Date: July 1, 2016
To: Holders of EMS Policy and Procedure Manuals
From: Dustin Ballard, MD
EMS Agency Medical Director

Subject: Update to Policy Manual, Change Notice #35

Enclosed please find Update #35 to the EMS Policy and Procedure Manual. These new and revised policies and procedures are effective July 1, 2016. Please update the Record of Change page and replace the Table of Contents and Signature page.

Revised Policies and Procedures include:

- 2003 Provider Medical Director Functions/Responsibilities
- 2004 Continuous Quality Improvement Provider Agency Responsibilities
- 2010 System Event Form Policy
- 2010a EMS Event Reporting Form
- 3300 Paramedic Accreditation
- 4600 Trauma System
- 4603 Service Areas for Hospitals
- 4606 Patient Transfer and Transportation
- 4608 Training of Trauma System Personnel
- 4609 Jurisdictional Coordination
- 4610 Coordination with Non-Medical Emergency Services
- 4611 Trauma System Fees
- 4612 Medical Control and Accountability
- 4613 Trauma Triage and Destination Guidelines
- 4614 Trauma Center Designation Process
- 4615 Data Collection and Management
- 7001 Prehospital Contact
- 7006a Field Transfer Form
- 7006b Medical Abbreviations
- ALS PR 07 IN Medications
- ALS PR 12 12-Lead ECG Procedure
- ATG 6 Determination of Death
- ATG 7 Adult Medications
- BLS 1 BLS Routine Medical Care
- C 1 Ventricular Fibrillation/Pulseless Ventricular Tachycardia
- C2 PEA
- C3 Asystole
- C6 Wide Complex Tachycardia
- C 8 Chest Pain
- C 9 STEMI
- E2 Cold Induced Injury
- E3 Envenomation
- GPC Cardiac Arrest Guidelines
- GPC 13 Spinal Motion Restriction
- N 1 Coma
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- P 1 Pediatric Pulseless Arrest
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- P 9 Pediatric Seizure
- P 10 Pediatric ALOC
- P 12 Pediatric Burns
- P 13 Pediatric Trauma
- P 14 Pediatric ALTE
- P 15 Pediatric Pain Management
- P 16 Pediatric Sexual Assault
- P 18 Pediatric Medication List
- P 18a Pediatric Dosing Guide
- P PR1 Pediatric Intraosseous Procedure
New Policies:

- Paramedic Internships 5008
- Unified Response to Violent Incidents
- Tactical Medic Personnel

SPECIAL NOTIFICATION:

**Important revisions to be implemented 7/1/2016 (not included in draft comment periods)**

1. E3 – Envenomation: language revised under Special Considerations

If you have not received training on these changes, please contact your CQI Liaison or Training Officer. Please ensure that the changes are made in your manual.
If any errors, (i.e.; typographical, grammatical, calculations or omissions) are noted in this manual, please inform this office immediately. To insure that the appropriate policy is changed, please make a copy of this form, fill in the required information and send it to us. Thank you.

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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.

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PROVIDER MEDICAL DIRECTOR
FUNCTIONS/RESPONSIBILITIES

PURPOSE
To differentiate the functions and responsibilities of provider medical directors from the functions and responsibilities of the Marin County EMS Agency Medical Director.

DEFINITION
A. The Marin County EMS Agency Medical Director is the physician employed by or under contract for services to the County of Marin.

B. A provider Medical Director is the physician who meets the criteria listed below and is the physician employed by or under contract for services to a County-approved ALS Provider.
   1. Currently licensed in California as a physician
   2. Board certified or qualified in Emergency Medicine
   3. Familiar with the current EMS system in Marin County
   4. Experienced with prehospital care components

POLICY
A. The Marin County EMS Agency Medical Director is responsible for providing medical control and assuring medical accountability throughout the planning, implementation and evaluation of the EMS system.

B. Under the authority of the Marin County EMS Agency Medical Director a provider Medical Director may perform the following duties and responsibilities as appropriate.
   1. Interface with other components of the system such as hospitals, other providers, physicians, nurses, contracting agencies.
   2. Participate in disaster training, planning, and preparation.
   3. Develop, implement and monitor programs or mechanisms for the following:
      a. Problem-solving medically related issues or issues relating to the performance of paramedics, to handle questions or complaints regarding personnel
      b. Medical equipment and supply procurement, storage and maintenance, including routine checks of narcotics
      c. Billing procedures (if any)
      d. Community education related to EMS
      e. A field training and evaluation process providing for evaluation of performance of new employees or employees new to the position, yearly performance evaluations, and method for monitoring performance if deemed necessary
      f. Infectious disease precautions and training
   4. Develop and implement an effective quality improvement program working toward continuous system and patient care improvement, to include the following:
      a. Prospective off-line medical direction, including the following:
         01. On-going evaluation of skill adequacy and method in place to maintain skills at an acceptable level;
02. Verification that equipment is present and paramedics are knowledgeable in its use;

03. Tailoring of on-going in-house education according to the needs of the individual provider agency.

b. Retrospective off-line medical direction to include the following:

01. Review of care to assure compliance with system protocols including review of written patient care records; and

02. Method for evaluating field care.

C. The provider Medical Director shall have regular and active participation in the Physicians Advisory Committee.
CONTINUOUS QUALITY IMPROVEMENT
PROVIDER AGENCY RESPONSIBILITIES

PURPOSE
To establish for provider agencies to use when establishing their Continuous Quality Improvement plans.

AUTHORITY
Division 9 of the California Code of Regulations, Chapter 4, Article 6, Section 10016 (b) requires that “each EMT-P service provider...shall have a quality assurance program approved by the local EMS Agency.”

DEFINITION
A. “Quality Assurance’ or ‘QA’ means a method of evaluation of services provided, which includes defined standards, evaluation methodology(ies) and utilization of evaluation results for continued systems improvement. Such methods may include, but not be limited to, a written plan describing the program objectives, organization, scope and mechanisms for overseeing the effectiveness of the program.” (Definition is from Health and Safety Code, Division 9, Chapter 4, Article 1, Section 100141.)

B. A “template” is a pattern or gauge to be used as a guide. In this setting, it is meant to provide a base for the development of a plan which will detail how that agency will accomplish the items listed.

POLICY
A. The Quality Assurance/Improvement program shall include, but not be limited to the following categories of activities:
   1. Prospective activities designed to prevent potential problems
   2. Concurrent activities designed to identify problems or potential problems during the course of patient care
   3. Retrospective activities designed to identify potential or known problems and prevent their occurrence
   4. Reporting/feedback activities to assure that system issues are identified and addressed as appropriate.

TEMPLATE
A. Prospective activities
   1. Education for new and current employees
      a. Orientation of new personnel to the EMS system
      b. Field care audits
      c. Continuing education offerings are based on perceived or demonstrated need
      d. Method for problem identification and trend analysis
      e. Procedure for obtaining input from and informing personnel of system changes
   2. Licensure/accreditation activities--establish procedures, based on Marin County policies, regarding
a. Initial licensure/accreditation
b. Continuing accreditation
c. Required training or activities as specified

3. Evaluation
   a. Establish criteria for new employee evaluations and for on-going evaluations of individual performance, including “ride-along” evaluations
   b. PCR review/tape review/review of other documentation as available
   c. Establish standardized remedial action plans

4. Define desired participation with development and change of county-wide system (committee membership, etc.)

B. Concurrent activities
   1. Establish procedure for evaluation of EMT-Ps utilizing performance standards through direct observation.
   2. Provide availability of qualified personnel and/or quality assurance liaison personnel for consultation/assistance.
   3. Provide patient information to the base hospital to facilitate obtaining patient follow-up information from receiving hospitals.

C. Retrospective analysis
   1. Develop a process for retrospective analysis of field care.
   2. Develop performance criteria for evaluating the quality of care.
   3. Comply with reporting and other quality improvement requirements as specified by EMS policy and/or contract

D. Review and update the CQI plan every two years, notifying the Marin County EMS Agency of changes made.
EMS SYSTEM EVENT REPORTING FORM

PURPOSE

To provide a single mechanism by which any system participant can request the attention of Continuous Quality Improvement by notifying the appropriate provider agency and the EMS Agency of an example of exemplary EMS care, educational opportunities, or a specific situation with the goal of system wide continuous quality improvement.

AUTHORITY

Health and Safety Code, Title 22, Division 9
California Administrative Code, Chapter 4

RELATED POLICIES

Continuous Quality Improvement # 2000 et seq.

POLICY

EMS Event Reporting Forms may be initiated by any individual or provider agency upon discovery of exemplary EMS care or to share an outcome of an interesting case that might facilitate education.

EMS Event Reporting Forms shall be initiated by any individual or provider agency upon discovery of potential system issues, issues where EMS care could be improved upon, or any event actionable pursuant to Health and Safety Code Section 1798.200.

Only one provider agency or person needs to submit a request although anyone wishing to document the situation or incident may do so.

EMS Event Reporting Forms may be submitted anonymously.

PROCEDURE

“FYI” Events

To report exemplary EMS care provided or an interesting patient outcome to facilitate education, complete the EMS Event Reporting Form and submit to the involved provider’s department CQI Liaison. The Marin County EMS Agency CQI Liaison may also be included in any correspondence.

Follow-Up Required Events

To report potential EMS system issues, areas where EMS care could be improved upon, or any event actionable pursuant to Health and Safety Code Section 1798.200, complete the EMS Event Reporting Form and submit to the involved provider’s department CQI Liaison as well as the EMS Agency CQI Coordinator and EMS Agency Medical Director.
The provider CQI Liaison receiving the report will acknowledge the receipt of the EMS Event Reporting Form, review the event, and submit a response (including a brief summary of findings and patient disposition) to the sender and the EMS Agency CQI Liaison and Medical Director.

This response should take into account all available information, the provider’s CQI Plan, and any relevant county and state policies, procedures and regulations.

Responses should be completed and submitted within 14 days of receipt.

The EMS Medical Director will have final approval of a satisfactory resolution to all EMS Event Reports.

The EMS Agency or Medical Director may also refer issues to the closed session of the CQI Committee.

The EMS Agency will notify all involved providers when the review process is completed and associated issues are resolved.
### EMS EVENT REPORTING FORM

**MARIN COUNTY EMS AGENCY**
1600 Los Gamos Drive, Suite 220, San Rafael, CA 94903
ph. 415-473-6871 fax 415-473-3747
www.MarinEMS.org

<table>
<thead>
<tr>
<th>PURPOSE</th>
<th>Check all that apply</th>
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<tbody>
<tr>
<td></td>
<td>Identify examples of exemplary EMS care (FYI)</td>
</tr>
<tr>
<td></td>
<td>Share an outcome of an interesting patient with a provider that might facilitate education (FYI)</td>
</tr>
<tr>
<td></td>
<td>Identify potential systems issues* (follow-up)</td>
</tr>
<tr>
<td></td>
<td>EMS care could be improved (follow-up)</td>
</tr>
<tr>
<td></td>
<td>EMS policy and/or procedures were not followed – Policy# ____________</td>
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<td>Protocol was followed but EMS care could be improved</td>
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### REPORTING PERSON

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<thead>
<tr>
<th>Name</th>
<th>Date</th>
<th>Phone</th>
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<tbody>
<tr>
<td>Agency/Hospital</td>
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### EVENT

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<table>
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<tr>
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*e.g. Protocols were followed but the system did not seem to function well, such as a stroke patient who got tPA but did not meet stroke alert criteria or a patient identified as a limited trauma by the triage tool who had major injuries.

1. This form is to be completed for every reported EMS event.
2. This information should originate from the provider involved and may be submitted anonymously.
3. FYI events - submit form to Provider Agency CQI Coordinator.
4. Follow-up events - submit form to EMS Agency CQI Coordinator.
5. All reports and follow up should be handled with confidentiality and in coordination with CQI personnel.
6. Individuals receiving the report of Follow-up events will complete a summary of findings and disposition of the event and submit to the EMS Agency CQI Coordinator and all involved CQI personnel.

Reviewed/Revised: July 1, 2016
PARAMEDIC ACCREDITATION/CONTINUOUS ACCREDITATION

INITIAL ACCREDITATION

A. To be eligible for accreditation in Marin County an individual must:
   1. Provide evidence of possession of a valid California paramedic license.
   2. Provide proof of employment with an approved Marin paramedic service provider.
   3. Apply to Marin County EMS Agency. Application includes the following:
      a. Completion of application form which includes a statement that the individual is not precluded from accreditation for reasons defined in Section 1798.200 of the Health and Safety Code.
      b. Payment as per fee schedule.
   4. Provide proof of completing an approved Marin County EMS System orientation not to exceed eight (8) hours.
   5. Permit verification of status with other certifying or accrediting agencies.
   6. Complete a written Protocol Test with 80% accuracy.

B. Accreditation procedure

1. The Marin County EMS Agency shall accredit the individual to practice in Marin County. Accreditation to practice shall be continuous as long as State of California paramedic licensure is maintained and local requirements are met. The paramedic may practice immediately in the basic scope of practice up to 30 days when working as a second paramedic during the accreditation process.

2. The paramedic will be issued a sticker which will be attached to the upper front right corner of the state-issued paramedic license. Additionally the paramedic accreditation number will match the state-issued paramedic number and shall start with the letter “M”, i.e., M00000. The new sticker will be issued at the completion of initial or continuous accreditation application for each paramedic.

3. Marin County EMS Agency shall notify individuals applying for accreditation of the decision to accredit within thirty (30) days of application. If requested by the applicant accreditation may be extended at the discretion of the EMS Agency.

MAINTAINING CONTINUOUS ACCREDITATION

A. Accreditation is continuous when the following requirements are met:
   1. The paramedic shall submit:
      a. An application form
      b. Proof of licensure renewal.
      c. Proof of completion of the most recent annual Policy and Procedure Update
   2. Employment with a approved paramedic service provider within the local jurisdiction. Employer shall notify Marin County EMS Agency within ten (10) days of paramedic leaving employment.

B. Inactive Accreditation

1. Accreditation becomes inactive if one or more of the following occur:
a. Paramedic is not currently employed by an approved Marin County paramedic service provider, OR

b. Paramedic has not met the local requirements for continued accreditation as listed above and is less than one year into the new licensure period, OR

c. Paramedic license has expired.

d. Application for continuous accreditation has not been submitted to Marin County EMS Agency.

2. Accreditation will be continued if, prior to 180 days into the new licensure period:

a. Paramedic presents a copy of the new/current license.

b. Paramedic presents proof of completion of the most recent annual Policy and Procedure Update Training.

c. A letter confirming employment is received by Marin County EMS Agency, if applicable.

C. Lapsed accreditation

1. If accreditation becomes inactive for any reason and is not continued prior to 180 days into the new licensure period, the paramedic must provide proof of completion of most recent annual Policy and Procedure update.

2. If accreditation becomes inactive for greater than one year the paramedic must complete the initial accreditation process.
TRAUMA SYSTEM

PURPOSE
To state general policies or principles that apply to the operation of the Trauma System and to the Trauma System policies and procedures contained in this section.

RELATED POLICIES
Trauma System Policies #4600-4618; EMS Aircraft, #5100; Determination of Death BLS 5, ATG 6; Traumatic Emergencies, BLS PR 5; Traumatic Injuries, T 1; Head Trauma, T2; Crush Injury, T3; EMS Communication, # 7000; Prehospital/Hospital Contact #7001; Do Not Resuscitate, GPC 07

DEFINITIONS
*Trauma System* refers to all aspects of care for injured patients set forth in the Marin County Trauma System Plan, approved by the California EMS Authority and implemented through contractual arrangements or policies and procedures detailed in this manual.

POLICY
A. The goal of the Trauma System Plan is to accomplish the following:
   1. To provide an organized, systematic approach to trauma care that is expected to result in a reduction of preventable death and morbidity.
   2. To enhance the delivery of trauma services to the residents of and visitors to Marin County.
   3. To encourage, through the use of an inclusive design model, the participation of all prehospital care providers and acute care facilities within the county, according to their corporate mission, their resources, and their commitment to the provision of quality trauma care.
   4. To promote physical and mental health and to prevent disease, injury and disability by providing equitable, high quality, appropriate and accessible health services to the community.

B. The Trauma System Plan will accomplish the above goals in the following manner:
   1. By utilizing prehospital triage criteria, facility standards and transfer criteria that are based on national and state models.
   2. By recognizing that a systemized approach to trauma care requires a multidisciplinary approach that acknowledges the importance of all those involved and engages them in the design and implementation of the system of care.
   3. By adopting policies, guidelines, and criteria that will provide for the coordination of all resources and ensure accessibility to the closest, most appropriate medical facility for all injured patients, regardless of the nature or severity of their injury or their ability to pay for such services.
   4. By establishing quality review processes and committees representing all involved disciplines to ensure a broad-based quality review of all trauma system activities.
   5. By regularly reviewing operations within the system and making appropriate adjustments as often as needed.
SERVICE AREAS FOR HOSPITALS

PURPOSE
To define the service areas for hospitals within the Marin County Trauma System.

RELATED POLICIES
Trauma Triage and Destination Guidelines Policy, # 4613

DEFINITIONS
Service Area refers to the area from which acute care facilities will receive patients.

POLICY
All counties contiguous with Marin County have established Trauma Systems in place and will not utilize designated trauma facilities within Marin County as primary destinations for injured patients.

A. Conditions may exist at any given time that result in the delivery of injured patients to a Marin County designated facility by a provider originating their service in another county. Those conditions may include, but are not limited to the following:
   1. Circumstances requiring medical mutual aid
   2. Incidents impeding the usual flow of traffic and dictating a Marin County destination.

B. Patients who meet Trauma Triage Criteria will be transported to a trauma center, as indicated by the Trauma Triage and Destination Guidelines policy.
PATIENT TRANSFER AND TRANSPORTATION

PURPOSE
To provide guidance regarding the movement of injured patients from non-trauma facilities to trauma facilities and from one level of trauma facility to a different level of trauma facility and to review the availability of transportation for those purposes.

RELATED POLICIES
Interfacility Transfer, #8107; EMS Aircraft, #5100

DEFINITIONS
A. Non-trauma facilities are acute care facilities not holding a trauma center designation.
B. Trauma facilities are acute care facilities holding a trauma center designation of Level I, Level II, Level III or EDAT.

POLICY
A. All acute care facilities in Marin County, as part of an inclusive trauma system, will provide care to injured patients and participate in the Trauma System Plan.

B. Prehospital care personnel will evaluate trauma patients on initial contact and determine the appropriate destination based on the apparent severity of the injury, the location of the patient, the time to transport to definitive care and the availability of transport resources related to the location of the appropriate facility.

C. Patient transfer may be accomplished in one of the following ways:
   1. Transfer from a non-trauma facility to a trauma facility. To facilitate this type of patient transfer, a rapid re-triage for adults and pediatrics patients may be used (see 4606 A and B);
   2. Transfer from a trauma facility to a trauma facility with a higher level designation 4606 A and B may be used to identify the types of patients which may benefit from the transfer;
   3. Transfer after stabilization and initial care (per EMTALA regulations) to a like facility of the patient’s choosing;
   4. Transfer after definitive care (per EMTALA regulations) to a non-trauma facility for on-going care. The transfer of patients from one facility to another must be based upon medical treatment decisions and not in whole or in part on the patient’s financial or social status or their ability to pay for care or services. Decisions to transfer the patient at their request or the request of their insurer must, at all times, be made in a manner consistent with good medical practice.

E. As the lead agency, the Marin County EMS Agency will initiate and maintain contracts with Level I, Level II and specialty care facilities on behalf of the Marin County Trauma System Plan.
   1. All contracts arranging for care of patients injured in Marin County will include provisions for the establishment of transfer guidelines indicating the type of patients or injuries anticipated to be transferred under the terms of the agreement.
   2. Marin County facilities are required to have transfer agreements and to specify the type of patient or injury to be transferred under the terms of the agreement.
   3. Additional transfer agreements must include provisions assuring that required trauma
data is provided to the transferring facility to complete data collection and quality improvement processes.

F. In all instances of patient transfer, it is the responsibility of the transferring facility to assure the following:

1. That the transfers occur in accordance with all state and federal laws and regulations;
2. That all pertinent patient records are transferred with the patient;
3. That the receiving facility and receiving physician have accepted the patient;
4. That the method of transfer is appropriate to the needs of the patient at the time that the transfer occurs; and
5. Arranging appropriate transportation for the patient.

G. If expected patient care is within Paramedic Scope of Practice and timely transfer is needed, contact 9-1-1 to request Emergency Interfacility Transfer. If expected patient care exceeds Paramedic Scope of Practice, contact appropriate transport agencies (CCT Transport) or arrange for nursing staff and/or MD to accompany paramedic or EMT during transport to the receiving facility.

1. Patients being transferred should receive, during the transport, a level of care and attention equivalent to the level of care necessary before and following the transfer.
2. Level of care refers to the type of equipment and supplies needed and to the level of expertise of caregivers.
TRAINING OF TRAUMA SYSTEM PERSONNEL

PURPOSE
To define trauma-related training required for Trauma System personnel to assure a universal understanding of expectations within the Trauma System.

RELATED POLICIES
Paramedic Accreditation/Continuous Accreditation, #3300

POLICY
A. Trauma System Orientation is a required component of Provider Agency/Hospital orientation, and should include:
   1. All prehospital personnel
   2. All pertinent hospital personnel (ED physicians, ED staff, ICU staff, etc.);
   3. All 911 Medical Dispatchers;
   4. Content should include the following: Trauma-related scene management, utilization of resources, evaluation of trauma patients, determination of appropriate destination using the Trauma Triage and Destination Guideline policy (#4613), trauma resuscitation, trauma team response, and all other system policies and operational changes associated with the Trauma System Plan.

B. Trauma-related classes or certifications for nurses or physicians are required and considered part of the contractual agreement for designation.

C. The responsibility for assuring training of all appropriate personnel is the responsibility of the employing agency.

D. Facilities and agencies contracted/designated to provide trauma services will provide training to employees.
JURISDICTIONAL COORDINATION

PURPOSE
To summarize the coordination with surrounding jurisdictions, facilitating integration of this developing trauma system with established or developing trauma systems in other counties.

RELATED POLICIES
Medical Mutual Aid, #5200; Bridge Response Policy, #5300

POLICY
A. The Marin County Trauma System Plan utilizes Level I, Level II, and specialty centers as well as air transport resources located in other jurisdictions.
   1. The Marin County EMS Agency develops and implements contractual arrangements with facilities in other jurisdictions.
   2. Existing operations of air ambulance providers are reviewed to assure they are appropriate.
B. Marin County EMS Agency works with other LEMSAs to assure that the needs of their patients are met and that they have access to the closest appropriate facility.
C. Consistent with the Marin County Trauma System Plan, cooperative follow-up and data collection will occur to assure that all patient care is reviewed through a comprehensive quality improvement program and that trauma systems in all jurisdictions have access to complete information on their patients.
COORDINATION WITH NON-MEDICAL EMERGENCY SERVICES

PURPOSE
To ensure that all non-medical emergency service providers are informed of the trauma system plan as it relates to their agency or organization.

DEFINITION
Non-medical Emergency Services (e.g., law enforcement agencies), for the purposes of this policy, shall mean any agency or organization that is not a provider of prehospital BLS or ALS services and is not providing service through a hospital that receives trauma patients.

POLICY
A. The Marin County EMS Agency ensures that all appropriate agencies are provided with a current copy of the Trauma System Plan and all policies and procedures created to implement that plan.

B. Appropriate agencies and organizations participate on relevant countywide trauma related committees to assure participation of all stakeholders in decisions related to ongoing operation of the trauma system.

C. Staff will offer to meet with all agencies or organizations to review the system and to answer questions regarding potential impact on their operations.

D. Efforts will occur, on a regularly scheduled basis, to provide public information about the trauma system and to involve agencies or organizations with interest in the process.
TRAUMA SYSTEM FEES

PURPOSE
To outline a fee structure to cover the direct costs of the designation process, effective monitoring and evaluation of the trauma care system.

POLICY
A. The Marin County Trauma System Plan stipulates that each participating agency will be required to make the commitments necessary to achieve the desired system and will individually fund or seek funding to support the necessary activities.

B. Additionally, the cost of providing survey teams will be met with fees paid by hospitals seeking and maintaining designation. These nonrefundable fees will be as follows:
   1. Fees for the Level III facilities will be $30,000 per year.
   2. Fees for EDAT facilities will be $5,000 per year.

C. If the fees collected exceed the amount needed for periodic inspection and designation, the excess will be used to offset the cost of the Trauma System Program to County.

D. Implementation and maintenance of the Trauma System Plan requires a part-time Trauma Coordinator as part of the EMS Agency staff.
MEDICAL CONTROL AND ACCOUNTABILITY

PURPOSE
To describe medical control of activities needed to provide care to patients with traumatic injuries.

RELATED POLICIES
Trauma Triage and Destination Guidelines, #4613; Traumatic Injuries, T1

POLICY
A. The Marin County EMS Agency Medical Director is the qualified physician contracted to provide services by the County of Marin and is responsible for medical direction of the overall Marin County EMS system.

B. The Provider Medical Director is the qualified physician contracted or hired by a hospital or ALS provider agency to oversee medical quality issues within that agency according to that agency’s approved Quality Improvement Plan.

C. Medical control and accountability of the prehospital portion of the system will continue as currently configured.

D. As part of an inclusive Trauma System, all acute care hospitals in Marin County who receive ambulances will receive injured patients and will participate in the Marin County Trauma System in one of the following ways:
   1. As a designated trauma center or
   2. As a receiving facility for injured patients who do not meet trauma triage criteria.

E. All acute care hospitals in Marin County who receive ambulances will participate in trauma data collection and the Trauma Continuous Quality Improvement Process according to terms contained in their contract for services with the County of Marin.

F. All acute care hospitals in Marin County who receive ambulances will comply with the medical control standards as established by Marin County EMS Agency.
TRAUMA TRIAGE AND DESTINATION GUIDELINES

PURPOSE
To provide additional explanation and guidance for the Marin County Trauma Triage Criteria Tool to help identify trauma patients in the field and, based upon their injuries, direct their transport to an appropriate level of trauma care facility.

RELATED POLICIES
Service Area for Hospitals, #4603; EMS Aircraft, #5100; Ambulance Diversion Policy, #5400; Destination Guidelines, GPC 4; Determination of Death, ATG 6; Multi-Casualty Incident, GPC 12

DEFINITIONS
A. **Designated Trauma Center** refers to an acute care facility holding designation as a Level I, Level II, Level III, or EDAT. In Marin County, Marin General Hospital is the designated “Level III trauma center” and Kaiser is the designated “EDAT.”

B. **Provide Trauma Notification** means that field personnel will advise the trauma center as soon as possible of their impending arrival by providing a Trauma Notification (see Trauma Triage Tool).

C. **Time closest facility** is that facility which can be reached in the shortest amount of time.

GENERAL POLICY
A. It is the overall goal of the Marin County Trauma System to provide treatment of injured patients at Marin County hospitals.

B. Whenever physician consultation is indicated within this policy, contact shall be made with Marin General Hospital Level III trauma center.

C. The following policy statements pertain to use of the Trauma Triage Tool (see 4613a):

1. Patients shall be determined to meet criteria for transport to a designated trauma center if they meet the criteria listed in the Trauma Triage Tool.

2. Physician consultation is REQUIRED in the following circumstances:
   a. The paramedic is unable to transport the patient to the indicated facility in an expedient manner;
   b. The paramedic assesses the patient and scene conditions and believes transport to a different level of care is indicated;
   c. Patient requests a facility not indicated by the Trauma Triage Criteria Tool.

3. Physician consultation is RECOMMENDED whenever assistance in resolving treatment decisions or transport destinations is desired.

4. Unmanageable airway: Patients with airway compromise unmanageable by BLS or ALS adjuncts will be transported to the closest receiving facility.

5. Traumatic Arrest in the Field Prior to Paramedic Arrival: Patients found in cardiopulmonary arrest due to blunt or penetrating trauma may be determined dead at the scene and not transported. Determination of death must meet criteria found in Policy ATG-6 (Determination of Death).

6. In MCI incidents, triage principles (START triage) may preclude initiation of CPR (refer to policy - ATG 6).
D. **Destination for Adult** patients who meet Physiologic or Anatomic Criteria:

1. Transport to time closest trauma center.
2. If the estimated ground transport time to the closest trauma center exceeds 30 minutes, consider use of air ambulance.
   a. Estimated ground transport time is evaluated from the time the patient is packaged and ready for transport. Consider traffic conditions, weather, and other relevant factors.
   b. Estimated air transport time includes: minutes until arrival (if helicopter is not already on the ground); scene and load time of flight crew (typically 10 minutes); flight time to trauma center; and off-load time (typically 7-10 minutes). If helicopter is on the ground at the time the patient is ready for transport, then air transport time is evaluated as time to load, flight time to trauma center and time to off-load to the ED.

E. For adult patients meeting mechanism of injury or additional factors criteria, transport to Marin General.

F. **Pediatric** patients who meet Physiologic or Anatomic Criteria:

1. Transport directly to Children’s Hospital Oakland (see Trauma Triage Tool).
2. If ETA (transport time) is anticipated to be >30 minutes, physician consultation should be obtained with the Level III trauma center to determine destination.

G. Incidents involving three or more patients meeting Physiologic or Anatomic Criteria will be handled in the following manner:

1. Prehospital providers should obtain a physician consultation from the Level III trauma center, regarding destinations anytime three or more patients meet Physiologic or Anatomic Criteria. If an incident is deemed to be an MCI, prehospital providers will utilize the multicasualty plan for destination guidelines.
2. Helicopter dispatch should be initiated for all incidents in which three or more patients meet A&P criteria.
3. Patients meeting physiologic and anatomic triage criteria that the Level III trauma center cannot accept should be transported to an out-of-county Level I or II trauma center in the most appropriate and expedient manner.

H. The EDAT will be used for patients meeting mechanism of injury trauma triage criteria that Level III trauma center is unable to accept.
MARIN COUNTY TRAUMA TRIAGE TOOL
Adult Patients (age 14 and older)

Step 1 – Major Physiologic Factors
1. Glasgow Coma Scale ≤13
2. Systolic blood pressure (mmHg) <90 mm Hg
3. Respiratory rate <10 or >29 breaths per minute

Provide Full Trauma Notification & Transport to Time Closest Trauma Center: Marin General Hospital by ground, or Level II by air.

Step 2 – Major Anatomic Factors
1. Penetrating injuries to head, neck, torso, or extremities proximal to elbow or knee
2. Flail chest
3. Two or more proximal long-bone fractures
4. Crushed, degloved, mangled or amputated extremity proximal to wrist or ankle
5. Pelvic fractures
6. Open or depressed skull fracture
7. Paralysis (partial or complete)
8. Burns with anatomic factors

Provide Full Trauma Notification & Transport to Time Closest Trauma Center: Marin General Hospital by ground, or Level II by air.

Step 3 – Mechanism of Injury Factors
1. Falls
   - Adults >20 feet (one story is equal to 10 feet)
   - Children >10 feet or three times the height of the child
2. High-risk auto crash
   - Passenger space intrusion >18" (>12" occupant site)
   - Ejection (partial or complete) from automobile
   - Death in same passenger compartment
3. Auto vs. pedestrian or auto vs. bicyclist: thrown, run over, or with >20 mph impact
4. Motorcycle or bicycle crash: thrown and >20 mph impact
5. Burns with MOI factors

Provide Limited Trauma Notification & transport to Marin General Hospital Trauma Center

Step 4 – Additional Factors
1. Older Adults; Risk of injury/death increases significantly after age 65
2. Anticoagulant use and/or bleeding disorders with head / torso injury
3. End-stage renal disease requiring dialysis
4. Pregnancy >20 weeks

Does assessment of these additional factors, or other complaints or exam findings cause paramedic to be concerned about the patient?

Provide Limited Trauma Notification & Transport to Marin General Hospital Trauma Center

Reviewed: March 2016
MARIN COUNTY TRAUMA TRIAGE TOOL
Pediatric Patients (age <14 yrs)

Step 1 – Major Physiologic Factors

1. Glasgow Coma Scale ≤13
2. Systolic BP <80 mm Hg – age 7-14
3. Systolic BP <70 mm Hg – age <7

Transport to Oakland Children’s Hospital if ETA 30 min. or less, otherwise transport to Marin General Hospital and provide Full Trauma Notification

YES
NO

Assess Anatomic Factors

Step 2 – Major Anatomic Factors

1. Penetrating injuries to head, neck, torso, or extremities proximal to elbow or knee
2. Flail chest
3. Two or more proximal long-bone fractures
4. Crushed, degloved, mangled or amputated extremity proximal to wrist or ankle
5. Pelvic fractures
6. Open or depressed skull fracture
7. Paralysis (partial or complete)
8. Burns with anatomic factors

Transport to Oakland Children’s Hospital if ETA 30 min. or less, otherwise transport to Marin General Hospital and provide Full Trauma Notification

YES
NO

Follow Steps 3 & 4 on page 1 for Adult Trauma Patients

SPECIAL CONSIDERATIONS

1. The clinical findings, including past medical history, are critical to identifying the trauma patient, especially when assessing Mechanism of Injury (MOI) and Additional factors (AF).
2. A thorough clinical assessment is especially important in:
   - Patients with persistent & unexplained respiratory difficulty, tachycardia, or peripheral vaso-constriction;
   - Any patient <5 yrs of age who has suffered major trauma but for whom it is not possible to fully determine physiologic status;
   - Inability to communicate (e.g., language barrier, substance or psychiatric impairment)
3. There are mechanisms of injury not identified in the Trauma Triage Tool that may be associated with trauma. Any fall or impact with significant velocity is likely to produce a candidate for trauma activation.

“PROVIDE TRAUMA NOTIFICATION” means field personnel will advise the trauma center as soon as possible of their impending arrival by providing a Trauma Notification. This information will be used to activate the trauma team. This information is best provided directly from the field by the EMT, paramedic or Incident Commander. Direct communication with the hospital via MERA is preferred. The notification must include at a minimum the following information:
1. Age / Gender
2. Incident type (e.g., MVA, fall, stab wound, gunshot wound)
3. Injury and/or complaints
4. Category:
   - “Full Trauma” (Anatomic or Physiologic factors) or
   - “Limited Trauma” (Mechanism or Additional factors)
5. ETA

As soon as practical after the Trauma Notification has been given, a more thorough report should be provided to the trauma center, including vital signs.

Trauma Center consultation is recommended for questions about destinations for injured patients.

Reviewed: March 2016
TRAUMA CENTER DESIGNATION PROCESS

PURPOSE
To outline the process for achieving designation as a trauma center in Marin County.

POLICY
A. Initial Designation Process in Marin County
   1. Marin County EMS Agency will designate trauma centers in Marin County.
   2. Facilities providing Level I, Level II and other pediatric trauma services will be contracted by Marin County to provide those services within the system.
      a. County of origin designations will be accepted.
      b. Only designated facilities will be utilized.
B. Subsequent designations
   1. Facilities not seeking designation during the initial process and electing to do so at a later date must do the following:
      a. Submit a letter of intent to seek designation to the Marin County EMS Agency and pay the required fee in the manner set forth in the original RFP no sooner than twelve (12) months following completion of the initial designation process.
      b. Meet all standards and requirements set forth in the original RFP at time of site inspection.
   2. Out of county facilities wishing to participate should notify Marin County EMS Agency in writing of their desire to contract to provide services within the Marin County Trauma System.
DATA COLLECTION AND MANAGEMENT

PURPOSE
To specify the components of the data collection and management processes.

RELATED POLICIES
Patient Care Record, #8115; Quality Improvement and System Evaluation, #4616

DEFINITIONS
A. The Marin County Electronic Prehospital Information System is that combination of databases used to collect prehospital and Emergency Department outcome information.
B. Trauma One is proprietary trauma registry software designed to collect specified trauma system information.

POLICY
A. All prehospital provider agencies will participate in the collection of prehospital data.
B. All hospitals in Marin County will participate in Trauma Registry data collection whether they seek designation as a trauma center or do not seek designation.
C. The Prehospital Information System has been modified to collect additional trauma information. Appendix A lists these additions.
D. Prehospital Trauma Audit Filters will be reported to providers monthly. Audit filters are listed in Appendix B.
E. The Collector Trauma Registry will be used to collect specified trauma information for the purpose of monitoring and tracking care provided to injured patients in the hospital setting (Appendix C and D).
F. Yearly EMS statistical reports will be expanded to include trauma system reports as determined by the Trauma System CQI Committee and the Marin County Trauma CQI Plan.
G. Appropriate Trauma System statistical and quality improvement information will be published on a regular basis.
## APPENDIX A

### Intent of Injury
- Unknown or N/A
- Intentional
- Unintentional

### Safety Equipment Used
- None
- Lap restraint
- Shoulder restraints
- Child safety seat
- Airbag
- Helmet
- Protective clothing
- Flotation Device
- Personal Protective Equip
- Harness
- Other

### Scene Conditions
- None identified
- Complicated extrication
- Do not resuscitate order form/medallion
- Hazardous material/contaminated Pt.
- Medical personnel on scene
- Possible provider exposure
- Unsafe or unsecured scene
- AMA
- Possible crime scene
- Other

### How Trauma Occurred
- Burns - chemical
- Burns - Electrical
- Burns - heat - boiling water
- Burns - heat - flame
- Burns - heat - gas/flammable liquid
- Burns - heat - hot surface
- Burns - heat - steam/grease scald
- Burns - heat - tap water
- Collision - with animal
- Collision - with auto
- Collision - with bicycle
- Collision - with bus
- Collision - with motorcycle
- Collision - with tractor/trailer
- Collision - with train
- Collision - with tree or building
- Collision with stationary fixed object
- Fall - ground level
- Fall - height < 20 feet - other
- Fall - height < 20 feet from balcony
- Fall - height < 20 feet from bunkbed
- Fall - height < 20 feet from cliff
- Fall - height < 20 feet from highchair
- Fall - height < 20 feet from horse
- Fall - height < 20 feet from ladder
- Fall - height < 20 feet from playground
- Fall - height < 20 feet from roof
- Fall - height < 20 feet from stairs
- Fall - height < 20 feet from table
- Fall - height < 20 feet from tree
- Fall - height < 20 feet from window
- Fall - height 20 feet or over - other
- Fall - height 20 feet or over from balcony
- Fall - height 20 feet or over from cliff
- Fall - height 20 feet or over from ladder
- Fall - height 20 feet or over from playground
- Fall - height 20 feet or over from roof
- Fall - height 20 feet or over from stairs
- Fall - height 20 feet or over from tree
- Fall - height 20 feet or over from window
- Hanging or strangulation
- Human bite
- No further identifier required
- Other - see narrative
- Penetrating injury - airgun - grease
- Penetrating injury - airgun – other/mechanical
- Penetrating injury - airgun - paintgun
- Penetrating injury - airgun - water
- Penetrating injury - arrow
- Penetrating injury - impaled on object
- Penetrating injury - other

### Where Trauma Occurred
- Aircraft - commercial
- Aircraft - private
- Auto - cargo area
- Auto - driver
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APPENDIX B
PREHOSPITAL TRAUMA AUDIT FILTERS

GENERAL

A. Response time to scene >10 minutes

B. On scene time >10 minutes

C. Patient with Trauma Triage Criteria who does not have “early trauma notification” selected AND/OR no “time” is recorded (when call is made)

TRIAGE AND DESTINATION

A. Patient with anatomic or physiologic trauma triage criteria transported to an ED or EDAT

B. Patient with multiple trauma (defined as two or more selected trauma triage criteria) transported to in-county facility (any hospital)

C. Patient with “high energy transfer mechanism” (Fall > 20 feet, Rollover with unrestrained occupant, prolonged extrication > 20 minutes, or significant blunt trauma to head, neck, or torso) transported to a Level II Trauma Center, ED or EDAT

D. Patient with “other mechanism of injury” transported to an ED

CLINICAL

A. Patient with GCS ≤ 9 who is not intubated in the field (successful intubation)

B. Patient with physiologic criteria (SBP < 90), IVs not started

C. Patient with physiologic criteria (resp rate <10 or > 29 BPM) without ALS airway intervention (oxygen, adjunct airway treatment)

D. Patient with GCS ≤13 with mechanism of injury without C-spine collar placed

E. Patient with GCS ≤13 without ALS adjunct airway intervention (no oxygen, artificial airway, etc.)

F. Patient who meets ANY criteria on trauma triage criteria tool who does not have an IV placed

G. Any cardiac arrest protocol patient in which trauma is present (noted by presence of trauma triage criteria or mechanism of injury on PCR)

H. Treatments:
   1. needle thoracostomy
   2. mast applied
   3. CPR
   4. All medications
   5. CPR
   6. Oxygen
APPENDIX C

MARIN COUNTY TRAUMA TRIAGE CRITERIA

PHYSIOLOGIC
- GCS <= 13
- Systolic B/P < 90 mmHg
- Respiratory rate < 10 or > 29 breaths per minute

ANATOMIC
- Amputation above wrist or ankle
- Pelvic instability
- Traumatic paralysis
- Flail or crushed chest
- Two or more proximal long bone fractures (femur or humerus)
- Penetrating trauma to head, neck, or torso
- Burns with trauma

HIGH ENERGY TRANSFER MECHANISM
- Fall > 20 feet
- Ejection from vehicle
- Rollover with unrestrained occupant
- Significant blunt trauma to the head, neck, or torso

OTHER MECHANISM OF INJURY
- MVA with: initial speed > 40 mph; auto deform > 20 in; OR intrusion > 12 in
- Auto vs. peds/auto vs. bike > 5 mph
- Motorcycle crash > 20 mph or separation of rider from bike
- Prolonged extrication
- Pedestrian thrown or run over
APPENDIX D

REPORTING REQUIREMENTS FOR HOSPITALS

PATIENTS TO BE ENTERED INTO REGISTRY:

- Patients who meet trauma triage criteria on the Marin County Trauma Triage Criteria Tool who are transported by EMS to the trauma center
- Patients who meet trauma triage criteria that present to the trauma center without EMS involvement
- Patients who meet trauma triage criteria who are transported to non-trauma designated centers
- Patients who meet trauma triage criteria who are transported to another trauma center (i.e., transferred to higher level trauma center; repatriated; etc.)
- All trauma related deaths

All trauma patients as defined above will have the following audit filters collected:

EMERGENCY/RESUSCITATION PHASE

- Response by all trauma team members
- Trauma Surgeon response time (> 30 minutes)
- Definitive airway in place when patient with GCS < 9 leaves resuscitation area
- Vital signs documented in the trauma record upon arrival and every 15 minutes x 3
- Vital signs documented on trauma record hourly until discharge from the ED
- Patients receive CT scan within 1 hour of ED arrival when intracranial injury present and GCS < 12

ACUTE/ADMISSION PHASE

- Patient with abdominal injuries and hypotension SBP < 90 mmHg who undergoes laparotomy > 1 hour after ED admission
- Patient undergoes laparotomy > 4 hours after ED arrival
- Patient with subdural brain hemorrhage undergoing craniotomy > 4 hours after ED arrival
- Patient with epidural brain hemorrhage undergoing a craniotomy > 4 hours after ED arrival
- Open fracture patient receives initial surgical treatment > 8 hours after ED arrival
- Thoracic surgery performed > 24 hours after ED arrival
- Abdominal surgery performed > 24 hours after ED arrival
- Vascular surgery performed > 24 hours after ED arrival
- Cranial surgery performed > 24 hours after ED arrival
- Non-fixation of femoral diaphyseal fracture
- Patient requiring re-intubation of airway within 48 hours of extubation
- Unplanned return to the OR
- Admission of patient under 14 years of age
- OB trauma patient admitted

POST HOSPITAL PHASE

- Admission unplanned
- Admit to hospital within 72 hours after ED discharge
Each hospital will be required to submit a monthly summary report of trauma patient activity to the EMS Program. Monthly summary reports will include:

- Total number of trauma patients entered into the registry per month
- Total number of admitted trauma patients
- ISS Scores, ICD-9 summary
- Admitting Diagnosis
- Admitted to what service
- Trauma Triage Criteria met as defined by the Marin County Trauma Triage Criteria Tool
- Demographics: age, sex, location of injury
- Disposition from ED: OR, ICU, acute care unit, discharged, etc.
- Length of stay
- Audit filters
- Complications
- All readmissions within 72 hours after ED discharge
- All unplanned admissions
- Trauma Deaths
PARAMEDIC INTERNSHIPS

PURPOSE
The purpose of this policy is to provide guidance and to establish minimum standards for paramedic internships offered by ALS providers in Marin County.

POLICY
A. Provider Agency
   1. Approved ALS providers may offer field internships for paramedic students from a LEMSA-approved training program to complete the required field portion of their training.
   2. The Provider Agency shall give notice to the Marin County EMS Agency in advance of the following:
      a. Paramedic student’s name
      b. Sponsoring Paramedic Training Program
      c. Start date of internship
      d. Assigned paramedic preceptor
   3. The Provider Agency shall have a current, written agreement to provide internships with the Paramedic Training Program with which the student is affiliated.

B. Preceptors
   1. Assigned preceptors shall meet the following minimum qualifications:
      a. Two years experience as California EMT-P.
      b. Possession of a current and active (non-probationary) California EMT-P license and local accreditation in Marin County for at least one year.
      c. Preceptors shall complete training as outlined/required by the Provider Agency and/or Paramedic Training Program.
      d. Formal preceptor designation by the Provider Agency.
   2. Preceptors shall complete all evaluations of student performance as may be required by the Paramedic Training Program.

C. Paramedic Students
   1. Students shall be subject to all Marin County EMS Agency policies, protocols and procedures
   2. Students also required to:
      a. Complete the approved Marin County EMS Agency internship application/form.
      b. Work only in basic scope of practice unless approved for optional scope procedures.
      c. Work only under the direct supervision of their assigned preceptor(s). In the absence of their preceptor(s), student may only work in the basic EMT scope of practice.
      d. Receive authorization from the Marin County EMS Agency.

D. EMS Agency
   1. EMS Agency will:
a. Issue a temporary paramedic intern authorization number.

b. Activate access for intern in ePCR database.
Unified Response to Violent Incidents

I. PURPOSE

To provide triage, medical care and extrication to patients involved in an incident involving an active shooter/violent incident or other hazardous incident being primarily managed by law enforcement agencies/departments.

II. RELATED POLICIES

GPC 12 MCI / MPMP
4613 Trauma Triage

III. AUTHORITY

1797.153, 1797.116, 1797.204, 1797.220, 1797.250, 1797.252, 1798.0, 1798.6 Health & Safety Code

IV. DEFINITIONS

Violent Incident - any criminal offense that involves the use or threat of force or violence. These can include shootings, stabbings and civil disobedience, as well as large scale incidents such as mass shootings, bombings and riots.

V. POLICY

Violent Incident Response/Active Shooter:

Education, training and joint exercises with Law Enforcement, Fire and EMS must be conducted before Fire and EMS providers are allowed to enter an active scene

Any law enforcement, fire and/or EMS provider shall have department policies regarding entry of responders into warm zones or secure areas as described in this policy

The EMS response to violent encounter/active shooter incidents should be coordinated utilizing ICS, SEMS, NIMS and Unified Command with on scene Law Enforcement/ Fire / EMS / Facility Cooperator

Concepts applied are based on curricula from the following courses; the Tactical Combat Casualty Course (TCCC), the International School of Tactical Medicine (ISTM) and the Unified Response to Violent Incidents (URVI)
Law Enforcement will be responsible for patient extrication if other first responders are not able to enter the scene. Patient extrication will be initiated at the earliest possible opportunity after the scene is relatively secured and/or the threat is neutralized.

The on scene Incident Commander/ Unified Command, in addition to departmental policies, will determine PPE requirements for entry into any warm zones.

VI. Considerations

- Communications must be maintained throughout the incident with respective dispatch centers and on scene medical, fire and law enforcement.

- Law enforcement is in charge of the incident. While in a warm zone environment, EMS should follow the direction of law enforcement.

- In accordance with department safety standards, EMS providers need to be ready to enter a secured scene quickly and aggressively.

- Make sure law enforcement command knows that an EMS team is ready, staged and awaiting direction. Most SWAT teams have an imbedded tactical medic that would be the logical liaison to EMS assets on scene.

- Law enforcement may provide a protective envelope (force protection model) around Fire/EMS providers and escort them into “warm zone” areas to treat or extricate victims (No Active Threat in the Area)

- EMS providers should be “forward leaning” and have trauma focused medical gear and triage tools available.

- Working closely with law enforcement is critical in getting life saving medical assets to the injured as soon as the threat has been mitigated or neutralized. The UNIFIED COMMAND model is best for these types of incidents.

- Make sure to have emergency egress routes and casualty collection points as well as evacuation rally points identified.

- If EMS team is brought into extricate patient, only minimal equipment should be carried. Roll up evacuation stretchers should be considered.

- EMS teams need to be prepared to split up if law enforcement requires it.

- EMS providers should use individual medical packs with lifesaving bleeding and airway tools so they can work “independently” on trauma victims.

- Patients should be moved as quickly as possible from CCP to FRFTS with only lifesaving procedures performed in the warm zone if applicable.
• Spinal motion restriction is not indicated for patients suffering only from penetrating trauma not involving the spinal column

• Once the threat is eliminated, law enforcement may be available to help extricate the injured

VII. References

• The FEMA/US Fire Administration “Fire/EMS Department Operational Considerations and Guide for Active Shooter and Mass Casualty Incidents” (Sept. 2013)

• The FIRESCOPE “Emergency Response to Tactical Law Enforcement Incidents” position paper (Dec. 2014)

• The IAFF “Active Shooter” position statement (Aug. 2014)

• Unified Response to Violent Incidents, California Firefighter Joint Apprenticeship Committee, CSFM, CPF (2013).
TACTICAL PARAMEDIC

PURPOSE

The purpose of this policy is to provide designation and operational guidelines for the Tactical Paramedic.

DEFINITION

Tactical Paramedic – A paramedic who meets all established pre-requisites and is authorized to provide medical support services for law enforcement operations.

POLICY

A. Under the authority of State regulations, Marin County paramedics may render care during law enforcement operations as long as the following conditions are met:
   1. They are in possession of a valid California Paramedic License.
   2. They are accredited by the Marin County EMS Agency
   3. They are affiliated with a Marin County provider approved by the Marin County EMS Agency.
   4. They have successfully completed a Tactical Medicine Course that is certified by the Peace Officers Training and Standards (POST) and approved by the California EMS Authority.

B. When requested for an out of county mutual aid assignment, personnel may utilize the scope of practice for which they are trained and accredited according to the policies and procedures established by the Marin County EMS Agency.

OPERATIONS


B. The assignment and/or deployment of any tactical paramedic during a law enforcement response shall be at the sole discretion of the law enforcement agency or department in accordance with established policies and operational procedures.

C. Marin County tactical paramedics will maintain (AVAILABLE AT THE SCENE) a minimum equipment and supply list, a drug and solution inventory, and the equipment and supplies commensurate with Marin County EMS authorized scope of practice.

D. Tactical paramedics must be sworn peace officers in order to carry a firearm.

E. All patient care will be reviewed through the CQI process.

F. Controlled substances shall be stored and handled in accordance with Marin County EMS and local agency policies.
QUALIFICATIONS, CERTIFICATION AND TRAINING

Designation by an ALS Provider Agency as a Tactical Paramedic must include verification that the paramedic has completed the requirements outlined in the California POST/California EMSA Tactical Medicine Operational Programs and Standardized Training Recommendations.

RELATED POLICIES

Provider Equipment List, 5010
MPMP
Patient Care Record, 7006
PREHOSPITAL/HOSPITAL CONTACT

PURPOSE
To provide guidelines for contact between prehospital care personnel and receiving facilities

DEFINITIONS
A. Report Only - a notification to the receiving facility that a patient is enroute
B. Early Notification – a communication meant to provide an early alert to hospital staff that a specialty care patient is enroute. Early Notifications include:
   1. Early Trauma Notification
   2. Early Stroke Notification
   3. Early STEMI Notification
   4. Early Sepsis Notification
C. Physician Consult - a consultative discussion between field personnel and an ED physician.

POLICY
A. Report Only
   1. Shall occur anytime a prehospital unit transports a patient.
   2. May be performed by any prehospital personnel.
   3. Reports shall include the following:
      a. Transport unit identification
      b. Level of transport (code 2 or 3)
      c. Level of care being provided (ALS or BLS)
      d. Age/gender of patient
      e. General category of patient (type of illness or injury) or treatment guideline being used for an ALS patient.
      f. Condition of patient (stable, improving or worsening)
      g. Estimated time of arrival to receiving facility
B. Early Notification (Trauma/Stroke/STEMI/Sepsis)
   1. Shall be performed at the earliest possible time, prior to leaving the scene when feasible.
   2. Is required when patient meets criteria.
   3. May be performed by paramedic, Incident Commander, or other delegated personnel
   4. Shall include all elements of Section A. above and all of the following:
      a. Type of Notification (Trauma, Stroke, STEMI, Sepsis)
         1. Sepsis
         2. Stroke: Last known well, patient identifying information
3. STEMI: 12-lead findings, patient identifying information
4. Trauma: Full or Limited
   b. ETA
5. As soon as practical after the ETA an Early Notification has been given, a more thorough report should be provided to the Trauma Center, including vital signs.

C. Physician Consult
   1. Shall occur when specified in an ALS or BLS Treatment Guideline.
   2. Trauma Center consultation is recommended for questions about the destinations for injured patients. Consult shall be made with Marin General Hospital.
   3. Physician Consult communication shall include the following:
      a. The need for physician consultation
      b. Statement of need (e.g. additional Versed, assistance with Determination of Death, etc.)
      c. Patient assessment and presentation.

D. If a paramedic attempts contact for any of the reasons above and is unable to contact the intended receiving facility, personnel may contact another in-county hospital. If no facility can be contacted, the following should occur:
   1. Treatment should be administered according to the appropriate ALS or BLS treatment guideline.
   2. Medications or treatments listed as “physician consult required” may not be administered or performed
   3. Documentation of the communications failure should be completed as detailed in policy #7002, Communication Failure.

E. In the event of a declared multiple patient incident, paramedics may operate according to the Multiple Patient Management Plan (MPMP) omitting contact or hospital consultation.

RELATED POLICIES
Trauma Triage and Destination Guidelines, #4613
Communication Failure, #7002
Marin County EMS
Pre-Hospital Field Transfer Form (FTF)

Last Name _____________________________ First Name ___________________________ Age ___________ DOB _____________ M       F

Date ______/_________/_________ Pt. Transferred Time_______________ Unit #________________ Incident # ___________________________

Pt. Address __________________________________________Phone (_____)_____________ PMD______________ Ins. ID #__________________

Incident Address ___________________________________________________

- PT’s HOME
- SNF
- ASSISTED LIVING
- OTHER _________

Facility - Name __________________________________    Contact Person_____________________________   Phone _______________________

Code Status Information: □ Full  □ POLST Form  □ DNR Form  □ Hospice - Agency _____________________ Phone______________________

Person best able to provide history about current illness:  □ Patient □ Facility □ Other: Name _______________________________ Phone______________________

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<th>GCS</th>
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<th>Pain (# / 10)</th>
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Chief Complaint _________________________________________

Signs & Symptoms _________________________________________

Medical History _________________________________________

Medications ____________________________________________

Allergies_______________________________________________

Physical Exam

- Head
- Pupils
- Neck
- Chest
- Abdomen
- Back
- Pelvis
- Extremities

= WNL

Physiological Exam

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Chief Complaint

Signs & Symptoms

Medical History

Medications

Allergies

Notes

Lead Medic

Signature

July 2016
# APPROVED MEDICAL ABBREVIATIONS

## PURPOSE

To identify the abbreviations and symbols which an Emergency Medical Technician (EMT) or Paramedic may use for documentation purposes in Marin County.

## ABBREVIATIONS

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<td>female</td>
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<tr>
<td>♂</td>
<td>male</td>
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<td>+</td>
<td>positive</td>
</tr>
<tr>
<td>-</td>
<td>negative</td>
</tr>
<tr>
<td>°C</td>
<td>degrees Celsius</td>
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<tr>
<td>°F</td>
<td>degrees Fahrenheit</td>
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<td>left</td>
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<td>≈</td>
<td>approximately</td>
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<td>x</td>
<td>times</td>
</tr>
<tr>
<td>ā</td>
<td>before</td>
</tr>
<tr>
<td>A/O</td>
<td>alert and oriented</td>
</tr>
<tr>
<td>A/S</td>
<td>at scene / arrived at scene</td>
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<tr>
<td>abd</td>
<td>abdomen</td>
</tr>
<tr>
<td>AC</td>
<td>antecubical</td>
</tr>
<tr>
<td>AFIB</td>
<td>atrial fibrillation</td>
</tr>
<tr>
<td>AICD</td>
<td>Automatic Internal Cardiac Defibrillator</td>
</tr>
<tr>
<td>AKA</td>
<td>above the knee amputation</td>
</tr>
<tr>
<td>ALOC</td>
<td>altered level of consciousness</td>
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<tr>
<td>ALS</td>
<td>Advanced Life Support</td>
</tr>
<tr>
<td>AM</td>
<td>morning</td>
</tr>
<tr>
<td>AMA</td>
<td>against medical advice</td>
</tr>
<tr>
<td>AMI</td>
<td>acute myocardial infarction</td>
</tr>
<tr>
<td>AOS</td>
<td>arrived on scene</td>
</tr>
<tr>
<td>approx</td>
<td>approximately</td>
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<tr>
<td>ASA</td>
<td>acetylsalicylic acid, aspirin</td>
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<tr>
<td>ASAP</td>
<td>as soon as possible</td>
</tr>
<tr>
<td>ATF</td>
<td>arrived to find</td>
</tr>
<tr>
<td>B/C</td>
<td>because</td>
</tr>
<tr>
<td>BBB</td>
<td>bundle branch block</td>
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<tr>
<td>BG</td>
<td>blood glucose</td>
</tr>
<tr>
<td>BGL</td>
<td>blood glucose level</td>
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<td>Abbreviation</td>
<td>Description</td>
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<tr>
<td>--------------</td>
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<tr>
<td>Bilat</td>
<td>bilateral</td>
</tr>
<tr>
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<td>below the knee amputation</td>
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<td>Basic Life Support</td>
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<td>bowel movement</td>
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<td>BP</td>
<td>blood pressure</td>
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<tr>
<td>bpm</td>
<td>beats per minute</td>
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<tr>
<td>BS</td>
<td>blood sugar</td>
</tr>
<tr>
<td>BSA</td>
<td>burn surface area</td>
</tr>
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<td>BVM</td>
<td>bag valve mask</td>
</tr>
<tr>
<td>C</td>
<td>with</td>
</tr>
<tr>
<td>C/O</td>
<td>complain of</td>
</tr>
<tr>
<td>C2</td>
<td>code two</td>
</tr>
<tr>
<td>C3</td>
<td>code three</td>
</tr>
<tr>
<td>CA</td>
<td>cancer</td>
</tr>
<tr>
<td>CAD</td>
<td>coronary artery disease</td>
</tr>
<tr>
<td>CHF</td>
<td>congestive heart failure</td>
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<td>CHP</td>
<td>California Highway Patrol</td>
</tr>
<tr>
<td>CMPA</td>
<td>Central Marin Police Authority</td>
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<tr>
<td>CO</td>
<td>complain of / carbon monoxide</td>
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<tr>
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<td>chronic obstructive pulmonary disease</td>
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<td>CP</td>
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<td>CPAP</td>
<td>continuous positive airway pressure</td>
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<td>CPR</td>
<td>cardio pulmonary resuscitation</td>
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<td>CPSS</td>
<td>Cincinnati prehospital stroke scale</td>
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<td>CSM</td>
<td>circulation, sensation, movement</td>
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<td>CVA</td>
<td>cerebral vascular accident</td>
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<tr>
<td>DDM</td>
<td>designated decision maker</td>
</tr>
<tr>
<td>DKA</td>
<td>diabetic ketoacidosis</td>
</tr>
<tr>
<td>DM</td>
<td>Diabetes mellitus</td>
</tr>
<tr>
<td>DNR</td>
<td>do not resuscitate</td>
</tr>
<tr>
<td>DVT</td>
<td>deep vein thrombosis</td>
</tr>
<tr>
<td>dx</td>
<td>diagnosis</td>
</tr>
<tr>
<td>ECG</td>
<td>electrocardiogram</td>
</tr>
<tr>
<td>ED</td>
<td>emergency department</td>
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<tr>
<td>EKG</td>
<td>electrocardiogram</td>
</tr>
<tr>
<td>EMD</td>
<td>Emergency Medical Dispatch</td>
</tr>
<tr>
<td>EMS</td>
<td>Emergency Medical Service</td>
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<tr>
<td>EMT</td>
<td>Emergency Medical Technician</td>
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<tr>
<td>EMT-P</td>
<td>Paramedic</td>
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<tr>
<td>ENRT</td>
<td>enroute</td>
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<td>ER</td>
<td>Emergency Room</td>
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<tr>
<td>ESO</td>
<td>electronic PCR software</td>
</tr>
<tr>
<td>ET</td>
<td>endotracheal</td>
</tr>
<tr>
<td>ETA</td>
<td>estimated time of arrival</td>
</tr>
<tr>
<td>ETCO₂</td>
<td>end-tidal carbon dioxide</td>
</tr>
<tr>
<td>ETI</td>
<td>endotracheal intubation</td>
</tr>
<tr>
<td>ETOH</td>
<td>alcohol</td>
</tr>
<tr>
<td>ETT</td>
<td>endotracheal tube</td>
</tr>
<tr>
<td>F</td>
<td>female</td>
</tr>
<tr>
<td>FTF</td>
<td>Field transfer form</td>
</tr>
</tbody>
</table>
fx  fracture
G   Gram
G   gauge
GCS Glasgow Coma Scale
GI  gastrointestinal
gm  gram
GSW gunshot wound
gtt(s) drop(s)
GU  genitourinary
h   hour
H/N/B head, neck, back
H₂O water
HA  headache
HHN hand-held nebulizer
HOB Head of bed
HR  heart rate
HTN hypertension
Hwy highway
hx  history
ICD Internal Cardiac Defibrillator
ICU intensive care unit
IM  intramuscular
IN  intranasal
IO  intraosseous
IV  intravenous
IVP intravenous push
JVD jugular venous distension
KED Kendrick Extrication Device
kg  kilograms
KSR Kaiser San Rafael
KTL Kaiser Terra Linda
L   liter
L   left
lac laceration
LKW Last known well
LL  left lateral
LLQ left lower quadrant
LOC loss of consciousness / level of consciousness
LS  lung sounds
Lt  left
LUQ left upper quadrant
m  min
M   male
m/o Month old
mA  Milliamp
MAD mucosal atomization device
MCSO Marin County Sheriff's Office (deputy)
MD  medical doctor
mEq milliequivalent
mg  milligram
mg/Dl milligrams per deciliter
MGH | Marin General Hospital
---|---
MI | myocardial infarction
MICU | mobile intensive care unit
MIN | minimum / minute
ml | milliliter
MOI | mechanism of injury
MPH | miles per hour
MS | morphine sulfate / multiple sclerosis
MSO4 | morphine
MVA | motor vehicle accident
MVC | motor vehicle crash
MVPD | Mill Valley Police Department
N&V or N/V or NV | nausea and vomiting
NaCl | Sodium Chloride
NAD | no apparent distress
NC | nasal cannula
NCH | Novato Community Hospital
NEG | negative
Neuro | neurological
NITRO | nitroglycerin
NKDA | no known drug allergies
NPA | nasopharyngeal airway
NPD | Novato Police Department
NRB | non-rebreather mask
NS | normal saline
NSR | normal sinus rhythm
NTG | nitroglycerine
NVD | nausea, vomiting, diarrhea
O₂ | oxygen
O₂ sat | peripheral capillary oxygen saturation
OD | overdose
ODT | orally disintegrating tablet
OPA | oropharyngeal airway
p | after
P/W/D | pink warm dry
PAC | premature atrial contraction
PALP | palpitation
PARA | parity, e.g. gravid 2, para 1 means the patient has been pregnant twice and given birth once; also written G2P1
PCN | penicillin
PE | pulmonary edema / pedal edema / patient exam
PEA | pulseless electrical activity
PERL | pupils equal reactive to light
PERRL | Pupils equal, round, reactive to light
PJC | premature junctional contraction
PM | evening
PMD | primary/personal/private medical doctor
PO | by mouth
POC | position of comfort
POLST | Physician Orders for Life Sustaining Treatment
PRN | as needed
PSYCH  psychiatric
PT  patient
PTA  prior to arrival
PTS  patients
PTSD  post traumatic stress disorder
Pulse Ox  peripheral capillary oxygen saturation
PVC  premature ventricular contraction
PVH  Petaluma Valley Hospital
PVT  private
PX  pain
q  every
R  right
RA  room air
RAS  released at scene
RLQ  right lower quadrant
RMC  routine medical care
RN  registered nurse
ROM  range of motion
ROSC  return of spontaneous circulation
RP  reporting party
RPM  respirations per minute
RR  respiratory rate
Rt  right
Rx  prescription
s  without
S. Brady  sinus brady
S. Tach  sinus tachycardia
S/NT/ND  Soft, non-tender, no distention
S/P  status post
S/S  signs and symptoms
SBP  systolic blood pressure
SC, SQ  subcutaneous
SL  sublingual
SM  small
SMR  spinal motion restriction
SNF  skilled nursing facility
SOB  shortness of breath
SPO$_2$  peripheral capillary oxygen saturation
SRPD  San Rafael PD
STEMI  ST Segment Elevation Myocardial Infarction
SVT  supraventricular tachycardia
TACH  tachycardia
TB  tuberculosis
TEMP  temperature
TIA  transient ischemic attack
TKO  to keep open
TOC  transfer of care
TRANS  transport / transfer
TTT  Trauma Triage Tool
TX  treatment
UCSF  University California San Francisco
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>UOA</td>
<td>upon our arrival</td>
</tr>
<tr>
<td>USGC</td>
<td>United States Coast Guard</td>
</tr>
<tr>
<td>UTI</td>
<td>urinary tract infection</td>
</tr>
<tr>
<td>UTL</td>
<td>unable to locate</td>
</tr>
<tr>
<td>UTO</td>
<td>unable to obtain</td>
</tr>
<tr>
<td>V</td>
<td>victim</td>
</tr>
<tr>
<td>V/S or VS</td>
<td>vital sign</td>
</tr>
<tr>
<td>VA</td>
<td>Veteran's Administration</td>
</tr>
<tr>
<td>VF</td>
<td>ventricular fibrillation</td>
</tr>
<tr>
<td>VT</td>
<td>ventricular tachycardia</td>
</tr>
<tr>
<td>W/</td>
<td>with</td>
</tr>
<tr>
<td>w/c</td>
<td>wheelchair</td>
</tr>
<tr>
<td>w/o</td>
<td>wide open</td>
</tr>
<tr>
<td>WBC</td>
<td>white blood count</td>
</tr>
<tr>
<td>WNL</td>
<td>within normal limits</td>
</tr>
<tr>
<td>Y/O or YO</td>
<td>Year(s) old</td>
</tr>
</tbody>
</table>
PROCEDURE FOR INTRANASAL MEDICATIONS
MIDAZOLAM (VERSED) & NARCAN
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- No IV access with the following symptoms:
  - Status epilepticus
  - Suspected narcotic overdose with respiratory depression

CONTRAINDICATION
- Epistaxis
- Complete mucosal blockage of both nostrils
- Nasal trauma
- Any recognizable septal abnormalities
- Retropharyngeal lacerations/ dissections

EQUIPMENT
- MAD adapter
- Syringe
- Suction

PROCEDURE
- With medication in syringe, attach atomizer (do not lubricate tip).
- Stabilizing the head, place applicator in nares and briskly compress the syringe plunger.

SPECIAL CONSIDERATION
- Be attentive to excessive oral secretions, vomiting, and inadequate tidal volume.
- Intranasal administration of Midazolam is an optional medication delivery system

RELATED POLICIES/ PROCEDURES
- Seizure ALS N 2
- Coma/ ALOC N 1
- Respiratory Arrest R 1
- Pediatric Seizure P 9
12-LEAD ECG PROCEDURE
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- Patients with a medical history and/or presenting complaints consistent with Acute Coronary Syndrome (ACS). Indications for the procedure may include one or more of the following:
  - Chest or upper abdominal pain, described as pressure or tightness
  - Nausea or vomiting
  - Diaphoresis
  - Shortness of breath and/or difficulty with ventilation
  - Anxiety, feeling of “doom”
  - Syncope or dizziness
  - Other signs or symptoms suggestive of ACS

PHYSICIAN CONSULT
- If interpretation of ECG is inconclusive and ST segment elevation is present, seek immediate consultation with STEMI Receiving Center (SRC)

EQUIPMENT
- ECG machine and leads

PROCEDURE
- Attach ECG limb leads to arms and legs.
- Attach ECG chest leads as follows:
  - V1: right of sternum, 4\textsuperscript{th} intercostal space
  - V2: left of sternum, 4\textsuperscript{th} intercostal space
  - V3: halfway between V2 and V4
  - V4: left 5\textsuperscript{th} intercostal space, mid-clavicular line
  - V5: horizontal to V4, anterior axillary line
  - V6: horizontal to V5, mid-axillary line
  - V4R- V6R: right 5\textsuperscript{th} intercostal space, mid-clavicular line to mid axillary line (for suspected right ventricular infarction (RVI) and/or physician request). Lead V4R must be obtained whenever ST segment elevation is noted in leads II, III, and AVF

SPECIAL CONSIDERATIONS
- If the 12-lead ECG demonstrates ST elevation and an acute ST elevation Myocardial Infarct is suspected refer to STEMI Policy C 9
- Infarctions may be present with a normal 12-lead ECG. Consider taking a 15-lead ECG.

RELATED POLICIES/PROCEDURES
- Chest Pain/ Acute Coronary Syndrome C 8
- STEMI Policy C 9
DETERMINATION OF DEATH - ALS
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
Patient in cardiac arrest who does not meet criteria for BLS Determination of Death and does not have a valid DNR order.

PROCEDURE
- Confirm pulseless and apneic. Apply leads and document rhythm in two monitoring leads for one minute or in one lead if an AED is the only available monitor.
- Determination of death can be made prior to, or immediately after, initiating resuscitation when:
  - Medical (ALL must be present)
    - The presenting rhythm is asystole
    - Event was unwatched
    - Effective bystander CPR was not initiated, based on CPR guidelines/paramedic judgment
    - No evidence of potentially reversible cause of arrest (e.g. hyperkalemia or hypothermia)
    - No AED or manual shock delivered
  - Trauma (EITHER may be present)
    - MCI incident where triage principles preclude initiation of CPR
    - Blunt, penetrating or profound multi-system trauma with asystole or PEA
- If determination of death cannot be made, perform ALS resuscitation for 20 minutes.
- If the above procedures have been completed without ROSC, resuscitation may be discontinued and determination of death made when ANY of the following are present:
  - Information (e.g. valid DNR or POLST form) becomes available which precludes continuation of resuscitation efforts
  - ETCO2 ≤ 10mm/Hg and the rhythm is asystole or PEA
- If determination of death can still not be made for medical arrests, continue resuscitation for ten additional minutes (30 minutes total) at which point resuscitation may be discontinued and determination of death made if ROSC has not occurred. If patient in refractory VF, transport is warranted.

PHYSICIAN CONSULT
- Evidence exists that resuscitative efforts are not desired or appropriate (e.g. family request) and above criteria is not met
- ETCO2 > 10mm/Hg after 30 minutes of resuscitation efforts
- When applicable, notify the appropriate law enforcement agency and remain on the scene until law enforcement or coroner arrives
- Complete the Determination of Death form and leave a copy at the scene if the patient will be transferred to the coroner

DOCUMENTATION- ESSENTIAL ELEMENTS
- Criteria for discretionary determination of death (i.e., DNR or valid POLST form)
- Name and phone number of physician authorizing termination of resuscitation
- When possible, attach copy of DNR to PCR or include type of DNR and physician information

RELATED POLICIES/ PROCEDURES
- BLS Determination of Death BLS 5
- DNR GPC 7
- Cardiac Policies: Asystole C3; PEA C2; Cardiac Arrest Guidelines
- Cold Induced Injuries E2
- Trauma Triage and Destination Guideline Policy 4613
### ADULT MEDICATIONS
**AUTHORIZED/ STANDARD DOSE**

<table>
<thead>
<tr>
<th>DRUG</th>
<th>CONCENTRATION</th>
<th>STANDARD DOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activated Charcoal</td>
<td>25 gm/ bottle or 50 gm/ bottle</td>
<td>1 gm/ kg PO (not to exceed 50 gm)</td>
</tr>
<tr>
<td>Adenosine (Adenocard)</td>
<td>6 mg/ 2 ml</td>
<td>6 mg 1&lt;sup&gt;st&lt;/sup&gt; dose, 12 mg 2&lt;sup&gt;nd&lt;/sup&gt; dose (rapid IV/IO push) followed by 20 ml saline flush after each dose</td>
</tr>
<tr>
<td>Albuterol</td>
<td>2.5 mg/ 3ml NS</td>
<td>5 mg/ 6 ml NS; (MDI: Fireline only)</td>
</tr>
<tr>
<td>Amiodarone</td>
<td>150 mg/ 3ml</td>
<td>VFib or Pulseless VTach: 300 mg IV/ IO push followed by one 150MG push in 3-5 min. Perfusing/Recurrent VTach–150 mg IV/ IO over 10 min. (15 mg/ min); MR q 10 min. as needed</td>
</tr>
<tr>
<td>Aspirin (chewable)</td>
<td>Variable</td>
<td>162-325 mg PO</td>
</tr>
<tr>
<td>Atropine</td>
<td>1 mg/ 10 ml</td>
<td>Bradycardia: 0.5 mg IV/ IO, MR q 3-5 min. to max of 3 mg. Organophosphate Poisoning: 2.0 mg slowly IV/ IO; MR 2-5 min. until drying of secretions</td>
</tr>
<tr>
<td>Calcium chloride 10%</td>
<td>1 GM/ 10 ml</td>
<td>Crush syndrome: 1gm IV/ IO slowly over 5 min. for suspected hyperkalemia (flush line with NS before &amp; after administration)</td>
</tr>
<tr>
<td>Dextrose 10%</td>
<td>25 GM/250 ml</td>
<td>125 ml bolus IV/IO over 10 minutes; recheck BG and repeat as needed</td>
</tr>
<tr>
<td>Diphenhydramine (Benadryl)</td>
<td>50 mg/ 1ml</td>
<td>Allergic reaction: 50 mg IV/ IO/ IM; max 50 mg Phenothiazine reaction: 1 mg/ kg slowly IV/ IO; max 50 mg. Motion sickness: 1 mg/kg IM/IV to maximum dose of 50 mg; maximum IV rate is 25 mg/minute</td>
</tr>
<tr>
<td>Dopamine</td>
<td>400 mg/ 250 ml Pre-mix</td>
<td>See specific policy dosing chart</td>
</tr>
<tr>
<td>Epinephrine 1:1000</td>
<td>1 mg/ 1ml EpiPen® (0.3mg) auto-injector</td>
<td>Allergic Reaction/ Anaphylaxis: 0.01 mg/ kg IM to max 0.5 mg or EpiPen®; MR x 1 in 5 minutes Bronchospasm/ Asthma/ COPD: 0.01 mg/kg IM; max. dose 0.5 mg. MR once in 5 minutes or EpiPen®</td>
</tr>
<tr>
<td>Item</td>
<td>Quantity / Formulation</td>
<td>Notes</td>
</tr>
<tr>
<td>-------------------------------------------</td>
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<td>----------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Epinephrine 1: 10,000                     | 1 mg/ 10 ml                             | **Anaphylaxis:** If unresponsive, no palpable BP, no palpable pulse - give 0.01 mg/kg to max of 0.5 mg/ 0.5 ml IV/ IO  
**Cardiac Arrest:** 1 mg (10 ml) IV/ IO followed by 20 ml NS flush q 3-5 min. during resuscitation |
| Glucose Paste                             | 15 GM / tube                            | 30 GM PO                                                             |
| Glucagon                                  | 1 mg IM                                 |                                                                      |
| Ipratropium (Atrovent)                    | 500 mcg per unit dose (2.5 ml)          | 500 mcg                                                              |
| Lidocaine 2% (preservative free)          | 20 mg / 1 ml                            | IO insertion: infuse 20-40 mg IO over 30-60 seconds                  |
| Nerve gas Auto-Injector Kit contains:     | 2 mg (0.7 ml) 600 mg (2 ml)             | **Small Exposure to vapors/ liquids:** 1 dose of both medications (Atropine & 2-PAM), MR X1 in 10 minutes.  
**Larger exposure to liquids/ vapors:** 3 doses initially (both medications) |
| Midazolam (Versed)                        | 2 mg/2 ml (IV/IO/IM) 5 mg/1 ml (IN)     | **Cardioversion/ Pacing:** 1 mg slow IV/ IO; MR 1 mg q 3 min.; Max dose = 0.05 mg/kg  
**Seizure:** 1 mg IV slowly; MR in 3 min. to maximum dose 0.05 mg/kg. For IN: 5 mg (2.5 mg in each nostril). For IM: 0.1 mg/kg; MR x 1 in 10 minutes.  
**Sedation:** see specific policy |
| Morphine Sulfate                          | 10 mg/ 1ml                              | **Chest Pain:** 2-5 mg slow IV/IO; MR q 2-3 min. to max of 10 mg  
**Pain Management/ Trauma Patient:** 5 mg slow IV/ IO, MR q 5 min if SBP >100; max dose 20 mg  
**Pulmonary Edema:** 2-5 mg slow IV/ IO. Physician Consult required |
| Naloxone (Narcan)                         | 2 mg/ 2 ml                              | 0.4-2.0 mg IV/IO/IM/SL/IN; MR in 5 min;                               |
| Nitroglycerine                            | 0.4 mg/ tablet or spray                 | 1 SL; MR q 5 min. if SBP > 100                                       |
| Ondansetron (Zofran)                      | 4 mg                                    | 4 mg ODT/IM or slow IV over 30 sec; MR x 1 in 10 minutes             |
| Sodium Bicarbonate                        | 50 mEq/ 50 ml                           | 1 mEq/ kg IV/ IO                                                      |

**NOTE:** If the above concentrations become unavailable, providers may use alternate available concentrations or packaging.
ROUTINE MEDICAL CARE (RMC)  

BLS  

ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- To define Routine Medical Care (RMC) in the pre-hospital setting

TREATMENT
- Assess Airway, Breathing and Circulation (ABC)
- Apneic and/or pulseless:
  - Begin CPR in accordance with the standards established by the American Heart Association, including Early Defibrillation
- Patient breathing with pulse present:
  - Administer oxygen per the Airway/Oxygen protocol; using airway adjuncts indicated for signs and symptoms
- Control significant external bleeding using direct pressure. If bleeding remains uncontrolled, apply gauze or hemostatic dressing and/or tourniquet.
  - Limb with the tourniquet must remain exposed
  - Hemostatic dressing must be approved by California EMS Authority
- Check vital signs – repeat q 5 min. for emergent patients and q 15 min. for non-emergent patients.
- Obtain pulse oximetry, if available
- Obtain:
  - Chief complaint
  - History of current event
  - Past medical history
  - Medications
  - Allergies
- Perform full secondary patient exam
- If indicated, apply spinal motion restriction
- Place patient in position of comfort or in other positions as needed to maintain adequate breathing and/or circulation
VENTRICULAR FIBRILLATION / PULSELESS VENTRICULAR TACHYCARDIA
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- Pulseless, apneic with cardiac rhythm of ventricular fibrillation or wide complex tachycardia

CRITICAL INFORMATION
- Witnessed or unwitnessed
- Effective Bystander CPR

TREATMENT
- See Cardiac Arrest Policy
- Defibrillate as per manufacturer’s recommendations:
  - LifePak: 200J, 300J, 360J
  - Zoll: 120J, 150J, 200J
  - Repeat defibrillations 30-60 seconds after drug administrations
- CPR for 2 minutes between shocks. Do not check rhythm immediately after shock.
- Manual CPR is preferred. If available, may use mechanical CPR for extrication/transportation (contraindicated in pediatrics and traumatic arrests)
- BLS airway management is preferred in the first 5 minutes of CPR. If NO ventilation occurring with basic maneuvers, proceed to advanced airway.
- ALS RMC
- If VF/VT converts to another rhythm post defibrillation, refer to appropriate protocol for further treatment
- If VF/VT continues: Epinephrine 1:10,000 1.0 mg IV/IO; repeat q 3-5 minutes;
- If VF/VT persists after three defibrillations or recurs:
  - Amiodarone 300 mg IV/IO push (diluted in, or followed by, 20 to 30 ml NS). Initial dose can be followed by ONE 150 mg IV/IO push in 3 to 5 minutes
- If rhythm converts with return of pulses, refer to ROSC policy.
- If rhythm converts with return of pulses after Amiodarone, monitor and consider infusion of Amiodarone drip (150mg in 100 ml NS, 1 mg/minute= 40 gtts/min. with 60 drops ml/tubing)

SPECIAL CONSIDERATIONS
- Establishment of IV/IO, airway and medication administration should occur during CPR and should not interrupt the CPR cycles
  - If rhythm converts without administration of Amiodarone, monitor and transport
  - Consider pre-cordial thump if witnessed and no defibrillator immediately available
  - Consider and treat possible contributing factors:
    - Hypovolemia
    - Hypoxemia
    - Hydrogen ion (acidosis)
    - Hypo/Hyperkalemia
    - Hypoglycemia
    - Hypothermia
    - Toxins (overdoses)
    - Tamponade, cardiac
    - Tension pneumothorax
    - Thrombosis (coronary / pulmonary)
    - Trauma

DOCUMENTATION – ESSENTIAL ELEMENTS
- Bystander CPR
- Witnessed or unwitnessed

RELATED POLICIES / PROCEDURES
Return of Spontaneous Circulation C10
PULSELESS ELECTRICAL ACTIVITY
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- Pulseless, apneic with rhythm that includes electromechanical dissociation (EMD), pseudo-electromechanical dissociation (pseudo-EMD), idioventricular rhythms, ventricular escape rhythms and bradycardia

CRITICAL INFORMATION
- Witnessed or unwitnessed
- Effective Bystander CPR

TREATMENT
- See Cardiac Arrest Policy
- ALS RMC
- Establish IV/ IO NS 250-500 ml fluid challenge then TKO
- Administer Epinephrine 1mg (1:10,000) IV/ IO. Repeat q 3-5 min.
- If hyperkalemia is suspected in renal dialysis patients, administer 500 mg of 10% Calcium Chloride and 1 mEq/kg of Sodium Bicarbonate IV/ IO
- If rhythm converts with return of pulses, refer to ROSC Policy
- If the above procedures have been completed without ROSC, consider field determination of death

SPECIAL CONSIDERATIONS
- Establishment of IV/IO, airway and medication administration should occur during CPR and should not interrupt the CPR cycles
- Consider and treat possible contributing factors:
  - Hypovolemia
  - Hypoxemia
  - Hydrogen ion (acidosis)
  - Hypo/Hyperkalemia
  - Hypoglycemia
  - Hypothermia
  - Toxins (overdoses)
  - Tamponade, cardiac
  - Tension pneumothorax
  - Thrombosis (coronary / pulmonary)
  - Trauma

DOCUMENTATION- ESSENTIAL ELEMENTS
- Witnessed or unwitnessed
- Bystander CPR

RELATED POLICIES/ PROCEDURES
- Determination of Death ALS ATG 6
- Return of Spontaneous Circulation (ROSC) C 10
- Trauma Triage and Destination Guidelines 4613
ASYSTOLE
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- Pulseless, apneic with no electrical activity on cardiac monitor

CRITICAL INFORMATION
- Determination of death can be made immediately if all of the following are present:
  - Event was unwitnessed
  - Effective bystander CPR was not initiated
  - No AED used or manual shock applied
  - Asystole has been documented in two monitoring leads for one minute or in one lead if an
    AED is the only available monitor
- If all of the above criteria not met, begin treatment

TREATMENT
- See Cardiac Arrest Policy
- ALS RMC
- IV/IO NS, 250-500 ml then TKO
- Epinephrine 1 mg (1:10,000) IV/IO; circulate for 2 min., check rhythm & pulse. MR q 3 -5 min
- Establishment of IV/IO, airway and medication administration should occur during CPR and
  should not interrupt the CPR cycles.
- If hyperkalemia is suspected in renal dialysis patients, administer 500 mg of 10% Calcium
  Chloride and 1 mEq/kg of Sodium Bicarbonate IV/IO.
- If rhythm converts with return of pulses, refer to ROSC Policy
- Consider field determination of death if patient remains in asystole and meets Determination of
  Death ALS criteria

SPECIAL CONSIDERATION
- Consider and treat possible contributing factors:
  - Hypovolemia
  - Hypoxemia
  - Hydrogen ion (acidosis)
  - Hypo/Hyperkalemia
  - Hypoglycemia
  - Hypothermia
  - Toxins (overdoses)
  - Tamponade, cardiac
  - Tension pneumothorax
  - Thrombosis (coronary / pulmonary)
  - Trauma

DOCUMENTATION- ESSENTIAL ELEMENTS
- Time death was determined

RELATED POLICIES/ PROCEDURES
- Determination of Death ALS Policy ATG 6
- Return of Spontaneous Circulation C10
WIDE COMPLEX TACHYCARDIA
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- Regular, wide ventricular complexes greater than 150 beats/minute, with pulses present

TREATMENT
- ALS RMC
- Stable (Normal mental status and/or signs of normal or mildly decreased perfusion):
  - 12-lead ECG
  - Infuse **Amiodarone** 150 mg IV/IO (add 150 mg to 100 ml of **NS** and infuse total over 10 minutes). May repeat q 10 minutes as needed.
- Unstable (Signs of poor perfusion: decreased LOC, SBP< 100, CHF, chest pain, SOB):
  - Synchronized cardioversion @ 100J, 200J, 300J, 360J
  - If patient is conscious, consider sedation with **Midazolam** 1 mg SLOW IV/IO push loading dose; May repeat with 1-2 mg in 3 minutes to achieve desired degree of sedation (use with caution if patient is hypotensive).
  - If any delay in synchronized cardioversion and the patient is critical, defibrillate the patient.
  - If no response to cardioversion infuse **Amiodarone** 150 mg IV/IO (add 150 mg to 100 ml of **NS** and infuse total over 10 minutes). May repeat q 10 minutes as needed.
  - If rhythm converts refer to appropriate protocol for further treatment.

SPECIAL CONSIDERATION
Consider and treat possible contributing factors:

<table>
<thead>
<tr>
<th>Hypovolemia</th>
<th>Toxins (overdoses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypoxemia</td>
<td>Tamponade, cardiac</td>
</tr>
<tr>
<td>Hydrogen ion (acidosis)</td>
<td>Tension pneumothorax</td>
</tr>
<tr>
<td>Hypo/Hyperkalemia</td>
<td>Thrombosis (coronary / pulmonary)</td>
</tr>
<tr>
<td>Hypoglycemia</td>
<td>Trauma</td>
</tr>
<tr>
<td>Hypothermia</td>
<td></td>
</tr>
</tbody>
</table>

RELATED POLICIES/ PROCEDURES
- Ventricular fibrillation/ Pulseless Ventricular Tachycardia C1
- Adult Sedation ATG 3
CHEST PAIN/ACUTE CORONARY SYNDROME

ALS

ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- Chest discomfort or pain, suggestive of cardiac origin.
- Other symptoms of Acute Coronary Syndrome (ACS) which may include weakness, nausea, vomiting, diaphoresis, dyspnea, dizziness, palpitations, “indigestion”
- Atypical symptoms or “silent Mls” (women, elderly, and diabetics)

PHYSICIAN CONSULT
- Additional treatment for ongoing pain when BP<100

TREATMENT
- ALS RMC
- ASA 162-325 mg (chewable), even if patient has taken daily ASA dose.
- 12-lead ECG; if elevation in leads II, III, and AVF, suspect RVI and perform right-sided ECG.
- For chest discomfort or pain, NTG 0.4 mg SL/spray, MR q 5 min. if systolic BP > 100
  - Withhold the NTG if the patient has RVI or has taken erectile dysfunction (ED) medication within the last 24 hrs (Viagra/Levitra) or 36 hrs (Cialis).
- If pain persists, give Morphine Sulfate 2-5 mg slowly IV; MR q 2-3 minutes to a total of 10 mg.
- Consider NS 250cc IV fluid bolus if BP < 100.
- For recurrent episodes of ventricular tachycardia with persistent chest pain, administer Amiodarone 150 mg in 100 ml NS, IV/IO; infuse over 10 minutes. May repeat q 10 minutes as needed.

SPECIAL CONSIDERATION
- IV access before NTG if any one of the following applies:
  - SBP <120
  - Patient does not routinely take NTG
- Consider other potential causes of chest pain: pulmonary embolus, pneumonia, aortic aneurysm and pneumothorax.
- Infarctions may be present with normal 12-leads.
- Routine administration of oxygen is not indicated if saturation is >93%

DOCUMENTATION-ESSENTIAL ELEMENTS
- OPQRST information
- Vital signs before/after NTG administration
- Cardiac rhythm documentation
- ECG findings
- Erectile dysfunction medications taken
- Level of pain

RELATED POLICIES/PROCEDURES
- 12-lead Electrocardiogram ALS PR 12
- Destination Guidelines GPC 4
- STEMI C 9
ST ELEVATION MYOCARDIAL INFARCTION (STEMI)

ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- Patients with acute ST Elevation Myocardial Infarction (STEMI) as identified by machine read

PHYSICIAN CONSULT
- If patient is symptomatic for STEMI, but computer interpretation is not in agreement, transmit ECG and consult the STEMI Receiving Center (SRC) receiving physician.
- If above findings occur, but transmission is not available, activate SRC with Early STEMI Notification.

TREATMENT/PROCEDURE
- ALS RMC
- Treat patient under appropriate protocol
- Routine administration of oxygen is not indicated if saturation is >93%
- Determine if patient is stable or unstable, and transport to appropriate facility
- Provide Early STEMI Notification and identifying patient information
  - If elevation in leads II, III, and AVF, suspect RVI and perform right-sided ECG.
- Transmit all STEMI ECGs to SRC if possible
- To determine if patient is stable or unstable:

<table>
<thead>
<tr>
<th>Stable</th>
<th>Unstable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stable VS and no indication of shock</td>
<td>SBP&lt; 90 (prior to NTG and Morphine Sulfate administration)</td>
</tr>
<tr>
<td></td>
<td>Signs of acute pulmonary edema</td>
</tr>
<tr>
<td></td>
<td>Ventricular tachyarrhythmia requiring defibrillation or antiarrhythmic therapy</td>
</tr>
<tr>
<td></td>
<td>Patient’s condition, based on paramedic judgment, requires immediate hospital intervention</td>
</tr>
</tbody>
</table>

- Stable patient:
  - May go to preferred SRC if the estimated transport time is not more than 15 minutes longer than the nearest SRC
  - Preferred SRC defined:
    - Patient preference
    - SRC used by treating cardiologist.
- Unstable patient:
  - Transport to the closest SRC

SPECIAL CONSIDERATION
- Early notification report to include: age, gender, patient identifying information, symptoms (including presence or absence of chest pain), and 12-lead findings

DOCUMENTATION- ESSENTIAL ELEMENTS
- 12-lead findings
- How preferred SRC is determined

RELATED POLICIES/PROCEDURES
- Destination Guidelines GPC 4
- 12-lead ECG Procedure ALS PR 12
- Chest Pain / ACS C8
COLD INDUCED INJURY
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- Exposure to cold and/or wet environment

TREATMENT and CRITICAL INFORMATION
- Move patient to a warm, protected environment as soon as possible
- Remove all wet clothing and cover entire body (including head & hands) with warm blankets
- ALS RMC – obtain core temperature (epitympanic or rectal), treat hypoglycemia per ALOC policy

<table>
<thead>
<tr>
<th>TEMPERATURE</th>
<th>SYMPTOMS</th>
<th>VS</th>
<th>TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild 90-95F /32-35C</td>
<td>shivering, apathy, ataxia LOC</td>
<td>increased HR, increased RR, NL BP</td>
<td>IV fluids (warm if available); warm blankets, hot packs to chest, back, groin, axilla</td>
</tr>
<tr>
<td>Moderate 82-90F/28-32C</td>
<td>shivering may cease; decreasing LOC; atrial dysrhythmias (will resolve with warming)</td>
<td>may be bradycardic and hypotensive; pulse may be difficult to detect</td>
<td>as above; handle patient gently and try to keep horizontal;</td>
</tr>
<tr>
<td>Severe &lt;82F/&lt;28C</td>
<td>minimally or completely unresponsive; ventricular dysrhythmias</td>
<td>profound hypotension; difficult to detect any VS (auscultate for heart sounds)</td>
<td>as above; critical to handle patient gently and keep horizontal; IV fluids (warm if available) @ 20ml/kg bolus; reassess after 500 ml; repeat as necessary for SBP &gt; 90</td>
</tr>
</tbody>
</table>

- If there are no signs of life and asystole remains after 60 seconds, ventilate for three minutes; auscultate for heart rate and assess for electrical activity for 60 seconds.
- If still asystolic and no pulse, begin CPR; if VF/VT defibrillate once @ 200 or 360J (depending on manufacturer) and if no change, begin CPR.
- If PEA (even very slow); withhold CPR; continue warming measures; begin transport, continue IV fluid boluses (as above); handle gently and manage airway.
- Withhold ACLS medications until core temperature reaches 86F/30C
- Hypothermia from submersion: Based on reliable report or witness, if submersion is <60 minutes, attempt resuscitation/active rewarming. If submersion is known to be >60 minutes, resuscitation should not be initiated (see Determination of Death Policy, ATG6).

SPECIAL CONSIDERATION
- Subtler presentations exist in the elderly, newborns, chronically ill, patients taking medications and alcohol
- Handle the patient gently for all procedures; physical manipulations have been reported to precipitate ventricular fibrillation.
- Continue re-warming in patients with temperature < 35C (95°F) with known or suspected hypothermia (hypothermia from submersion <60 minutes) as the primary cause or significant contributor of death, unless obvious death or valid DNR are present.
ENVENOMATION
ALWAYS USE BODY SUBSTANCE ISOLATION PRECAUTIONS

INDICATION
- Unidentified and/or identified poisonous snake bite (physical evidence: puncture wound or symptoms of envenomation: local pain, swelling or numbness)

CRITICAL INFORMATION
- Identify or provide description of snake

TREATMENT
- ALS RMC
- Remove rings, bracelets, or other constricting items from affected extremity
- Limit patient’s movement as much as possible
- Mark extent of affected area, noting time on skin
- Immobilize extremity at or below heart level and monitor distal pulses
- Consider pain management.
- If exhibiting signs of allergic reaction or shock, refer to Allergic Reaction Policy
- Expedite transport

SPECIAL CONSIDERATION
- Contact hospital early to allow preparation for treatment
- Do not apply tourniquets, incise skin, apply ice, or suction

DOCUMENTATION- ESSENTIAL ELEMENTS
- Estimated time of snake bite

RELATED POLICIES/ PROCEDURES
- Allergic Reactions/ Anaphylaxis M 3
- Adult Pain Management ATG 2
ADULT CARDIAC ARREST
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- To provide effective, quality cardiopulmonary resuscitation in a sequential and organized manner

CRITICAL INFORMATION
- Witnessed vs. Unwitnessed
- Bystander CPR vs. No Bystander CPR
  - For documentation purposes, inappropriately given CPR = NO CPR

TREATMENT
- Confirm arrest: Unresponsive, no breathing or agonal respirations, no pulse
- Compressions (if hypothermic, delay compressions for 3 minutes; focus on ventilations and active rewarming first)
  - Begin compressions at a rate of at least 110 per minute, using a metronome or other similar device that produces regular, metrical feedback at 110 beats per minute.
  - Consider mechanical CPR device if available
  - Compress the chest at least 2 inches and allow for full recoil of chest
  - Manual CPR is not optimal in the back of a moving ambulance. If transporting a patient needing CPR, consider using mechanical CPR if available
  - Change compressors every 2 minutes
  - Minimize interruptions in compressions. If necessary to interrupt, limit to 10 seconds or less
  - Do not stop compressions while defibrillator is charging
  - Resume compressions immediately after any shock
- Monitor/Defibrillator
  - Priority of second rescuer is to apply pads while compressions are in progress
  - Determine rhythm and shock if indicated
  - Follow specific treatment guideline based on rhythm
- Basic Airway Management
  - During the first 5 minutes of resuscitation BLS airway management is preferred
  - Open airway and provide 2 ventilations after every 30 compressions
  - Ventilation should be about one second each- enough to cause visible chest rise. Avoid excessive ventilation.
  - Use two-person BLS Airway management (one holding mask and one squeezing bag) whenever possible
- Establish IV/IO Access (IO preferred)
- Advanced Airway Management
  - Placement of advanced airway is not a priority during the first 5 minutes of resuscitation unless no ventilation is occurring with basic maneuvers
  - King Airway is the preferred device if an advanced airway is required.
  - Laryngoscopy for endotrachael tube placement must occur with CPR in progress. Compressions should not be interrupted for more than 10 seconds for advancement of tube through the cords
  - AVOID EXCESSIVE VENTILATION – provide no more than 8-10 ventilations per minute
  - Maintain O2 saturation level of 94%-99%.
  - Continuous monitoring of End-Tidal CO2 to monitor effectiveness of CPR and advanced airway placement.
- Treatment on Scene
  - Movement of patient during CPR may be detrimental to patient outcome.
  - Provide resuscitation on scene until ROSC, or patient meets Determination of Death criteria.
  - Regardless of the above, transportation is warranted in the following situations: refractory VF, unsafe scene conditions, unstable airway, hypothermia as a primary cause of arrest (<95F/35C), any patient pulled from a fire in cardiac arrest.
  - To assure ROSC continues, remain on scene for 5-10’ to assure ROSC, and then transport to a STEMI Receiving Center.

RELATED POLICIES/ PROCEDURES
- Determination of Death ATG6
- Determination of Death BLS5
- King Airway Procedure ALS14
- Ventricular Fibrillation / Pulseless Ventricular Tachycardia C1
- PEA C2
- Asystole C3
- Return of Spontaneous Circulation C10
SPINAL MOTION RESTRICTION (SMR)

ALWAYS USE STANDARD PRECAUTIONS

INDICATION
Any patient identified by Marin County’s Spinal Injury Assessment [GPC 13A] to warrant full or modified SMR. The spinal injury assessment should be performed prior to application of SMR. SMR describes the procedure used to care for patients with possible unstable spinal injuries.

CONSIDERATIONS
- Full SMR is not benign; it can lead to pain, respiratory compromise, skin breakdown (decubiti) and contribute to cerebral hypo-perfusion in patients with stroke or head injury
- **Routine use of SMR should be avoided.** Its use should be reserved for patients with confirmatory physical findings or high clinical suspicion of unstable spinal fracture
- **SMR is not indicated in patients with isolated penetrating trauma [GPC 13A]**
- Use SMR with caution with patients presenting with dyspnea and position appropriately
- If patient experiences negative effects of SMR methods used, alternative measures should be implemented as soon as possible.
- **Pregnant patients** (>20 Weeks) should be positioned on the left side, immobilized as appropriate, supporting fetus
- **Combative patients:** Avoid methods that provoke increased spinal movement and/or combativeness
- **Athletic Equipment** (football helmet and shoulder pads; lacrosse helmet and shoulder pads; baseball/softball catcher’s helmet)
  - In event of suspected spine injury during participation in equipment-intensive sport, removal of equipment is recommended prior to application of SMR
  - Equipment should be removed by the rescuers most familiar with the equipment (i.e. Athletic Trainers when present)
  - Removal of helmet and/or shoulder pads provides early access to the patient’s airway/chest
- **Pediatric patients**
  - Consider the use of SpO2 and EtCO2 to monitor respiratory function
  - Consider use of padded pediatric motion restricting board
  - Avoid methods that provoke increased spinal movement
  - If choosing to apply SMR to patient in car seat, ensure that proper assessment of patient posterior is performed
  - **Car seats:**
    - Infants or children restrained in a front or rear-facing car seat (excludes booster seats) may be immobilized and extricated in the car seat. The infant or child may remain in the car seat if the immobilization is secure and his/her condition allows (no signs of respiratory distress or shock).
    - Children restrained in a booster seat (with or without a back) need to be extricated and immobilized following standard SMR procedures.

PROCEDURE
Full SMR (Cervical Collar with full length-vacuum splint or rigid device with lateral immobilization and straps)
- Indications
  - Patients with obvious acute neurologic deficit (paralysis or weakness)
  - Priapism or suspected spinal shock
• **Procedure**
  
  • **Assess motor/sensory function before SMR and regularly reassess and document** motor/sensory function (include finger abduction, wrist/finger extension, plantar/dorsal flexion and sharp/dull exam if possible) following application of SMR.
  
  • **Remove athletic equipment (if applicable)**
  
  • **Apply soft or rigid cervical collar**
  - Cervical collar may be omitted for patients with isolated lumbar and/or lower thoracic spine tenderness.
  
  • If needed, **extricate patient** limiting movement of the spine.
  
  • **Apply adequate padding** on backboards or use vacuum mattress to prevent tissue ischemia and increase comfort.
  
  • Secure patient to device.
  
  • **Consider the use of SpO2 and EtCO2** to monitor respiratory function.

**Modified SMR** (may include any of the following: soft or rigid cervical collar alone; self limiting motion; padding to limit movement; KED; or ½ length vacuum splint):

  - **Indications**
    - Patients who do not meet criteria above but who are at high risk due to blunt trauma mechanism.
    - Ambulatory/self-extricated patients who have mid-line neck pain and/or tenderness.
  
  - **Procedure**
    - **Use the least invasive methods/tools** available which minimize patient discomfort and respiratory compromise. Least invasive examples: Lateral, semi-fowler’s or fowler’s position with cervical collar only; soft collars; pillows; vacuum splint or gurney mattress; children’s car seats.
    - **Hard backboards should only be used when absolutely necessary** (e.g. patient transfer). Consider pull sheets, other flexible devices (e.g. flat stretchers), or scoops and scoop-like devices.
    - **Provide manual stabilization** restricting gross motion. **Alert and cooperative patients** may be allowed to self-limit motion if appropriate with or without cervical collar.
    - **self-extrication** is allowable for patients meeting criteria for Modified SMR.

**RELATED POLICIES/ PROCEDURES**

Spinal Injury Assessment GPC13A
COMA/ ALTERED LEVEL OF CONSCIOUSNESS

ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- GCS < 15, etiology unclear (consider AEIOU TIPS); sudden onset of weakness, paralysis, confusion, speech disturbances, headache

TREATMENT
- ALS RMC
- Position patient with head elevated 30 degrees or left lateral recumbent if vomiting
- If BS < 60 or immeasurable:
  - **Dextrose 10% 25GM/250ml:**
    - 125 ml bolus IV/IO over 10 minutes; recheck BG and repeat as needed
- If BS < 60 or immeasurable and unable to start IV:
  - **Glucagon 1 mg IM**
  - Narcotic overdose:
    - **Narcan 0.4 mg-2 mg IVP/ IM/ IN**

SPECIAL CONSIDERATION
- Consider indication for C-spine precautions; consider diabetes-related complications
- If CVA suspected, see CVA/Stroke Policy N 4

RELATED POLICIES/ PROCEDURES
- Intrasnal Medications Midazolam(Versed) and Narcan Procedure ALS PR 7
- CVA / Stroke Policy N4
SEIZURES
ALS
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- Recurring or continuous generalized seizures with ALOC

TREATMENT
- ALS RMC
- Treat hypoglycemia according to ALOC policy
- **Narcan** 2 mg IV/ IM/ SL/ IN if opiate overdose is suspected and the patient is in respiratory failure or shock
- **Midazolam (Versed)**
  - IV/IO: 1 mg slowly; MR q 3 minutes until seizure stops or maximum dose 0.05 mg/kg.
  - IN: 5 mg (2.5 mg in each nostril)
  - IM: 0.1 mg/kg; MR x 1 in 10 minutes if still seizing.

SPECIAL CONSIDERATION
- Consider treatable etiologies (hypoglycemia, hypoxia, narcotic overdose, unusual odor of alcohol, signs of trauma, medic alert tag) prior to administering anti-seizure medications.
- Expect and manage excessive oral secretions, vomiting, and inadequate tidal volume.
- Treatment should be based on the severity and length of the seizure activity.
- Focal seizures without mental status changes may not require pre-hospital pharmacological intervention.
- Never administer **Midazolam (Versed)** rapid IVP/IO since cardiac and/or respiratory arrest may occur.

DOCUMENTATION- ESSENTIAL ELEMENTS
- Blood glucose level
- Number, description, duration of seizures
- Dosage of medications, times administered

RELATED POLICIES/ PROCEDURES
- Intranasal Medications Midazolam (Versed) & Narcan ALS PR 7
- ALOC N1
SYNCOPE
ALWAYS USE BODY SUBSTANCE ISOLATION PRECAUTIONS

INDICATION
- Episode of brief loss of consciousness, dizziness, often postural

CRITICAL INFORMATION
- Evaluate cardiac rhythm, precipitating factors, associated symptoms, medical history/medications. If abnormal vital signs or loss of consciousness, do not do postural vital signs.

TREATMENT
- ALS RMC
- Cardiac monitor - treat dysrhythmias per specific treatment guidelines
- 12-lead ECG if patient has medical history and/or presenting complaints consistent with acute coronary syndrome. If positive for STEMI, see 12-lead ECG Procedure.
- IV NS TKO or saline lock; 250-500 ml fluid challenge if hypotensive or tachycardic
- Treat hypoglycemia according to ALOC policy
CEREBROVASCULAR ACCIDENT (STROKE)
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
Sudden onset of weakness/paralysis, speech or gait disturbance

TREATMENT
- ALS RMC
  - Secure IV access (antecubital preferred) if patient meets Early Stroke Notification criteria
  - Elevate head of bed 20-30% elevation or place in left lateral decubitus
- Provide Early Stroke Notification if all of the following are true:
  - Abnormal Cincinnati Prehospital Stroke Scale (CPSS) score
  - Last known well < 4.5 hours
  - Symptoms are most likely due to stroke and not a stroke mimic
  - Blood glucose level >70
- If the patient meets criteria for early notification
  - During radio report, provide patient identifying information – hospital medical record number if known and/or last name and DOB of patient
  - Rapidly transport to patient’s preferred Primary Stroke Center (PSC), as long as the estimated transport time is not > 15 minutes longer than the closest PSC.
    - Preferred PSC: patient’s preference or PSC with patient’s medical records
    - No preferred PSC: transport to the closest PSC
  - Notify family members/medical decision maker that their immediate presence at the hospital is critical for optimal care
  - Bring names and best phone numbers for the patient’s medical decision maker and whoever last saw the patient normal whenever possible
- If high suspicion of rapidly progressive intracranial bleed (sudden, witnessed onset of coma or rapidly deteriorating GCS especially in setting of severe headache) transport to Marin General Hospital

DOCUMENTATION- ESSENTIAL ELEMENTS
- Criteria for Early Stroke Notification
- Choose CVA as Primary Impression
- Name and contact information for patient family member/decision maker and/or those who had last seen the patient normal (e.g., skilled nursing personnel)
- Documentation of CPSS and hospital notification
- Time last known well (document in military time). If time last known to be well is unknown or indeterminate, document and report
- Blood glucose level
- GCS
- History of intracranial hemorrhage
- Serious head injury within 2 months
- Taking anticoagulant medications (e.g. Warfarin/ Coumadin, Pradaxa/Dabigatran, Xarelto/Rivaroxaban, Eliquis/Apixaban, Lovenox/Enoxaparin)
- Improving neurological deficit
RELATED POLICIES/ PROCEDURES

▪ Destination Guidelines GPC 4
▪ Prehospital / Hospital Contact Policy 7001
▪ Ambulance Diversion Policy 5400
▪ Coma/ALOC N1

**Cincinnati Pre-Hospital Stroke Scale (CPSS)**

*Facial Droop* (the patient shows teeth or smiles)

___ Normal: both sides of the face move equally
___ Abnormal: Right side of the face does not move as well as the left
___ Abnormal: Left side of the face does not move as well as the right

*Arm Drift* (the patient closes their eyes and extends both arms straight out for 10 seconds)

___ Normal: both arms move the same, or both arms do not move at all
___ Abnormal: Right arm either does not move, or drifts down compared to the left
___ Abnormal: Left arm either does not move, or drifts down compared to the right

*Speech* (the patient repeats “The sky is blue in Cincinnati.” or other sentence)

___ Normal: the patient says the correct words with no slurring of words
___ Abnormal: the patient slurs words, says the wrong words, or is unable to speak
PEDIATRIC PULSELESS ARREST
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- Pulseless, chaotic, disorganized electrical rhythm (Ventricular Fibrillation/ VF)
- Pulseless, organized “wide complex” rhythm, rate > 150/ min (Ventricular Tachycardia/ VT)
- Electrical activity other than VF or VT that does not produce a palpable pulse (Asystole, Pulseless Electrical Activity/ PEA)

CRITICAL INFORMATION
- Measure with color-coded resuscitation tape and treat according to the Pediatric Dosing Guide (P18A). Apply corresponding wrist band.
- Witnessed or unwitnessed
- Bystander CPR
- If arrest witnessed, time without CPR

TREATMENT
- Compressions until defibrillator available
- ALS RMC

- **VF/ VT:**
  - Defibrillate: Manual – 2 – 4J/kg; if unavailable use AED with dose attenuator; CPR for 2 minutes
  - **Epinephrine** IV/IO (1:10,000) 0.01mg/kg; repeat q 3-5 min.
  - CPR for 2 minutes
  - Defibrillate: Manual - 4 J/ kg; if unavailable use AED with dose attenuator; CPR for 2 minutes
  - **Amiodarone** 5 mg/kg IVP/IO (max. dose 300 mg); may repeat up to two times for refractory rhythm
- **Asystole/ PEA:**
  - **Epinephrine** IV/ IO (1:10,000) 0.01 mg/kg; repeat q 3-5 min.
  - Give 5 cycles of CPR and reassess rhythm

SPECIAL CONSIDERATION
- If unable to access IV/IO, **Epinephrine** (1: 1,000) ET 0.1mg/ kg; repeat q 3-5 min
- If pediatric dose attenuator is not available, use a standard AED
- Consider and treat possible contributing factors:

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<td>Hydrogen ion (acidosis)</td>
<td>Tension pneumothorax</td>
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<tr>
<td>Hypo/Hyperkalemia</td>
<td>Thrombosis (coronary / pulmonary)</td>
</tr>
<tr>
<td>Hypoglycemia</td>
<td>Trauma</td>
</tr>
<tr>
<td>Hypothermia</td>
<td></td>
</tr>
</tbody>
</table>
NEOBORN RESUSCITATION
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- Prehospital delivery of a newborn

CRITICAL INFORMATION
- Assess for term gestation, crying or breathing, heart rate, and muscle tone.
- Measure with color-coded resuscitation tape and treat according to the Pediatric Dosing Guide (P18A). Apply corresponding wrist band.

TREATMENT
- Provide routine newborn care if no abnormal findings on initial exam (see assessment above).
  - Provide warmth
  - Clear airway if necessary
  - Dry / stimulate
- If weak / absent respiratory effort or decreased / absent muscle tone:
  - Provide warmth
  - Open airway
  - Stimulate
- Reassess heart rate and respiratory effort
  - If HR > 100/MIN, breathing is unlabored, and patient's color improves, continue supportive care
  - If HR > 100/MIN and breathing is labored and color does not improve, provide supplemental O2
  - If HR < 100/MIN perform BVM at 40-60 per minute; consider ETT
  - If HR remains < 60/MIN perform BVM with chest compressions at 3:1 ratio
    - 90 compressions / 30 ventilations per minute
  - If HR < 60 continues, perform endotracheal intubation and administer **Epinephrine**
    - 1:10,000 0.01mg/kg ET/IO/IV (may give up to 0.1mg/kg via ET). IV/IO PREFERABLE. Repeat every 3-5 min
- IV/IO if not previously initiated
- Administer fluid bolus of 10 ml/kg IV/IO
- Assess for hypoglycemia and treat according to Pediatric Dosing Guide
- Continuous assessment of heart rate and respiratory effort en route

SPECIAL CONSIDERATIONS
- **Epinephrine** administration is indicated for asystole or spontaneous heart rate less than 60 beats per minute despite adequate ventilation with 100% oxygen and chest compressions after 30 seconds. Epinephrine by ETT is the fastest route and minimizes delay in resuscitation.
- **Narcan** is contraindicated in neonatal resuscitation.
- Clamp and cut cord after one minute.
- Peripheral cyanosis is normal.

DOCUMENTATION- ESSENTIAL ELEMENTS
- Presence of meconium
- APGAR score at 1 and 5 minutes
<table>
<thead>
<tr>
<th>Sign</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart rate (bpm)</td>
<td>Absent</td>
<td>Slow (&lt;100)</td>
<td>≥100</td>
</tr>
<tr>
<td>Respirations</td>
<td>Absent</td>
<td>Slow, irregular</td>
<td>Good, crying</td>
</tr>
<tr>
<td>Muscle tone</td>
<td>Limp</td>
<td>Some flexion</td>
<td>Active motion</td>
</tr>
<tr>
<td>Reflex irritability</td>
<td>No response</td>
<td>Grimace</td>
<td>Cough, sneeze, cry</td>
</tr>
<tr>
<td>Color</td>
<td>Blue or pale</td>
<td>Pink body with blue extremities</td>
<td>Completely pink</td>
</tr>
</tbody>
</table>
PEDIATRIC RESPIRATORY DISTRESS
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- Patient exhibits any of the following:
  - Wheezing
  - Stridor
  - Grunting
  - Nasal flaring
  - Apnea

CRITICAL INFORMATION
- Measure with color-coded resuscitation tape and treat according to the Pediatric Dosing Guide (P18A). Apply corresponding wrist band.
- Neonate = birth to four weeks; infant = four weeks to 1 year; child = 1-14 years; adolescent = >14 years

TREATMENT
- ALS RMC
- Position of comfort to maintain airway
- Allow parent to administer oxygen if possible
- Upper Airway/ Stridor:
  - Mild to moderate respiratory distress: 3ml NS via HHN
  - Moderate to severe respiratory distress: Epinephrine 1:1,000 5 mg in 5 ml via nebulizer
- Lower Airway Obstruction/ Wheezing:
  - Albuterol 2.5 mg in 3 ml NS via HHN, mask, or bag-valve-mask; MR x 1 and
  - Ipratropium 500 mcg in 2.5 ml NS via HHN or bag-valve-mask
  - If response inadequate, Epinephrine 1:1,000 (0.01 mg/kg) IM, maximum single dose 0.3 mg; MR x 1.
- Foreign Body Obstruction:
  - Attempt to clear airway:
    - < 1 year: 5 back blows and 5 chest thrusts
    - > 1 year: 5 abdominal thrusts
  - Visualize larynx and remove foreign body with Magill forceps
- Respiratory failure/ apnea/ complete obstruction.
  - Attempt positive pressure ventilation via bag-valve-mask, if unable to ventilate, attempt intubation

SPECIAL CONSIDERATIONS
- Assess key history factors: recent hospitalizations, asthma, allergies, croup, and medication usage
PEDIATRIC BRADYCARDIA
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- HR< 60 causing cardio-respiratory compromise

CRITICAL INFORMATION
- Measure with color-coded resuscitation tape and treat according to the Pediatric Dosing Guide (P18A). Apply corresponding wrist band.
- Neonate = birth to four weeks; infant = four weeks to 1 year; child = 1-14 years; adolescent = >14 years
- History of exposure to substances or medications

TREATMENT
- ALS RMC
- 12-lead ECG
- Obtain IV/IO access
- If responsive and no signs of shock
  - Monitor and transport
- If shock present:
  - Chest compressions if HR < 60 and patient is < 8 years with poor perfusion
  - Epinephrine 1:10,000 IV/IO: 0.01 mg/kg (0.1 ml/kg); MR q 3-5 min.
  - If first degree block or Mobitz type I, Atropine 0.02 mg/kg IV/IO (max single dose: 0.5 mg; minimum single dose: 0.1 mg); MR x 1
  - Consider endotracheal intubation
  - Consider cardiac pacing if no response to above treatment.

SPECIAL CONSIDERATIONS
- Consider and treat possible contributing factors:
  - Hypovolemia
  - Hypoxemia
  - Hydrogen ion (acidosis)
  - Hypo/Hyperkalemia
  - Hypoglycemia
  - Hypothermia
  - Toxins (overdoses)
  - Tamponade, cardiac
  - Tension pneumothorax
  - Thrombosis (coronary / pulmonary)
  - Trauma

RELATED POLICIES/ PROCEDURES
- External Cardiac Pacing Procedure ALS PR 11
- Pediatric Dosing Guide P18 A
PEDIATRIC TACHYCARDIA  
POOR PERFUSION  
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- Rapid heart rate (HR > 220 infant: HR > 180 child) with pulse and poor perfusion

 PHYSICIAN CONSULT
- Amiodarone

CRITICAL INFORMATION
- Measure with color-coded resuscitation tape and treat according to the Pediatric Dosing Guide (P18A). Apply corresponding wrist band.
- Neonate = birth to four weeks; infant = four weeks to 1 year; child = 1-14 years; adolescent = >14 years

TREATMENT
- ALS RMC
- 12-lead EKG
- If normal QRS ≤ 0.09 seconds; Probable Sinus Tachycardia or Supraventricular Tachycardia:
  - Consider vagal maneuvers, but do not delay other treatments
  - If vascular access readily available, Adenosine 0.1mg/kg IV/IO; max first dose 6 mg. MR X 1; (double the dose), maximum dose 12 mg. Follow each dose with rapid 10 ml flush.
  - Premedicate with Midazolam 0.05 mg/kg IV/IO (maximum 1 mg per dose; Maximum total dose = 5 mg).
  - Do not delay cardioversion if patient unstable.
  - Cardiovert: 0.5-1J/kg; if not effective, increase to 2 J/kg
- Wide QRS ≥ 0.09 seconds; Probable Ventricular Tachycardia:
  - Cardiovert (see above)
  - Amiodarone if no response to cardioversion: 5 mg/kg IV over 20-60 minutes

SPECIAL CONSIDERATION
- Consider and treat possible contributing factors:
  - Hypovolemia
  - Hypoxemia
  - Hydrogen ion (acidosis)
  - Hypo/Hyperkalemia
  - Hypoglycemia
  - Hypothermia
  - Toxins (overdoses)
  - Tamponade, cardiac
  - Tension pneumothorax
  - Thrombosis (coronary / pulmonary)
  - Pain
  - Trauma
PEDIATRIC SHOCK
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- Inadequate organ and tissue perfusion to meet metabolic demands

CRITICAL INFORMATION
- Measure with color-coded resuscitation tape and treat according to the Pediatric Dosing Guide (P18A). Apply corresponding wrist band.
- Neonate = birth to four weeks; infant = four weeks to 1 year; child = 1-14 years; adolescent = >14 years

TREATMENT
- ALS RMC
- IV/ IO X 2; Use length-based color-coded resuscitation tape to determine fluid boluses; repeat bolus as needed
- Check blood glucose and treat if <60 mg/dl (<40 mg/dl neonate):
  - Neonate = D10W 2 ml/kg IV/IO over 10 minutes
  - > Neonate: D10W 5 ml/kg IV/IO over 10 minutes
- If unable to establish vascular access; Glucagon .03 mg/kg (max = 1 mg) IM; MR x 2 q 15 minute intervals
- For symptoms of anaphylaxis, follow Allergic Reaction Policy P 8

SPECIAL CONSIDERATION
- Fluid resuscitation may require 40-60 ml/kg or more
PEDIATRIC ALLERGIC REACTION
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- Exposure to allergens causing airway, breathing and/or circulatory impairment

CRITICAL INFORMATION
- Treat according to length based color-coded resuscitation tape and in conjunction with the Pediatric Dosing Guide (P18A). Apply corresponding wrist band.
- Neonate = birth to four weeks; infant = four weeks to 1 year; child = 1-14 years; adolescent = >14 years
- Exposure to common allergens (stings, drugs, nuts, seafood, meds), prior allergic reactions
- Presence of respiratory symptoms (wheezing, stridor)

TREATMENT
- ALS RMC
- Mild (hives, rash)
  - Benadryl 1mg/kg IM (MR in 10 minutes; max. dose 50 mg)
- Moderate / Severe
  - Epinephrine IM (1:1000) 0.01mg/kg (MR in 15 minutes); max. dose 0.6 mg
  - Benadryl 1mg/kg IM/IV/IO (MR in 10 minutes; max. dose 50 mg)
  - Albuterol 2.5 mg/3 ml NS HHN if bronchospasms present; MR X1 if no improvement
  - If hypotensive, fluid challenge NS 20 ml/kg IV/IO, MR
  - If no palpable pulse or BP; Epinephrine IV/IO (1:10,000) 0.01mg/kg; MR q 3-5 minutes

DOCUMENTATION- ESSENTIAL ELEMENTS
- Allergen if known
PEDIATRIC SEIZURES
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- Recurring or continuous generalized seizures with ALOC

CRITICAL INFORMATION
- Measure with color-coded resuscitation tape and treat according to the Pediatric Dosing Guide (P18A). Apply corresponding wrist band.
- Neonate = birth to four weeks; infant = four weeks to 1 year; child = 1-14 years; adolescent = >14 years
- Evaluate for and treat hypoglycemia, hypoxia, narcotic overdose, trauma, fever, etc. prior to administering anti-seizure medications

TREATMENT
- ALS RMC
- Vascular access for prolonged seizures
- Check blood glucose and treat if <60 mg/dl (<40 mg/dl neonate):
  - Neonate = D10W 2 ml/kg IV/IO over 10 minutes
  - > Neonate: D10W 5 ml/kg IV/IO over 10 minutes
    - If unable to establish vascular access; Glucagon .03 mg/kg (max = 1 mg) IM; MR x 2 q 15 minute intervals
  - Midazolam (Versed)
    - IV/IO: 0.05 mg/kg (maximum 1 mg per dose). MR q 3 minutes until seizure stops and/or total dose of 5 mg is reached.
    - IN: 0.2 mg/kg (split dose equally per nostril); Maximum dose = 5 mg
    - IM: 0.1 mg/kg; MR x 1 in 10 minutes if still seizing.

DOCUMENTATION- ESSENTIAL ELEMENTS
- Number, description, and duration of seizures

RELATED POLICIES/ PROCEDURES
- Intranasal Medications Midazolam (Versed) & Narcan ALS PR 7
- Pediatric Dosing Guide P18A
PEDIATRIC ALTERED LEVEL OF CONSCIOUSNESS (ALOC)
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- Abnormal neurologic state where child is less alert and interactive than is age appropriate

CRITICAL INFORMATION
- Measure with color-coded resuscitation tape and treat according to the Pediatric Dosing Guide (P18A). Apply corresponding wrist band.
- Neonate = birth to four weeks; infant = four weeks to 1 year; child = 1-14 years; adolescent = >14 years
- Narcan is contraindicated with neonatal resuscitation

TREATMENT
- ALS RMC
- Check blood glucose and treat if < 60 mg/dl (neonate < 40 mg/dl):
  - Neonate = D10W 2 ml/kg IV/IO over 10 minutes
  - > Neonate: D10W 5 ml/kg IV/IO over 10 minutes
- If unable to establish vascular access; Glucagon 0.03 mg/kg (max = 1 mg) IM; MR x 2 q 15 minute intervals
- Narcan 0.1 mg/kg IM/ IV/ IO/ IN. MR Q 5 minutes up to 2 mg if no improvement in ALOC and strong suspicion of opiate exposure

RELATED POLICIES/ PROCEDURES
- Intranasal Medications Midazolam (Versed) and Narcan ALS PR 7
- Pediatric Dosing Guide P18A
**PEDIATRIC BURNS**

**ALWAYS USE STANDARD PRECAUTIONS**

**INDICATION**
- Second or third degree burns (i.e., caustic material, electricity or fire) involving 10% or more of body surface area or those associated with respiratory involvement

**CRITICAL INFORMATION**
- Measure with color-coded resuscitation tape and treat according to the Pediatric Dosing Guide (P18A). Apply corresponding wrist band. Neonate = birth to four weeks; infant = four weeks to 1 year; child = 1-14 years; Adolescent = >14 years
- Consider early intubation for severe facial burns
- Burns with trauma mechanism are to be transported according to the Marin County Trauma Triage Tool

**TREATMENT**
- ALS RMC
- Thermal/Electrical:
  - Remove patient to safe area
  - Eliminate source and stop the burning process (water may be used in the first few minutes to stop the burning process)
  - Remove all clothing/jewelry
- Chemical:
  - Brush away any dry chemicals
  - Attempt to identify chemical; flush affected area with copious amounts of water unless contraindicated
- Support ventilation with high flow oxygen. If wheezing, consider bronchodilator therapy
  - **Albuterol** 2.5 mg HHN; MR x 1
- Re-evaluate airway frequently
- Expose affected area and apply clean dry sheet
- Keep patient warm to avoid hypothermia
- Fluid bolus 20 ml/kg **NS** IV/IO
- Pain management as indicated
- Transport by ground. If there is respiratory involvement, transport to the time closest ED by air or ground.

**SPECIAL CONSIDERATION**
- Avoid hypothermia, do not use ice or wet dressings, and keep patient warm
- IV/IO required if BSA >10%

**DOCUMENTATION - ESSENTIAL ELEMENTS**
- Estimated percentage of BSA affected

**RELATED POLICIES/PROCEDURES**
- Pediatric Pain Management P15
- Pediatric Shock P7
- Pediatric Dosing Guide P18A
PEDIATRIC TRAUMA
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
▪ Suspected or apparent injuries which meet conditions listed on the Marin County Trauma Triage Tool

CRITICAL INFORMATION
▪ Measure with color-coded resuscitation tape and treat according to the Pediatric Dosing Guide (P18A). Apply corresponding wrist band.
▪ Neonate = birth to four weeks; infant = four weeks to 1 year; child = 1-14 years; adolescent = >14 years
▪ Rapid transport to the appropriate trauma receiving facility is of paramount importance and must be taken into account in the field management of pediatric trauma patients.

TREATMENT
▪ ALS RMC
▪ Early trauma center notification
▪ Secure airway, maintaining C-spine precautions as per policy
▪ IV/ IO NS bolus 20 ml/kg; MR X 1
▪ Pain management as appropriate

SPECIAL CONSIDERATION
▪ If injury may have resulted from abuse, neglect, assaults, and/or other crimes, refer to Suspected Child Elder and/or Dependent Adult Abuse Policy for reporting.

RELATED POLICIES/ PROCEDURES
▪ Destination Guidelines GPC 4
▪ Trauma Triage and Destination Guidelines, 4613
▪ Suspected Child, Elder and/ or Dependent Adult Abuse GPC 9
▪ Spinal Immobilization GPC 13
▪ Pediatric Pain Management P15
▪ Pediatric Dosing Guide P 18A
PEDIATRIC APPARENT LIFE-THREATENING EVENT (ALTE)

ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- A frightening episode to the observer characterized by some combination of:
  - Apnea (central or obstructive)
  - Color change (cyanosis, pallor, erythema)
  - Marked change in muscle tone
  - Unexplained choking or gagging

 PHYSICIAN CONSULT
- Parent/Designated Decision Maker (DDM) refuses medical care and/or transport

CRITICAL INFORMATION
- Measure with color-coded resuscitation tape and treat according to the Pediatric Dosing Guide (P18A). Apply corresponding wrist band.
- Neonate = birth to four weeks; infant = four weeks to 1 year; child = 1-14 years; adolescent = >14 years
- Although ALTE usually occurs in patients < 12 months, any patient under 24 months who experiences any of the above indications should be considered
- Medical history: cardiac arrhythmias/anomalies, child abuse, meningitis, near SIDS, seizures, sepsis, toxic exposure, trauma

TREATMENT
- ALS RMC
- Check blood glucose and treat if < 60 mg/dl (< 40 mg/dl if neonate):
  - Neonate = D10W 2 ml/kg IV/IO over 10 minutes
  - > Neonate: D10W 5 ml/kg IV/IO over 10 minutes
  - If unable to establish vascular access; Glucagon .03 mg/kg (max = 1 mg) IM; MR x 2 q 15 minute intervals

SPECIAL CONSIDERATION
- Most ALTE patients have a normal physical exam
- Assume parental history is real. Encourage transport no matter how well the patient might appear.

DOCUMENTATION- ESSENTIAL ELEMENTS
- Severity, nature and duration of the episode
- General appearance of the patient, skin color, extent of interaction with the environment
- Evidence of trauma

RELATED POLICIES/ PROCEDURES
- Suspected Child/Dependent Adult/ Elder Abuse GPC 9
- Pediatric Dosing Guide P 18A
PEDIATRIC PAIN MANAGEMENT
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- To provide analgesia for pediatric patients (6 months to 14 years or up to 45 kg), especially if anticipated extrication, movement, or transportation would exacerbate the patient’s level of pain

 PHYSICIAN CONSULT
- Patients less than 6 months of age
- Patients with head, chest, or abdominal trauma; decreased respirations; ALOC (GCS < 15)
- Additional doses of narcotic after initial doses administered

CRITICAL INFORMATION
- Measure with color-coded resuscitation tape and treat according to the Pediatric Dosing Guide (P18A). Apply corresponding wrist band.
- Origin of pain (examples: isolated extremity trauma, chronic medical condition, burns, abdominal pain, multi-system trauma)
- Mechanism of injury
- Approximate time of onset
- Complaints or obvious signs of discomfort
- Use Visual Analog Scale (0-10) or Wong/Baker Faces Pain Rating Scale (see Appendix A). Express results as a fraction (i.e. 2/10 or 7/10).

TREATMENT
- ALS RMC
- Morphine Sulfate 0.1mg/kg IV/IO/IM; MR x 2 in 15 minutes following IV/IO administration, or in 30 minutes following IM administration.  ♻ Physician consult for additional doses
- Have Narcan available
- If nausea/vomiting, consider Ondansetron (Zofran ©)
  - Ages 2-3: 2mg ODT or slow IV/IO over 30 seconds; MR x 1 in 10 minutes
  - Age ≥4: 4mg ODT or slow IV/IO over 30 seconds; MR x 1 in 10 minutes

DOCUMENTATION- ESSENTIAL ELEMENTS
- 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 ALOC)
- Physician consult if required
PEDIATRIC SEXUAL ASSAULT
ALWAYS USE STANDARD PRECAUTIONS

INDICATION
- Patients under 14 years of age with complaints consistent with sexual assault

CRITICAL INFORMATION
- Preserve possible evidence and advise patient not to clean, bathe or change clothes until after examination by hospital personnel
- Notify police and dispatch of nature of call
- Measure with color-coded resuscitation tape and treat according to the Pediatric Dosing Guide (P18A). Apply corresponding wrist band

TREATMENT
- BLS/ ALS RMC
- Calm/ reassure patient
- Assign responder of same sex as patient if possible
- Treat medical conditions/ traumatic injuries per protocol
- If no medical conditions/ traumatic injuries are apparent and assault occurred within 72 hours of report:
  - Law Enforcement will take the victim to Children’s Hospital Oakland (CHO) for a medical evidentiary examination and should call the Emergency Department at CHO (510) 428-3240 and ask for the ED Social Worker on call
- If no medical conditions / traumatic injuries and the assault occurred > 72 hours of the report
  - Law Enforcement will make a decision of whether or not to proceed with the forensic medical examination
- If patient/ Designated Decision Maker (DDM) refuses transport, instruct patient/DDM not to shower and advise of alternative care/ transport options per AMA or RAS Policy

DOCUMENTATION- ESSENTIAL ELEMENTS
- Date and time of alleged assault
- Details of injuries noted
- Law Enforcement actions and determination of destination
- Patient’s destination

RELATED POLICIES/ PROCEDURES
- AMA Policy  GPC 2
- RAS Policy GPC 3
- Destination Guidelines GPC 4
- Pediatric Dosing Guide P 18A
# PEDIATRIC MEDICATIONS
## AUTHORIZED/ STANDARD INITIAL DOSE

<table>
<thead>
<tr>
<th>DRUG</th>
<th>CONCENTRATION</th>
<th>STANDARD DOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activated Charcoal</td>
<td>25 GM/ bottle</td>
<td>1 gm/ kg PO; not to exceed 50 gm.</td>
</tr>
<tr>
<td>Adenosine (Adenocard)</td>
<td>6 mg/ 2 ml</td>
<td><strong>Tachycardia Poor Perfusion:</strong> 0.1mg/kg; max. first dose 6mg. MR x 1 (double the dose); max. dose 12mg. (Rapid IV/IO push, each dose followed by 5 ml NS flush). <strong>Tachycardia Adequate Perfusion:</strong> Dose as above after physician consult</td>
</tr>
<tr>
<td>Albuterol</td>
<td>2.5 mg/ 3 ml NS</td>
<td>2.5 mg/ 3ml NS</td>
</tr>
<tr>
<td>Amiodarone</td>
<td>150 mg/ 3 ml</td>
<td><strong>Pulseless Arrest:</strong> 5 mg/ kg IV/ IO followed by or diluted in 20-30 ml NS. Maximum single dose 300 mg. <strong>Tachycardia with poor perfusion:</strong> 5mg/kg IV/IO over 20-60 min.</td>
</tr>
<tr>
<td>Atropine</td>
<td>1 mg/ 10 ml</td>
<td><strong>Bradycardia:</strong> 0.02 mg/kg IV/ IO (minimum dose 0.1 mg.; single max. dose 0.5mg). MR X 1. <strong>Organophosphate Poisoning:</strong> 0.05 mg/kg IV/IO; MR q 5-10 min. max. dose 4mg or until relief of symptoms</td>
</tr>
<tr>
<td>Dextrose 10%</td>
<td>D10%</td>
<td><strong>ALOC (Neonate):</strong> 2 ml/ kg IV/IO <strong>ALOC (&lt;2 years):</strong> 4ml/ kg IV/IO</td>
</tr>
<tr>
<td>Diphenhydramine (Benadryl)</td>
<td>50 mg/ 1 ml “or” 50 mg/ 10 ml</td>
<td>1 mg/ kg IV/IO/IM IV/ IO max. dose 25 mg/ min. IM max. dose, 50 mg.</td>
</tr>
<tr>
<td>Epinephrine 1:1000</td>
<td>1 mg/ 1ml EpiPen Jr® 0.15mg</td>
<td><strong>Allergic Reaction moderate/ severe/ anaphylaxis:</strong> 0.01 mg/ kg IM (0.01ml/ kg). Max. dose of 0.6 mg (0.6 ml). EpiPen Jr®; repeat as needed in 5 min. <strong>Upper Airway/ Stridor:</strong> 5mg in 5ml via nebulizer</td>
</tr>
<tr>
<td>Drug</td>
<td>Concentration</td>
<td>Indications</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| **Epinephrine 1:10, 000**     | 1 mg/ 10 ml            | *Anaphylaxis:* If no response to Epi 1:1000, give 0.01mg/ kg (0.1ml/kg) of 1:10,000 IV/ IO.  
  *Bradycardia:* 0.01mg/ kg (0.1ml/kg) IV/ IO.  
  *Cardiac Arrest:* 0.01 mg/kg (0.1ml/kg) IV/ IO |
| **Glucagon**                  | 1 mg/ 1 ml             | *Hypoglycemia/Beta Blocker OD:* 0.03 mg/kg IM (max. dose 1 mg)               |
| **Ipratropium (Atrovent)**    | 500 mcg per unit dose (2.5 ml) | Unit dose                                                                   |
| **Lidocaine 2% (preservative free)** | 20 mg/1 ml          | *IO insertion for pts >3kg:* Infuse 0.5mg/kg slowly (up to a maximum dose of 40mg). May repeat as needed x 1 using ½ of initial bolus. |
| **Midazolam (Versed)**        | 2 mg/ 2ml              | *Cardioversion:* 0.05 mg/kg slow IV/IO. Max.initial dose 1 mg                 |
|                               | IN: 5 mg/1 ml          | *Seizure (see policy for specifics):* IV/IO=0.05 mg/kg; MR q 3’ (Max=5mg) IM=0.1mg/kg; MR in 10 minutes x 1 IN= 0.2mg/kg; Max.= 5 mg. |
| **Morphine Sulfate**          | 10 mg/ 10 ml 10 mg/ 1 ml | *Pain Management:* 0.1mg/ kg (0.1ml/ kg) slow IV/ IO/ IM. MR X 1 in 15 min. if IV/ IO or 30 min if IM.  
  *Burns:* 0.1 mg/kg IV/IO/IM in incremental doses up to 0.3mg/kg |
| **Naloxone (Narcan)**         | 2mg/2ml                | *Suspected OD in non-neonate:* 0.1 mg/kg (0.25 ml/ kg) IV/ IO/ IM             |
| **Ondansetron (Zofran)**      | 4 mg                   | *Patients ≥ 4 yrs:* 4 mg ODT or slow IV over 30 seconds  
  *Patients 2-4yrs:* 2mg ODT or slow IV over 30 seconds. |
| **Sodium Bicarbonate**        | 50 mEq/ 50 ml          | *Tricyclic Antidepressant OD with significant dysrhythmias:* 1mEq/ kg IV/ IO |

**NOTE:** If the above concentrations become unavailable, providers may use alternate available concentrations or packaging.
<table>
<thead>
<tr>
<th>WEIGHT</th>
<th>Grey</th>
<th>Pink</th>
<th>Red</th>
<th>Purple</th>
<th>Yellow</th>
<th>White</th>
<th>Blue</th>
<th>Orange</th>
<th>Green</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 - 11</td>
<td>60, 80, 100 ml</td>
<td>130 ml</td>
<td>170 ml</td>
<td>210 ml</td>
<td>260 ml</td>
<td>325 ml</td>
<td>420 ml</td>
<td>530 ml</td>
<td>660 ml</td>
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<tr>
<td>lbs</td>
<td>Intubation tube size</td>
<td></td>
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<tr>
<td>3.5</td>
<td>3.5</td>
<td>3.5</td>
<td>4.0</td>
<td>4.5</td>
<td>5.0</td>
<td>5.5</td>
<td>6.0</td>
<td>6.5</td>
<td>6.5</td>
</tr>
</tbody>
</table>

**DEFIBRILLATION 2 - 4 J/kg**
- **1st**: 6 - 10J
- **2nd**: 12 - 20J

**CARDIOVERSION 0.5 - 1 J/kg, 2 J/kg**
- **1st**: 3 - 5J
- **2nd**: 6 - 10J

**ACTIVATED CHARCOAL 1 gm/kg PO (Max dose 50 gm)**
- Concentration: 25 gm/120 ml bottle (1 gm/4.8 ml)
  - 4 gm | 6.5 gm | 8.5 gm | 10.5 gm | 13 gm | 16.5 gm | 21 gm | 26 gm | 33 gm

**ADENOSINE 0.1 mg/kg RIVP w/ 10ml NS flush**
- MR x 1 double the dose
- (Max 1st dose 6 mg, max 2nd dose 12 mg)
- Concentration: 6 mg/2 ml (3 mg/ml)
  - 0.14 ml | 0.2 ml | 0.3 ml | 0.4 ml | 0.6 ml | 0.7 ml | 0.9 ml | 1.1 ml |
  - 0.25 ml | 0.4 ml | 0.6 ml | 0.7 ml | 0.9 ml | 1.1 ml | 1.4 ml | 2.2 ml |

**ATROPINE**
- (Bradycardia) 0.02 mg/kg IV/IO
- Concentration: 1 mg/10 ml (0.1 mg/ml)
  - 1 ml | 1 ml | 2 ml | 2 ml | 3 ml | 3 ml | 4 ml | 5 ml |
  - 0.14 - 0.25 mg | 0.3 mg | 0.4 mg | 0.5 mg | 0.7 mg | 0.8 mg | 1 mg | 1.3 mg | 1.7 mg |

**ATROPINE** (Organophosphate Poisoning)
- 0.05 mg/kg IV/IO
- Concentration: (preload) 1 mg/10 ml (0.1 mg/ml)
  - 1.5 - 2.5 mg | 3 mg | 4 mg | 5 mg | 7 ml | 8 ml | 11 ml | 13 ml | 17 ml |
  - 0.4 - 0.6 mg | 0.8 ml | 1.1 ml | 1.3 ml | 1.6 ml | 2.1 ml | 2.6 ml | 3.3 ml | 4.1 ml |

**BENADRYL**
- 1 mg/kg IM/IV/IO
- (IV/IO Max dose 25 mg; IM Max dose 50 mg)
- Concentration: 50 mg/ml
  - 0.08 ml | 0.1 ml | 0.2 ml | 0.2 ml | 0.3 ml | 0.3 ml | 0.4 ml | 0.5 ml | 0.7 ml |

**DEXTROSE 10%**
- Give over 10 minutes
  - Neonates D10W 2 ml/kg IV/IO
  - > Neonate D10W 5 ml/kg IV/IO

**EPINEPHRINE** (Cardiac Arrest/Bradycardia) 1:10,000
- 0.01 mg/kg IV/IO (Max dose 0.1 mg/kg)
- Concentration: 1 mg/10 ml
  - 0.3 - 0.5 ml | 0.7 ml | 0.9 ml | 1 ml | 1 ml | 2 ml | 2 ml | 3 ml | 3 ml |

**ATROPINE** (Organophosphate Poisoning)
- Concentration: (preload) 1 mg/10 ml (0.1 mg/ml)
  - 1.5 - 2.5 mg | 3 mg | 4 mg | 5 mg | 7 ml | 8 ml | 11 ml | 13 ml | 17 ml |
  - 0.4 - 0.6 mg | 0.8 ml | 1.1 ml | 1.3 ml | 1.6 ml | 2.1 ml | 2.6 ml | 3.3 ml | 4.1 ml |

**AMIODARONE** (Pulseless Arrest) 5 mg/kg IV/IO
- Followed by 20 ml NS flush. MR x 2 refractory rhythm
- (Max single dose 300 mg)
- Concentration: 150 mg/3 ml (50 mg/ml)
  - 15 - 25 mg | 32 mg | 42 mg | 50 mg | 65 mg | 80 mg | 105 mg | 130 mg | 165 mg |
  - 0.3 - 0.5 ml | 0.6 ml | 0.8 ml | 1 ml | 1.3 ml | 1.6 ml | 2.1 ml | 2.6 ml | 3.3 ml |

**ALBUTEROL**
- Unit Dose 2.5 mg/3 ml
  - 0.25 mg | 0.4 mg | 0.6 mg | 0.7 mg | 0.9 ml | 1.1 ml | 1.4 ml | 1.8 ml | 2.2 ml |

**NS Fluid Bolus**
- D10W 2 ml/kg IV/IO

**DEXTROSE 10%**
- Give over 10 minutes
  - Neonates D10W 2 ml/kg IV/IO
  - > Neonate D10W 5 ml/kg IV/IO
<table>
<thead>
<tr>
<th>WEIGHT</th>
<th>Grey</th>
<th>Pink</th>
<th>Red</th>
<th>Purple</th>
<th>Yellow</th>
<th>White</th>
<th>Blue</th>
<th>Orange</th>
<th>Green</th>
</tr>
</thead>
<tbody>
<tr>
<td>kg</td>
<td>3-5</td>
<td>6-7</td>
<td>8-9</td>
<td>10-11</td>
<td>12-14</td>
<td>15-18</td>
<td>19-22</td>
<td>24-28</td>
<td>30-36</td>
</tr>
</tbody>
</table>

**EPINEPHRINE** (Allergic Reaction & Asthma) 1:1,000

- 0.01 mg/kg IM (Max dose 0.6 mg)
  - Concentration: 1 mg/1 ml
  - 0.03 - 0.05 mg 0.1 mg 0.1 mg 0.1 mg 0.1 mg 0.2 mg 0.2 mg 0.3 mg 0.3 mg

**EPINEPHRINE** "Nebulized Epi" (Upper Airway/Stridor) 1:1,000

- 5 mg (5 ml) Via Nebulizer

**GLUCAGON** (hypoglycemia/Beta blocker OD) 0.03 mg/kg IM
- MR x 2 q 15 minutes (Max dose 1 mg)
  - Concentration: 1 mg/1 ml
  - 0.09 - 0.15 mg 0.2 mg 0.3 mg 0.3 mg 0.4 mg 0.5 mg 0.6 mg 0.8 mg 1 mg

**IPRATROPIUM** - Atrovent

- 500 mcg per unit dose (2.5 ml)
- Concentration: 200 mcg/ml
  - 1st: 0.06 - 0.13 ml 0.2 ml 0.2 ml 0.3 ml 0.3 ml 0.4 ml 0.4 ml
  - 2nd: 0.75 - 1.25 mg 2 mg 2 mg 3 mg 3 mg 4 mg 4 mg 5 mg 5 mg

**LIDOCAINE** 2% - (IO Insertion)
- 0.5 mg/kg slow IO (Max dose 40 mg)
  - Concentration: 200 mcg/ml
  - 1st: 0.06 - 0.13 ml 0.2 ml 0.2 ml 0.3 ml 0.3 ml 0.4 ml 0.4 ml
  - 2nd: 0.75 - 1.25 mg 2 mg 2 mg 3 mg 3 mg 4 mg 4 mg 5 mg 5 mg

**MIDAZOLAM** - Versed (Seizure & Cardioversion)
- 0.05 mg/kg slow IV/IO (Max 1st Dose 1 mg, total max dose 5 mg)
  - Concentration: 2 mg/2 ml (1 mg/ml)
  - 0.15 - 0.25 mg 0.3 mg 0.4 mg 0.5 mg 0.7 mg 0.8 mg 1 mg 1 mg 1 mg

**MIDAZOLAM** - Versed (Seizure) IN: 0.2 mg/kg
- Split dose equally per nostril (Max dose 5 mg)
  - Concentration: 5 mg/ml
  - 0.12 - 0.2 ml 0.3 ml 0.3 ml 0.4 ml 0.5 ml 0.7 ml 0.8 ml 1 ml 1 ml

**MIDAZOLAM** - Versed (Seizure) IM: 0.1 mg/kg
- MR x 1 in 10 minutes
  - Concentration: 5 mg/ml
  - 0.3 - 0.5 mg 0.7 mg 0.9 mg 1 mg 1.3 mg 1.7 mg 2.1 mg 2.6 mg 3.3 mg

**MORPHINE** (Pain/Burns) 0.1 mg/kg IV/IO/IM
- MR x 2 in 15 minutes (IV/IO) or in 30 minutes (IM)
  - Concentration: 10 mg/1 ml
  - 0.06 - 0.1 ml 0.1 ml 0.1 ml 0.2 ml 0.2 ml 0.3 ml 0.3 ml 0.4 ml 0.5 ml 0.7 ml

**NARCAN** - Naloxone
- 0.1 mg/kg IV/IO/IM MR q 5 minutes up to 2 mg
  - Concentration: 2 mg/2 ml
  - 0.3 - 0.5 mg 0.7 mg 0.9 mg 1 mg 1.3 mg 1.7 mg 2 mg 2 mg 2 mg

**SODIUM BICARBONATE** 1 mEq/kg IV/IO
- Concentration: 1 mEq/ml
  - 3 - 5 mEq 6.5 mEq 8.5 mEq 10 mEq 13 mEq 17 mEq 21 mEq 26 mEq 33 mEq

**ZOFRAN** - Ondansetron
- Concentration: 4 mg tab ODT, 4 mg/2 ml IV
  - Age 2 - 3 years: Give 2 mg ODT or slow IVP
  - Age 4 and up: Give 4 mg ODT or slow IVP
PEDIATRIC INTRAOSSEOUS INFUSION PROCEDURE
ALWAYS USE STANDARD PRECAUTIONS

INDICATIONS
- Patient in extremis, cardiac arrest, or profound hypovolemia and in need of immediate delivery of medications or fluids and IV access is not possible in 90 seconds

CONTRAINDICATIONS
- Absolute:
  - Recent fracture of involved bone (less than 6 weeks)
  - Vascular disruption proximal to insertion site
  - Inability to locate landmarks
- Relative:
  - Infection, scarring or burn overlying the site
  - Congenital deformities of the bone
  - Metabolic bone disease

EQUIPMENT
- Automatic Intraosseous needle (IO) or manual device
- Betadine swabs/ solution/ gauze
- 5-12 ml syringe
- Lidocaine 2% (Preservative Free)
- Saline
- IV NS solution
- IV tubing with 3-way stopcock
- Supplies to secure infusion

PROCEDURE
- Aseptic technique must be followed at all times
- All approved ALS IV medications may be administered IO
- Position and stabilize leg
- Prepare skin with betadine swabs or solution on gauze
- Air or gauze dry
- Fill 5-12 ml syringe with 5 ml saline
- IV NS solution, flood tubing with a 3-way stopcock
- Attach 5-12 ml syringe with 5 ml saline to needle
- For patients >3kg: If awake and/or responsive to pain, infuse 2% Lidocaine 0.5mg/kg slowly (max dose = 40mg; treat according to the Pediatric Dosing Guide P18A). Allow the Lidocaine to work 30-60 seconds prior to administering fluids.
- Attach 5-12 ml syringe with 5 ml saline to needle
- Locate primary site 1-2 cm distal to the tibial tuberosity and 1-2 cm medial
- Locate secondary site according to manufacturer’s specification
- Insert needle through skin at 90-degree angle to the periosteal surface (bone contact)
- Rotate applying gentle, steady pressure, letting the driver do the work
- Stop when a change of resistance is felt (indicating entrance into the medullary space)
- Stabilize hub and remove stylet
- Confirm placement
- For patients >3kg: If awake and/or responsive to pain, infuse 2% Lidocaine 0.5mg/kg slowly (max dose = 40mg; treat according to the Pediatric Dosing Guide P18A). Allow the Lidocaine to work 30-60 seconds prior to administering fluids.
- Attach 5-12 ml syringe with 5 ml saline to needle
- Syringe bolus with 5 ml saline
- Manual IO device:
  - 1 cm medial or distal to tibial tuberosity (0-6 years)
  - 1-2 cm medial or distal to tibial tuberosity (6-12 years)
  - Choose the desired depth of injection (see packet insert for manufactures instructions)
  - Position needle, insert at 90 degrees, and remove devices following manufacturer’s instructions
  - Confirm placement
  - For patients >3kg: If awake and/or responsive to pain, infuse 2% Lidocaine 0.5mg/kg slowly (max dose = 40mg; treat according to the Pediatric Dosing Guide P18A). Allow the Lidocaine to work 30-60 seconds prior to administering fluids.
  - Attach 5-12 ml syringe with 5 ml of saline in needle
  - Flush with 5 ml saline
- Aspirate to confirm position, if needle flushes without resistance proceed
- If resistance is met, remove needle and apply pressure to site
- Attach pre-flooded IV tubing
- Stabilize according to manufacturer’s direction
- Administer fluid boluses via syringe utilizing the 3-way stopcock

SPECIAL CONSIDERATIONS
- Limit attempts for IO access at scene to no more than 2