III. TREATMENT

- A. If altered mental status, check glucose:
  - 1. If BS < 70 or unmeasurable, **Dextrose** 50% 50 cc IVP
  - 2. IF BS < 70 or unmeasurable and unable to start IV, **Glucagon** 1mg IM or SQ
- B. Consider **Lidocaine** 100 mg IV prior to intubation attempts
- C. Attempt intubation once for GCS < 9 (does NOT preclude multiple attempts if other indications for intubation are present)
- D. If unable to intubate on single attempt, manage airway with other airway adjuncts
- E. Consider ventilation to rate of 16--20 breaths per minute or an ETCO<sub>2</sub> reading of 30 mm/hg if worsening GCS and signs of herniation (posturing, unilateral pupillary dilation)
- F. **Diazepam** or **Midazolam** for seizures per seizure protocol
- G. Maintain midline head position with head elevated whenever possible

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## CRUSH /SYNDROME T3

### I. PURPOSE

To provide guidelines for the identification and management of apparent crush syndrome. Crush Injury Syndrome is a systemic injury as a result of a muscle crush injury and cell death.

### II. RELATED POLICIES

ALS Trauma Treatment Guidelines, #8306

### III. INDICATIONS

- A. Patients with extended extremity or torso entrapment (usually > 2hours)
- B. Consider patients with co-morbid factors (age, history of renal or cardiac disease, presence of hypothermia, and/or alcohol or drug use)

### IV. TREATMENT

- A. Pre-extrication (or if extricated prior to arrival)
  - 1. **Albuterol** 5.0 mg. in 6 cc NS via nebulizer. Consider use of patient actuated nebulizer with prolonged scene times and/or transport times over 10 minutes.
  - 2. **Sodium Bicarbonate** 1 mEq/kg. up to 100 mEq. IVP (\*flush IV line with normal saline before & after administration)
  - 3. Normal Saline 20 cc/kg bolus, prior to release of compression, in addition to standard trauma fluid resuscitation
- B. Post Extrication:
  - 1. **Albuterol** 5.0 mg. in 6 cc NS via nebulizer if wheezing or evidence of hyperkalemia. Consider use of patient actuated nebulizer with prolonged scene times and/or transport times over 10 minutes.
  - 2. **Calcium Chloride** 1 gram IV slowly over 5 min. for suspected hyperkalemia (absent P waves, peaked T waves, or prolonged QRS and/or evidenced by hypotension). \*Flush IV line with normal saline before & after administration.
- C. Apply additional splints and dressings as needed

## ENVIRONMENTAL EMERGENCIES

### HEAT ILLNESS E1

**Heat Cramps:** Severe painful cramping of fatigued muscles in the setting of heat stress, often following fluid replacement with hypotonic fluids.

**Heat Exhaustion:** Systemic symptoms, often vague and nonspecific, precipitated by significant hypovolemia under conditions of heat stress, and characterized by any of the following: weakness, fatigue, nausea, vomiting, headache, impaired judgment, vertigo, syncope, tachycardia, hypotension and dizziness, often orthostatic. Mental status is normal.

**Heat Stroke:** A catastrophic life-threatening failure of homeostatic thermoregulatory mechanisms, manifested by extreme elevation of body temperature and severe CNS dysfunction, which may present as disorientation, delirium, seizure or coma.

#### Treatment

1. Move to a cool environment
  - a. Remove clothing.
  - b. For heat exhaustion and heat stroke - apply cool packs on neck, axilla, and groin.
2. Hydrate
  - a. Heat Cramps: electrolyte-containing oral solution or IV NS 250cc
  - b. Heat Exhaustion and Heat Stroke: IV NS 250cc fluid challenge (may repeat up to one liter).
4. Cardiac Monitor – treat dysrhythmias per appropriate policy
5. Treat ALOC, Seizures or Shock per appropriate policy

## **COLD INDUCED INJURY E2**

When exposure is obvious, such as on a cold and wet night, hypothermia is easy to suspect. However, more subtle presentations exist in the elderly, in newborns, in the chronically ill, also secondary to medications and alcohol. Consider the possibility of hypothermia in any patient with altered mental status.

**Mild Hypothermia** - Clinical features: Shivering, often painful. May display any of the following: dysarthria, apathy, poor judgment, ataxia (e.g., stumbling), tachycardia and tachypnea. Presentation includes normal blood pressure and level of consciousness.

**Moderate Hypothermia** - Clinical features: In addition to above symptoms, the patient may display an absence of shivering, stupor, progressive decrease in level of consciousness as temperature drops, and atrial arrhythmias, especially atrial fibrillation, which will resolve with rewarming.

**Severe Hypothermia** – Clinical features: Minimal voluntary motion, minimal or no response to pain, decreasing level of consciousness, hypotension, ventricular arrhythmias, especially ectopy. Peripheral pulses may be difficult to obtain.

### **Treatment**

1. Move to a warm environment
  - a. Remove any wet clothing and cover entire body (including head and hands) with warm blankets.
  - b. Apply heat packs to neck, axilla, and groin
2. For Moderate and Severe Hypothermia
  - a. Cardiac monitor – treat dysrhythmias per appropriate policy
  - b. High flow oxygen, warm and humidified preferred
  - c. IV NS 250cc bolus q 15 minutes, warm preferred
3. Treat ALOC, Seizures or Shock per appropriate policy

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## ENVENOMATION E3

### Snakebite with Suspected Envenomation

Reminder: Previously placed tourniquets and constriction bands should be removed after intravenous access is established. Immobilize the extremity, keeping it in neutral position relative to the heart.

- Rinse area of bite gently
  - Mark extent of affected area, noting time on skin
  - DO NOT INCISE SKIN
  - DO NOT APPLY ICE
  - Monitor distal pulses
1. Ensure patent airway
  2. Cardiac monitor
  3. If exhibiting signs of allergic reaction or shock, treat per ANAPHYLAXIS
  4. IV NS TKO
  5. Contact hospital early to allow preparation for treatment.

## MAJOR BURNS E4

Definition: Damage to skin and/or airway caused by contact with caustic material (chemical burns), electricity or fire. Second or third degree burns involving 20% or more of body surface area or those associated with respiratory involvement are considered major burns.

### Thermal/Electrical

1. Keeping safety in mind, remove patient to safe area
2. Eliminate source and stop the burning process (water may be used in the first few minutes to stop the burning process)
3. Ensure patent airway: Intubate for severe facial burns and/or evidence of airway compromise and ALOC
4. High flow oxygen; prepare to support ventilation
5. If wheezing, consider bronchodilator therapy: **Albuterol** 5mg in 6cc NS via nebulizer
6. Re-evaluate airway frequently
7. Remove jewelry
8. Expose affected areas
9. Apply clean dry sheet over burn area
10. Evaluate depth/surface area
11. Keep patient warm
12. IV NS TKO, preferably in unburned area
13. Pain management protocol as indicated

### **Chemical**

1. As above in Thermal/Electrical
2. Remove all clothing *and brush away any dry chemicals*
3. Attempt to identify chemical
4. Unless contraindicated, flush affected areas with copious amounts of water.

## **DROWNING/NEAR DROWNING E5**

### **Drowning**

Definition: Loss of consciousness in water, now in full arrest

Treat as CARDIOPULMONARY ARREST, using specific dysrhythmias treatment guideline, with consideration for hypothermia and spinal precautions.

### **Near Drowning**

Definition: Loss of consciousness in water, not in full arrest

1. Ensure patent airway
2. Protect cervical spine if neck injury suspected
3. High flow oxygen. Prepare to support ventilations with appropriate airway adjuncts (CPAP if available)
4. Cardiac monitoring
5. Anticipate vomiting; take precautions against aspiration, be prepared for suctioning
6. Remove wet clothing. Keep patient warm dry.
7. IV NS TKO

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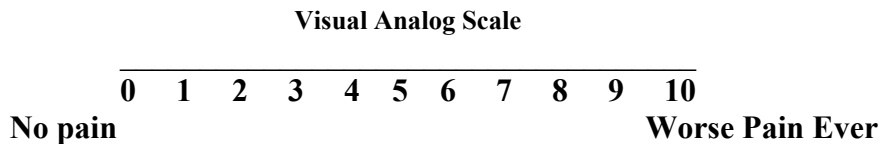
## ADULT PAIN MANAGEMENT

### INFORMATION NEEDED

- Origin of pain (examples: isolated extremity trauma, chronic medical condition, burns, abdominal pain, multi-system trauma)
- Mechanism of injury
- Approximate time of onset

### OBJECTIVE FINDINGS

- Complaints or obvious signs of discomfort
- Use Visual Analog Scale (0-10) or Wong/Baker FACES Pain Rating Scale if pediatric patient or non-English speaking adult. Express results as a fraction (i.e.: 2/10 or 7/10)
- Vital signs
- Special infusion apparatus: narcotic or oncology agents



Pain Management Criteria	Physician Consult Required?	Treatment
<p><b>Any patient with a SBP &gt;100 and a complaint of significant pain, including:</b></p> <ul style="list-style-type: none"> <li>- Extremity injuries</li> <li>- Burn patients</li> <li>- Crush injuries</li> <li>- Prolonged extrication</li> <li>- Back and spinal pain</li> <li>- Abdominal pain</li> </ul>	<p style="text-align: center;"><b>NO</b>  Unless &gt; <b>16mg</b>  Morphine Sulfate is  needed</p>	<p><b>Morphine sulfate:</b></p> <p><b>IV:</b> 4 mg; MR q 5 minutes up to 16mg max.  <b>IM:</b> 4 mg. May repeat in 20 minutes, up to 16mg max.</p>
<p><b>Multi-system Trauma patient (SBP &gt;100), whose trauma includes:</b></p> <ul style="list-style-type: none"> <li>- Abdominal trauma</li> <li>- Thoracic trauma</li> </ul>	<p style="text-align: center;"><b>YES</b></p>	<p><b>Contact the receiving hospital prior to administering any pain medication</b></p>
<p><b>Other patients with a complaint of significant pain, including:</b></p> <ul style="list-style-type: none"> <li>- SBP &lt; 100</li> <li>- Head Trauma</li> <li>- Decreased respirations</li> <li>- Altered mental status (GCS &lt; 15)</li> <li>- Women in labor</li> <li>- Patients with pain not covered above</li> </ul>	<p style="text-align: center;"><b>YES</b></p>	<p><b>Contact the receiving hospital prior to administering any pain medication</b></p>

**Documentation for Adherence to Protocols:**

- Initial and post treatment pain score, expressed in a measurable form (i.e. “7/10”)
- Interventions used for pain management (i.e. ice pack, splint, Morphine Sulfate)
- Reassessments made after interventions
- Initial and post treatment vital signs (including GCS in patients with altered mental status)
- Physician consult if required

**PRECAUTIONS AND COMMENTS**

- Use Morphine cautiously in C-spine immobilized patients who may have potential for Physician C-spine clearance upon arrival in ED

**PEDIATRIC MEDICATIONS  
 AUTHORIZED/STANDARD INITIAL DOSE**

<b>Drug</b>	<b>Concentration</b>	<b>Standard Dosage</b>
<b>Activated Charcoal</b>	25 Gm/bottle	1 gm/kg PO (not to exceed 50 Gm)
<b>Adenosine (Adenocard)</b>	6 mg/2ml	<b>SVT</b> : 0.1 mg/kg (2nd dose is double the first dose; max. dose of 12 mg or 4cc)
<b>Albuterol</b>	2.5 mg/3ml NS	2.5 mg/3cc NS
<b>Atropine</b>	1 mg/10ml	<b>Bradycardia</b> : 0.02 mg/kg IV/IO/ET (Minimum dose is 0.1 mg or 1ml; single max dose for child is 0.5mg or 5 ml and for adolescents is 1mg or 10ml), MR x 1 <b>Organophosphate Poisoning</b> : 0.02 mg/kg IV/IO; MR q 2-5 minutes until drying of secretions
<b>Calcium Chloride 10%</b>	1 Gm/10 ml	1 Gm/10 ml
<b>Dextrose 10%</b>	D50W – diluted 1:4	Neonatal – 3 months: 3ml/kg IV/IO
<b>Dextrose 25%</b>	2.5 Gm/10 cc	3 months - 2yrs: 2ml/kg IV/IO
<b>Dextrose 50%</b>	25 Gms/50ml	>2yrs: 1ml/kg IV/IO
<b>Diazepam (Valium)</b>	10 mg/2 ml	0.1 mg/kg (0.02 ml/kg) IV slowly; MR x 2 q 5 min. to max. dose of 0.3 mg/kg (0.06 ml/kg) or 0.5 mg/kg (0.1 ml/kg) Rectal, Max 10 mg
<b>Diphenhydramine (Benadryl)</b>	50 mg/1ml or 50 mg/ 10ml	1 mg/kg IV or IM to max of 50 mg; IV administration not to exceed 25mg/min
<b>Epinephrine 1:1000</b>	1 mg/1 ml  Pedi Auto-Injector	<b>Allergic reaction moderate/severe/anaphylaxis</b> : 0.01 mg/kg SQ (0.01 ml/kg) max. of 0.3 mg (0.3 ml) or Pedi Auto-Injector; repeat prn in 5 minutes <b>Bradycardia</b> : 0.01 mg/kg (0.01 ml/kg) ETT
<b>Epinephrine 1:10,000</b>	1 mg/10 ml	<b>Anaphylaxis</b> : if no response to Epi 1:1000, give 1:10,000 0.01 mg/kg (0.1 ml/kg) IV/IO <b>Bradycardia</b> : 0.01 mg/kg (0.1 ml/kg) IV/IO <b>Cardiac Arrest</b> : 1 mg (10ml)IVP
<b>Furosemide (Lasix)</b>	Variable	0.5 mg/kg IV
<b>Glucagon</b>	1 mg/1 ml	0.1 mg/kg SQ/IM/IV
<b>Instant Glucose</b>	30 Gms/tube	30 Gms PO
<b>Ipratropium (Atrovent)</b>	500 mcg in each unit dose (2.5 ml)	Unit dose

<b>Lidocaine</b>	100 mg/ 10 ml	1 mg/kg to max of 3 mg/kg
<b>Midazolam (Versed)</b>	2 mg/2 ml	<b>Cardioversion:</b> 0.05 mg/kg slow IVP or IM (max. dose of 5 mg) <b>Seizures:</b> 0.05mg/kg slow IVP or IM (max. dose of 5 mg)
<b>Morphine Sulfate</b>	10 mg/10 ml	<b>Pain Management*:</b> 0.1mg/kg (0.1ml/kg) slow IVP/IM; MR x 1 in 15 min if IV or in 30 min. if IM  *Physician Consultation if <6months
<b>Nalaxone (Narcan)</b>	2 mg/5 ml	<b>Suspected OD in non-neonate:</b> 0.1 mg/kg (0.25 ml/kg) IV/IO/IM
<b>Sodium bicarbonate</b>	50 mEq/50 ml	<b>Crush Syndrome:</b> 1 mEq/kg up to 100 mEq IVP <b>Cyclic Antidepressant OD with significant dysrhythmias:</b> 1 mEq/kg IVP

*\*If the above concentrations become unavailable, providers may use alternate available concentrations or packaging.*

□

## EXTERNAL CARDIAC PACING PROCEDURE

### I. INDICATIONS

- A. Symptomatic bradycardia—Heart rate below 50/minute with associated decreasing perfusion, chest pain, shortness of breath, decreased level of consciousness, pulmonary congestion, or congestive heart failure.
- B. First responders or paramedics detect a pulse and witness the onset of asystole.

### II. CONTRAINDICATIONS

Individual is less than eighteen (18) years of age.

### III. EQUIPMENT

- A. Cardiac monitor/defibrillator/external pacemaker
- B. Pacing capable electrode pads

### IV. PROCEDURE

- A. Determine need for use of procedure. Provide care according to appropriate guideline.
- B. Consider administration of sedation/analgesia if patient conscious.
  - 1. NS 250cc IV bolus (delete if patient in CHF) followed by **Midazolam** 2mg SLOW IVP. Titration to desired degree of sedation can be accomplished with repeated 1-2 mg doses every 3 minutes, to a max of 0.1mg/ Kg
  - 2. Consider **Morphine** up to 4 mg IV for analgesia.
- C. Position patient supine if tolerated, bare chest completely and apply pacing electrodes in anterior/posterior or sternal/apex position according to manufacturer recommendations.
- D. Confirm and record ECG.
- E. Set pacing rate at 80, turn on pacing module, confirm pacer activity on monitor.
- F. Increase output control until capture occurs or maximum output is reached.
- G. Confirm pulses with paced rhythm, evaluate vital signs.

## **ADULT ORAL INTUBATION POLICY AND PROCEDURE**

### **I. PURPOSE**

Adult intubation is an ALS procedure to be used on unconscious and apneic or near apneic patients without a gag reflex who do not meet contraindications. BLS airway management skills must be performed prior to any attempt at intubation. An intubation attempt is defined as the introduction of an endotracheal tube past the patient's teeth.

### **II. INDICATIONS**

- A. Non-traumatic cardiac and/or respiratory arrest
- B. Traumatic cardiac and/or respiratory arrest or severe ventilatory compromise where the airway cannot be adequately maintained by BLS techniques
- C. An alternative route for medication administration in the cardiac arrest patient if other routes are not possible.

### **III. CONTRAINDICATIONS**

- A. Absolute contraindication - Epiglottitis
- B. Relative
  - 1. Spontaneous respirations are present and/or patient is awake with intact gag reflex.
  - 2. Suspected opiate overdose
  - 3. Profound hypoglycemia

### **IV. EQUIPMENT**

- A. Battery powered laryngoscope handle, extra batteries and bulbs
- B. Laryngoscope blades
- C. McGill forceps
- D. Endotracheal tubes, cuffed
- E. Lubricating jelly
- F. Disposable stylets
- G. Suction
- H. Pulse oximetry
- I. End Tidal CO<sub>2</sub> detector

## **V. PROCEDURE**

- A. Place patient in correct position
- B. BVM ventilation for 1-3 minutes with 100% oxygen
- C. Select a proper ETT
- D. Insert stylet
- E. Select proper sized blade and visualize the larynx.
- F. Suction as needed
- G. Apply cricoid pressure as needed to prevent passive regurgitation
- H. Insert ETT 2-3 cm past the cords under direct visualization
  - 1. 30 seconds/attempt
  - 2. Hyperventilate between attempts
- I. Remove stylet and bag ventilate
- J. Confirm position with at least two of the following methods:
  - 1. Bilateral chest and epigastric auscultation
  - 2. CO2 detection device
  - 3. Esophageal intubation detector
  - 4. Direct endotracheal visualization
- K. Secure the tube. Consider spinal immobilization to prevent extubation.
- L. Reassessment tube placement after each patient movement. If any doubt about placement, use direct visualization to confirm.

## **VI. PRECAUTIONS AND COMMENTS**

- A. Defibrillation should precede intubation.
- B. The goal is always to ventilate the patient, not just intubate. Do not sacrifice good ventilation with repeated intubation attempts.
- C. Hyperventilate before and after administering transtracheal medications (Atropine, Epinephrine, Lidocaine, and Narcan).
- D. Do not delay transport with repeated unsuccessful intubation attempts.

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## CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP) POLICY AND PROCEDURE

### I. PURPOSE

- A. The purpose of this procedure is to establish guidelines for the use of CPAP devices.

### II. POLICY

- A. The **goals** of CPAP are:
1. Elimination of dyspnea
  2. Decreased respiratory rate
  3. Decreased heart rate
  4. Increased SpO<sub>2</sub>
  5. Stabilized blood pressure
- B. Paramedics who have successfully completed a Main County-approved training program may perform CPAP administration using the method described in the accompanying procedure. This skill will be included in the Marin County “Skills Refresher Program.”

### III. INDICATIONS

- A. An advanced airway adjunct used in patients age 8 or older in *severe respiratory distress*
- B. Optional device for airway control when patient has *severe respiratory distress* and:
1. Signs of CHF with pulmonary edema and one or more of the following:
    - a. Currently on medications such as digoxin or lasix
    - b. Pedal edema
    - c. Severe and/or sudden onset SOB
    - d. Orthopnea
    - e. Anxious
    - f. Diaphoresis
    - g. Rales or coarse wheezes
    - h. Hypertension
  2. Near drowning

#### **IV. CONTRAINDICATIONS**

- A. Absolute Contraindications (DO **NOT** USE):
  - 1. Age < 8
  - 2. Respiratory or Cardiac Arrest
  - 3. Agonal respirations
  - 4. Severely depressed level of consciousness
  
  - 5. Systolic BP <100
  - 6. Signs and symptoms of pneumothorax
  - 7. Inability to maintain airway patency
  - 8. Major trauma (especially head trauma with signs of ICP or significant chest trauma)
  - 9. Facial anomalies or trauma (e.g., burns, fractures)
  - 10. Vomiting
  
- B. Relative Contraindications (USE CAUTIOUSLY):
  - 1. History of Asthma/COPD
  - 2. History of Pulmonary Fibrosis
  - 3. Decreased LOC
  - 4. Claustrophobia or inability to tolerate mask (after first 1-2 minutes trial)

#### **V. EQUIPMENT**

- A. CPAP equipment
- B. Oxygen supply
- C. Pulse oximetry
- D. Cardiac Monitor
- E. Bag-Valve-Mask
- F. Advanced airway adjuncts

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## VI. PROCEDURE

- A. Patient preparation
1. Place patient in a seated position with legs dependant
  2. Apply cardiac monitor and assess vital signs (BP, HR, RR, SpO<sub>2</sub>). Reassess V/S every 5 minutes after application of the CPAP device.
  3. Treat patient according to treatment protocols.
- B. CPAP device set up may vary with specific device; follow manufacturer directions as specified. The following directions are for the Caradyné WhisperFlow device.
1. Connect the generator to the oxygen source (tank or wall outlet) via quick connect. Do not attach to a flow meter – it must be a 50 psi source.
  2. Attach filter on the air entrainment (air intake) port.
  3. Attach corrugate tubing to WhisperFlow generator.
  4. Select appropriate size mask (large for most adults, small for very small adults and children), and attach mask to corrugated tubing.
  5. Attach CPAP valve to center hole of mask.
  6. Attach strap to mask.
- C. Adjusting flow and FiO<sub>2</sub> on the WhisperFlow generator
1. Turn all three control knobs fully clockwise (OFF)
  2. Turn the Flow Adjustment Valve counterclockwise to the completely open position (about 5 complete turns) to provide full flow (140 LPM).
  3. Turn the oxygen Control Valve to the fully closed position (28%). This valve may be opened after treatment begins if the patient's SpO<sub>2</sub> does not improve significantly after 5 minutes.
  4. Turn the ON/OFF valve to the ON position.
  5. Verify that air is flowing to the mask. Leave the oxygen and flow controls as set, then turn the ON/OFF valve fully off (clockwise).
- D. Explain the procedure to the patient. The phrases below may be used to help the patient breathe normally and avoid hyperventilation:
1. "You are having trouble breathing because your heart is not pumping well enough right now and fluid is backing up into your lungs."
  2. "I am going to put this mask on your face to help push air into your lungs and push the fluid out."
  3. "It will feel a little strange at first, but you will notice right away that your breathing will be a lot easier."
  4. "Just relax, breath normally, and you will see this will really help."

E. Apply the mask

1. When the mask is ready and the patient is prepared, turn the ON/OFF valve fully to the ON position (counterclockwise ½ turn). Ensure that the gas is flowing, and then hold the mask to the patient's face. Gently place your other hand on the back of the patient's head to confirm a good air seal.
2. Within a few minutes (once the patient is comfortable) use the head strap to hold the mask in place. Ensure that the mask is not too tight. Some air leakage is acceptable unless it is in the eye area.
3. Make sure the flow rate is in excess of the patient's inspiratory flow rate in order to maintain continuous pressure throughout the breathing cycle. Check this frequently during transport as the patient's needs may change. There are 3 ways to determine whether the flow is set high enough:
  - a. The CPAP valve should remain slightly open during the entire respiratory cycle.
  - b. The anti-asphyxia valve on the mask should not open during normal operation.
  - c. Some gas should escape from the exhalation port.
4. For patient comfort, and to preserve oxygen, turn the flow adjustment knob down to maintain the flow just above patient's flow rate.
5. In most cases, the patient should improve in the first 5 minutes with CPAP.
6. If after 5 minutes the patient's SpO<sub>2</sub> is not at the desired level, deliver higher oxygen concentrations (up to 100%) by turning the valve farther counterclockwise. The FiO<sub>2</sub> should be increased judiciously to preserve O<sub>2</sub>. Adjust one to two full turns and then re-evaluate the SpO<sub>2</sub>.

**VI. PRECAUTIONS AND COMMENTS**

- A. Failure to improve: Should the patient fail to show improvement with CPAP, remove the CPAP device and assist ventilations with BVM or other advanced airway device as needed
- B. Consider using sedation to alleviate possible anxiety associated with the CPAP device.
- C. Pulse oximetry must be used continuously
- D. Correct CPAP pressure must be delivered at all times. The flow from the generator should always be in excess of the patient's demand. Check frequently to ensure that excess flow is coming out from the exhaust port of the CPAP valve at all times.

- E. When using a portable tank, conserve oxygen. Use the following table to determine approximate length of usage:

<b>Cylinder Size</b>	<b>100% FiO<sub>2</sub></b>	<b>28%FiO<sub>2</sub></b>
D	3.5 – 4 minutes	30 minutes
E	5.5 – 6 minutes	45 – 50 minutes
M	28 minutes	236 minutes

### **VIII. DOCUMENTATION FOR ADHERENCE TO PROTOCOL**

- A. The following items must be documented for Adherence to Protocol:
1. Prehospital impression as to why CPAP was chosen
  2. Vital signs (BP, HR, RR, SpO<sub>2</sub>) recorded every 5 minutes.
  3. Description of patient's response to CPAP
  4. Documentation of other airway adjunct if CPAP is unsuccessful
  5. Use of sedating medications

## **ENDOTRACHEAL TUBE INTRODUCER (ETTI) POLICY AND PROCEDURE**

### **I. PURPOSE**

To provide guidance for the use of an endotracheal tube introducer (ETTI). This device should be attempted before proceeding to needle cricothyrotomy.

### **II. INDICATIONS**

- A. Patients with Grade II through IV laryngeal views (Cormack-Lehane grade)
- B. Patients with airway edema regardless of laryngeal view
- C. Anatomic conditions that preclude either adequate visualization for intubation by conventional means

### **III. CONTRAINDICATIONS**

Do not use on endotracheal tubes smaller than 6.0

### **IV. PROCEDURE**

- A. Perform laryngoscopy as per oral tracheal intubation procedure, and obtain the best possible laryngeal view
- B. Holding the ETTI in your right hand and the angled tip pointing upward, gently advance the ETTI anteriorly (under the epiglottis) to the glottic opening (cords).
  - 1. For grade II views, direct through the cords
  - 2. For all other situations, direct the ETTI to the area where you believe the cords should be, and feel for washboard sensation as the tip ratchets on the tracheal rings.
- C. Gently advance the ETTI until resistance is encountered at the carina.
- D. NOTE: Because the ETTI can potentially cause pharyngeal/tracheal perforation, NEVER FORCE IT. If no resistance is encountered and the entire length of the ETTI is inserted, the device is in the esophagus.
- E. The ETTI is correctly placed when you see the device going through the cords, when you feel the ratcheting of the tip on the trachea, and/or when you meet resistance while advancing the device (ETTI is at the carina).

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- F. Once positioned, withdraw the ETTI until the 37 cm black line mark is aligned with the lip and advance an endotracheal tube over the ETTI and into the trachea. This indicates that the tip is well beyond the cords and the proximal end has enough length to slide the endotracheal tube over it.
  - G. If resistance is encountered – caused by the endotracheal tube catching on the arytenoids or aryepiglottic folds – withdraw the endotracheal tube slightly, rotate 90 degrees and reattempt. If this is unsuccessful, attempt with a smaller tube.
  - H. Once the endotracheal tube is in position, while holding the tube, remove the ETTI through the endotracheal tube.
  - I. Because this is a blind intubation, ETCO<sub>2</sub> must be present to confirm tracheal placement.