

MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL

*Springfield Memorial Hospital
EMS System*



Prehospital Policies Manual

Developed June 2013
Updated November 2023

**MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL**

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FOREWORD

As healthcare continues to evolve at an ever faster pace, Emergency Medical Services gains greater opportunities to improve upon the care it provides to its patient population. In 2013, Memorial EMS took a large step forward to improve the care provided to those in need. As such, this edition stands to be the last full rewrite of EMS protocols. The ease of technology has allowed us to learn more than ever before. This rapid spread of medical information has also caused us to outdated medical knowledge faster than ever before. As Emergency Medical Service professionals, we must be able to adapt to those changes, adopting what is appropriate to our situations, and abandoning that which had been proven to be less effective. Moving forward we must be able to change more quickly than a complete rewrite would allow. Based on regular scheduled review of best practices and EMS literature, changes to specific protocols will be the process from this point on.

In order to continue to move forward, we must continue to work as a team. This team approach is the concept introduced by Dr. Matt Jackson as he worked to bring the system up to a more modern approach while serving as EMS Medical Director. It continues to be the approach we want to use. Thank you to those who volunteered to serve on the protocol review committee and meet over a series of months reviewing every page of the protocols for what needed improvement based on their provider prospective. The team approach continued by working with the receiving facilities and specialty services to streamline the needs of those receiving areas. On that note, I want to personally thank Sara Brown, EMT-P, EMS System Manager, for all the time and effort she has put into the day-to-day administration of Memorial EMS system. She is truly dedicated to the education and advancement of our system.

As you review this manual, you will notice additional protocols, new equipment, as well as areas where little change was needed. One of the greatest areas of focus was improving identification of patients with life threatening and life altering complaints. As the training and equipment of EMS continues to improve the expectation of EMS continues to grow. EMS is a member of the healthcare profession and as such their role continues to grow both in scope and in importance.

We are very excited to move forward with this protocol update. Great progress has been made over the last three years which has translated to improved patient outcomes. For that you are the ones who should be applauded. We continue to ask for your support, your feedback and your ideas on how to continue to improve care for your patients and your communities.

Sincerely,



Matthew Johnston, MD
EMS Medical Director,
Memorial EMS System

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All guidelines and information contained herein is intended solely for use within the Memorial EMS System. No other set of guidelines or any other system's protocols, policies, or procedures shall supersede the guidelines set forth in this manual or be utilized in place of this manual by any provider in the Memorial EMS System without explicit approval of the Memorial EMS System Medical Director.

In order to maintain the most up to date practices, it is the goal of the Memorial EMS System to provide regular updates to its protocols, policies and procedures. Twice a year, any updates to the Memorial EMS System Protocols will take effect. These changes will occur on the first Monday following the changes to and from Daylight Savings Time.

It is the responsibility of all providers within the Memorial EMS System to be alert for any changes, modify all printed version of documents and adhere to the newest editions of protocols. All protocol changes will be available on the Memorial EMS website.

EMS Medical Director

Matthew Johnston, MD

Associate Medical Directors

Nathan Jones, MD, FACEP

Tyler Fulks, MD, FACEP

James Hart, MD

IDPH Region 3 Coordinator Approval

MEMS Policies, Adult Manual, Pediatric Manual, Appendix

Updated November 2023

*Signature: Brian Kieninger
Date: 10-17-23*

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Hospitals of the Memorial EMS System

Resource Hospital

Springfield Memorial Hospital

EMS Office	217-788-3973
Medical Control	217-788-3028
Emergency Department	217-788-3030
Transfer Services	877-622-7829

Associate/Affiliate Hospitals

Lincoln Memorial Hospital

Medical Control	217-735-9893
Emergency Department	217-732-2161 x55150

Taylorville Memorial Hospital

Medical Control	217-824-3339
Emergency Department	217-824-3339

Jacksonville Memorial Hospital

Medical Control	217-245-6813
Emergency Department	217-479-5587

Decatur Memorial Hospital

Medical Control	217-877-9813
Emergency Department	217-876-3000

Participating Hospitals

Carlinville Area Hospital

Inbound Patient Report	217-854-3141 X300
Emergency Department	217-854-3141 X300

Sarah D Culbertson Hospital

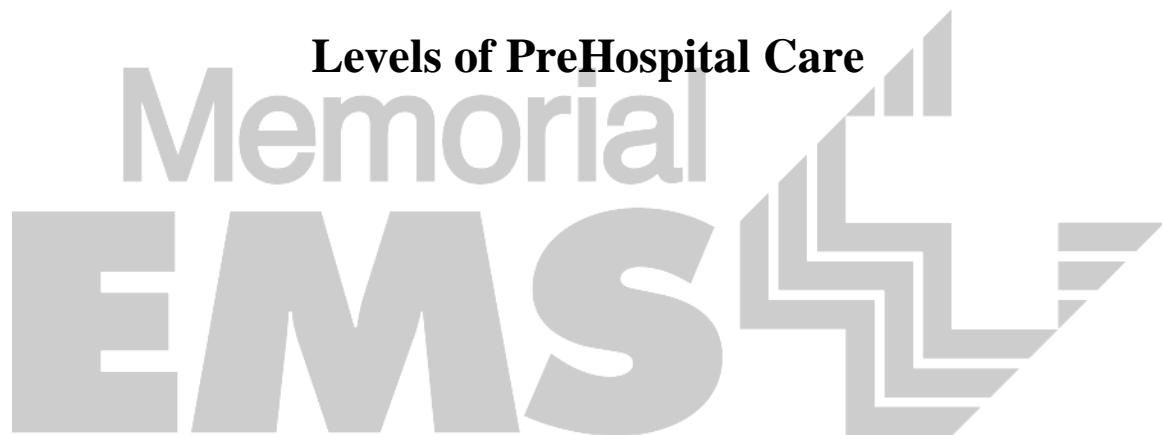
Inbound Patient Report	217- 322-5260
Emergency Department	217- 322-4321
EKG line	217-322-4321

Area Resource Hospitals

HSHS St. John's Hospital

EMS Office	217-544-6464 x44103
Medical Control	217-753-1089
Emergency Department	217-544-6464 x44101

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Levels of Prehospital Care
EMS Services and Personnel

Within EMS in Illinois there are several levels of provider licenses. As we in Illinois and in Memorial EMS move toward the newer, nationally recognized license levels, protocols will be modified to reflect the following levels of service.

Emergency Medical Responder- This has historically been referred to as a First Responder (FR) or First Responder- Defibrillation (FR-D).

Provisional Emergency Medical Responder- This is the license for anyone who has successfully completed the Emergency Medical Responder course, but is not eighteen years of age.

Emergency Medical Technician- This has historically been referred to as an EMT-B.

Registered Nurse- In limited rural areas, an RN may volunteer at a BLS level with limited additional training.

Advanced Emergency Medical Technician- This replaces the Illinois Emergency Medical Technician - Intermediate and aligns Illinois with NREMT certifications.

Paramedic- This replaces the Emergency Medical Technician- Paramedic.

Additional Advanced Life Support Licenses- All of the following have the same scope of practice as a Paramedic in the Memorial EMS System.

Prehospital Registered Nurse- PHRNs are specific to Illinois and may not be able to transfer their license to other states.

Prehospital Physician's Assistant- PHPAs are specific to Illinois and may not be able to transfer their license to other states.

Prehospital Advanced Practice Nurse- PHAPN's are specific to Illinois and may not be able to transfer their license to other states.

Emergency Communications Registered Nurse- the ECRN is an RN, typically in the Emergency Department, who is licensed both to receive report, but also to give orders within the scope of the EMS Protocol.

Expanded Scope- Refers to additional training and capacity needed by EMS in order to appropriately transport patients from one facility to another. Expanded scope is the first of three levels of capacity defined as Critical Care Transport. Expanded Scope does not refer to, or limit a hospital from providing their own staffing to assist with transport of a patient from their facility.

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Levels of Prehospital Care
EMS Services and Personnel

EMS Vehicle Staffing must, at all times meet both the IDPH Administrative Code as well as the individual Agency's EMS System Plan.

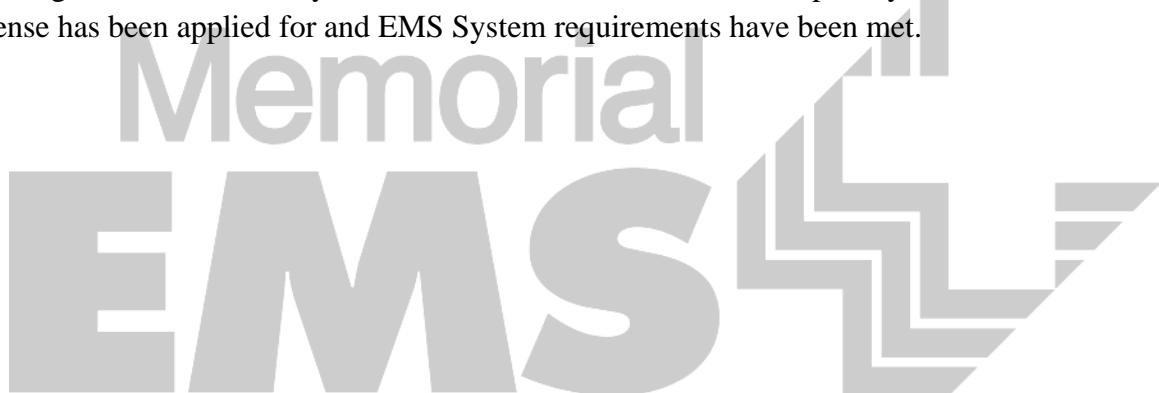
The following allowances allow for variations in staffing may be possible

In field upgrade, as per 515.827 and 515.833.

Alternate staffing for private ambulance providers, as per 515.830

Vehicle Service Providers are reminded that they must notify their EMS System to, in turn, notify IDPH when deploying for any out of state deployment or emergency response.

Per IDPH Administrative Code 515.610, any provider certified by the NREMT and already working in another state, my work in Illinois under immediate reciprocity once the Illinois license has been applied for and EMS System requirements have been met.



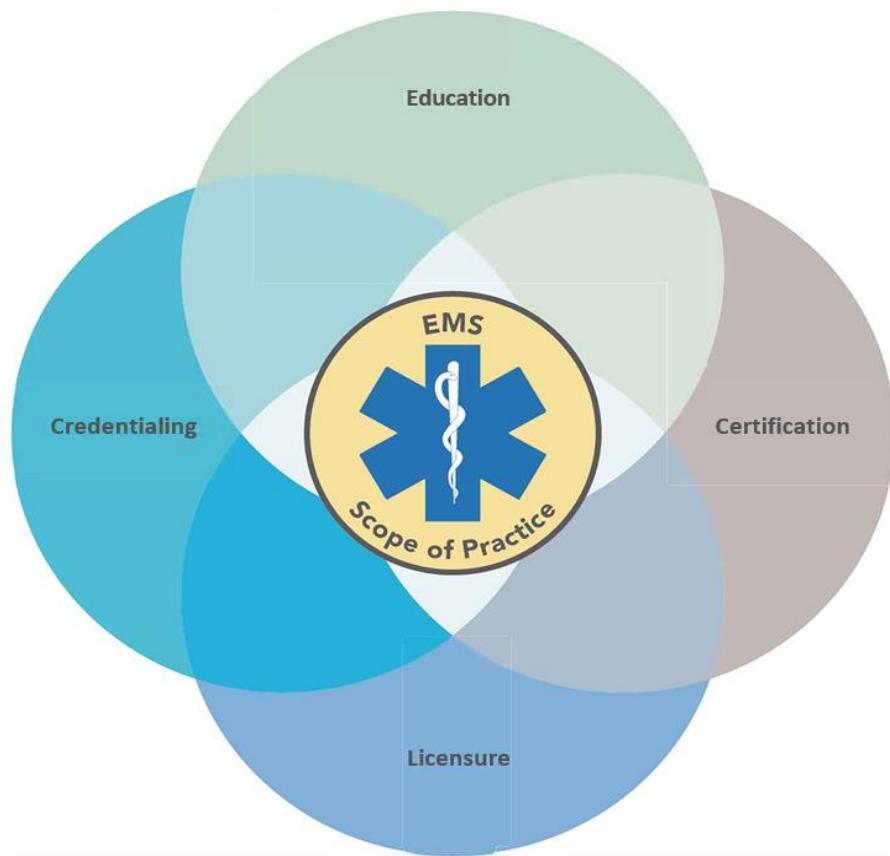
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EMS Scope of Practice Model

The National Highway Safety Administration National EMS Scope of Practice Model defined as

An individual may only perform a skill or role for which that person is:
EDUCATED (has been trained to perform the skill or role), **AND**
CERTIFIED (has demonstrated competence in the skill or role), **AND**
LICENSED (has legal authority issued by the State to perform the skill or role), **AND**
CREDENTIALED (has been authorized by medical director to perform the skill or role).

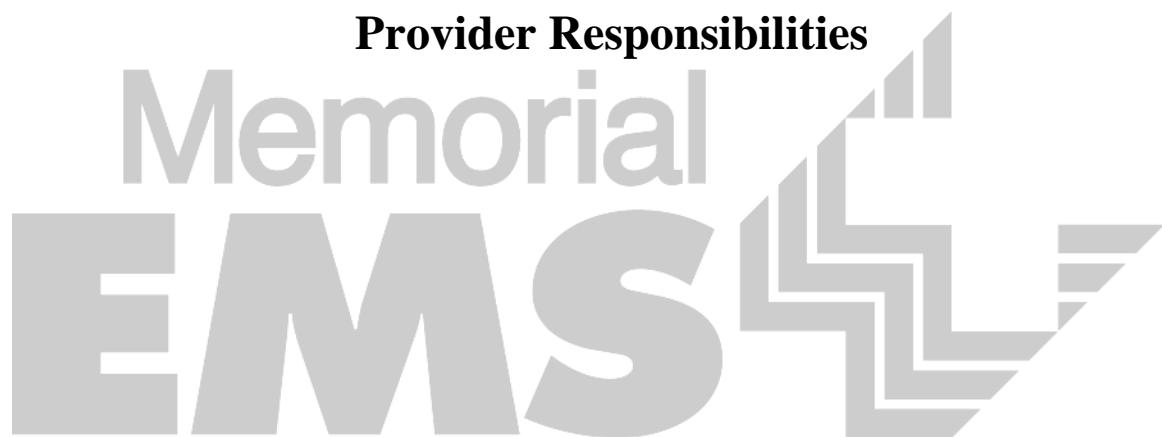
This is graphically represented as



National Association of State EMS Officials. *National EMS Scope of Practice Model* 2019 (Report No. DOT HS 812-666). Washington, DC: National Highway Traffic Safety Administration.

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Provider Responsibilities



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Agency Responsibilities Policy

Listed below is a summary of the important responsibilities of the provider agencies that are in the Memorial EMS System. This list is based on the System manuals and IDPH rules and regulations. These responsibilities are categorized into four major areas: ***Operational Requirements, Notification Requirements, Training & Education Requirements*** and ***Additional Reports and Records Requirements***. Some items have been repeated to stress the importance of compliance.

Operational Responsibilities

1. A provider agency must comply with minimum staffing requirements for the level and type of vehicle. Staffing patterns must be in accordance with the provider's approved system plan and in compliance with Section 515.830(f).
2. No agency shall employ or permit any member or employee to perform services for which he or she is not licensed, certified and credentialed or otherwise authorized to perform (Section 515.170).
3. Agencies that utilize Emergency Medical Responders and Emergency Medical Dispatchers shall cooperate with the System and the Department in developing and implementing the program (Section 515.170).
4. A provider agency must comply with the Ambulance Report Form Requirements Policy, including Prehospital patient care reports, refusal forms and any other required documentation. Any PCR software changes will require MEMS approval.
5. Agencies with controlled substances must abide by all provisions of the Controlled Substance Policy including: *maintaining a security log, maintaining a Controlled Substance Usage Form, complying with destination facility documentation and waste requirements and immediately reporting any discrepancies to the EMS Office*. See page 7.F.3.
6. Notify the EMS Office of any incident or unusual occurrence which could or did adversely affect the patient, co-worker or the System **within 24 hours** via incident report form.
 - a. Examples not limited to drug administration and/or patient treatment not consistent with protocol, potential injuries from patient moves, equipment failures, etc.
7. Immediately remove from service any piece of equipment in question regarding its capacity to safely and accurately assist in patient care.

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Agency Responsibilities Policy

Notification Requirements

An agency participating as an EMS provider in the Memorial EMS System must notify the Resource Hospital, (Springfield Memorial Hospital), of the following:

1. Notify the System in **any** instance when the agency lacks the appropriately licensed and System-certified personnel to provide 24-hour coverage. Transporting agencies must apply for an ambulance staffing waiver if the agency is aware a staffing shortage is interfering with the ability to provide such coverage.
2. Notify the System of agency personnel changes and updates **within 10 days**. This includes addition of new personnel and resignations of existing personnel.
 - a. Rosters must include: *Name/level of provider, Phone #, Email, license number, and license expiration date. Roster updates among other documents will be required at annual inspection and the 6 month interval between inspections.*
3. Notify the System any time an agency is not able to respond to an emergency call due to lack of staffing. The report should also include the name of the agency that was called for mutual aid and responded to the call.
4. Notify the System of **any** incident, via incident report within 24 hours, which could or did adversely affect the patient, co-worker or the System.
5. Provide the EMS Office with updated copies of FCC Licenses and Mutual Aid Agreements upon request of System or IDPH.
6. Notify the System of any changes in medical equipment or supplies. Prior System approval required for all new equipment.
7. Notify the System of any changes in vehicles. All vehicles must be inspected by IDPH and the System and the appropriate paperwork must be completed **prior** to the vehicle being placed into service. Any vehicle that has been out of service for greater than 12 days **CANNOT** return to service without an IDPH scheduled inspection.
8. Notify the System **PRIOR** to any changes in agency role.
9. Notify the System if the agency's response area changes.
10. Notify the System if changes occur in capacities or equipment.
11. Notify the System of any Line of Duty Death.

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Agency Responsibilities Policy

Training and Education Responsibilities

1. Twenty-five percent (25%) of all EMS continuing education must be obtained through classes taught or sponsored by the Resource Hospital, Springfield Memorial Hospital. The EMS System will require specific training of all providers, annually.
2. Appoint a training officer. If available the EMS training officer should be an IDPH Lead Instructor (LI). The training officer (or approved designee) will be required to attend mandatory training officer in-services. If no agency identified LI, the EMS Office will need to co-sign all training requests. Agencies are not required to host CE training, however training requests will be approved on an annual basis for each calendar year.
3. Develop a training plan which meets the requirements for re-licensure and System certification as detailed in the *Continuing Education and Re-licensure Requirements Policy*.
4. Submit the agency's training plan annually to the EMS Office for System and Department (IDPH) approval. The EMS Office will submit for IDPH approval. The applications are due by October 1st for the following training year.
5. Any changes made to an approved training application must be communicated to the EMS Office prior to the training.
6. Maintain sign-in rosters for all training conducted and provide participants with certification of attendance for a minimum of seven years.
7. Conduct System mandatory training annually as per EMS Office notification.

Additional Reports and Records Responsibilities

1. Comply with Memorial EMS System Quality Assurance Plan, including agency self-review, submission of incident reports, submission of patient care reports, maintain controlled substance security logs and usage tracking forms. Logs must be made available upon request of EMS Office personnel.
2. Maintain glucometer logs. Testing should be done a minimum of once per week, any time a new bottle of strips is put into service and any time the glucometer is dropped. Glucometer logs should be kept at the vehicle location and must be made available upon request of EMS Office personnel.

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Agency Responsibilities Policy

3. All agencies and agency personnel are to comply with all of the requirements outlined in HIPAA regulations with regard to protected health information. The eighteen identifiers are listed below. Agencies must identify a mechanism to secure information as well as communicate with those who by role need such information.
 1. Names;
 2. All geographical subdivisions smaller than a State, including street address, city, county, precinct, zip code, and their equivalent geocodes, except for the initial three digits of a zip code, if according to the current publicly available data from the Bureau of the Census: (1) The geographic unit formed by combining all zip codes with the same three initial digits contains more than 20,000 people; and (2) The initial three digits of a zip code for all such geographic units containing 20,000 or fewer people is changed to 000.
 3. All elements of dates (except year) for dates directly related to an individual, including birth date, admission date, discharge date, date of death; and all ages over 89 and all elements of dates (including year) indicative of such age, except that such ages and elements may be aggregated into a single category of age 90 or older;
 4. Phone numbers;
 5. Fax numbers;
 6. Electronic mail addresses;
 7. Social Security numbers;
 8. Medical record numbers;
 9. Health plan beneficiary numbers;
 10. Account numbers;
 11. Certificate/license numbers;
 12. Vehicle identifiers and serial numbers, including license plate numbers;
 13. Device identifiers and serial numbers;
 14. Web Universal Resource Locators (URLs);
 15. Internet Protocol (IP) address numbers;
 16. Biometric identifiers, including finger and voice prints;
 17. Full face photographic images and any comparable images; and
 18. Any other unique identifying number, characteristic, or code (note this does not mean the unique code assigned by the investigator to code the data)
4. Every EMS Agency has responsibilities to protect patient privacy and to report privacy breeches to the appropriate authorities.

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**Professional Conduct &
Code of Ethics Policy**

The following are guidelines for interaction with patients, other caregivers and the community. They apply equally to agencies, providers and students in the EMS System.

- **Respect for Human Dignity** – Respect all patients regardless of socio-economic status, race, belief systems, financial status or background. Dignity includes greeting, conversing, respectful mannerisms, and protecting physical privacy.
- **Maintain Confidentiality** – Respect every person's right to privacy. Sensitive information regarding a patient's condition or history should only be provided to medical personnel involved in the patient's care, with an immediate need-to-know. Sensitive information regarding our profession may only be provided to those with a right to know. This includes no electronic dissemination, transfer, publication, or reference via social media of information referencing patients, specific calls, agencies or the EMS industry.
- **Professional Competency** – Provide the patient with the best possible care by continuously improving your knowledge base, skills, and maintaining continuing education and required certifications. Protect the patient from incompetent care by knowing the standard of care and being able to identify those who do not.
- **Safety Awareness & Practice** – Protect the health and well-being of the patient, yourself, your co-workers and the community by constantly following safety guidelines, principles and practices.
- **Accountability for Your Actions** – Act within the scope of your practice and training, realize your individual limitations, and accept responsibility for both satisfactory and unsatisfactory actions.
- **Loyalty & Cooperation** – Demonstrate devotion to your profession by promoting professional image through competency and efficiency and honesty. Strive to improve morale when possible and refrain from publicly criticizing.
- **Personal Conduct** – Demonstrate professionalism by maintaining high moral and ethical standards, and by maintaining good personal hygiene. Do not participate in behavior that would discredit you, your co-workers and the profession.

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**Professional Conduct &
Code of Ethics Policy**

Code of Ethics

(Applies to ALL Prehospital providers)

Professional status as an EMS Provider is maintained and enriched by the willingness of the individual practitioner to accept and fulfill obligations to society, other medical professionals, and the profession of Emergency Medical Technician.

As an EMS Provider, I solemnly pledge myself to the following code of professional ethics:

- A fundamental responsibility of the EMS PROVIDER is to conserve life, to alleviate suffering, to promote health, to do no harm, and to encourage the quality and equal availability of emergency medical care.
- The EMS PROVIDER provides services based on human need, with respect for human dignity, unrestricted by consideration of nationality, race, creed, color or status.
- The EMS PROVIDER does not use professional knowledge and skills in any enterprise detrimental to the public well-being.
- The EMS PROVIDER respects and holds in confidence all information of a confidential nature obtained in the course of professional work unless required by law to divulge such information.
- The EMS PROVIDER, as a citizen, understands and upholds the law and performs the duties of citizenship; as a professional, the EMS PROVIDER has the never-ending responsibility to work with concerned citizens and other healthcare professionals in promoting a high standard of emergency medical care to all people.
- The EMS PROVIDER shall maintain professional competence and demonstrate concern for the competence of other members of the EMS healthcare team.
- An EMS PROVIDER assumes responsibility in defining and upholding standards of professional practice and education.

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**Professional Conduct &
Code of Ethics Policy**

Code of Ethics (continued)

- The EMS Provider assumes responsibility for individual professional actions and judgment, both in all aspects of emergency functions, and knows and upholds the laws which affect the practice of the EMS PROVIDER.
- The EMS Provider has the responsibility to be aware of and participate in matters of legislation affecting the EMS System.
- The EMS Provider, or groups of EMS Providers, who advertise professional service, does so in conformity with the dignity of the profession.
- The EMS Provider has an obligation to protect the public by not delegating to a person less qualified, any service which requires the professional competence of an EMS Providers.
- The EMS Provider will work harmoniously with and sustain confidence in EMS Provider associates, the nurses, the physicians, and other members of the EMS healthcare team.
- The EMS Provider refuses to participate in unethical procedures and assumes responsibility to expose incompetence or unethical conduct of others to the appropriate authority in a proper and professional manner.
- No EMS provider will advertise themselves and/or their agency for a level of care that they are not licensed for AND EMS System credentialed for.
- The EMS provider will fulfill their responsibilities under the law in regards to direct reporting incidents of suspected child and elder abuse.
- The EMS provider understands and respects the trust which the public places in the healthcare industry. They pledge to support and maintain the dignity of the profession by refraining from any derogatory or slanderous spread of information intended to belittle those in the profession or the organizations within the healthcare industry. Offenses are not only an insult to the entire healthcare community, but can also be cause for civil and professional discipline.

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**Agency Compliance Waiver
Policy**

If compliance with IDPH Rules and Regulations of the Memorial EMS System Policies results in unreasonable hardship, the EMS provider agency shall petition the Memorial EMS System and IDPH for a temporary rule waiver.

The format for waiver petition shall be as follows:

Part 1

Cover letter, to include: *agency name, IDPH agency number, agency official(s), agency designated contact person, telephone number, statement of the problem and proposed waiver.*

Part 2

Explanation of why the waiver is necessary.

Part 3

Explanation of how the modification will relieve problems that would be created by compliance with the rule or policy as written.

Part 4

Statement of and justification for the time period (maximum two years) of which the modification will be necessary. This section must also include a chronological plan for meeting total compliance requirements.

- a) Staffing waivers require local newspaper advertisement explaining staffing shortage, mention that there will be "*no reduction in standard of care*", and a request for new volunteers/ employees.
- b) Submit a copy of 60-day staffing schedule.

The petition should be submitted to the Memorial EMS System Medical Director for review and approval. The IDPH Regional EMS Coordinator will then review the petition. If needed, the Illinois Department of Public Health may request review of the petition by the State Advisory Board. These recommendations will be forwarded to the Director of IDPH for final action. **Waivers will be granted only if there is NO reduction in the standard of medical care. Waivers will be granted for up to 24 months.**

Private ambulances services may qualify for a staffing waiver if the ambulance is only utilized for interfacility transports and does not respond to any prehospital requests for service. Additional requirements apply.

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Agency Advertising Policy

EMS agencies are expected to advertise in a responsible manner and in accordance with applicable legislation to assure the public is protected against misrepresentation.

No agency (public or private) shall advertise or identify their vehicle or agency as an EMS life support provider unless the agency does, in fact, provide service as defined in the EMS Act and has been approved by IDPH.

No agency (public or private) shall disseminate information leading the public to believe that the agency provides EMS life support services unless the agency does, in fact, provide services as defined in the EMS Act and has been approved by IDPH.

Any person (or persons) who violate the EMS Act, or any rule promulgated pursuant there to, is guilty of a Class C misdemeanor.

A licensee that advertises its service as operating a specific number of vehicles or more than one vehicle shall state in such advertisement the hours of operation for those vehicles, if individual vehicles are not available twenty-four (24) hours a day. Any advertised vehicle for which hours of operation are not stated shall be required to operate twenty-four (24) hours a day.

It is the responsibility of all Memorial EMS System personnel to report such infractions of this section to the EMS Medical Director.

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System Certification Policy

It is the responsibility of the Resource Hospital to confirm the credentials of the System's EMS providers. System certification is a *privilege* granted by the EMS Medical Director in accordance with the rules and regulations of the Illinois Department of Public Health.

System Certification Process

1. A System applicant must hold a State of Illinois license or be eligible for State licensure. EMS providers transferring in from another system or state must have all clinical and internship requirements completed prior to System certification. *Transferring into the Memorial EMS System to complete internship requirements of an EMT training program is prohibited.*
2. The System applicant must be a member of or in the process of applying for employment with a Memorial EMS System provider agency. The System agency must inform the EMS Office of the applicant's potential for hire or membership to their agency.
3. Potential new providers to the Memorial EMS System should submit their information via the Memorial EMS website submission form.
4. The System applicant must also submit copies of the following:
 - IDPH license (EMR, EMT, Intermediate, Paramedic, PHRN, PHPA, PHAPN)
 - ACLS (advanced providers)
 - PHTLS, ITLS, TNS, TNCC or TECC (advanced providers)
 - PEPP, PALS, or ENPC (advanced providers)
 - CPR {AHA Healthcare Provider OR American Red Cross}

The System applicant must pass the appropriate Memorial EMS System Protocol Exam with a score of **80% or higher**. The applicant may retake the exam with the approval of the EMS Medical Director. No same day retakes are allowed. Providers who are unsuccessful with protocol testing once will not be allowed a third attempt until they have completed the study guide made available for the protocols.

- Successfully complete any practical skills evaluations required by the EMS Medical Director.
- Providers who do not meet the 80% after three (3 attempts), depending on licensure, may work at a lower level if that threshold is met. The provider can request to retest at the next protocol update.
- No Protocol Testing will occur the week of protocol updates.

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System Certification Policy

System Certification Process (continued)

5. Upon successful completion of the above requirements, the agency will be notified of the applicant's probationary status in the System with proof of successful protocol testing.
6. Satisfactory completion of a **90-day** probationary period is required once System-certification is granted.
7. The EMS Medical Director reserves the right to deny System provider status or to place internship & field skill evaluation requirements on any candidate requesting System certification at any level.



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System Certification Policy

Maintaining System Certification

In addition to minimum continuing education requirements for re-licensure, EMS providers in the Memorial EMS System must maintain the following:

Categories- one certification per category is required	EMD	EMR	EMT-B	TEMS	EMT-I	EMT-P	PHRN PHPA PHAPN	ECRN
CPR • AHA: Healthcare Provider or • ARC: Professional Rescuer	✓	✓	✓	✓	✓	✓	✓	✓
Pediatrics • Emergency Pediatric Care • Pediatric Advanced Life Support • Pediatric Education for Prehospital Providers • Emergency Nursing Pediatric Course					✓	✓	✓	✓
Cardiac • Advanced Cardiac Life Support					✓	✓	✓	✓
Trauma • Prehospital Trauma Life Support • Tactical Emergency Casualty Care (only after initial PHTLS) • International Life Support • Trauma Nurse Core Course • Trauma Nurse Specialist				✓	✓	✓	✓	✓
System Protocol Test			✓	✓	✓	✓	✓	✓

Maintaining of current certifications and tracking of expiration dates is **ultimately the responsibility of the individual provider**. Agency training officers can *assist* with monitoring these certifications

The EMS Agency is required to and responsible for ensuring that all providers are properly credentialed before providing care to a patient in any capacity. This will be validated at annual inspection and at any request of IDPH or the System.

MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL

System Certification Policy

System Resignation / Termination

A System participant may resign from the System by submitting a written resignation to the EMS Medical Director.

A System participant who resigns from or is terminated by a System provider agency has a 60-day grace period to re-establish membership/active status with another System provider agency. If the participant does not do this within the 60-day time period, then the individual's System certification will be re-categorized or terminated.

An EMS provider requesting to re-certify in the Memorial EMS System will be required to repeat the process for initial certification.

Provider Status

Active Provider – An EMS Provider is considered an active provider if he/she:

- Is System-certified at the level of his/her IDPH licensure level.
- Is active and functions at his/her certification level with a Memorial EMS System agency providing the same level of service.
- Maintains all continuing education requirements, certifications, and testing requirements in accordance with System policy for his/her level of System certification. Level specific required certifications that lapse will result in loss of System credentialing.

Sub-certified Provider – An EMT, AEMT, Paramedic or PHRN is considered to be a sub-certified provider if he/she:

- Is System-certified at a level other than his/her IDPH licensure level.
- Is active and functions as a provider with a Memorial EMS System agency at a level of service other than his/her IDPH licensure level. The agency level must be equal to or below the level the provider's request sub-certified level.
- Maintains all continuing education requirements, certifications, and testing requirements in accordance with System policy for his/her level of System certification.

MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL

System Certification Policy

Provider Status

- RESTRICTIONS:

- A sub-certified EMS provider may only function within the scope of practice of the individual's System certification and the provider level of the EMS agency.
- A sub-certified EMS provider is **prohibited** from performing skills the individual is not *System-certified* to perform regardless of the IDPH licensure level.
- A sub-certified provider is restricted to identifying himself/herself as a provider at his/her level of System certification when functioning with a Memorial EMS System agency (this includes uniform patches and name tags).
- A sub-certified provider shall apply for *independent* re-licensure if System certifications are not met for the IDPH licensure level.

Inactive (Non-participating) Provider – An EMT is considered to be inactive if he/she:

- Was previously system-certified but has not functioned with a Memorial EMS System agency for greater than 60 days.
- Maintains IDPH continuing education requirements.
- RESTRICTIONS:
 - An inactive provider is **prohibited** from identifying himself/herself as an EMS provider in the Memorial EMS System.
 - An inactive provider is **prohibited** from performing skills or providing care that he/she is not System-certified to perform.
 - An inactive provider must apply for independent re-licensure with IDPH.

MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL

Re-Licensure Requirements Policy

Re-Licensure Process

1. To be re-licensed as an EMS provider, the licensee shall submit the required documentation for renewal with the Resource Hospital (EMS Office) at least **30 days** prior to the license expiration date. **Failure to complete continuing education requirements and/or failure to submit the appropriate documentation to the EMS Office at least 30 days prior to the license expiration date may result in delay or denial of re-licensure. The EMS provider will be responsible for any late fees or class fees incurred as a result.**
2. The EMS Office will review the re-licensure applicant's continuing education records. If the individual has met all requirements for re-licensure and approval is given by the EMS Medical Director, the EMS Office will submit a renewal request to IDPH.
3. An EMS provider who has not been recommended for re-licensure by the EMS Medical Director will be instructed to submit a request for independent renewal directly to IDPH. The EMS Office will assist the licensee in securing the appropriate renewal form.
4. IDPH requires the licensee to certify on the Renewal Notice (Child Support/Personal History Statement), **under penalty of perjury**, that he or she is not more than 30 days delinquent in complying with a child support order and previous felon status (Section 10-65(c) of the Illinois Administrative Procedure Act [5 ILCS 100/10-65(c)]). The provider's social security number must be provided as well.
 - a. EMS providers are reminded to be hyper-vigilant when completing this form. It is a legal document. Errors reported on this form, will be investigated at the licensee's expense.
 - b. Any provider who has been convicted of a felony, on or off duty, must notify the EMS Office and IPDH within 30 days of conviction
5. The license of an EMS provider shall terminate on the day following the expiration date shown on the license. **An EMS provider may NOT function in the Memorial EMS System without a current IDPH license that can be electronically verified.**
6. An license that has expired may, **within 60 days after license expiration**, submit all re-licensure material and a fee of \$50.00 in the form of a *certified check* or *money order* made payable to IDPH (Note: personal checks or cash will **NOT** be accepted) or electronically with credit/debit card. If all continuing education and System requirements have been met and there is no disciplinary action pending against the EMS provider, the Department may re-license the EMS provider.

MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL

Re-Licensure Requirements Policy

Re-Licensure Process (continued)

7. Any provider whose license has expired for a period of more than **60 days and less than 36 months** may be allowed to retest for their license renewal (written and skills test) after a review of the situation by the Medical Director and IDPH. This only applies to a State of Illinois license for EMT (Section 3.50(d)(5) of the Illinois Administrative Procedure Act [5 ILCS 100/3.5(d)(5)]).

**NOTE: Failure to re-license at any level does not “automatically” drop a provider to a lower level of certification (e.g. An EMT does not automatically become a First Responder, etc.). Once a provider’s license has expired, he or she is no longer an EMS provider at ANY level and cannot provide medical care in the System or the State.

8. Requests for extensions or inactive status must be submitted on the proper IDPH form and forwarded to the EMS Office at least 60 days prior to expiration. Extensions are granted only in very limited circumstances and are handled on a case by case basis. NOTE: The EMS Medical Director may mandate additional CEU requirements during the extension period.
9. At any time **prior to the expiration of the current license**, an EMT-I or EMT-P may revert to the EMT-B status for the remainder of the license period. The EMT-I or EMT-P must make this request in writing to the EMS Medical Director & the Department and must submit their original **current** EMT-I or EMT-P license to the Department. To re-license at the EMT-B level, the provider must meet all of the EMT-B requirements for re-licensure.
10. At any time **prior to the expiration of the current license**, an EMT-B may revert to the First Responder/Defibrillator (FR-D) status for the remainder of the license period. The EMT-B must make this request in writing to the EMS Medical Director & the Department and must submit their original **current** EMT-B license to the Department. To re-license at the FR-D level, the provider must meet all of the FR-D requirements for re-licensure.
11. At any time prior to the expiration of the current license, **EMT licenses** may be placed inactive. This request must be initiated before expiration and must include current CPR and continuing education for the level of the license.
- a. A license that has been inactive for greater than 48 months, can only be re-obtained if the inactive EMS provider challenges and passes the current NREMT exam for that level of license.

MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL

Re-Licensure Requirements Policy

General Continuing Education Requirements

Memorial EMS System requires:

1. Twenty-five percent (25%) of the continuing education hours required for re-licensure (as an EMS provider, at any level in the Memorial EMS System) must be earned through attendance at System-taught courses or System sponsored. System sponsored courses could include courses taught by EMS Office staff, built by Memorial EMS available in the online training database, and courses designed by EMS Office Staff and provided to agency training officers.
 - a. Memorial EMS will require specific training courses every year for all EMS providers. Those courses must be completed by 12/31 of the assigned year.
2. No more than seventy-five percent (75%) of the continuing education hours required for re-licensure will consist of hours obtained from the same site code.
3. No more than twenty-five percent (25%) of the continuing education hours required for re-licensure will consist of any single subject area (*i.e.* shock, diabetic emergencies, etc.)
4. Based on the EMS Region 3 continuing education plan, EMS providers must obtain a minimum number of training hours within five categories. Should a provider be lacking in an area, additional training will be required.
5. EMS continuing education credits must have an *approved* IDPH site code, CAPCE or similar professional accreditation approve, or be approved by the Memorial EMS Medical Director.
6. EMS providers with known dual system participation have the option of renewing in either system. Should a Memorial EMS provider renew under a different EMS System they are still required to complete any required Memorial EMS trainings.

**MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL**

Re-Licensure Requirements Policy

Summary of Re-licensure Requirements



EMS License Renewal Request

Name (as written on license): _____

License Held: _____ License Number: _____ Expiration Date: _____

Agency (ies): _____

If renewing under another EMS System, list EMS System: _____

Memorial EMS System required trainings continue to be required regardless of renewing System.

Category	NR/ EMR	Lead Instructor	EMT-B	EMT-I	EMT- P/PHRN
Airway Including: skills labs	2	2	4	8	10
Breathing, Patient Assessment	3	3	6	8	8
Circulation, Trauma, Shock/Resuscitation, Pathophysiology	8	6	18	24	32
Disability, Medical, Behavioral, OB/infant/Children	6	6	14	18	18
Environment, Preparations /Operations, Special Population, Pharmacology	5	3	10	14	16
Subtotal	24	20	52	72	84
Open topics <small>**Prior System approval required to perform clinical hours for CE</small>	-	20 Educator Specific Training	8	8	16
Total	-	40	60	80	100

Documentation Required

CPR for Healthcare Provider

System Required Trainings in 4 year cycle. Must be completed by year end of each year.

2023: Pit Crew CPR CBL Patient Assessment/ ALERT/ Communication
 Bleeding Control and RTF CBL Administrative Policies Update

**MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL**

Disciplinary Processes

The ability to work in the Emergency Medical Services field is both a privilege and a responsibility. As outlined in Section 515.320 of the Administrative Code, “All BLS, ILS, and ALS Services, and CCT, as defined by the Act, shall be provided through EMS Systems.” And “All pre-hospital, inter-hospital and non-emergency medical care, as defined by the Act, shall be provided through EMS Systems, using the levels of Department licensed or approved personnel required by the Act and this Part”

Due to the requirement of EMS System participation for agencies and thereby EMRs, EMTs, PHRs, ECRNs, EMDs, and LIs to function in the capacity of their respective licenses, the follow information is provided to outline the disciplinary process which can include Suspension, Revocation and Denial of Licensure per Section 515.165. Based on the severity of the perceived incident the discipline can take immediately or at an established time.

Discipline that impacts a provider or agencies ability to continue to function within the EMS System and/ or other Systems/ within the State of Illinois are reviewable at request. A Local System Review Board exists to provide the first level of review. If further review is requested at the next available meeting of the State Emergency Medical Services Disciplinary Review Board the dispute will be reviewed with the Board’s decision binding to all parties.

Any persons or agencies involved in a disciplinary action will be provided written instruction of their right to appeal when notified.

A listing of the Local System Review Board members is available upon request.

IDPH Notification

As required by IDPH Administrative Code Section 515.330 g.4. all complaints submitted to the EMS System will be tracked and submitted to IDPH monthly. Information will include agency and EMS provider names, type of complainant (patient, family, facility, etc.) and outcome. This will include the number of EMS Patient Care Reports that were not completed within the IDPH requirement.

Should an EMS provider be suspended for any reason, IDPH will be notified. Any known overlapping EMS Systems will also be notified.

MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL

EMS

Communications & Documentation



**MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL**

**Off-Line Medical Control, Standing
Medical Orders & Protocols Policy**

The Prehospital Care Manual, as developed by the EMS Medical Director, reflects nationally recommended treatment modalities for providing patient care in the prehospital setting. This Prehospital Care Manual, containing Standing Medical Orders, Protocols, Policies & Procedures, is intended to establish the standard of care which is expected of the Memorial EMS System provider.

1. Standing Medical Orders, Protocols, Policies & Procedures contained in this Prehospital Care Manual are the written, established standard of care to be followed by all members of the Memorial EMS System for treatment of the acutely ill or injured patient.
2. The EMS provider will initiate patient care under these guidelines and contact Base Station Medical Control in a timely manner for consultation regarding treatment not specifically covered by standing orders, in addition to those protocols that specify on-line physician's order. Diligent effort must be made to contact Medical Control in a timely manner via Twiage, cellular telemetry, landline phone, or VHF MERCI radio. Delay or failure to contact Medical Control for required on-line orders is a quality assurance indicator.
3. These Standing Medical Orders will be utilized as Off-Line Medical Control under the following circumstances:
 - For conditions covered by this protocol manual.
 - In the event communication cannot be established or is disrupted between the Prehospital provider and Medical Control.
 - In the event that establishing communications would cause an inadvisable delay in care that would increase life threat to the patient.
 - In the event the Medical Control physician is not immediately available for communication.
 - In the event of a disaster situation, where an immediate action to preserve and save lives supersedes the need to communicate with hospital-based personnel, or where such communication is not required by the disaster protocol.
4. Inability to contact Medical Control should not delay patient transport or the provision of life-saving therapies. Patient destination and transport decisions are set forth in these Standing Medical Orders / Protocols.

MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL

On-Line Medical Control Policy

On-Line Medical Control

The **TWIAGE App** is the preferred method of communications with all participating area hospitals except in cases where on-line medical control is required. On-line Medical Control is designed to provide immediate medical direction and consultation to the Prehospital EMS provider in accordance with established patient treatment guidelines and policies in this manual.

On-line Medical Control is utilized to involve the expertise of an Emergency Medical Physician in the treatment plans and decisions involving patient care in the Prehospital setting.

1. EMS communications requiring on-line contact with a base station physician shall be conducted using **cellular telemetry**. *Note: When calling Memorial for Medical Control and when calling in patient reports, the individual answering the call will identify themselves as "Memorial Base Control."
2. Incoming telemetry calls will usually be answered by an Emergency Communications Registered Nurse (ECRN). The ECRN may request Medical Control from a Base Station Physician if orders or consultation are needed. The ECRN, as an agent of the EMS Medical Director, may initiate the order for any treatment included within EMS protocol. A Medical Control physician is required any time an order outside of protocol is requested or issued.
3. *Pre-hospital personnel in need of on-line Medical Control identify the need for orders at the beginning of the report. A licensed ECRN can give orders for anything within protocol requiring Medical Control approval.*
4. *Memorial EMS agencies and providers can only accept Medical Control orders from a Memorial affiliated hospital. If a provider feels the order is incorrect and for the safety of the patient requests override, the request will go to the senior most physician and Springfield Memorial Emergency Department. CQI will be required.*
5. Use of **telemetry** is required for patient care requiring interventions beyond the *Routine BLS, ILS or ALS standing medical orders*. Situations requiring Medical Control contact include, but are not limited to:
 - Any time an order is specifically required for BLS, ILS or ALS medications as outlined in the protocol.
 - Any time orders are needed for certain defined *procedures*.
 - Any instance an EMS provider desires *physician involvement*.
 - Any situation that involves *bypassing* a closer hospital.
 - Anytime an EMS provider feels a *deferral* is warranted.
 - Anytime a Field Training Instructor (FTI) feels a student needs to further develop communication skills.
 - **When a pre-hospital 12-Lead EKG is acquired that shows wide-complex tachycardia, consultation is requested, or to activate STEMI protocol.**
 - Circumstances involving a Death on Scene (DOS) or cases involving advanced directives (DNR et al.).
 - High risk refusals (*see next pages*).

MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL

On-Line Medical Control Policy

On-Line Medical Control (Continued)

- *First Responder* low risk refusals (see item #10 of this policy).
6. **“Telemetry” calls** include all medical complaints requiring Medical Control contact, refusals, traumas and consultations.
7. **“MERCi” calls** are made via MERCi radio and called directly to the receiving hospital (or in cases where telemetry communication is not possible and consult with a physician is necessary). MERCi communication is adequate for patient care that does not require interventions beyond *Routine BLS, ILS or ALS Care*. Specifically, patients that have received only oxygen, monitor, IV and/or medications without the need for additional orders or in cases where Medical Control contact is not required.
- If MERCi traffic prevents contact with the receiving hospital, the Resource Hospital (Springfield Memorial Hospital) may be contacted for assistance in proper routing of communications.
 - If the receiving hospital deems that further care is necessary or requests additional interventions be performed, the EMS provider should contact Medical Control. Only Medical Control (ED Physician or ECRN) at the resource hospital (SMH) or affiliate hospitals (LMH, JMH, TMH, or DMH) may give orders.
 - If the receiving hospital requests discontinuation of treatment established by the prehospital provider, Medical Control contact should be established.
8. **High Risk Refusals** require Medical Control consultation prior to securing and accepting the refusal and terminating patient contact. High risk refusals involve cases where the patient’s condition may warrant delivery of care in accordance with implied consent of the *Emergency Doctrine* or other statutory provision. **High risk refusals** include, but are not limited to:
- Head injury (based on mechanism or signs & symptoms)
 - Presence of alcohol/ drugs resulting in questionable loss of decisional capacity
 - Anytime medications are given and patient refuses transport (Dextrose is the only exception to this)
 - Significant mechanism of injury (e.g. rollover MVA)
 - Altered level of consciousness or impaired judgment
 - Unaccompanied minors (≤ 17 yrs old, when guardian cannot be contacted)
 - Situations that involve bypassing a closer hospital

MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL

On-Line Medical Control Policy

On-Line Medical Control (Continued)

9. **Low Risk Refusals** do not require Medical Control consultation (for BLS, ILS & ALS levels) if the prehospital provider determines that the patient meets the *Low Risk Criteria* and there is no doubt that the patient understands the risk of refusal. The patient cannot be impaired and must be able to consent to the refusal. Medical Control should be contacted if there are any concerns about the patient's ability to refuse. **Low risk** refusals may include:
 - Slow speed auto accidents with no intrusion into patient compartment, low mechanism of injury, and no patient injury beyond minor scrapes and bruises.
 - Fall from standing without other medical conditions and no extreme of age.
 - Isolated injuries not related to an auto accident or other significant mechanism of injury
 - False calls or "third party" calls where no illness, injury or mechanism of injury is apparent.
 - Lifting assistance or "public assist" calls (for which EMS is called for assistance in moving a patient from chair to bed, floor to bed, car to home, etc.). This assumes the EMS agency is routinely called to assist this patient, the patient is assessed to ensure there is no complaint or injury and there has been no significant change in the patient's condition. EMS crews must complete a patient care report indicating all assessment findings and assistance rendered.
10. If the EMS provider has not been able to contact Medical Control via cellular telemetry, telephone or MERCI radio, the EMS provider will initiate the appropriate protocol(s). Upon arrival at the receiving hospital, an incident report must be completed and forwarded to the EMS Office within 24 hours of the occurrence. This report should document all aspects of the run with specific details of the radio/communications failure and initiation of the Memorial EMS System *Standing Medical Orders and Standard Operating Procedures*.
11. First Responders may handle **low risk** refusals only (as defined above). **Under no circumstance should a First Responder take a high risk refusal.**
12. When EMS is requested, but the patient identified, from the initial request call that mobility assistance only is all that is requested, documentation at the agency level is allowed. If any question exists about the patient's needs or condition an informed refusal should be completed and signed by the patient.

MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL

**Radio/ MICU
Communications Protocol**

Radio communications is a vital component of prehospital care. Information reported should be concise and provide an accurate description of the patient's condition as well as treatment rendered. Therefore, **a complete patient assessment and set of vital signs should be completed prior to contacting Medical Control or the receiving hospital.**

Regardless of the destination, **early and timely** notification of Medical Control or the receiving hospital is essential for prompt care to be delivered by all involved. All communication with Medical Control will be recorded and available for review for no less than 1 year.

Components of the Patient Report

1. Unit identification
2. Destination & ETA
3. Age/sex
4. Chief complaint
5. Assessment (General appearance, degree of distress & level of consciousness)
6. Vital signs
7. Pertinent physical examination and negative findings, history
8. Treatment rendered and patient response to treatment

If Medical Control contact is necessary to obtain orders (where indicated by protocol), diligent attempts must be made to establish communication with local and/ or receiving facility capable of providing Medical Control.

MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL

**Radio/ MICU
Communications Protocol**

EMS Alert Patient Report

Certain patient populations benefit from activation of specialty teams, protocols, providers and other resources that the majority of patients do not require. As such, including in the notification for such patients the specific need as soon as possible in the EMS communication can aid both the EMS provider giving report and the Emergency Department receiving the communication to obtain specific critical elements of information specific to that patient complaint. Specific treatment protocols include reference to identifying a patient as an “EMS Alert Patient Report” and identifying the specific suspected complaint in the initial seconds of the radio report.

EMS Alert Patient Report categories include

- STEMI
- Stroke
- Trauma
- Cardiac/ Respiratory Arrest/ Impending Arrest
- Sepsis

Specific information for each patient type is included in the protocols. Information listed in those protocols is to aid in determining severity, as well as needs of the inbound patient with the goal of activating resources prior to patient arrival.

While all patients in the above categories are critical, the EMS provider must understand the process and needs of those patients to assist in getting the patient the most appropriate service in the timeliest fashion. While expedited transport is appropriate in most situations, assessment and communication could improve the time to definitive treatment if care is provided in a different order for different patient times.

All EMS Alert Patient Report situations qualify for continuous QI (CQI).

MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL

Patient Right of Refusal
Policy

A patient may refuse medical help and/or transportation. Once the patient has received treatment, he/she may refuse to be transported if he/she does not appear to be a threat to themselves or others. **Any person refusing treatment must be informed of the risks of not receiving emergency medical care and/or transportation.** NOTE: Family members cannot refuse transportation of a patient to a hospital unless they can produce a copy of a *Durable Power of Attorney for Healthcare*.

Refusal Process

1. Assure an accurate assessment has been conducted that includes the patient's chief complaint, history, objective findings and the patient's ability to make **sound** decisions.
2. Explain to the patient the risk associated with his/her decision to refuse treatment and transportation.
3. Secure Medical Control approval of **high risk refusals** (low risk refusals for First Responders) in accordance with the *Online Medical Control Policy*. If there is any question as to a patients' legal ability to refuse treatment/transport (emancipated minors, pregnant minors, etc), consider as high risk and contact medical control for guidance.
4. Complete the *Against Medical Advice/Refusal Form* and have the patient sign the form. If the patient is a minor, this form should be signed by a legal guardian or *Durable Power of Attorney for Healthcare*. **NOTE:** Parental refusals may be accepted by voice contact with the parent (i.e. by telephone) if the EMS provider has made reasonable effort to confirm the identity of the parent and the form may be signed by an adult witness on scene. This should be clearly documented on the refusal form and in the patient care report.
5. If available, it is preferable to have a police officer at the scene act as the witness. If a police officer is not present, any other bystander may act as a witness. However, his/her name, address & telephone number should be obtained and documented.
6. If the patient refuses medical help and/or transportation after having been informed of the risks of not receiving emergency medical care and refuses to sign the release, clearly document the patient's refusal to sign the report. Also, have the entire crew witness the statement and have an additional witness sign your statement, preferably a police officer. Include the officer's badge number and contact Medical Control.
7. If an agency uses the MEMS provided physical triplicate refusal form, the top (white) original of the *AMA/Refusal Form* is maintained by the agency securing the refusal. The **yellow** copy is forwarded to the EMS Office with the appropriate copies of the patient care report. The patient is provided with the **pink** copy. A copy is not required to be left with the patient if assessments/signatures are obtained and notice 4.D.3 is given to the patient. If an agency utilizes electronic documentation, they must have a process to provide the patient with a copy of the acknowledgement and signatures for the release of liability.

MEMORIAL EMS SYSTEM PREHOSPITAL POLICIES MANUAL

Patient Right of Refusal Policy



MEMORIAL EMS SYSTEM—PATIENT REFUSAL FORM

Date _____ Agency incident # _____

Option f

ACKNOWLEDGMENT AND RELEASE OF LIABILITY FOR ALL HEALTHCARE PROVIDERS

Option I **ACKNOWLEDGMENT AND RELEASE OF LIABILITY FOR ALL HEALTHCARE PROVIDERS**
I, _____, hereby acknowledge and release the above-mentioned emergency service provider and its personnel, Memorial Medical Center, and all EMS system physicians, nurses, agents and personnel of any liability for my refusal to accept further treatment. I acknowledge that I have been advised of and understand the risks of not accepting emergency treatment and/ or transportation to the nearest hospital facility, which I am refusing.

I have been advised as follows:

- That I should receive emergency medical treatment and transportation to a hospital, which I am refusing.
 - That having received emergency medical treatment, I am refusing further aid or transport to a medical facility.
 - I am refusing all medical assessment, treatment and transport.
 - That my failure to seek treatment and transport could result in permanent injury, impairment, disability and could lead to my death.
 - I certify that I have the ability and appreciate the consequences of making decisions regarding my medical treatment and the ability to reach an informed decision.
 - I have been made aware and understand that I can call 9-1-1 again and at any time.

Signature of patient or authorized representative _____ Date _____ Time _____

Option 2

REFUSAL TO SIGN RELEASE STATEMENT

The above patient was informed and read the above release from medical responsibility clause and was asked to sign due to his/her refusal of Emergency Medical Services. The above patient was informed of the risks of not receiving emergency medical assessment, treatment and/or transportation to the nearest medical facility, and still stated his/her refusal to sign the above. The above-described patient has the ability to understand and appreciate the consequences of making decisions regarding medical treatment and the ability to reach an informed decision and sufficient understanding to make responsible decisions concerning the medical care of his/her person.

Signature of witness #1 _____ Date/time _____ Printed _____ Phone _____
Signature of witness #2 _____ Date/time _____ Printed _____ Phone _____

MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL

**Patient Right of Refusal
Policy**

Notice of EMS Response and Refusal Document Practices

- ▶ A Memorial EMS System—Patient Refusal Form has been generated as a result of this encounter.
- ▶ This record is kept on file at:

- ▶ It can be accessed (in person) by the patient or whomever has legal guardianship of said patient.
- ▶ To request a copy of this record, please call:

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**MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL**

Incident Reporting Policy

Prehospital care providers shall complete a Memorial EMS System (or the individual agency) *Incident Report Form* whenever a System related issue occurs. In order to properly assess the situation and determine a solution to the issue, the following information needs to be provided on the form:

1. Date of occurrence
2. Time the incident occurred
3. Location of the incident
4. Description of the events
5. Personnel involved
6. Agency and/or institution involved
7. Copy of the patient care record and/or any other related documents

Incident Report Process

1. All incident report forms shall be given to the EMS provider's immediate supervisor, training officer, or quality assurance coordinator who will assess the incident and will forward the report to the Memorial EMS System Quality Assurance Coordinator.
2. The EMS QA Coordinator will review the incident and notify the EMS Medical Director and the appropriate course of action will be determined.
3. The EMS provider originating the report will be notified of the resolution.

Incident Report Indicators

Situations requiring EMS Office notification include: (see attached form)

- “Any situation which is not consistent with routine operations, System procedures or routine care of a particular patient. It may be any situation, condition or event that could adversely affect the patient, co-worker or the System.”
- Any deviation from Memorial EMS System policies, procedures or protocols.
- **Medication errors**
- **Treatment errors**
- Delays in patient care or scene response
- Operating on protocol when Medical Control contact was indicated but unavailable

MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL

Incident Reporting Policy

Incident Report Indicators (continued)

- Violence toward EMS providers that results in injury or prevents the provider from delivering appropriate patient care
- Equipment failure (e.g. cardiac monitor, glucometer)
- Inappropriate Medical Control orders
- Repeated concerns/conflicts between agencies, provider/physician or provider/hospital conflicts
- Patterns of job performance that indicate skill decay or knowledge deficiencies affecting patient care
- Every time an EMS provider is not able to complete their paperwork within the two hour IDPH requirement.

Situations subject to review and resolution at the agency level include:

- Conflicts between employees
- Conflicts between agencies (that do not impact patient care)
- Operational errors (that do not impact patient care)
- Behavioral issues (that do not impact patient care)

**MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL**



Unusual Occurrence / Incident Report

Patient name or MRN	Equipment involved	Event date	Event time	Report date	Report time	Incident location
Dispatch info		Additional agencies / departments / units involved				
Description of unusual occurrence or incident						
Agency		Printed name		Signature		
Possible way in which situation could have been avoided						
Witness		Witness	Witness			
<input type="checkbox"/> Completing additional report		<input type="checkbox"/> Completing additional report	<input type="checkbox"/> Completing additional report			
EMS office Date report received:	Initial actions taken by EMS office					
<input type="checkbox"/> Follow-up needed Completed by:						
Additional notes		<input type="checkbox"/> EMS Medical Director		<input type="checkbox"/> Other:		
email to: MemorialEMS@mhsil.com						

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MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL

**EMS Patient Care Reports
Policy**

Documentation of patient contacts and care is a vital aspect of assuring continuity of care, providing a means of quality assurance and historical documentation of the event. It is just as important as the care itself and should be an accurate reflection of the events that transpired. **It is imperative to patient care that receiving facilities have the EMS Patient Care Report available to review.**

Patient Care Reports

1. All EMS providers/agencies involved must complete a patient care report for each patient contact or *request* for response (*e.g.* agency is cancelled enroute to a call then a “cancelled call” chart must be completed).
2. Per IDPH 515.330 **Agencies must complete their ePCR within 2 hours of patient delivery to destination hospital.** Returning the unit to service ready condition should not be delayed for paperwork completion. In all situations the ePCR must be completed and submitted prior to the end of shift. If a crew is unable to complete and submit their report within 2 hours, an incident report should be submitted to the EMS Office also before end of shift. Memorial EMS will notify IDPH any time an ePCR is not complete within the 2 hour requirement.
3. Memorial EMS does not have a short form for handoff at the ED. The verbal report and Twiage report can assist in communicating handoff information, however a full ePCR must be completed per IDPH.
4. Documentation must be completed on System approved forms and/or System approved electronic reporting systems. For transporting agencies, the electronic reporting system must be NEMESIS compliant and up to date with IDPH requirements. **Any PCR software changes must be discussed with MEMS (prior to purchase).**
5. Non-transport agencies must complete patient care documentation immediately following the call.
6. Copies of all patient care reports must be provided to the EMS Office. This can be completed by bunching quarterly and can be the original hand written report or an electronic copy of all reports. This includes every transport and refusal.

**MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL**

**Patient Confidentiality &
Release of Information Policy**

All Memorial EMS System personnel are exposed to or engaged in the collection, handling, documentation or distribution of patient information. Therefore, all EMS personnel are responsible for the protection of this information. Patient specific information, even amongst providers directly involved in patient care, should not be discussed in locations where non-involved parties can hear the conversation.

Unnecessary sharing of confidential information will not be tolerated. EMS personnel must understand that breach of confidentiality is a serious issue that carries legal implications due to laws governing privacy (HIPAA). Corrective action **will** be taken including System suspension or termination.

Confidential Information Guidelines

1. Written and Electronic Documentation

- a) Confidentiality is governed by the “*need to know*” concept.
- b) Any audiovisual documentation collected involving a patient or scene encounter shall be performed exclusively through the **Twiage App**. No copying, posting, or sharing outside the **Twiage App** is allowed.
- c) Only Memorial EMS System personnel and hospital medical staff **directly involved** in a patient’s care or personnel involved in the quality assurance process are allowed access to the patient’s medical records and reports. Authorized medical records and billing personnel are allowed access to the patient’s medical records and reports in accordance with hospital and EMS provider policies.
- d) Requests for release of patient care related information (from third party payers, law enforcement personnel, the coroner, fire department or other agencies) should be directed to the EMS agency’s medical records department.

2. Verbal Reports

- a) Memorial EMS System personnel are **not** to discuss specific patients in public areas.
- b) EMS providers should not discuss any confidential information regarding patient care with friends and relatives or friends and relatives of the patient. This includes hospitalization of a patient and/or the patient’s condition.
- c) Information gained from case reviews for the purpose of education, research, quality improvement, or quality assurance is considered confidential.

MEMORIAL EMS SYSTEM
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**Patient Confidentiality &
Release of Information Policy**

Confidential Information Guidelines (continued)

3. Radio Communications

- a) No patient name will be mentioned in the process of prehospital radio transmissions utilizing MERCI radio.
- b) Customarily, when calling in a “direct admit” the patient’s initials can be included in the radio report. This is necessary for identification and is acceptable to transmit.
- c) Sensitive patient information regarding diagnosis or prognosis not necessary for direct care of the current patient condition should not be discussed during radio transmissions.
- d) MERCI capabilities are required on all IDPH licensed vehicles. Cellular telemetry to the MICU line is the preferred mechanism of communication. Regardless of mechanism, transport units should their uniquely identifiable MERCI moniker for communications. Local jurisdiction identifiers are not acceptable.
- e) If utilizing cellular telemetry, patient specific identifiers may be requested for the advance notification of specialty teams. See complaint specific protocols for such items.

4. Communication at the Scene

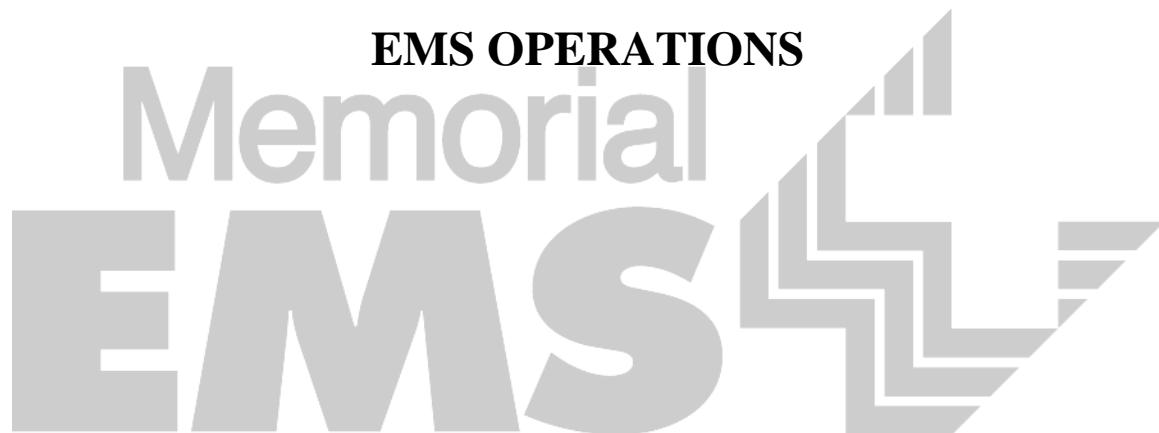
- a) Every effort should be made to maintain the patient’s auditory and visual privacy during treatment at the scene and enroute.
- b) EMS personnel should limit bystanders at the scene of an emergency. Law enforcement personnel may be called upon to assist in maintaining bystanders at a reasonable distance.

5. Information Regarding Patient Outcomes

- a) For the purposes on quality improvement a certain degree of patient outcome information needs to be available for EMS providers. Every effort will be made to ensure what information allowed by law is available.
 1. These requests should be forwarded to the Assistance EMS Coordinator for Quality Improvement.

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PREHOSPITAL POLICIES MANUAL

GENERAL PATIENT ASSESSMENT & MANAGEMENT/



**MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL**

Patient Destination Policy

Patients should be transported to the closest appropriate hospital. A patient (or the patient's *Power of Attorney for Healthcare*) does have the right to make an informed decision to be transported to a hospital of choice. This decision should be respected unless the risk of transporting to a more distant hospital outweighs the medical benefits of transporting to the closest hospital.

Such requests cannot be honored during the initial actions of a MCI event. Secondary transfers may be coordinated in the hours and days following. Additionally, certain patient complaints will be best served at hospitals certified or licensed for unique specialty services.

Patient Hospital Preference Guidelines

Bypassing the nearest hospital to respect the patient's hospital choice is a decision based on medical benefits and associated risks and should be made in accordance with:

1. Urgency of care and risk factors based on:
 - Mechanism of injury (physiologic factors)
 - Perfusion status and assessment findings (anatomical factors)
 - Transport distance and time (environmental factors)
2. Medical Control consultation
3. Capacity of the nearest facility or facility of choice
4. Available resources of the transporting agency
5. Traffic and weather conditions

The patient's hospital preference may be honored if:

- There are no identifiable risk factors.
- The patient has a secure airway.
- The patient is hemodynamically stable.
- The patient has been advised of the closer hospital.
- Medical Control approves.
- A specialty hospital direct transfer is available and it is agreed by Medical Control (specifically or by MOU) that the specialty hospital would serve the patient's needs better.

The EMS provider will explain the benefits versus the risks of transport to a more distant hospital and involve Medical Control for approval. **No transporting service shall bypass a hospital in order to meet an ALS intercept unless approved by Medical Control.**

Patients may be transported to the hospital of choice within the limits of the same city without contacting Medical Control for approval as the differences in transport times is negligible.

**MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL**

Patient Destination Policy

EMS Triage Destination Plan

The purpose of this plan is assist EMS in identifying patients in need of specialty services not available at all hospitals, identify hospitals that provide specialty services, and, within geographic parameters, transport those patients to the most appropriate facility the first time, thereby reducing the need for secondary transfers. This plan must address the 24/7/365 needs of EMS and provide objective criteria for identifying the patients and facilities involved.

Patient choice should always be the first criteria considered. If patient choice is not the most appropriate hospital, the patient must be educated and make their own informed decision, unless deemed not competent for decision making.

Pt Complaint	Criteria	Distance	Facilities certified/ licensed to meet patient's complaint
Burn	<ul style="list-style-type: none"> • Isolated burn to hand, face or genital regions, or • Any full thickness burns, or • > 20% TBSA adults, or • > 15% TBSA pediatrics, or • Any circumferential burns 	25 minute	<p>Springfield</p> <ul style="list-style-type: none"> • Springfield Memorial Hospital
Early Term OB	<ul style="list-style-type: none"> • > 20 and < 32 full weeks gestation, AND • Any of the following <ul style="list-style-type: none"> ◦ Abdominal /Low back pain ◦ Contractions ◦ Fluid leakage/ bleeding ◦ Urge to push/ Pressure ◦ S/S of abdominal trauma 	25 minute	<p>Springfield</p> <ul style="list-style-type: none"> • St. John's Hospital <p>Peoria</p> <ul style="list-style-type: none"> • OSF St. Francis
Antepartum & Postpartum HTN	<ul style="list-style-type: none"> • Pregnant or ≤ 6 weeks post delivery, AND • Any of the following <ul style="list-style-type: none"> ◦ Headache ◦ Visual Complaints ◦ AMS ◦ Stroke like symptoms ◦ Seizure ◦ SBP > 140 ◦ DBP > 90 	25 minute	<p>Springfield</p> <ul style="list-style-type: none"> • St. John's Hospital <p>Peoria</p> <ul style="list-style-type: none"> • OSF St. Francis
STEMI	<ul style="list-style-type: none"> • Cardiac Complaint, AND • Elevation on 12 lead in 2 or more contiguous leads. 	25 minute	<p>Springfield</p> <ul style="list-style-type: none"> • Springfield Memorial Hospital • St. John's Hospital <p>Bloomington/ Normal</p> <ul style="list-style-type: none"> • Carle BroMenn • OSF St. Joseph's <p>Decatur</p> <ul style="list-style-type: none"> • Decatur Memorial Hospital <p>Peoria</p> <ul style="list-style-type: none"> • OSF St. Francis

**MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL**

Patient Destination Policy

EMS Triage Destination Plan- Continued

Pt Complaint	Criteria	Distance	Facilities certified/ licensed to meet patient's complaint
Stroke (meets or exceeds IDPH Region 3 protocol)	<ul style="list-style-type: none"> Positive Fast \leq 4.5 hours <ul style="list-style-type: none"> Closest Facility (Minimum ASRH) 	Not applicable	Region 3 <ul style="list-style-type: none"> Every Region 3 EMS hospital is ASRH (Acute Stroke Ready Hospital) Every EMS hospital within 30 miles of Region 3 is ASRH
	<ul style="list-style-type: none"> Positive Fast $>$ 4.5 hours AND \leq 24 hours with LAMS \geq 4 	45 minute	CSC (Comprehensive Stroke Centers) Springfield <ul style="list-style-type: none"> Springfield Memorial Hospital HSHS St. Johns Hospital Peoria OSF St. Francis
Pediatric Trauma	<ul style="list-style-type: none"> Age \leq 12 years, AND Any of the following <ul style="list-style-type: none"> \leq 12 GCS \leq 6 PTS 	25 minute	Springfield <ul style="list-style-type: none"> HSHS St. John's Hospital Peoria OSF St. Francis
Trauma	<ul style="list-style-type: none"> CDC Field Triage Decision Scheme Criteria 	25 minute	Level 1 Springfield <ul style="list-style-type: none"> Springfield Memorial Hospital St. John's Hospital Peoria OSF St. Francis Level 2 Decatur <ul style="list-style-type: none"> Decatur Memorial Hospital Bloomington/ Normal Carle BroMenn OSF St. Joseph's
Suspected EBOLA or other current CDC alerted highly infectious disease.	<ul style="list-style-type: none"> Fever, ABD Pain, Nausea/Vomiting, Diarrhea, Body Aches AND who has traveled from any country with widespread virus transmission in the last 2-21 days. 	Per Medical Control	Peoria <ul style="list-style-type: none"> OSF St. Francis Springfield St. Johns Champaign Carle BroMenn
Patient seeking Mental Health Screening/ Treatment	<ul style="list-style-type: none"> Patient complaint, signs and symptoms 	Not applicable	<ul style="list-style-type: none"> Every hospital emergency room has capacity to screen and begin treatment.

**MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL**

Patient Destination Policy

Assumptions

- If patient is in extremis, the closest emergency department should be destination to stabilize the patient. This includes unstable airway patients.
- Agencies need to know the capabilities of all destination hospitals.
- Transport agencies must identify all destinations that they will transport to from prehospital calls. Barring weather emergency and facilities closed to EMS, an agencies response to a specific hospital request must be the same every time.
- If within the distance to the most appropriate facility, the most appropriate facility should be recommended to the patient so that the patient makes an informed decision. Should the patient refuse the most appropriate destination, medical control should be included to document that the patient has made an informed refusal.
- STEMI declaration requires recognition by Medical Control, the provider must contact Medical Control following EKG submission. This should be done in coordination with local Medical Control before transporting to PCI Center.
- Memorial EMS does not have a protocol for the transport of prehospital patients to urgent care or intermediate care facilities. All prehospital patients will be transported to Emergency Departments or to specific definitive treatment locations within the hospitals until 24/7/365 options become available.
- Transport agencies must respect that if a facility is on bypass, no patients may be transported to that facility.

Additional Transport information

- Unless it would be a detriment to patient treatment or a risk for EMS providers, transport agencies must transport a service/ support animal as provided for in the Americans with Disabilities Act.
- So long as it does not delay needed care of other patients, transport providers may transport an ill or injured law enforcement animals to an appropriate veterinary facility. Providers should include the handler if at all possible and have restraint equipment available to protect themselves.

MEMORIAL EMS SYSTEM
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**Transfer and Termination
of Patient Care Policy**

Patient abandonment occurs when there is termination of the caregiver/patient relationship without consent of the patient and without allowing sufficient time and resources for the patient to find equivalent care. This is assuming, and unless proven otherwise, there exists a need for continuing medical care and the patient is accepting the treatment.

EMS personnel must not leave or terminate care of a patient if a need exists for continuing medical care that must be provided by a knowledgeable, skilled and licensed EMS provider **unless** one or more of the following conditions exist:

1. Appropriate receiving hospital personnel assume medical care and responsibility for the patient.
2. The patient or legal guardian refuses EMS care and transportation (In this instance, follow the procedure as outlined in the *Patient Right of Refusal Policy*).
3. EMS personnel are physically unable to continue care of the patient due to exhaustion or injury.
4. When law enforcement personnel, fire officials or the EMS crew determine the scene to be unsafe and immediate threat to life or injury hazards exist.
5. The patient has been determined to be dead and all policies and procedures related to death cases have been followed.
6. If Medical Control concurs with a DNR order.
7. Whenever specifically requested to leave the scene due to an overbearing need (e.g. disasters, triage prioritization).
8. Medical care and responsibility for the patient is assumed by comparably trained, certified and licensed personnel in accordance with applicable policies.

If EMS personnel arrive on scene, establish contact and evaluate a patient who then refuses care, the EMS crew shall conduct termination of the patient contact in accordance with the *Patient Right of Refusal Policy* and *On-Line Medical Control Policy*.

EMS personnel may leave the scene of an illness or injury incident, where initial care has been provided to the patient and the only responsibility remaining for the EMS crew is transportation of the patient or securing a signed refusal, if the following conditions exist:

1. Delay in transportation of another patient (i.e. trauma patient) from the same incident would threaten life or limb.
2. An occurrence of a more serious nature elsewhere necessitates life-saving intervention that could be provided by the EMS crew (and without consequence to the original patient).
3. More appropriate or prudent transportation is available.

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**Transfer and Termination
of Patient Care Policy**

4. Definitive arrangement for the transfer of care and transportation of the initial patient to other appropriate EMS personnel must be made prior to the departure of the EMS crew. The alternate arrangements should, in no way, jeopardize the well-being of the initial patient.

During the transport of a patient by ambulance, should the EMS crew come across a separate emergency or incident requiring ambulance assistance; the local EMS system will be activated. Crews involved in the treatment and transportation of an emergency patient (lights and sirens) are not to stop and render care. The priority is to the patient onboard the ambulance. Crews involved in the treatment of a non-emergency patient (no lights and sirens) may stop and render aid if safe to do so. The safety of the on-board patient and the crew are the priority.

In the event you are transporting a patient with more than two (2) appropriately trained prehospital personnel, you may elect to leave one medical attendant at the scene to render care and the other personnel will continue to transport the patient to the receiving facility.

In the event there is not a patient onboard the ambulance and an emergency situation is encountered requiring ambulance assistance; the crew may stop and render care. However, the local EMS agency should be activated and their jurisdiction respected.

MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL

Transition of Care Policy

A smooth transition of care between EMS providers is essential for optimum patient care. First Responder and BLS non-transport crews routinely transfer care to transporting EMS providers. The transfer of advanced procedures presents unique concerns for both the EMS provider relinquishing patient care as well as the EMS provider assuming patient care. A smooth transition between providers is essential for good patient care. Cooperation between all EMS personnel is encouraged and expected.

Patient Care Transition Procedure

1. EMS providers arriving at the scene of a call shall initiate care in accordance with the guidelines provided in this manual. The EMS provider must maintain a constant awareness as to what would be the best course of action for optimum and compassionate patient care. *Focus should be placed on conducting a thorough patient assessment and providing adequate BLS care.* The benefit of remaining on scene to establish specific treatments versus prompt transport to a definitive care facility should be a consideration of each patient contact.
2. Once on scene, the EMS transporting agency shall, in conjunction with Medical Control, be the on-scene authority having jurisdiction in the determination of the patient care plan. *The rank or seniority of a non-transport provider shall not supersede the authority vested in the transporting EMS provider by the EMS Medical Director.*
3. Upon the arrival of the transporting agency, the non-transport provider should provide a detailed verbal report to the transporting provider and then **immediately transfer care to the transporting provider.** The non-transport provider may continue the establishment of BLS/ILS/ALS procedures with the concurrence of the transporting provider.
4. **At any time, any member of the patient care team, regardless of experience, rank or license level, may request a Safety Step Back.** Such a request requires all members of the patient care team not providing basic resuscitative care to pause all actions and respectively hear the initiating providers concern. Such discussion, must be respectful, brief, and based on patient safety concerns, not provider preferences.
5. The transport provider should obtain report from the non-transport provider and conduct a thorough patient assessment. Treatment initiated by the non-transport provider should be taken into consideration in determining subsequent patient care steps.
6. If the provider has initiated advanced procedures, then the transport provider should verify the integrity of the procedure prior to utilizing it for further treatment (e.g. verify patency of peripheral IVs and ETTs should be checked for proper placement). *Transporting crews shall not arbitrarily avoid the use of (or discontinue) an advanced procedure established by non-transport personnel.* Rationale for discontinuing an established procedure should be documented on the patient care report.

**MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL**

Intercept Policy

To improve access to Advanced Life Support in the more rural communities the EMS System Intercept Protocol should serve as a guide to pre-establish procedures and work to minimize the amount of possible variables when a Basic Life Support ambulance requires assistance from an Advanced Life Support Ambulance from another geographic area. The goal should always be to provide ALS care to the patient who need ALS care in the most expeditious manner.

Dispatch Initiated ALS Intercept

1. At the point of 911 EMD all calls prioritized as Charlie, Delta, and Echo will have ALS automatically requested from the 911 center taking the call. The ALS dispatch should come secondary to dispatching the local unit, but in the most timely manner possible.
 - a. As areas needing ALS assistance are situated geographically between two or more hospitals, the 911 dispatcher is to ask patient what destination city they want to be transported to (Carlinville, Jacksonville, Pittsfield or Springfield). The 911 center taking the call should then contact the 911 center in the destination location to request an intercept. The request should also include identifying the call sign of both ambulances involved in the intercept, radio frequency that will be used, and patient chief complaint. Updates may need to be provided.
 - b. If patient destination is not known, the closest 911 dispatch center with ALS ambulances services should be contacted. This should be predetermined.
 - i. ALS unit origin does not dictate patient destination. Transport units must be informed as to 24/7 capabilities of all area hospitals.
2. The higher level of care and lower level units must communicate via radio frequency regarding patient status and rendezvous location as soon as possible.
 - a. Radio frequency should be predetermined.
3. Rendezvous location should be off main roadways and, if at all possible, a parking lot or secondary road.
 - a. EMS providers functioning on roadways are required to meet the CFR655 (F) requirements by wearing high visibility, breakaway safety vests.
4. Patient transport/transfer
 - a. Patient care should be of the upmost priority in making decisions about which vehicle will provide transport of the patient.
 - i. The provider with the highest level of care, in cooperation with Medical Control, will have the ultimate authority regarding patient care decisions.
 - b. Agencies must identify who they could intercept with and address any administrative issues with those agencies.
 - c. The decision as to whether the lower level rig can return to service should be a team decision based upon each patient situation. If needed, both rigs can be taken out of service to provide enough providers for patient care.
 - d. Should the lower level unit be returned to service, every reasonable attempt to resupply that unit should be made by the intercepting unit.

**MEMORIAL EMS SYSTEM
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Intercept Policy

BLS/ILS Request for Intercept

At any time ALS can be requested based on BLS assessment or change in patient condition. In order to request that intercept

1. The requesting unit should contact their dispatching 911 center (or the center in their destination city if unable to reach their own dispatch 911 center).
 - a. Reason for request
 - b. Patient requested destination
 - c. Route of travel
 - d. 911 dispatch centers should proceed with request in the same manner as if requesting based on 911 call information.
2. Both agencies should work to achieve radio communication as soon as possible.
 - a. Communication between the lower level unit and the intercepting unit should occur prior to intercept.
3. Patient intercept should follow the process outlined for EMD initiated dispatch.
4. Any time a BLS unit is transporting a patient with lights and siren it must be to intercept with a higher level unit.

Intercepting Unit Transfer of Care back to ILS/BLS

1. Should the intercepting unit arrive on scene and feel that the patient may be appropriate for the lower level unit to continue care
 - a. Patient assessment must be completed and communicated to Medical Control by the senior most provider of the intercepting unit.
 - b. ALS, ILS/BLS and Medical Control must agree that the lower level of care meets all of the patients needs.
 - c. Situations that cannot be transported by a lower level of care include
 - i. Any suspected cardiac complaint
 - ii. Respiratory distress not relieved by a single nebulizer
 - iii. Patients meeting trauma declaration criteria
 - iv. Patients with uncontrolled pain
 - v. Postictal seizure patients
 - vi. Imminent childbirth
 - vii. Any situation where medications were given that are not in the transporting units protocol
 - d. Both agencies should complete all appropriate patient documentation.

Discrepancies

Should initial units arrive and find a situation different than that which they were dispatched for, the update should be communicated to the dispatching agency and highest level of providers so to make the best use of available resources. Unless in a situation where the patient(s) are signing refusals, once initiated, the higher level of care unit must assess the patient. At no time should units not on scene be making decisions that supersede the decisions made by Emergency Medical Dispatch priority coding. Disagreements regarding response should be handled at an administrative level. Agencies that represent specific geographic areas must identify if they will or will not provide intercept services.

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Coroner Notification Policy

In accordance with Section 10.6, Chapter 31 of the Illinois Revised Statutes – Coroners:

1. Every law enforcement official, funeral director, **ambulance attendant**, hospital director of administration or person having custody of the body of a deceased person, where the death is one subjected to investigation under Section 10 of this Act, and any physician in attendance upon such a decedent at the time of his death, shall notify the coroner promptly. Any such person failing to notify the coroner promptly shall be guilty of a Class A misdemeanor, unless such person has reasonable cause to believe that the coroner had already been notified.
2. Deaths that are subject to coroner investigation include:
 - Accidental deaths of any type or cause
 - Homicidal deaths
 - Suicidal deaths
 - Abortions – criminal or self-induced maternal or fetal deaths
 - Sudden deaths – when in apparent good health or in any suspicious or unusual manner including sudden death on the street, at home, in a public place, at a place of employment, or any deaths under unknown circumstances may ultimately be the subject of investigation.
3. The coroner should via dispatch at appropriate county and be provided the following information:
 - Your name
 - Your EMS service
 - Location of the body or death
 - Phone number and/or radio frequency you are available on
 - Brief explanation of the situation
4. Once this information has been provided, wait for the coroner (or his/her designee) to arrive for further instructions. EMS crews may clear the scene if law enforcement is on the scene and no other emergency exists.
5. Law enforcement personnel are responsible for death scenes once the determination of death is established with Medical Control and the coroner has been notified.
6. If a patient is determined to be dead during transport, note the time & location and record this information on the patient care report. Immediately contact the coroner to discuss death jurisdiction. **Do not cross county lines with a patient that has been determined to be dead.**
 - If patient is DNR and being transported to the Emergency Department, continue transport to the ED, if not crossing county lines.

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**Reporting and Control of
Suspected Crime Scenes
Policy**

EMS providers should be aware of law enforcement's concern for preserving, collecting and using evidence. Anything at the scene may provide clues and evidence for the police.

1. Immediately notify law enforcement of any suspected crime scene (this does not necessarily include petty crimes or traffic violations).
2. If the victim is obviously dead, then he or she should remain undisturbed if at all possible.
3. Do not touch, move or relocate any item at the scene unless absolutely necessary to provide treatment to an injured, viable victim. Mark the location of any item that must be moved so the police can determine its original position.
 - a. At no times should EMS responders move a weapon at a crime scene unless fear of the weapon being utilized by others on the scene.
 - b. In situations of violent crime, EMS responders should only enter the scene after Law Enforcement Officers have advised to approach the scene.
4. Restrict access to the scene of onlookers or other unauthorized personnel on the premises of the crime.
5. Observe and note anything unusual (e.g. smoke, odors, or weapons), especially if the evidence may not be present when law enforcement arrives.
6. Give immediate care to the patient. The fact that the patient is a probable crime victim should not delay prompt care to the patient. Remember that your role is to provide emergency care, not law enforcement.
7. Keep detailed records of the incident, including your observations of the victim and the scene of the crime. Lack of records about the case can be professionally embarrassing if called to testify.

MEMORIAL EMS SYSTEM
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**Physician/Other Medical Professional
on Scene Policy**

Only personnel licensed to perform care in the prehospital setting and certified in the Memorial EMS System are allowed to provide advanced patient care (*e.g.* intubation, IV access, medication administration, pacing, etc.) at the scene unless approved by Medical Control. An on-scene physician (or other medical professional) does **not** automatically supersede the EMS provider's authority. Patient care shall not be relinquished to another person or provider unless approved by the EMS Medical Director or Medical Control.

1. If a professed, duly licensed medical professional (*e.g.* physician, nurse, or dentist) unexpectedly wishes to participate in and/or direct patient care on scene, the EMS provider should contact Medical Control and inform the base station physician of the situation.
2. If the medical professional on scene (including the patient's primary care physician) has properly identified himself/herself and wishes to direct patient care, approval must be granted by the Medical Control Physician prior to EMS personnel carrying out the on-scene medical professional's requests or orders. If care is relinquished to the professional on scene, he/she **must** accompany the patient to the hospital. This procedure should be explained to the provider prior to contacting Medical Control.
3. If an on-scene physician orders procedures or treatments that the EMS provider believes to be unreasonable, medically inaccurate, and/or outside the EMS provider's standard of care, the EMT should refuse to follow such orders and re-establish contact with Medical Control. In all circumstances, the EMS provider shall avoid any order or procedure that would be harmful to the patient.
4. If an on-scene medical professional (or any person *claiming* to be a healthcare provider) is obstructing EMS efforts or is substantially compromising patient care, the EMS provider should redirect the interfering person, request law enforcement assistance and communicate the situation to Medical Control.
5. If EMS personnel or nursing staff from another system or jurisdiction (other than a requested intercept or mutual aid) are at the scene and request to provide or assist with patient care, excuse them from the scene if their assistance is not needed. If assistance is needed, these personnel may provide assistance with the supervision of the agency having jurisdiction of the scene. Memorial EMS System policies, procedures and protocols must be followed regardless of the assisting EMS personnel's authorized level of care.

Emergency Medicine Residents can and will do "ride time" with MEMS agencies as part of their EMS Rotation and as requested. Their presence should never take the place of on-line medical control when required/ requested by the EMS Provider, nor cause deviation from the MEMS protocols at any time.

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Region 3 School Bus and MCI Policy

Incidents involving school buses pose unique challenges to the EMS provider in assuring proper release of uninjured children. Once Medical Control confirms that the minor children are not injured, the custody and responsibility for these children will remain with the responding EMS provider until the children are transferred to parents, legal guardians, school officials or the hospital. If no procedure exists to have children transferred to a parent, legal guardian or school official, then these children will need to be transported to the hospital.

On arrival at the scene, EMS personnel shall determine the category of the incident and request appropriate resources. EMS must also accomplish a complete assessment of the scene to include at least:

1. Mechanism of injury
2. Number of patients
3. Damage to the vehicle
4. Triage as outlined in the System Plan

Once this has been accomplished, then the patients may be assigned to one of the following categories:

CATEGORY A: Significant mechanism of injury (*i.e.* rollover, high-speed impact, intrusion into the bus, etc.) – school bus occupancy indicates that at least one child may reasonably be expected to have significant injuries or significant injury is present in one or more children. *All children in this category must be transferred to an appropriate hospital unless a Memorial EMS System refusal form is signed by a parent or legal guardian.*

CATEGORY B: Suspicious mechanism of injury (*i.e.* speed of impact, some intrusion into the bus, etc.) – school bus occupancy indicates that at least one child may reasonably be expected to have minor injuries or minor injury in one or more children exists with no obvious mechanism of injury that could reasonably be expected to cause significant injuries. *EMS personnel must complete the EMS Multiple Casualty Release Form and secure a signature of an appropriate school official.*

CATEGORY C: No obvious mechanism of injury – school bus occupancy indicates no injuries may be present and that the release of uninjured children may be the only EMS need. No injuries are found to be present in any of the children. *EMS personnel must complete the EMS Multiple Casualty Release Form and secure a signature of an appropriate school official.*

CATEGORY D: If the pediatric patient(s) have special healthcare needs and/or communication difficulties, then all of these patients must be transported to the hospital for evaluation unless approval for release is received from Medical Control or a parent/legal guardian has signed the approved refusal form.

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Region 3 School Bus and MCI Policy

1. After determining the category of the incident, EMS personnel shall determine the extent of EMS involvement and **contact Medical Control**.
2. Adults, victims 18 years and older, and occupants of other vehicles will be treated or released in accordance with routine System operating procedures.
3. If Medical Control has approved usage of this policy/plan, then each provider will implement their procedure for contacting parents, legal guardians or appropriate school officials to receive custody of uninjured children.
4. The approved system *Multiple Casualty Release Form* for school bus incidents must be utilized for all children who will not be transported.
5. Each child transported must have a completed run report.
6. One run report indicating the nature of the incident, etc. shall be completed and must include all information regarding the incident including the number of patients released. Keep a copy of this report with the release form or with refusal forms signed by the parents.
7. A parent, legal guardian or appropriate school official must be given a copy of the refusal/release form.
8. Any parent or legal guardian who arrives on scene to remove and assume responsibility for their child will be requested to sign an individual refusal form.
9. EMS providers shall use reasonable means to contact the parents or school officials. This could include use of telephone, cellular phone or direct contact by law enforcement. If contacted by phone, EMS providers shall take reasonable means to confirm the identity and authority of the parent, legal guardian or school official.
10. Once the identity and authority of the parent, legal guardian or school official has been established, the EMS provider may release the child to that individual or alternate transport source. School officials will follow their established program for informing parents or legal guardians regarding the incident.
11. The health and safety of the child is the primary concern. It is the responsibility of the EMS provider to assure that the child is returned to the parent or placed on the school's alternate transport vehicle. If the EMS provider on scene determines a child should receive a physician evaluation or be offered medical care, the child **will be transported** to the hospital unless a parent or legal guardian is on scene and consents to refusal.

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Region 3 School Bus and MCI Policy

12. Each prehospital agency in the Memorial EMS System who may likely respond to a school bus incident must contact the school superintendents in their district to obtain the name and title of the “appropriate school official” who may take responsibility for the child on the bus involved in the incident.
13. Copies of documentation must be forwarded to the EMS Office for review within 24 hours of utilization of this policy.



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Region 3 School Bus and MCI Policy

School Bus Incident Form/ EMS Multiple Casualty Release Form

All individuals on the bus age 18 and older should sign in the indicated space adjacent to their name when uninjured. Parent/legal guardian should sign in the indicated space adjacent to their child's name when the child is uninjured. Signature indicates agreement that no injury has been suffered and no transportation is required to the hospital.

Date:	Location:		School District:		Bus Number
Time of incident:	Department Alarm/ Run Number		Total Patients	Total transported	Total Refused
Adult Name	Function/Role	Address & Phone Number		Signature	
Child/ Student Name	Age/ Birth Date	Address & Phone Number		Signature of <u>>18</u> Parent or Guardian	

The children/students listed above have been determined to be uninjured. Medical control has been contacted and approved release to the custody of school officials (parent/ guardian) or to self if age ≥ 18 .

Name of EMS Provider

Name of School Authorized Representative

EMS Signature

Date

School Representative Signature

Date

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Region 3 School Bus and MCI Policy

Notice of Emergency Medical Services Response to a Minor

Date:

From:

Child's Name:

Members of our Emergency Medical Services agency were called to evaluate your son/ daughter/ ward today as a result of a bus collision/incident.

After responding to the above incident, we evaluated your child. Based on our assessment and statements made by the child, it was determined that he or she did not require emergency care and/or transportation to an emergency department at that time.

Whereas your child is a minor, it is our duty to inform you of this incident so that an informed decision can be made as to whether follow-up evaluation with a physician is desired.

The child was released to a designated school representative who accepted further responsibility for him or her.

If you desire additional information, please contact our agency at the above phone number.

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Region 3 Concealed Carry Weapons Policy

In order to comply with the passage of Illinois Firearm Concealed Carry Act, the following policy has been agreed to by Illinois EMS Region 3 as a Region 3 Policy. It applies to EMS providers with concealed and not concealed weapons.

General Guidelines

When EMS is called to respond to any call, they should always be alert for scene safety and potential changes as scenes should always be considered dynamic. A patient who has a Concealed Carry Weapon should, in most cases, be cared for with minimal interruptions in care. At any time that EMS encounters a situation where they do not feel their safety has been reasonably ensured, they may retreat, call for law enforcement support, and wait at a secure location until the situation is secured before returning to patient care. If EMS should encounter an uncooperative or altered mental status patient who possesses a weapon, law enforcement may be contacted to assist.

Since many hospitals have declared themselves weapon-free facilities, every reasonable effort should be made to encourage the patient to secure the weapon at the patient's home, vehicle or with appropriate family member. If the patient is a law enforcement/security officer, they should be encouraged to secure the weapon in their vehicle or with a supervisor. This should be documented in the patient care report. Should EMS encounter a situation where this is not possible, the weapon should remain holstered at all times. If transporting with a weapon, EMS should identify early in the communications report specifically, "**I have a firearm onboard and will need assistance on arrival.**" The receiving facility should have a designated process for assisting with this. Most likely this will involve a security officer meeting the patient in the ambulance garage area. Never should a weapon be left where it could be obtained by others.

While the professions of law enforcement and EMS often overlap, only those EMS agencies who are functioning as a Tactical EMS Unit or when members of law enforcement are responding while on duty should EMS providers respond to a call with a weapon. EMS agencies are supported in their efforts to be weapons-free facilities and no-carry signage on transport vehicles is appropriate. Should an EMS provider, who is responding to a call, possess a weapon, it should be secured in their personal vehicle prior to approaching the scene.

Pearls

Law enforcement/ security officers (when they are the patient) that remain in possession of their weapon will not be given sedation or pain medications.

Do not ask the patient whether he/ she has the right to carry a weapon. If the person has no legal right, they may become alarmed and cause EMS personnel harm.

Unless specific procedures have been established, all EMS providers should assure a safe scene before treatment should begin. EMS should always be alert to the dynamic scene conditions.

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Aero Medical Transportation Activation

Use of aero medical transport is a great tool in the care of acutely injured patients. As EMS continues to strive to provide the most appropriate care for a patient, the following guidance should be used to assist in decision making regarding use of aero medical transport.

A helicopter may be utilized when **ALL** of the following criteria are present:

- Patient meets 1 or more of any criteria items within step 1 or 2 Field Trauma Criteria,
- Patient is entrapped and extrication is expected to last greater than 20 minutes,
- The ground transport time will be greater than 15 minutes,
- The patient is NOT in traumatic cardiac arrest.

Step One

Glasgow Coma Scale	≤13
Systolic Blood Pressure (mmHg)	<90 mmHg
Respiratory rate	<10 or >29 breaths per minute* (<20 in infant aged <1 year), or need for ventilatory support

Step Two*

- All penetrating injuries to head, neck, torso and extremities proximal to elbow or knee
- Chest wall instability or deformity (e.g., flail chest)
- Two or more proximal long-bone fractures
- Crushed, degloved, mangled, or pulseless extremity
- Amputation proximal to wrist or ankle
- Pelvic fractures
- Open or depressed skull fracture
- Paralysis

A helicopter can be utilized when **ANY** of the following is present:

- Situation specifically approved by Medical Control
- Mass Casualty Situation

If a helicopter is requested, resources must be dedicated to establishing a landing zone (100 ft by 100 ft), establishing radio communications with the inbound helicopter (I-Reach or other identified channel) and assisting with access to the helicopter.

Some Critical Access Hospitals allow use of their helipad for intercept with a helicopter. This plan should be developed prior to any incident. Should this plan be enacted, the staff of the hospital cannot be requested to help with any aspect of the call or the patient must be seen in the facility.

The decision to request aero medical transport must be made early in the response so to avoid waiting for the helicopter when the patient is ready for transport.

If at any time a helicopter is deemed to be unnecessary and the patient is transported by ground or refuses transport, an incident report should be forwarded to the EMS Office. Included with the incident report should be the patient care report identifying the patient status as well as the dispatch information including all times for responding agencies and the agency/ organization making the helicopter request. All field activations of aeromedical resources qualify for continuous QI (CQI).

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Continuous Quality Improvement

In order to continuously monitor the quality of care provided under the Memorial EMS System, a Continuous Quality Improvement program exists at the System level. Certain call types automatically qualify for CQI review.

- Use of physical and/or chemical restraint by EMS providers
- Medication Assisted Intubations
- Paramedic initiated refusals
- All Alert Patient Report criteria (Stroke, Sepsis, Trauma, STEMI, & Arrest/Near-Arrest)
- Aero Medical resource utilization
- Requests for Override of Medical Control Order

Additional protocols may be added to the CQI process based on

- Utilization of pain medications
- Change in treatment protocol
- Protocols where a loss in quality is perceived
- Protocols where external factors impact EMS care

Additionally, opportunities to pilot (trial) changes in protocol or process will be implemented via the Continuous Quality Improvement process. Any changes that include researching patient outcomes and the variance in outcome based on alternative treatments will require, and will have, Institutional Review Board approval prior to the beginning of said changes. Participation in such projects may be voluntary or mandatory. Participation may be agency or provider specific based on capacity and prior involvement.

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MCI/ Tactical MCI Guidelines

As emergency responders, members must have the skills and training to adapt to a variety of situations. While it is impossible to plan for every event the following guidelines are designed to assist not only in the planning of likely events within an agency's own response area, but also to function within the larger response structure.

Incident Command System (ICS)

All EMS/ Fire/ Law Enforcement responders should, at minimum, be NIMS compliant by completing NIMS700 and 100 and being competent in functioning in an Incident Command System Structure.

Agency Having Jurisdiction (AHJ)

The agency whose primary response area the event occurs in, is the Agency Having Jurisdiction. That agency should initially establish command and initiate requests for additional resources. Per ICS, command can be passed to another provider with more capability or additional resources can assist the incident commander based on the situation.

Emergency Response Plan

Every county should have an Emergency Response Plan, including discussion of Mass Casualty events. This plan should be updated regularly and available to all responders in that area. This plan should include listings of available resources (people and supplies) within the county as well as general resource capabilities from neighboring counties and the mechanism with which dispatch should use to request those resources. The plan needs to include primary and secondary patient destination hospitals than can reasonably be utilized for units transporting from the scene. There must also be a mechanism where a hospital identifies when they have exceeded capacity and need additional patients diverted to other facilities.

Additional Resources

Every agency should have a mechanism to contact off shift staff to respond to an emergency. Additionally, it should be noted that not all staff may be needed initially, but may be needed in the twelve (12) and twenty-four (24) hour increments after the initial call. As information becomes available, agencies may want to start contacting staff to determine availability. **At no time should individuals or agencies self-dispatch.** Unless all communication/ dispatch mechanisms in the area impacted are lost, the established channels for dispatching agencies/ vehicles will be utilized. The Incident Commander should utilize normal channels of communication to request specific resources based on the incident as well as other community needs.

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MCI/ Tactical MCI Guidelines

Scene Safety

A reasonable attempt to control scene hazards should be established based on the capabilities of the responding departments. Based on the unlimited possibility of response situations, this should be based on a continuous assessment by responders based on their capabilities with any responder able to communicate concerns via ICS chain of command.

Mass Care

Medical responders should be knowledgeable of how to triage patients based on the SMART algorithm to rapidly categorize patients while only treating reversible life threats. Treatment teams should be established as soon as responders are available to begin treating victims and organizing based on triage category for prioritizing transport. Agencies must be able to work together to cache supplies as well as responders to be most focused on patient needs. It is reasonable to expect that traditional models for patient care will be modified. Extended scene treatment time may be needed, as well as transporting more than one patient at a time, but the goal should always be utilizing non-transport providers on scene and ambulance staff to transport as quickly as patient priorities can be established.

Tactical Incidents

The response to a tactical incident (where a warm zone response may be needed) is unlike that which EMS typically responds. It requires a very different mindset, approach, and equipment (both for providers and for patients). Any incident where violence is being enacted upon others requires EMS resources to stage a safe distance from the actual incident. **Responders are not to approach the scene until told to do so by law enforcement officers.** Responders and/or agencies not willing, not able, or not equipped to handle the needs of responding in a tactical environment should be identified prior to the incident so that alternate action plans can be established. Responders providing transport service should be the last option for filling this role as all ambulances available may be needed to transport patients.

Law Enforcement's priorities are to stop the attack, rescue victims, and then provide aid. Until the aggressor has been stopped more victims will be created. After the initial law enforcement response, additional officers will be assigned to Rescue Task Force. This is a team model that must be led by law enforcement who provide the security for EMS as well as the communication in regards to areas that are still deemed Hot Zone. Law enforcement determines hot, warm and cold zones. All responders must be aware that the zones are potentially fluid and subject to change based on the tactical situation as the event unfolds. Due to the nature of this response, only lifesaving treatment should occur at the location where victims are found. A Casualty Collection Point should be established based on EMS needs and law enforcement's opinion of a defendable location. Treatment will occur in this location until the victims can be moved to an ambulance corridor with law enforcement support. EMS will never move freely within the scene until a complete search of the building has advised no additional threats; this will take hours or even days.

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WELL-BEING OF THE EMS PROVIDER



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Infectious Disease Control Policy

The following procedure has been established in accordance with the Illinois State Statutes, Centers for Disease Control recommendations and OSHA standards. All Memorial EMS System agencies should have a specific exposure control program and post exposure plan.

Protective Measures

1. Utilization of body substance isolation gear during all patient contacts is an effective means of avoiding exposure to body fluids. EMS personnel should don protective gear prior to entering a scene or situation that may increase the risk of exposure to body fluids or other infectious agents.
2. Thorough hand washing should be accomplished immediately after each patient contact or handling of potential infectious vectors.
3. EMS personnel should consult their agency's exposure control program for specific guidelines in the type of protective gear to be worn.

Exposure

1. An exposure incident has occurred when, as a result of the performance of an EMS provider's duty, **the provider's eyes, mouth, mucous membrane or area of non-intact skin** has come in contact with body fluids or other potentially infectious vector. This includes parenteral contact with blood or other potentially infectious materials.
2. If EMS personnel treating and/or transporting a patient are directly exposed to a patient's body fluids or infectious vector, the provider(s) should immediately report the incident. This includes notifying the EMS provider's supervisor and following post exposure procedures. The ability to appropriately respond to the incident is significantly reduced if the incident is not reported upon arrival at the receiving facility.

Post Exposure Management

After an exposure has occurred:

1. Thoroughly cleanse the exposed area with soap and water immediately.
2. The eyes and/or mouth of the provider should be thoroughly rinsed with water, if exposed.
3. Immediately notify the supervisor of the emergency department where the source patient was transported. If the source patient was not transported to an emergency department, treatment should be based on unidentified source patient practices.

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Infectious Disease Control Policy

4. Complete applicable forms either *Exposure Report Form for Allied Health Professionals* via Memorial Intranet or *Communicable Disease Incident Form* if Intranet option not available at destination. The completed forms should be auto submitted to the EMS Office or left with the emergency department charge nurse in a sealed envelope for the EMS Office. The charge nurse will forward the envelope to the infection control department. The EMS provider should also provide a copy to his/her supervisor and to the EMS Office within 24 hours.
5. A request should be made for consent to test the source patient's blood for HBV/HCV/HIV infectivity. If consent is granted, a blood sample shall be drawn and results of testing documented. Testing is not necessary if the source patient is known to be infected with HBV or HIV.
6. Results of tests performed on the source patient shall be made available to the exposed EMS provider's private or occupational physician while maintaining confidentiality of all persons involved.
7. Unless emergency treatment is required for associated injuries along with the exposure. Evaluation in the emergency room can be replaced with the employer's occupational health provider. Occupational health providers are on call 24/7/365.
8. All findings or diagnosis shall remain confidential.

Questions concerning exposure control program requirements or post exposure procedures should be directed to the EMS provider's supervisor, training officer or infection control department.

Notification of Ambulance Personnel Exposed to Communicable Disease

1. If a patient is suspected to have, or is diagnosed with a reportable communicable disease, a copy of the ambulance patient care report will be forwarded to Infection Control Department as soon as possible by the receiving hospital emergency department supervisor.
2. The Infection Control Department will maintain a log and file. If any patients treated and/or transported by EMS providers are diagnosed as having one of the specified diseases, the designated EMS provider(s) will be notified by the Infection Control Department/EMS Office within seventy-two (72) hours after the confirmed diagnosis is known.

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Infectious Disease Control Policy

3. Specified diseases requiring notification of EMS personnel by the Infection Control Department include:

- Acquired Immunodeficiency Syndrome (AIDS)*
- AIDS-Related Complex (ARC)*
- Anthrax
- Chickenpox
- Cholera
- Diphtheria
- Hepatitis B
- Hepatitis non-A, non-B
- Herpes simplex
- Human Immunodeficiency Virus (HIV) infection*
- Measles
- Meningococcal infections
- Mumps
- Plague
- Polio
- Rabies (human)
- Rubella
- Severe Acute Respiratory Syndrome (SARS)
- Smallpox
- Tuberculosis (TB)
- Typhus

*For confirmed diagnosis of AIDS or HIV, the letter of notification will not be sent unless emergency personnel indicate that they may have had blood or body substance exposure.

4. When a hospital patient with a listed communicable disease is to be transported by ambulance personnel, the hospital staff sending the patient shall inform the ambulance personnel of any precautions to be taken to protect against exposure to disease. If a significant exposure occurs, the ambulance personnel shall immediately report the incident as indicated above.
5. The *Hospital Licensing Act* requires any information received in the notification process be handled in accordance with confidentiality policies and procedures.
6. Every agency should establish a designated person to assist in the process should an exposure occur.
7. At all times vehicles and equipment should be maintained in a clean, disinfected and ready to use condition. This should be done after every call, regardless of perceived need based on patient condition.

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Infectious Disease Control Policy

COMMUNICABLE DISEASE INCIDENT FORM
Use only if electronic form cannot be utilized.

Exposed emergency personnel providing care:

Police Firefighter/First Responder EMT/Paramedic/PHRN

Other: _____

Name of EMS Provider Exposed: _____

Home Address: _____

City/State/Zip Code: _____

Home Phone #: _____ Cell Phone #: _____ Work Phone #: _____

Name of Agency: _____ Run #: _____

Name of Supervisor: _____ Phone #: _____

Patient's Name: _____ Date/Time of Transport: _____

Type of Significant Exposure (Circle):

Parenteral (e.g. needle stick)

Mucous membranes (e.g. eyes, mouth)

Significant skin exposure to blood, urine, saliva, bile, semen, vomit (e.g. open sores, cuts)

Other (explain): _____

Additional Comments:

Post Exposure Procedure

1. Immediately notify your supervisor.
2. Notify the emergency department charge nurse when you arrive at the hospital with the patient.
3. Complete this form and make two (2) copies.
4. **Place the original in an envelope, seal and write "Attention Infection Control" on the front of the envelope.**
5. Give the sealed envelope to the emergency department charge nurse that the patient was transported to.
6. Provide your supervisor with a copy.
7. Forward a copy to the EMS Office within 24 hours.

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Latex Allergy Policy

A latex allergy is recognized as a significant problem for specific patients and healthcare workers. There are two (2) types:

- **Systemic** – Immediate reaction (within 15 minutes). Symptoms include generalized rash, wheezing, dyspnea, laryngeal edema, bronchospasm, tachycardia, angioedema, hypotension and cardiac arrest.
- **Delayed** – Delayed reaction (6 to 48 hours). Symptoms include contact dermatitis such as local itching, edema, erythema (redness), blisters, drying patches, crushing & thickening of the skin, and dermatitis that spreads beyond the skin initially exposed to the latex.

Persons at risk include patients with spina bifida, patients with urogenital abnormalities, workers with industrial exposures to latex, healthcare workers, persons with multiple surgeries, persons with frequent urinary procedures and persons with a history of predisposition to allergies.

Suspected Latex Allergy

1. Assess for suspected latex sensitivity by asking the following:
“Do you react to rubber bands or balloons? Describe.”
2. Initiate interventions for *Known Latex Sensitivity* if the latex sensitivity screen response suggests a latex hypersensitivity.
3. Notify the receiving hospital of suspected latex hypersensitivity.
4. Follow orders as per the *Allergic/Anaphylactic Reaction Protocol*.

Known Latex Allergy

1. Obtain a patient history and ask the patient to describe their symptoms of latex hypersensitivity.
2. Monitor the following signs and symptoms:
 - Itching eyes
 - Feeling of faintness
 - Hypotension
 - Bronchospasm/Wheezing
 - Nausea/Vomiting
 - Abdominal cramping
 - Facial edema

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Latex Allergy Policy

Known Latex Allergy (continued)

- Flushing
 - Urticaria
 - Shortness of breath
 - Generalized itching
 - Tachycardia
 - Feeling of impending doom
3. Notify the receiving hospital of known latex sensitivity.
 4. Follow orders as per the *Allergic/Anaphylactic Reaction Protocol*.
 5. Remove all loose latex items (*e.g.* gloves, tourniquets, etc.) and place in a closed compartment or exterior storage panel.
 6. Utilize available latex-free supplies when preparing to care for or transport the latex-sensitive patient. The latex-free supplies must be on the ambulance (or other apparatus) and readily available.
 7. Cover the mattress of the cot with a sheet so that no areas of the mattress are exposed.
 8. DO NOT administer any medications through latex IV ports.
 9. Wrap all tubing containing latex in Kling before coming into contact with the patient (*e.g.* stethoscope tubing, BP cuff tubing, etc.).

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**Substance Abuse Policy
(Including Marijuana)**

The Memorial EMS System considers substance abuse (drug and/or alcohol dependency) to be a health problem and will assist any System provider who becomes dependent on drugs and/or alcohol. The System, and ultimately our patients, will suffer the adverse effects of having a prehospital care provider whose work performance and attendance are below acceptable standards. Any employee whose substance abuse problems jeopardize the safety of patients, co-workers or bystanders shall be deemed "unfit to work". Any prehospital care provider involved in the Memorial EMS System who voluntarily requests assistance with a personal substance abuse problem will be referred to the EMS Medical Director for assessment and referral for treatment when necessary.

Testing for Drugs & Alcohol

The Memorial EMS System does not require employees to submit to blood and/or urine testing for drugs and/or alcohol as a routine part of their employment physical examination. However, individual agencies may require testing as part of the application process.

Any prehospital care provider may contact the EMS Medical Director (or his/her designee) if he/she has reasonable cause to suspect that a co-worker is under the influence of drugs (including Marijuana) and/or alcohol while on duty. The EMS Medical Director may choose to require the System provider to submit to a blood alcohol test and/or blood/urine toxicology screening. The cost of this testing procedure may be billed to the provider's agency, or in the case of a student, the requesting agency. Disputes related to billing of drug testing should not delay the procedure(s).

1. If a System provider who is required to submit to testing for drugs and/or alcohol refuses to cooperate, he/she will be subject to disciplinary action for insubordination (up to and including termination from the System).
2. Anyone caught tampering with, or attempting to tamper with his/her test specimen (or the specimen of any other prehospital care provider) will be subject to immediate termination from the System.
3. If any of the test results are positive, the EMS Medical Director will interview the provider. The EMS Medical Director will consult with the provider's agency to determine if referral to an assistance program shall occur.
 - The **first** occurrence will result in a referral of the prehospital care provider to the appropriate assistance program and the provider will be subject to disciplinary action as determined by the EMS Medical Director in consultation with the provider's agency/employer.
 - The **second** occurrence will result in disciplinary action as determined by the EMS Medical Director in consultation with the provider's agency/employer and may result in suspension of the provider's license and/or System certification.

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**Substance Abuse Policy
(Including Marijuana)**

Testing for Drugs & Alcohol (continued)

- The progress of employees with substance abuse problems who have been referred to an assistance program will be closely monitored by their agency/employer and the EMS Medical Director. The provider must successfully complete the entire required rehabilitative program and maintain the preventative course of conduct prescribed by the assistance program. He/she must attend the appropriate after-care program(s) and provide verification of compliance with the program requirements, including additional drug testing as determined by the EMS Medical Director and the agency/employer.
4. If the test results are negative, a conference with the EMS Medical Director and the provider's agency/employer will be held to determine what future action, if any, will be taken.
 5. If the prehospital care provider refuses to correct his/her health problems, he/she shall be subject to disciplinary action that pertains to all System providers who cannot, or are not, performing their job duties and responsibilities at acceptable levels.

The use, sale, purchase, transfer, theft or possession of an illegal drug is a violation of the law. *Illegal drug* means any drug which is (a) not legally obtainable or (b) legally obtainable but has not been legally obtained. The term *illegal drug* includes prescription drugs not legally obtained and prescription drugs legally obtained but not being used for prescribed purposes. Anyone in violation will be referred to law enforcement, licensing and/or credentialing agencies when appropriate.

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**Mental Health Assistance
and Critical Incident Stress
Management Team**

EMS providers face a number of challenges that can compromise their mental health and well-being. These include both acute stress after critical incidents, and chronic stress associated with day-to-day EMS work. Mental health assistance information (if needed) is always available through the MEMS office. For the more acutely stressful incidents, the *Critical Incident Stress Management Team* is an important resource in assisting personnel that are coping with these experiences.

1. EMS providers of the Memorial EMS System involved in an unusually stressful incident can contact the *Critical Incident Stress Management Team*.
2. The CISM team members have specialized training in providing pre-incident education, on-scene support services, defusing, demobilization, formal debriefings, one-on-one debriefings, follow-up services and specialty briefings.
3. Debriefings and stress management services are most effective when conducted within 72 hours of the incident.
4. The CISM Team Coordinator may be reached via Sangamon County Central Dispatch at 217-753-6666 or the Memorial EMS office at 217-788-3973
5. Trainings for CISM team members will be held as interest and availability exists in order to build a regional pool of volunteers who can assist in such situations.

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**EMS Equipment &
Supplies Policy**

Memorial EMS System providers must maintain response vehicles in a manner that will limit mechanical breakdown, provide a clean environment and be engineered for compliance with OSHA standards. Providers must also have minimum equipment and supplies specified by IDPH and the EMS Medical Director.

1. EMS providers shall notify the EMS Office and IDPH of any new or replacement vehicles (including temporary loaner vehicles).
2. Initial response vehicles (First Responder and BLS Non-transport units) shall be equipped and stocked in accordance with the IDPH *Non-Transport Vehicle Inspection Form*.
3. Ambulance (transporting) vehicles must meet general standards as specified on the IDPH *Ambulance Inspection Form* and be in compliance with the current recognized national standards for ambulances.
4. The addition of new equipment not listed on a specific EMS provider level checklist **requires approval by the EMS Medical Director**.



**MEMORIAL EMS SYSTEM
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IDPH Non-Transport Supply List



State of Illinois
Illinois Department of Public Health

**Emergency Medical Systems
Non-Transport Inspection Form**

Provider _____ Provider Number _____ V.I.N. (last four if applicable) _____

Provider Address _____ City/State/Zip _____

Phone Number _____ Contact E-mail _____

Vehicle Type or Stationary Unit _____ Location/Address _____

Level of Care ALS ILS BLS FR Local ID _____ EMS System _____ Date _____

Initial Annual Self Inspection Compliant Waiver (attached)

Issue license Reinspection required (non-life threatening equipment problems)

A condition has been identified that could result in harm to the public, this vehicle should be removed from service until corrections are made, a reinspection is conducted, and IDPH approves.

Equipment

- | | |
|--|---|
| <input type="checkbox"/> Adhesive tape rolls (2)
<input type="checkbox"/> Airways - Oropharyngeal airways (adult, child, infant)
<input type="checkbox"/> Airways - Nasopharyngeal airways (size 12-34 F w/lubricant)
<input type="checkbox"/> Bandages/ arm slings/triangular (2)
<input type="checkbox"/> Bandages/ roller, self adhering (4)
<input type="checkbox"/> Bandages/ sterile gauze pads (4x4) (10)
<input type="checkbox"/> Bandages/ Vaseline gauze (3"x 8") (1)
<input type="checkbox"/> Bandages/ trauma/universal dressings (2)
<input type="checkbox"/> Bandage scissors (1)
<input type="checkbox"/> Blanket (Mylar accepted) (1)
<input type="checkbox"/> Blood pressure cuffs (adult, child, infant) w/ gauges
<input type="checkbox"/> Burn Sheet (1)
<input type="checkbox"/> C-collars, adjustable or (1 each)-Adult Lg., Med., Sm., Child, Infant
<input type="checkbox"/> Cold Packs (2) and Warm packs (2)
<input type="checkbox"/> Communication equipment to contact hospital
<input type="checkbox"/> Defibrillator/AED - w/adult and pediatric pads | <input type="checkbox"/> Flashlight and Pen light
<input type="checkbox"/> Obstetrical Kit, sterile w/head cover (1)
<input type="checkbox"/> Oxygen equipment-adult, child infant masks (1 each)
Cylinder must be minimum 1200 with O2 tank key attached
<input type="checkbox"/> Oxygen flowmeter/regulator for 15 lpm with delivery tubing
<input type="checkbox"/> Personal protective items - isolation bags (1), non-porous gloves (2), face/eye mask (2), gowns (2)
<input type="checkbox"/> Run report forms (5)
<input type="checkbox"/> Squeeze bag-valve-mask - adult bag with adult mask
<input type="checkbox"/> Squeeze bag-valve-mask - child, infant, and neonate mask
<input type="checkbox"/> Splinting devices (2)
<input type="checkbox"/> Sterile solution (1000cc) in plastic bottles or bags
<input type="checkbox"/> Stethoscope (1)
<input type="checkbox"/> Suction Device with tubing and sterile single use suction catheters, one from each size range, 6 - 8; 10 - 12; 14 - 18.
<input type="checkbox"/> ILS/ALS system approved equipment (medication storage box, airway equipment, monitor/defibrillator)
<input type="checkbox"/> Meets temperature/environmental control standards for medication storage box. |
|--|---|

COMMENTS:

I verify that the information provided is true and correct to the best of my knowledge. I understand that misrepresentation of this information will constitute grounds to invalidate this inspection documentation and my result in loss of EMS provider licensure.

Pre-Hospital Care Provider/Owner or Representative Signature, Title and Date

EMS System Coordinator Signature and Date

Illinois Department of Public Health Representative Signature, Title and Date

IOCI 16-60

**MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL**

IDPH Ambulance Supply List



State of Illinois
Illinois Department of Public Health

**Emergency Medical Services (EMS) Systems
Ambulance Inspection Form**

Provider _____ License No. _____

Garage Address _____

VIN _____ Level of Care _____ Local ID _____ EMS System No. _____

Inspection Type _____ Inspected By _____

Inspection Date _____ Inspection Status _____ Action _____

National Standard: Federal Specifications for the Star of Life Ambulance Ground Vehicle Standards for Ambulances
 National Fire Protection Association

Main (On-board) Oxygen Equipment (1-9)

- [1] Main (on-board) Oxygen Cylinder is not empty
Main oxygen cylinder volume (psi) _____
- [2] Adult size non-rebreather oxygen mask (min 1)
- [3] Child size oxygen mask (min 1)
- [4] Infant size oxygen mask (min 1)
- [5] Adult size nasal cannulas (min 2)
- [6] Child size nasal cannulas (min 2)
- [7] Child size oxygen mask or equivalent (min 1)
- [8] Infant size oxygen mask or equivalent (min 1)
- [9] Dial flowmeter/regulator for 15 lpm

Portable Oxygen Equipment (10-19)

- [10] Portable oxygen cylinder (minimum size 'D')
Portable oxygen cylinder volume (psi) _____
- [11] Dial flowmeter/regulator for 15 lpm
- [12] Full spare portable oxygen cylinder (minimum size 'D')
- [13] Quick release, crash-stable, mounting bracket for portable oxygen cylinders
- [14] Adult size non-rebreather oxygen mask (min 2)
- [15] Child size non-rebreather oxygen mask (min 2)
- [16] Child size oxygen mask or equivalent (min 1)
- [17] Infant size oxygen mask or equivalent (min 1)
- [18] Adult size nasal cannulas (min 1)
- [19] Child size nasal cannulas (min 1)

Suction & Airway Equipment (20-27)

- [20] Onboard suction capable of obtaining 300mm HG within 4 seconds of clamping tubing
- [20a] Vacuum level can be adjusted
- [20b] Collection bottle holds 1000ml
- [20c] Wide bore suction tubing capable of reaching second patient being transported on squad bench
- [21] Portable battery operated suction capable of obtaining 300mm HG within 4 seconds of clamping tubing
- [21a] Wide bore suction tubing
- OR**
- [22] Manually operated suction device (IDPH approved)
- [23] Sterile, single-use suction catheters, two each size: 6, 8, 10, 12, 14, 18-French plus three tonsil tip semi-rigid pharyngeal suction tip catheters (with thumb suction control port)
- [24] Semi-rigid pharyngeal suction tips, with thumb suction control port, three(3)
- [25] Airway, Oropharyngeal - Adult, Child, Infant (sizes 0-5 or 50-100 mm)
- [26] Airway, Nasopharyngeal - sizes 14-34 French
- [27] Lubricant for nasopharyngeal airways
- Resuscitation Equipment (28-31)**
- [28] Adult squeeze bag-valve-mask ventilation unit with transparent adult mask (min 1)
- [29] Child size squeeze bag-valve-mask ventilation
- [29a] Child size transparent mask (minimum 1)
- [29b] Infant size transparent mask (minimum 1)
- [29c] New born size transparent mask (minimum 1)

**MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL**

Resuscitation Equipment (28-31) (continued)

- | | | | |
|---|--------------------------|---|--------------------------|
| [30] Automated External Defibrillator (AED) with Adult and Pediatric Capability | <input type="checkbox"/> | [55] Blood pressure cuff, infant | <input type="checkbox"/> |
| | | [56] Gauge(s) for blood pressure cuffs appropriately calibrated | <input type="checkbox"/> |

[30a] Adult AED Pads

- | | | |
|--------------------------|--|--------------------------|
| <input type="checkbox"/> | [57] Stethoscopes (two per vehicle) | <input type="checkbox"/> |
| | [58] Flashlight, for patient assessment, minimum one (1) | <input type="checkbox"/> |

[30b] Pediatric AED Pads

- | | | |
|--------------------------|--|--------------------------|
| <input type="checkbox"/> | [59] Adequate lighting to allow patient assessment | <input type="checkbox"/> |
|--------------------------|--|--------------------------|

OR

[31] Cardiac monitor capable of defibrillation, with Adult and Pediatric Capability

- | | | |
|--------------------------|---------------------------------|--------------------------|
| <input type="checkbox"/> | Medical Supplies (60-83) | |
| | [60] Trauma dressing Six (6) | <input type="checkbox"/> |

[31a] Adult AED Pads

- | | | |
|--------------------------|---|--------------------------|
| <input type="checkbox"/> | [61] Gauze pads (4" x 4"), sterile, Twenty (20) | <input type="checkbox"/> |
| | [62] Bandages (Gauze pads), soft roller, self-adhering (4" x 5 yards), ten (10) rolls | <input type="checkbox"/> |

[31b] Pediatric AED Pads

- | | | |
|--------------------------|--|--------------------------|
| <input type="checkbox"/> | [63] Vaseline gauze (3" x 8"), Two (2) | <input type="checkbox"/> |
| | [64] Adhesive tape, two (2) rolls | <input type="checkbox"/> |

Extrication/Immobilization/Splinting Equipment (32-50)

[32] Long spine board (72" x 16" min) with 3 sets of torso straps

- | | | |
|--------------------------|--|--------------------------|
| <input type="checkbox"/> | [65] Triangle bandages or slings, five (5) | <input type="checkbox"/> |
| | [66] Bandage shears (min 1) | <input type="checkbox"/> |

[33] Short spine board (32" x 16" min) with two (9-foot) torso straps, one chin strap and one head strap

- | | | |
|--------------------------|---|--------------------------|
| <input type="checkbox"/> | [67] Burn sheets (clean, individually wrapped), two (2) | <input type="checkbox"/> |
| | [68] Cold packs (3) | <input type="checkbox"/> |

OR

[34] Vest type wrap around extrication device

- | | | |
|--------------------------|--|--------------------------|
| <input type="checkbox"/> | [69] Obstetrical kit, sterile (minimum 1, pre-packaged with instruments and bulb syringe) | <input type="checkbox"/> |
| | [70] Material or device intended to maintain body temperature (i.e. aluminum foil, mylar blankets) | <input type="checkbox"/> |

[35] Infant size rigid cervical collar (min 1)

- | | | |
|--------------------------|--|--------------------------|
| <input type="checkbox"/> | [71] Sterile solution (normal saline)- 500 cc (four per vehicle) or 1,000 cc (two per vehicle) plastic bottles or bags | <input type="checkbox"/> |
|--------------------------|--|--------------------------|

[36] Child size rigid cervical collar (min 1)

- | | | |
|--------------------------|--|--------------------------|
| <input type="checkbox"/> | [72] Drinking water, 1 quart in non-breakable (may substitute 1000 cc sterile water) | <input type="checkbox"/> |
|--------------------------|--|--------------------------|

[37] Small adult size rigid cervical collar (min 1)

- | | | |
|--------------------------|-------------------------|--------------------------|
| <input type="checkbox"/> | [73] Epinephrine, adult | <input type="checkbox"/> |
|--------------------------|-------------------------|--------------------------|

[38] Medium adult size rigid cervical collar (min 1)

- | | | |
|--------------------------|-----------------------------|--------------------------|
| <input type="checkbox"/> | [74] Epinephrine, pediatric | <input type="checkbox"/> |
|--------------------------|-----------------------------|--------------------------|

[39] Large adult size rigid cervical collar (min 1)

- | | | |
|--------------------------|---|--------------------------|
| <input type="checkbox"/> | [75] Opioid antagonist, including, but not limited to, Naloxone, with administration equipment appropriate for the licensed level of care | <input type="checkbox"/> |
| | [76] Pediatric equipment/drug dosage sizing tape | <input type="checkbox"/> |

OR

[40] Rigid cervical collar adjustable to adult sizes (min 2)

- | | | |
|--------------------------|--|--------------------------|
| <input type="checkbox"/> | [77] Pediatric equipment/drug age/weight chart | <input type="checkbox"/> |
| | [78] Pediatric trauma score reference | <input type="checkbox"/> |

[41] Rigid cervical collar adjustable to pediatric sizes (min 2)

- | | | |
|--------------------------|--------------------------------------|--------------------------|
| <input type="checkbox"/> | [79] Adult trauma score reference | <input type="checkbox"/> |
| | [80] Emesis basin/Emesis bag (min 1) | <input type="checkbox"/> |

[42] Lower Extremity Traction Splint (adult)

- | | | |
|--------------------------|----------------------|--------------------------|
| <input type="checkbox"/> | [81] Bedpan, one (1) | <input type="checkbox"/> |
| | [82] Urinal, one (1) | <input type="checkbox"/> |

[43] Lower Extremity Traction splint, (child)

- | | | |
|--------------------------|--|--------------------------|
| <input type="checkbox"/> | [83] Pediatric specific restraint systems or age/size appropriate car safety seats | <input type="checkbox"/> |
|--------------------------|--|--------------------------|

[44] Extremity splints, adult, 2 long

- | | | |
|--------------------------|--|--------------------------|
| <input type="checkbox"/> | [84] Pediatric equipment/drug dosage sizing tape | <input type="checkbox"/> |
|--------------------------|--|--------------------------|

[45] Extremity splints, adult, 2 short

- | | | |
|--------------------------|--|--------------------------|
| <input type="checkbox"/> | [85] Pediatric equipment/drug age/weight chart | <input type="checkbox"/> |
| | [86] Pediatric trauma score reference | <input type="checkbox"/> |

[46] Extremity splints, pediatric, 2 long

- | | | |
|--------------------------|--|--------------------------|
| <input type="checkbox"/> | [87] Pediatric equipment/drug age/weight chart | <input type="checkbox"/> |
| | [88] Pediatric trauma score reference | <input type="checkbox"/> |

[47] Extremity splints, pediatric, 2 short

- | | | |
|--------------------------|--|--------------------------|
| <input type="checkbox"/> | [89] Pediatric equipment/drug age/weight chart | <input type="checkbox"/> |
| | [90] Pediatric trauma score reference | <input type="checkbox"/> |

[48] Medical grade patient restraints, 2 pair (arm and leg) for 4-point restraint

- | | | |
|--------------------------|--|--------------------------|
| <input type="checkbox"/> | [91] Pediatric equipment/drug age/weight chart | <input type="checkbox"/> |
| | [92] Pediatric trauma score reference | <input type="checkbox"/> |

[49] Wrecking bar (24" min)

- | | | |
|--------------------------|--|--------------------------|
| <input type="checkbox"/> | [93] Pediatric equipment/drug age/weight chart | <input type="checkbox"/> |
| | [94] Pediatric trauma score reference | <input type="checkbox"/> |

[50] Goggles

- | | | |
|--------------------------|--|--------------------------|
| <input type="checkbox"/> | [95] Pediatric equipment/drug age/weight chart | <input type="checkbox"/> |
| | [96] Pediatric trauma score reference | <input type="checkbox"/> |

Assessment Equipment (51-59)

[51] Pulse oximeter with pediatric and adult sensors

- | | | |
|--------------------------|--|--------------------------|
| <input type="checkbox"/> | [97] Pediatric equipment/drug age/weight chart | <input type="checkbox"/> |
| | [98] Pediatric trauma score reference | <input type="checkbox"/> |

[52] Blood pressure cuff, Large adult

- | | | |
|--------------------------|--|--------------------------|
| <input type="checkbox"/> | [99] Pediatric equipment/drug age/weight chart | <input type="checkbox"/> |
| | [100] Pediatric trauma score reference | <input type="checkbox"/> |

[53] Blood pressure cuff, adult

- | | | |
|--------------------------|---|--------------------------|
| <input type="checkbox"/> | [101] Pediatric equipment/drug age/weight chart | <input type="checkbox"/> |
| | [102] Pediatric trauma score reference | <input type="checkbox"/> |

[54] Blood pressure cuff, child

**MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL**

Personal Protective Equipment (84-86)

- [84] Impermeable biohazard-labeled isolation bag (min 1)
- [85] Nonporous disposable gloves
- [86] Face protection through any combination of masks and eye protection and face shields

Linens (87-88)

- [87] Blankets (min 2)
- [88] Sheets (min 2)

Communication (90-94)

- [89] Ambulance emergency run reports with data required by IDPH, (minimum 10)

OR

- [90] Electronic documentation with paper backup
- [91] Ten disaster triage tags
- [92] Illinois Poison Center telephone number
- [93] IDPH Central Complaint Registry telephone number (must be posted where visible to patient)
- [94] Ambulance-to-Hospital radio tested and working

Safety/General Vehicle (95-104)

- [95] State-approved Mass Casualty Incident (MCI) triage algorithms (START/JumpSTART)
- [96] Patient area is clean
- [97] Equipment in patient area is secured/crash-stable
- [98] Flashlight (min 1)
- [99] Fire extinguisher (5 pound ABC with current service tags, mounted in quick release brackets, one mounted in driver compartment and one in patient compartment)
- [100] Emergency warning lights operational
- [101] Siren operational
- [102] Flood lights operational
- [103] Current IDOT-issued Safety Inspection sticker on windshield
Expiration Date _____
- [104] No visually apparent issues which would compromise the safety of the patient, the ambulance personnel or the public

Inspection Comments

**MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL**

**Combined IDPH and
MEMS Supply List**

Item	Non-Transport					Transport		
	FR	BLS	TEMS	ILS	ALS	BLS	ILS	ALS
Wheeled multi-level cot w/ 3 sets of straps & shoulder harness						1	1	1
Three-Point fastener for cot						1	1	1
Cot fits securely in fastener						1	1	1
Secondary stretcher w/ 3 sets of straps						1	1	1
Infant oxygen mask	1	1	1	1	1	2	2	2
Adult nasal cannula	2	2	2	2	2	4	4	4
Child nasal cannula						4	4	4
Adult BVM	1	1	1	1	1	1	1	1
Child BVM	1	1	1	1	1	1	1	1
Infant BVM w/ Neonate Mask	1	1	1	1	1	1	1	1
Oropharyngeal airway kit size 00-5	1	1	1	1	1	1	1	1
Nasopharyngeal airway kit (12-34F) with Lubricant	1	1	1	1	1	1	1	1
Adult nebulizer mask		2	2	2	2	2	2	2
Pediatric nebulizer mask		1	1	1	1	1	1	1
Nebulizer kits		2	2	2	2	2	2	2
iGel size 3, 4, 5 each		1	1	1	1	1	1	1
iGel size 1, 1.5 each					1			1
iGel size 2, 2.5 each					1			1
Salem sump tube 16-18 Fr w/ 60 mL Catheterer tip syringe								1
Pair Magill forceps				1	1		1	1
Bougie				1	1		1	1
Laryngoscope handle				1	1		1	1
Laryngoscope blades-straight (sizes 1-4), each				1	1		1	1
Laryngoscope blades-curved (sizes 1-4), each				1	1		1	1
Cuffed endotracheal tubes (sizes 6.0-8.5), each				1	1		1	1
Spare Laryngoscope handle batteries				1	1		1	1
Adult end-tidal CO ₂ detector				1	1		1	1
Commercial ETT holder				1	1		1	1
10 mL syringe				1	1		1	1
Adapter for ETT Albuterol administration				1	1		1	1
Pediatric Magill forceps					1			1
Small laryngoscope handle					1			1
Un-cuffed ET tubes (size 2.5-5.5), each					1			1
Pediatric end-tidal CO ₂ detector					1			1
Commercial pediatric ETT holder				1	1		1	1
PEEP Valve devices (adjustable)								1
CPAP circuits					2			2
Chest decompression Needles 10g-14g 3.25 inch minimum length (2 total)			2		2			2
Blood pressure cuff, large adult						1	1	1
Blood pressure cuff, adult	1	1	1	1	1	1	1	1
Blood pressure cuff, child	1	1	1	1	1	1	1	1
Blood pressure cuff, infant	1	1	1	1	1	1	1	1
Gauge(s) for blood pressure cuffs calibrated	1	1	1	1	1	1	1	1

**MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL**

**Combined IDPH and
MEMS Supply List**

Item	Non-Transport					Transport		
	FR	BLS	TEMS	ILS	ALS	BLS	ILS	ALS
Stethoscopes	1	1	1	1	1	2	2	2
Penlight, or non-LED flashlight	1	1	1	1	1	1	1	1
Long spine board w/ three sets of torso straps	1	2	2	2	2	2	2	2
Spinal Board Straps/Spider Straps	1	2	2	2	2	2	2	2
Short spine board with 2 torso straps, 1 child strap & 1 head strap						1	1	1
OR Vest type wrap around extrication device (KED)						1	1	1
Rigid cervical collar adjustable to adult sizes (minimum 1)	2	2	2	2	2	2	2	2
Rigid cervical collar adjustable to pediatric sizes (minimum 1)	2	2	2	2	2	2	2	2
COD/Head block/towel rolls	1	2	2	2	2	2	2	2
Traction splint, adult						1	1	1
Traction splint pediatric						1	1	1
Extremity splints / Sam splints, adult (long)	2	2	2	2	2	2	2	2
Extremity splints /Sam splints, adult (short)	2	2	2	2	2	2	2	2
Extremity splints, pediatric (long)	2	2	2	2	2	2	2	2
Extremity splints pediatric (short)						2	2	2
SAM pelvic sling		1		1	1	1	1	1
Restraints (pair)				2	2	2	2	2
IV catheters (22g-14g) each			2	2	2		2	4
Saline locks			2	2	2		2	2
10ml Pre-filled saline flushes			5	5	5		5	5
Tubex syringe				1	1		1	1
Hypodermic needles (18g & 25g), each	3	3	5	5		3	5	5
IV start Kits or equivalent			5	5	5		5	5
IV tubing 10gtts			2	2	2		2	4
IV tubing 60gtts					1			2
0.22 Micron filter					1			1
0.9% Normal Saline (1,000 ml bags)			2	2	2		4	4
Syringes (30 & 60 ml) each				1	1		1	1
Syringes (1,3,& 10ml) each	2	2	3	3		2	3	3
Jamshidi IO needle					1			1
EZ-IO drill				1	1		1	1
Bariatric (15g 45mm) EZ-IO				1	1		1	1
Adult (15g, 25mm) EZ-IO				1	1		1	1
Pediatric (15g, 15mm) EZ-IO				1	1		1	1
Thermometer with disposable cover probes.						1	1	1
Sharps container	1	1	1	1	1	1	1	1
Alcohol preps	10	10	10	10	10	10	10	10
Atomizer syringes or adaptors	1	2	2	2	2	2	2	2
Sterile solution (saline/water) in plastic bottles 1000ml or equiv	1	1	1	1	1	2	2	2
Drinking water, one quart or 1,000 ml sterile water						1	1	1
Epinephrine, adult	1	1	1	1	1	1	1	1
Epinephrine, pediatric	1	1	1	1	1	1	1	1

**MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL**

**Combined IDPH and
MEMS Supply List**

Item	Non-Transport					Transport		
	FR	BLS	TEMS	ILS	ALS	BLS	ILS	ALS
Main (on-board) oxygen cylinder not empty						1	1	1
Portable oxygen cylinder: (minimum size "D")	1	1	1	1	1	1	1	1
Dial flowmeter / regulator for 15 lpm	1	1	1	1	1	1	1	1
Full spare portable oxygen cylinder (minimum size "D"), crash stable						1	1	1
Quick-release, crash-stable mounting racket for portable cylinders						1	1	1
Pediatric trauma score/ Broslow - Current with Pedi Trauma Score				1	1	1	1	1
Automated External Defibrillator (AED) with adult & pediatric capability	1	1	1			1		
Adult AED/ Defib pads pads	1	1	1	1	1	1	1	1
Pediatric AED/ defib pads	1	1	1	1	1	1	1	1
Cardiac monitor: 12-lead, defib, adult & pedi, capnography & transmit		opt.		1	1	opt.	1	1
Battery charger or spare battery for AED/ Defib	1	1	1	1	1	1	1	1
thermomter with disposable cover probes.					1	1	1	1
Pulse Ox Adult/Pedi probes	1	1		1	1	1	1	1
Obstetrical kit, sterile	1	1	1	1	1	1	1	1
Thermal absorbant blanket with head cover OR aluminum foil/ heat reflective material	1	1	1	1	1	1	1	1
<i>Emergency Childbirth Record Forms</i>	1	1	1	1	1	1	1	1
Glucometer w/ 1 bottle strips		1	1	1	1	1	1	1
Safety lancets		10	10	10	10	10	10	10
Testing solution 1bottle		1	1	1	1	1	1	1
Glucometer log		1	1	1	1	1	1	1
Onboard suction: obtain 300 mmHg w/ 4 sec. clamped, sadjustable, 1,000 mL container						1	1	1
Packages suction tubing	1	1	1	1	1	2	2	2
Portable battery operated suction: obtain 300 mmHg w/ 4 sec clamped	1	1	1	1	1	1	1	1
OR Manually operated suction device (IDPH approved)	1	1	1	1	1	1	1	1
Sterile, suction catheters, sizes: 6-18, every size						2	2	2
Sterile, suction catheters, sizes 6-8, 10-12, and 14-18, 1per range	1	1	1	1	1	1	1	1
Sterile semi-rigid pharyngeal suction tips				1	1	3	3	3
Trauma dressings (12" x 30")	2	2	2	2	2	6	6	6
Gauze pads 4" x 4", sterile	10	10	10	10	10	20	20	20
Gauze, soft, self-adhering (4" x 5 yards)	4	4	4	4	4	10	10	10
Vaseline gauze (3x 8)	1	1	1	1	1	2	2	2
Hemostatic gauze or rolled guaze for wound packing	1	1	1	1	1	1	1	1
Combat Application Tourniquet	1	1	1	1	1	1	1	1
Adhesive tape	2	2	2	2	2	2	2	2
Triangle bandages or slings	2	2	2	2	2	5	5	5
Bandage/Trauma shears	1	1	1	1	1	1	1	1
Burn sheets wrapped individually	1	2	2	2	2	2	2	2
Hot packs	2	2	2	2	2	2	2	2
Cold packs	2	2	2	2	2	3	3	3
Wrecking bar (24" minimum)						1	1	1
Goggles						1	1	1
Adequate lighting to assess patient						1	1	1

**MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL**

**Combined IDPH and
MEMS Supply List**

Item	Non-Transport					Transport		
	FR	BLS	TEMS	ILS	ALS	BLS	ILS	ALS
Electric clock w/ sweep second hand						1	1	1
Latex allergy kit (non-latex gloves, BP cuff sleeve, stethoscope)						1	1	1
Emesis basin or bag						1	1	1
Bedpan						1	1	1
Urinal						1	1	1
Pediatric specific restraint systems or age/ size appropriate care safety seats						1	1	1
Kleenex or toilet tissue						1	1	1
Impermeable biohazard-labeled isolation bag	1	1	1	1	1	1	1	1
Nonporous disposable gloves 1 box each small, medium & large	1	1	1	1	1	1	1	1
Face masks w/ eye protection or mask/ protective eyewear combile	1/staf	1/staf	1/staff	1/staf	1/staf	1/staf	1/staf	1/staf
Isolation gowns	1/staf	1/staf	1/staff	1/staf	1/staf	1/staf	1/staf	1/staf
Pillows w/ cases						2	2	2
Sheets						2	2	2
Blankets	1	1	1	1	1	2	2	2
Towels						4	4	4
Ambulance emergency run reports w/ data required by IDPH	5	5	5	5	5	10	10	10
Electronic documentation w/ paper backup						1	1	1
Illinois Poison Center Number						1	1	1
IDPH Central Complaint Hotline number (must be visible to patient)						1	1	1
Ambulance-hospital radio tested & working	1	1	1	1	1	1	1	1
Cell phone						1	1	1
Patient area clean						x	x	x
Equipment in patient area secured/crash-stable						x	x	x
Flashlight	1	1	1	1	1	1	1	1
Fire extinguishers (5 pound ABC, 2 w/ current service tag)						2	2	2
Emergency warning lights operational						x	x	x
Siren operational						x	x	x
Flood lights operational						x	x	x
Current Illinois DOT issued safety inspection sticker on windshield						x	x	x
No visually apparent issues that would compromise safety						x	x	x

MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL

EMR and BLS Medication List

EMR Medications – Minimum Requirements

<i>Unit Stock</i>	<i>Medication</i>	<i>Supplied</i>
2	Narcan	2mg/mL pre-filled syringe

BLS Medications – Minimum Requirements

<i>Unit Stock</i>	<i>Medication</i>	<i>Supplied</i>
3	Albuterol (Proventil)	2.5 mg/ 3 mL unit dose
4	Aspirin (ASA)	4 – 81mg OR 1 bottle chewable tablets
2	Epinephrine	1: 1,000 mg- 1 mL vials
1	Glucagon	1mg & diluent unit dose
1	Nitroglycerin (NTG)	1 bottle – 0.4mg
3	Oral Glucose	15g tube
2	Narcan	2mg/mL pre-filled syringe
1	Zofran (ODT)	4 mg ODT tablets

**MEMORIAL EMS SYSTEM
PREHOSPITAL POLICIES MANUAL**

ILS Medication List

TEMS & Rescue Department Specific Medications- *Elective* Requirements

<i>Unit Stock</i>	<i>Medication</i>	<i>Supplied</i>
1	Atropine	8 mg/20 mL
2	Benadryl (Diphenhydramine)	50mg/1mL vial
1	Cyanokit	5 g vial

ILS Medications – *Minimum Requirements*

<i>Unit Stock</i>	<i>Medication</i>	<i>Supplied</i>
3	Adenocard (Adenosine)	6mg/2mL vial
3	Albuterol (Proventil)	2.5mg/3mL unit dose
1	Aspirin (ASA)	4 – 81mg chewable tablets
3	Atropine	1mg/10mL pre-filled syringe
2	Atrovent (Ipratropium)	0.5mg/2.5mL unit dose
2	Dextrose 10%	250 mL infusion
6	Epinephrine 1:10,000	1mg/10mL pre-filled syringe
2	Epinephrine	1: 1,000 mg- 1 mL vials
1	Glucagon	1mg & diluent unit dose
4	Lidocaine	100mg/5mL pre-filled syringe
2	Narcan (Naloxone)	2mg/2mL prefilled syringe
1	Nitroglycerin (NTG)	1 bottle – 0.4mg
1	Ondansetron (Zofran)	4 mg ODT tablets
1	Ondansetron (Zofran)	4 mg/ 2 mL vial
<i>Controlled Substance Container</i>		
2	Versed (Midazolam)	10mg/2mL vial
1	Fentanyl	100mcg/2mL vial

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ALS Medication List

ALS Medications – Minimum Requirements

Unit Stock	Medication	Supplied
3	Adenocard (Adenosine)	6mg/2mL vial
3	Albuterol (Proventil)	2.5mg/3mL unit dose
3	Amiodarone	150 mg/3 mL with 100 mL D5W for infusion
1	Aspirin (ASA)	4 – 81mg chewable tablets
3	Atropine	1mg/10mL pre-filled syringe
2	Atrovent (Ipratropium)	0.5mg/2.5mL unit dose
2	Benadryl (Diphenhydramine)	50mg/1mL vial
1	Calcium Gluconate	1gm/ 10mL vial
2	Dextrose 10%	250 mL infusion
1	Dopamine	400mg/250mL in D5W
2	Epinephrine 1:1000	1: 1,000 mg- 1 mL vials
6	Epinephrine 1:10,000	1mg/10mL pre-filled syringe
1	Glucagon	1mg & diluent unit dose
1	Hurricane 20%	5 mL bottle
4	Lidocaine	100mg/5mL pre-filled syringe
2	Narcan (Naloxone)	2mg/2mL ampule
1	Nitroglycerin (NTG)	1 bottle – 0.4mg
1	Ondansetron (Zofran)	4 mg ODT tablet
1	Ondansetron (Zofran)	4mg/ 2 mL vial
2	Sodium Bicarbonate	50 mEq/50mL pre-filled syringe
1	Tranexamic Acid/ TXA	1gm/10mL
<i>Controlled Substance Container</i>		
2	Fentanyl	100mcg/2mL vial
1	Ketamine	500mg/10mL
2	Morphine	4mg/1mL tubex
2	Versed (Midazolam)	10mg/2mL vial

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Controlled Substance Policy

The Memorial EMS System recognizes the importance of medications carried on the ambulances in relationship to patient care. It is also important to understand the risks involving the potential abuse and addiction of controlled substances and to have tracking mechanisms in place.

1. All controlled substances will be kept inside each ambulance/apparatus within the drug box (preferably) or designated cabinet.
2. At the beginning of a shift, the on-coming Paramedic (or Intermediate at the ILS level) will verify that the controlled substance tag is secure and the tag number is to be verified with the log.
3. If the tag is **not** intact or the number is not verifiable for **any** reason, a complete inventory should be taken immediately, a supervisor shall be notified and an incident report will be completed and forwarded to the Memorial EMS Office.
4. Controlled substances shall be available for inspection by IDPH, Memorial EMS office, or any other authorized individual.
5. Each usage of a controlled substance must be documented on the proper “Controlled Substance Usage Log”. All of the following information is to be completed:
 - Date of administration
 - Time of administration
 - Old tag number
 - New tag number
 - FIN & Destination
 - Drug & dose given
 - Drug amount wasted
 - Total amount of drug
 - Paramedic signature (or intermediate signature at the ILS level)
 - Witness signature (RN or MD at the receiving hospital)
6. The controlled substances shall be inspected once a month. This inspection will be documented with the old and new tag number. Any discrepancies (e.g. missing medication, broken seals, etc.) should be reported to a supervisor immediately. If no problems are found, the log will be signed and witnessed.

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Controlled Substance Policy

7. By signing the log (at ALS agencies), the Paramedic is ensuring that the following controlled substances are secure:
 - **2 – Fentanyl 100mcg/2mL vial**
 - **2 – Morphine 4mg/1mL tubex**
 - **2 – Versed 10mg/2mL vial**
 - **1 – Ketamine 500mg/10ml vial**
8. By signing the log (at the ILS level), the Advanced EMT is ensuring that the following controlled substances are secure:
 - **2 – Versed 10 mg/2 mL vial**
 - **1- Fentanyl 100mcg/2mL vial**
9. Any controlled substance that has not been administered must be properly disposed of. The amount wasted must be noted on the log and witnessed by a nurse or physician at the receiving hospital.
10. Controlled substances (e.g. Fentanyl, Morphine, Versed, Ketamine) should be restocked at the receiving hospital if possible. The EMS agency may be billed for restocked controlled substances.
11. At the end of each shift, the paramedic (or intermediate at the ILS level) will verify that the controlled substance tag is secure and the tag number matches the log. Any new tag number must be documented on the log.
12. The controlled substance shift log form will be changed at the end of each month. Thus, a new log will be started on the 1st day of each month.

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Memorial EMS System Controlled Substance Usage Log

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Drug Shortage Policy

Due to the demand, expirations and other limiting factors, drug shortages seem to be a reality of the medical world in which we function. While seeking other supply options should always be explored there are times when shortages of desired medications cannot be alleviated and alternatives must be used. It would be impossible to plan for all possible shortages within this protocol manual. Instead providers must be ever aware that this issue exists and be attentive that attempts to address such shortages may be more or less obvious to providers. Therefore, providers must always be alert when pulling medications and verify the **six rights** before administering any medication. The following steps shall be followed:

1. In the event of a known or anticipated shortage the pharmacy will contact the EMS Office with the drug affected by the shortage and anticipated time frame of the shortage. A staff pharmacist and the EMS Medical Director will discuss the situation and develop a plan for responding to the shortage. This plan could include:
 - a. Changing the concentration of a drug that is already used by EMS. (I.e. EMS carries Morphine 4mg/4mL but instead will be given 10mg/1 mL.)
 - b. Using a different concentration such that the drug will be given differently. (I.e. Dextrose 50% is not available but D10 will be given to be infused over 15 minutes.)
 - c. Using an alternative drug concentration that can be reconstituted to make the unavailable drug. (i.e. Giving Epi 1:1,000 and 10 mL of Normal Saline with directions for making Epi 1:10,000)
 - d. Giving a replacement drug. (I.e. Lidocaine is not available but Amiodarone is. Amiodarone is provided with training given to all affected agencies.)
 - e. Not replacing a drug that is affected by shortage. (I.e. Narcan is affected by shortage; but no suitable replacement is available. Treatment would need to proceed to next step in protocol sequence.)
2. This plan will be communicated to all affected agencies and include any necessary training information.
3. This plan will be communicated to all affiliated hospital pharmacies.
4. Notice will be posted at the Pyxis where EMS providers obtain their medications.
5. When the shortage is over notice will be given to all affected agencies and previously posted, notices will be removed from the refill areas.

*Springfield Memorial
Hospital
EMS System*



Adult Prehospital Care Manual

Developed June 2013
Updated November 2023

**MEMORIAL EMS SYSTEM
ADULT PREHOSPITAL CARE MANUAL**

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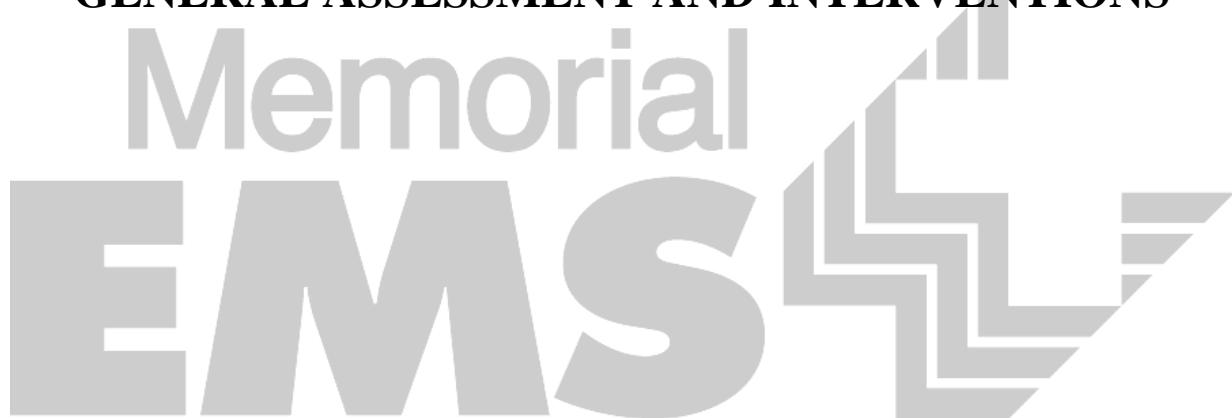
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GENERAL ASSESSMENT AND INTERVENTIONS



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**Patient Assessment Process &
Goals of Patient Care**

The goal of the patient assessment process is to measure the status of the patient's perfusion, identify life-threatening conditions, determine the patient's chief complaint and/or mechanism of injury, evaluate the complaint (OPQRST) and obtain a (SAMPLE) history.

The components of the patient assessment process include the scene survey, initial assessment (ABCs) and rapid trauma assessment or detailed physical exam. A focused physical exam may be conducted if the general impression of the patient's condition appears to be of a specific nature.

The EMS provider must constantly monitor the patient's perfusion status. Perfusion is defined as the adequate flow of blood through the body's tissues. For perfusion to be adequate the patient must have an adequate blood volume (with adequate supplies of oxygen and glucose), a properly functioning cardiovascular system and an intact neurological system for regulation of vascular dilation. Failure of the body to maintain adequate perfusion will result in signs and symptoms of shock.

Signs and symptoms of shock vary depending on the degree and cause of shock. Level of consciousness is an important assessment of the patient's vital organ perfusion status. A patient with an altered level of consciousness must be considered at risk of shock. Peripheral tissue condition is another important indicator of perfusion status. A patient with cool, clammy, pale or cyanotic skin should be considered at risk for shock.

If the patient is found to be in shock, the assessment process should be directed at finding the cause of shock, immediate interventions to support perfusion and prompt transport. Conversely, if the mechanism of injury or assessment findings suggests that the patient may have a condition that could result in shock, EMS personnel should carefully assess the patient's perfusion status and prepare to treat shock.

The goal of patient care is to identify patients in shock or at risk of shock, initiating care that will directly assist maintaining the patient's perfusion and safely transporting the patient to an appropriate emergency department or trauma center in a timely manner.

The EMS provider must maintain a constant awareness as to what would be the best course of action for optimum and compassionate patient care. The benefit of remaining on scene to establish specific treatments verses prompt transport to a definitive care facility should be a consideration of each patient contact.

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**General Patient Assessment &
Initial Care Procedure**

Scene Size-Up

1. Initiate body substance isolation (BSI) precautions prior to arrival at the scene for all patient contacts. Apply appropriate personal protective equipment (PPE). Use special care in the handling of sharps, contaminated objects, linens, etc.
2. Assure the well-being of the EMS crew by assessing **scene safety**. If the scene is not safe, do not enter until appropriate authorities have secured the area (i.e. violent crime calls, domestic violence calls, hazardous materials, etc.).
3. Determine the mechanism of injury, number of patients and need for additional resources.

General Patient Assessment

1. Initial Assessment (Primary Survey)
 - a) Airway: Assess airway patency and assess for possible spinal injury.
 - b) Breathing: Assess for respiratory distress, bilateral chest expansion, rate, pattern & depth of ventilations, adequacy of gas exchange, use of accessory muscles and lung sounds.
 - c) Circulation: Assess rate, quality & regularity of pulses, skin condition, hemodynamic status, and neck veins. Evaluate and record cardiac rhythm if indicated.
 - d) Calculate GCS, convey this in your report to the destination hospital.
 - e) Disability: Mini-neuro exam to include brief pupil check and assessment of mental status:
 - **A** – Alert
 - **V** – Not alert but responds to verbal stimuli
 - **P** – Not alert but responds to painful stimuli
 - **U** – Unresponsive to all stimuli
 - f) Expose: Examine patient as indicated.
2. Focused History and Physical Exam (Secondary Survey)
or Detailed Physical Exam
 - a) Vitals signs and Glasgow Coma Score
 - b) Chief complaint and history of present illness
 - c) Past medical history, current medications and allergies
 - d) Systematic head-to-toe assessment (detailed exam/secondary survey)

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**General Patient Assessment &
Initial Care Procedure**

Initial Medical Care

1. **Airway:** Establish and maintain a patient's airway by using appropriate patient positioning, airway adjuncts, suctioning and advanced airway control (intubation). Consistently monitor patient's ability to maintain their airway.
2. **Breathing:** Evaluate adequacy of respirations by assessing chest movement, lung sounds and skin condition. Initiate oxygen therapy if indicated and provide or assist ventilations as necessary.
3. **Circulation:** Evaluate perfusion status by assessing carotid and peripheral pulses and skin condition. Initiate CPR and early defibrillation if indicated. Control any external hemorrhage as soon as it is identified and establish IV access with IVF if indicated. No more than two (2) attempts should be made to establish an IV on scene unless requested by Medical Control. Assess both central and peripheral skin for cyanosis.
4. Loosen tight clothing and reassure patient; keep NPO (nothing by mouth) unless specified by SOP or Medical Control.
5. **BLS/ILS Units:** Initiate ALS intercept if indicated (Refer to *Intercept Policy* for optimal patient care).
6. Place the patient in a semi-Fowler's (45°) position of comfort unless contraindicated. Patients with altered mental status should be placed on their side. The backboard should be tilted for immobilized patients with altered mental status to prevent aspiration.
7. Evaluate pain. Ask the patient to rate any pain on a scale of "0-10" with "0" indicating a pain-free state and "10" being the worst pain imaginable.
8. Recheck and record vital signs and patient responses at least every **15 minutes** for stable patients, every **5 minutes** for critical patients **and after each intervention**. Be sure to accurately document the times the vitals were obtained.
****Special consideration with vital signs for inter-facility**. Discharged and BLS stable inter-facility transfers, vital signs may be taken every 2 hours with minimum being at the start and end of trip.**
9. Establish Medical Control contact as indicated.
10. Transport to the closest appropriate hospital. NOTE: Follow System-specific policies regarding patient destination and bypass procedures.

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**Routine (Initial) Patient Care
Protocol**

EMR Care

EMR Care should be focused on assessing the situation and establishing initial care to treat and prevent shock:

1. Open and/or maintain an open airway.
2. Loosen all tight clothing and be prepared to expose vital body regions if necessary.
3. Reassure patient by identifying yourself, explaining how you will help them and inform the patient that additional help is en route.
4. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
5. Place patient in a position of comfort. Sit patient upright unless the patient is hypotensive (BP<100mmHg systolic) or has a potential for cervical spine injury.
6. Ensure that EMS has been activated for further care and transport. Provide responding units with pertinent patient information.
7. Monitor the patient's level of consciousness, vital signs, etc. for any acute changes.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, providing care to treat for shock and preparing or providing patient transportation.

1. BLS Care includes all components of *EMR Care*.
2. Attach cardiac monitor and print rhythm strip for documentation by ALS, if indicated.
 - a. If indicated and capabilities exist, obtain and transmit 12 lead EKG. Print two extra copies for ALS.
3. Initiate ALS intercept, if indicated (or ILS intercept **if** ALS is unavailable).
4. Simultaneously with above, perform physical exam/assessment, obtain baseline vital signs and obtain patient history.
5. Continue to reassess patient en route to the hospital.
6. Transport should be initiated at the earliest possible opportunity.

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**Routine (Initial) Patient Care
Protocol**

ILS Care

ILS Care should be directed at conducting a thorough patient assessment, providing care to treat for shock and preparing or providing patient transportation. The necessity of establishing IV access is determined by the patient's condition and chief complaint. Consideration should also be given to the proximity of the receiving facility.

1. ILS Care includes all of the components of *BLS Care*.
2. If indicated, establish IV access using a 1000mL IVF with macro drip or blood tubing. No more than two (2) attempts should be made on scene. Infuse at a rate to keep the vein open (TKO) – approximately 8 to 15 drops (gtts) per minute. If no concern for fluid needs, an IV lock can be utilized.
3. Dependent upon patient condition, consider initiating IV access en route to the hospital.
4. Obtain a 12-Lead EKG, if indicated and transmit to receiving hospital. Provide the receiving nurse/physician with a copy of the 12-Lead upon arrival in the ED with request for physician review of the EKG as soon as possible.

ALS Care

ALS Care should be directed at conducting a thorough patient assessment, providing care to treat for shock and preparing or providing patient transportation. The necessity of establishing IV access is determined by the patient's condition and chief complaint. Consideration should also be given to the proximity of the receiving facility.

1. ALS Care includes all of the components of *ILS Care*.
2. Additional ALS care based on complaint specific protocol.

Pearls

- Transfers home, to an ECF, or inter-facility with an IV lock only (no meds or fluids) may be taken at the BLS level.
- Routine IV Fluids such as Normal Saline, Lactated Ringers, Dextrose solutions etc. may be transferred from facility to facility (at the ILS level and above) without medical control consultation.
- When determining the extent of care needed to stabilize the patient, the EMS provider should take into consideration the patient's presentation, chief complaint, risk of shock and proximity to the receiving facility.
- IV access should not be attempted on scene with a trauma patient.
- Obtain a 12-Lead EKG as soon as possible if indicated. See *12-Lead EKG Procedure* for indications.

Intravenous Cannulation Procedure (ILS, TEMS, & ALS Only)

Intravenous cannulation is used in the Prehospital setting to establish a route for drug administration and/or to provide fluid replacement. Intravenous cannulation should not significantly delay scene times or be attempted while on scene with a trauma patient who meets load-and-go criteria.

1. Explain to the patient the need for and a brief description of the procedure.
2. Observe the universal precautions for body substance exposure.
3. Obtain an appropriately sized catheter.
4. Check the fluid:
 - a) Is it the right fluid?
 - b) Check the expiration date.
 - c) Check for color and clarity (IVF should be clear with no particles).
5. Continue with procedure per scope of practice guidelines.

Saline Locks

Saline locks may be used if fluid replacement is not indicated:

1. Procedure per scope of practice guidelines

External Jugular Vein Cannulation (ALS Only)

External Jugular (EJ) access can be utilized only if traditional extremity cannulation cannot be established and the patient requires immediate stabilizing fluid replacement and/or drug administration route.

1. Only one (1) attempt at EJ vein cannulation may be made in the Prehospital setting.
2. Procedure per scope of practice guidelines.

Pearls

- If blood begins to back-flow in the IV tubing, check the location of the bag to assure it is in a gravity flow position and check to assure all valves are properly set. If the IV equipment is properly set and blood continues to back-flow, re-examine the vessel to assure arterial cannulation has not occurred.
- Edema, pain and lack of fluid flow at the site indicates infiltration and the IV must be discontinued.
- Do not partially withdraw a needle and reinsert into the catheter. This can cause catheter shear.
- Hang IV fluids in trauma patients, patients who are in shock, patients with unstable vital signs or patients requiring multiple drug administrations.
- External jugular vein cannulation is contraindicated in patients with suspected cervical spine injury.
- Medication infiltrates need to be verbally reported to receiving staff. Additional medical treatment may be required based on the medication and quantity of medication that infiltrated.

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**Intraosseous Cannulation
Procedure (ILS & ALS Only)**

In patients presenting with conditions such as shock from any cause, cardiac arrest, overdose with airway compromise, impairment in mentation or hemodynamic parameters, severe dehydration associated with unresponsiveness or shock, and multi-system trauma, it may be impossible to find an accessible vein. This is a challenge commonly faced by prehospital providers, which hinders optimal patient care by limiting treatment options and increasing scene time trying to obtain vascular access.

The intraosseous space may be viewed as a non-collapsible, easily accessed space for any fluid or medication. Intraosseous infusion is preferred over endotracheal routes of medication administration and is a viable alternative when IV therapy is not available or not accessible. Intraosseous infusion is immediately available, safe and effective.

Indications

1. Intravenous fluids and medications are emergently needed **AND** the patient demonstrates one of the following criteria (no I.V. attempts are required) :
 - Clinical signs of shock (syncope/ near syncope, confusion, diaphoresis, pallor, combativeness, tachycardia, tachypnea, hypotension) from any cause with a systolic BP less than 80 mm Hg.
 - Patients in extremis (at immediate risk of death or disability). Examples include: multi-system trauma, anaphylaxis, status asthmaticus, status epilepticus, life-threatening dysrhythmia or bradycardia, severe respiratory distress with hypoxia and/or alteration in consciousness, respiratory arrest, and overdose associated with alteration in vital signs, mental status, and/or dysrhythmia.
 - Cardiac/ Respiratory/ Traumatic Arrest
2. EZ-IO is only approved for patients greater than 3 kg. **If less than 3 kg**, ALS should initiate an IO using a **Jamshidi needle**.

Contraindications

1. Fracture of the bone selected for IO infusion (consider another approved site of insertion)
2. Excessive tissue at insertion site with absence of anatomical landmarks (consider another approved site of insertion)
3. Previous significant orthopedic procedures (i.e. prosthesis or hardware placement) (consider another approved site of insertion)
4. Infection at the site selected for insertion (consider another approved site of insertion)

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**Intraosseous Cannulation
Procedure (ILS & ALS Only)**

Considerations

- Drip rates will be slower than achieved with intravenous (IV) access. To improve continuous infusion rates, use a pressure infusion bag (or BP cuff).
- Insertion of the EZ-IO in conscious patients or patients responsive to pain has been noted to cause mild to moderate discomfort comparable to the insertion of a large bore IV catheter. IO infusion, however, has been noted to cause severe discomfort.

EZ-IO Procedure

1. Observe universal precautions.
2. Prepare the EZ-IO driver and needle set:
 - a) 15ga, 15mm long needle for patients weighing between 3kg and 39kg
 - b) 15ga, 25mm long needle for patients weighing greater than 40kg
 - c) 15ga, 45 mm long needle for patients weighing greater than 40kg with excessive tissue depth
3. Locate an appropriate insertion site. Approved sites and positioning include:
 - *Proximal Humerous* (preferred site) - Patient arm internally rotated with palm over the Abdomen. Place ulnar aspect of one hand over the Biceps tendon. Place the other hand over the middle of the Humerus. Using your thumbs, identify the greater Tuberosity. Insert the IO 1cm above the surgical neck. Angle the IO at a 45 degree angle to optimize insertion.
 - *Proximal Tibia*- 2 finger breadths below the Patella, 1-2cm medial to the Tibial Tuberosity.
 - *Distal Tibia*- Palpate the Medial Malleolus and then palpate 2cm proximal. Identify the borders of the Tibia to ensure optimal insertion.
4. Prep the site with Betadine or chlorhexidine and set up infusion solution as for regular IV.
5. Stabilize site and insert appropriate needle set.
6. Remove EZ-IO driver from needle set while stabilizing catheter hub.
7. Remove stylet from the catheter; place stylet in EZ-IO shuttle or approved sharps container.

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**Intraosseous Cannulation
Procedure (ILS & ALS Only)**

EZ-IO Procedure {Continued}

8. Attach 5-10mL syringe and aspirate bone marrow (0.5 mL) to confirm placement.
 - a) IO catheter should be at a 90 degree angle and firmly seated in the bone.
 - b) Blood may be visible at the tip of the stylet.
 - c) The IO catheter should flush freely without difficulty or evidence of extravasation. 5-10 mL IVF should be rapidly infused.
9. Connect the luer-lock equipped IV administration set.
10. For **patients responsive to pain** (or for previously unresponsive patients who become conscious or aware of pain):
 - a) Adult patients: **Lidocaine**: 40 mg IO (slowly) to reduce discomfort from infusion.
 - b) Pediatric patients: **Lidocaine**: 0.5 mg/kg up to 40 mg IO (slowly) to reduce discomfort from infusion.
11. Flush the IO catheter with 10mL of normal saline.
12. Utilize a pressure bag for continuous infusions where applicable. If a pressure bag is not available, wrap a BP cuff around the bag of normal saline and inflate the cuff until desired flow rate is achieved.
13. Dress site, secure tubing and apply wristband as directed. Can be accomplished with tape or commercial wristband.
14. Closely monitor EZ-IO site en route.

Pearls

- The Humeral head is the preferred site for IO access as it has flow rates 5x that of proximal tibia and is comparable to large bore peripheral IVs.
- Do not use an area previously used for IO attempts.
- **Sometimes marrow cannot be aspirated and does not necessarily indicate improper placement.**
- Excessive movement of the IO needle may result in leakage.
- Do not place more than one IO unless absolutely necessary.
- Cease use of device immediately if extravasation is evident.

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Medication Administration Procedure

Medication administration is accomplished by specific routes as indicated by the protocols. This procedure describes the traditional medication routes for use in the prehospital setting.

Preparation Steps

1. Observe universal precautions for body substance exposures.
2. Confirm the drug order, amount to be given and route.
3. Confirm that the patient is not allergic to the medication.
4. Check the medication:
 - Is it the right medication? *Beware of similar looking medications or a medicine not being in the "normal" location.*
 - Expiration date?
 - Color and clarity?
5. Explain to the patient *what* medication you are giving them and *why* you are giving it.
6. Assemble the necessary equipment.
 - Filter needles must be utilized any time a medication is removed from an ampule.
7. Calculate and draw up the desired volume of the drug or confirm the concentration of the drug if administering from a pre-filled syringe.
8. Eject any air from the syringe.
9. Confirm the medication again:
 - Is it the **right medication**?
 - Is it the **right patient**?
 - Is it the **right dose**?
 - Is it the **right route**?
 - Is it the **right time**?
 - Is the **right documentation** in the chart?

Intravenous Medication Administration

This procedure utilizes an IV that has previously been established and patency has been confirmed.

1. Procedure per scope of practice guidelines

EZ-IO Medication Administration

Refer to *Intravenous Medication Administration* steps. Unless specifically noted with a medication, any medication that can be given IV can be given IO.

1. Procedure per scope of practice guidelines.

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Medication Administration Procedure

Subcutaneous Medication Administration

Subcutaneous injections are administered into the subcutaneous tissue (not the superficial dermis or the muscle).

1. Procedure per scope of practice guidelines.

Intramuscular Medication Administration

Intramuscular injections are administered into the muscle tissue and require adequate perfusion for absorption.

1. Procedure per scope of practice guidelines.

Intranasal Medication Administration

The intranasal route of medication administration offers another option when intravenous access is either unavailable, or when a parenteral delivery system is impracticable or contraindicated. Intranasal administration is safe, effective, and decreases risk of inadvertent needle stick injuries.

1. Procedure per scope of practice guidelines.

Contraindications

- Nasal trauma or recent sinus or nasal surgery
- Epistaxis, nasal congestion, or significant nasal discharge
- Cardiac Arrest

Pearls

- Approved I.N. medication- Narcan, Fentanyl (Peds only), Midazolam (Peds only)
- Maximum volume per nostril is 1 mL (more than 1 mL will cause medication run off)
- Divide the total amount of fluid to be delivered equally between each nostril.
- Allow 15 minutes before administering subsequent intranasal doses.
- Patients who have abused inhaled stimulants such as cocaine may have decreased effectiveness of intranasal medications.
- Hypotension may decrease absorption.

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Pain Control Protocol

Pain, and the lack of relief from the pain, is the most common complaint among patients. Pain control can reduce the patient's anxiety and discomfort, making patient care easier. The patient's severity of pain must be properly assessed in order to provide appropriate relief. Managing pain clinically in the prehospital setting will provide greater patient care. While society is facing a narcotic medication addiction epidemic, the care provided by EMS in regards to pain management should be focused on the event at hand rather than concerns of increasing that problem in society. As such, Pain Control will be reviewed through the CQI process.

Emergency Medical Responder Care

First Responder Care should focus on the reduction of the patient's anxiety due to the pain.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. Assess level of pain using the *Pain Assessment Scale* (0-10) or the *Wong-Baker Faces Pain Rating Scale*.
3. Place patient in a position of comfort.
4. Reassure the patient.
5. Consider ice or splinting.
6. Reassess level of pain using the approved pain scale.

BLS Care

BLS Care should focus on the reduction of the patient's anxiety due to the pain.

1. BLS Care includes all of the components of *Emergency Medical Responder Care*.
2. Initiate ALS intercept, if indicated.

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Pain Control Protocol (cont.)

ILS Care

ILS Care should focus on the reduction of the patient's anxiety due to the pain as well as initiating pharmaceutical management.

1. ILS Care includes all of the components of *BLS Care*.
2. Initiate ALS intercept, if indicated.
3. Apply **Waveform Capnography** (Capnography must be applied to monitor respiratory status)
4. In cases of **extremity pain (deformity, inability to bear weight, inability to flex joints etc.), back pain, chest pain, burns, abdominal/ flank pain, and discomfort from an IO infusion** pain medication may be given without calling medical control if the systolic BP > 90mmHg. **Any other situation involving pain medication administration requires Medical Control order prior to giving the medication**
 - a) **Fentanyl:** 1mcg/kg IV (Maximum 100 mcg dose) over 2 minutes for pain. If unable to establish IV access, may administer Fentanyl 1mcg/kg IM (Maximum 100 mcg dose).

--In patients with known renal failure, the Fentanyl dose must be reduced by half.

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Pain Control Protocol (cont.)

ALS Care

ALS Care should focus on initiating and/or continuing pharmaceutical management of the patient's pain.

1. ALS Care includes all of the components of *ILS Care*.
2. In cases of **extremity pain (deformity, inability to bear weight, inability to flex joints etc.), back pain, chest pain, burns, abdominal/ flank pain, and discomfort from an IO infusion** pain medication may be given without calling medical control if the systolic BP > 90mmHg. **Any other situation involving pain medication administration requires Medical Control order prior to giving the medication.**

- a) **Morphine Sulfate:** 2-4mg IV every **5 minutes** to reduce the patient's anxiety and severity of pain.

If unable to establish IV access, may administer Morphine 2-4mg IM every **15 minutes**.

OR:

Fentanyl: 1mcg/kg IV (Maximum 100 mcg dose) over **2 minutes** for pain.

This IV dose may be repeated one time in **5 minutes** to a maximum of 200 mcg.

If unable to establish IV access, may administer Fentanyl 1mcg/kg IM (Maximum 100 mcg dose). IM dose may be repeated one time in **15 minutes** to a total of 200mcg.

-Fentanyl and Morphine can be given in either order or one without the other based on patient situation and need.

-In patients with known renal failure, the Fentanyl dose must be reduced by half. The dose may be repeated one time.

- b) **Ketamine:** 0.3 mg/ kg IV/IO IBW over **2 minutes** for continued pain only after either Morphine or Fentanyl has been administered.

Additional doses of Ketamine require medical control order.

-Additional doses of Morphine or Fentanyl may be given following Ketamine administration without medical control order.

Ketamine dosing is based upon Ideal Body Weight.

The formula for calculating IBW is:

Men= 50 kg + 2.3 kg for every inch over 5 foot tall.

Women= 45.5 kg + 2.3 kg for every inch over 5 foot tall.

**** Patient height must be documented in the PCR****

- c) **Ondansetron (Zofran):** 4mg IV/ ODT for nausea and/or vomiting. May repeat X 1 in 30 minutes, if needed. If known pregnant female, contact medical control prior to administering any Ondansetron.

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ADULT PREHOSPITAL CARE MANUAL

Pain Control Protocol (cont.)

Wong-Baker FACES® Pain Rating Scale



Memorial

Pearls

- Monitor the patient for respiratory depression when administering narcotics.
- Blood pressure should be monitored closely – check 5 minutes after narcotic administration (and prior to administering repeat doses).
- Verify that the patient is not allergic to the pharmaceutical agent prior to administration.
- Patients with ALOC or patients with unstable vital signs **should not receive pain medications**.
- **In patients with known renal failure, the Fentanyl dose must be reduced by half (ILS/ALS). The dose may be repeated one time (ALS)**
- Pain medication may be given IO to conscious patients experiencing discomfort from IO infusion.
- When IBW is calculated, the estimated height must be documented in the PCR.

CQI

- Use and security of controlled substances must follow strict procedures. Providers must follow waste and documentation procedure at all receiving facilities.
- If medication is diluted for more controlled administration, dilution must be noted with the waste of the remaining solution for accurate testing.

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Routine Cardiac Care Protocol

Patients experiencing chest pain with a suspected cardiac origin may present with signs and symptoms which include:

- Substernal chest pain / pressure
- Heaviness, tightness or discomfort in the chest
- Radiation and/or pain/discomfort to the neck or jaw
- Pain/discomfort/weakness in the shoulders/arms
- Nausea/vomiting
- Diaphoresis
- Dyspnea

Priorities in the care of chest pain patients include:

- Assessing and securing ABCs.
- Determining the quality and severity of the patient's distress.
- Obtain 12 lead, activate STEMI ASAP if applicable.
- Obtaining a medical history (including medications & allergies).

Timely transportation to the emergency department is an important factor in patient outcome.

First Responder Care

First Responder Care should be focused on assessing the situation and initiating care to reassure the patient, reducing the patient's discomfort and beginning treatment for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, providing care to reassure the patient, reducing the patient's discomfort, beginning treatment for shock and preparing or providing patient transportation.

1. BLS Care includes all components of *First Responder Care*.
2. **Aspirin (ASA):** 324mg PO (4 tablets of 81mg chewable aspirin by mouth).
 - Give all 4 --81mg ASA unless the patient can absolutely confirm taking ASA 325 mg within the last hour.
 - Ask the patient specifically about any history of hypersensitivity to ASA.
 - Do not give ASA to patients with active ulcer disease or known allergy to ASA.

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Routine Cardiac Care Protocol

BLS Care {Continued}

3. **Nitroglycerin (NTG)**: 0.4mg SL. May repeat every **3-5 minutes** to a total of 3 doses (if systolic BP remains > 110mmHg).
 - NTG (& ASA) may be administered without contacting Medical Control if the patient is age 30 or older, has chest pain consistent with acute myocardial infarction (AMI) and has a systolic BP > 110mmHg. **If the patient does not meet these criteria, consult Medical Control prior to administering NTG.**
4. Initiate ALS intercept as soon as possible.
5. Obtain **12-Lead EKG** (if equipped) and transmit to receiving hospital **ASAP**.
6. At any time should caregiver feels patient meets STEMI declaration criteria, treat based on *12 Lead Identified STEMI Declaration Protocol*.
7. Transport as soon as possible (transport can be initiated at any time during this sequence).

ILS Care

ILS Care should be directed at conducting a thorough patient assessment, providing care to reassure the patient, reducing the patient's discomfort, beginning treatment for shock and preparing or providing patient transportation.

1. Render initial care in accordance with the *BLS Care*.
2. Obtain **peripheral IV** access.
3. Manage pain, nausea and vomiting based on *Pain Control Protocol*.

ALS Care

ALS Care should be directed at conducting a thorough patient assessment, providing care to reassure the patient, reducing the patient's discomfort, beginning treatment for shock and preparing or providing patient transportation.

1. ALS Care includes all components of *ILS Care*. If time permits, establish a 2nd line (preferably an 18g saline lock) en route.
2. **Contact receiving hospital** as soon as possible, especially if you have sent them a STEMI EKG.

Routine Cardiac Care Protocol

Critical Thinking Elements

- Consider the patient to be in cardiogenic shock if the patient has dyspnea, diaphoresis, a systolic BP < 100mmHg, with signs of congestive heart failure.
- EKG limb leads should actually be placed **on the patient's limbs!**
- Consider carrying gowns to place the patient in during 12-lead acquisition. It will help the E.D. or cath-lab if needed.
- A pulse oximeter is a tool to aid in determining the degree of patient distress and the effectiveness of EMS interventions.
- NTG that the patient self administers prior to EMS arrival should be reported to the receiving hospital. Subsequent doses should be provided by the EMS unit's stock.
- **Medications should not be administered IM to a suspected AMI patient.**
- Use nitro with caution if an Inferior M.I. is suspected as this may cause a severe drop in blood pressure. Aggressively treat with fluids if BP <100mmHg
- **Nitro is contraindicated** if the patient has taken erectile dysfunction medications such as Sildenafil (Viagra), Tadalafil (Cialis), and Vardenafil (Levitra)

Pearls

- **Time is Muscle.** Responders must understand the process from First Medical Contact to delivery at Percutaneous Coronary Intervention center. A change in the sequence of steps may be the most expeditious way to impact total time to intervention for the patient.
- **Use of the auto-diagnose function on a 12-Lead EKG comes with its own risks/ benefits.** Auto-diagnose is most accurate when it identifies a STEMI, but does not guarantee that the patient is suffering from STEMI. Lack of identification does NOT guarantee the patient is not suffering a STEMI.

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**12 Lead Identified STEMI
Declaration Protocol**

Early identification of myocardial infarction (STEMI) is crucial. The benefits of thrombolytic therapy or Percutaneous Coronary Intervention (cardiac cath lab) are time-dependent and the 12-Lead EKG may provide early recognition of acute myocardial infarction (AMI). Remember **time is muscle!** A 12-Lead EKG is an assessment tool that can be completed by most EMS providers. Reading of the EKG is an advanced skill that will be verified by the Emergency Department physician.

Indications for a 12-Lead EKG include (but are not limited to):

- Chest pain / discomfort
- Epigastric pain/ nausea
- Shortness of breath of suspected cardiac etiology
- Blunt chest trauma
- Pulmonary edema / Cardiogenic shock
- Wide complex tachycardia
- Symptomatic bradycardia
- Vague “unwell” symptoms in diabetic and elderly patients
- Unstable patients with symptoms to suspected cardiac origin.

Upon determining that a patient has a complaint or symptoms that indicate performing a 12-Lead:

1. Initiate **Routine Cardiac Care Protocol** and **obtain 12-Lead EKG as soon as possible.**
2. Transmit the EKG and **contact the receiving hospital** as soon as possible.
 - a. If EKG findings are suspicious of STEMI, scene time should be limited, but more importantly a report to the receiving facility should be completed so that arrangements can be made to take patient directly to the Cardiac Cath Lab, if needed.
 - b. **Concurrent processes of activating the Cardiac Cath Lab WHILE EMS care and transport occurs will facilitate faster delivery of needed interventions.** A report including what additional interventions EMS will complete that is made earlier can significantly increase the ability to go directly to CCL rather than EMS waiting until all treatment has been completed and then contacting Medical Control.
3. **Defib Fast Patches** must be applied (location per manufacturer recommendation) to any suspected STEMI patient, regardless of their perceived stability.
4. **Contact Medical Control** with patient report and verification of 12-Lead EKG findings.
 - a. EMS Report should follow format of an *EMS Alert Patient Report*.
 - i. EMS must know pre-hospital CCL activation process for all facilities they transport to as well as locations of each facility's CCL.
5. CQI is completed on all STEMI diagnosis patients. EMS paperwork should include EKG and any monitor tracings.

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**12 Lead Identified STEMI
Declaration Protocol**

EMS Alert Patient Report- STEMI

The following information and format necessitate expedited delivery of information for potential pre-hospital STEMI declaration.

1. Unit identification
2. ETA & Destination if other than Medical Control Center being contacted.
 - a. (Agencies should utilize their approved local Medical Control).
 - b. (Agencies whose normal Medical Control Center may not be the receiving destination of a STEMI patient must communicate early to determine destination. Report should include everything needed to activate CCL team.)
3. “Inbound EMS Alert Patient Report- Potential STEMI.”
 - a. The above statement should be made within the first 5 seconds of the communication.
4. History of present illness
 - a. Chief complaint
 - b. Onset
 - c. EKG finding
5. Patient Status
 - a. Level of consciousness
 - b. Vital Signs
 - c. Additional pertinent complaints
6. Acknowledge necessary treatment plan. (May not be complete at time of communication.)
7. Determine destination (facility and location).

Transporting Units

1. Destination decisions must be informed decisions based on local and regional destination capabilities, time since onset and transportation distances.
 - a. See *EMS Triage Destination Plan*.
 - b. Include **Medical Control** with decision making.

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Cardiogenic Shock Protocol

Cardiogenic shock (sometimes referred to pulmonary edema or heart failure) occurs when the heart loses its ability to effectively pump blood, resulting in hypoperfusion of organs. The signs and symptoms of cardiogenic shock include:

- Pain, heaviness, tightness or discomfort in the chest with hypotension (systolic BP < 100mmHg)
- Rales or crackles (“wet” lung sounds indicating pulmonary edema)
- Pedal edema (while not an acute finding, may be a clue to underlying cardiomyopathy)
- Dyspnea
- Diaphoresis
- Nausea/vomiting

Patients with a history of coronary artery disease, MI or previous CHF have an increased risk. Priorities in the care of the cardiogenic shock patient include:

- Assessing and securing ABCs.
- Determining the quality and severity of the patient’s distress.
- Identifying contributing factors of the event.
- Obtaining a medical history (including medications and allergies).

Timely transportation to the emergency department is an important factor in patient outcome.

First Responder Care

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen**: If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.

BLS Care

1. BLS Care includes all components of *First Responder Care*.
2. Initiate ALS intercept and transport as soon as possible.
3. Obtain **12-Lead EKG** and transmit to receiving hospital if capabilities exist.
4. Apply **Waveform Capnography** (if equipped)

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Cardiogenic Shock Protocol

ILS Care

1. ILS Care includes all components of *BLS Care*.
2. Obtain **Peripheral IV** access.

ALS Care

1. ALS Care includes all components of *ILS Care*.
2. Consider multiple large bore IVs
3. Ready IVF on pressure bag and start **NS IV fluid bolus** if hypotensive with a goal systolic blood pressure > 90 mmHg. Caution in the setting of CHF (Rales in lungs)
4. Manage all dysrhythmias according to appropriate protocols.
5. **Dopamine:** Begin infusion at 24gtts/min (2 gtts/ 5 seconds). Increase by 12gtts/min (2 gtts/ 10 seconds) every **2 minutes** to achieve and maintain a systolic BP of at least 100mmHg. Closely monitor vital signs.
 - a. *Dopamine is provided premixed (400mg in 250mL D5W). This yields a concentration of 1600mcg/mL. The initial rate of infusion is 1-10mcg/kg/min which can be achieved with a 24gtts/min infusion rate.*
 - b. *Dopamine premix and 60 gtt tubing must be stored together in drug bag.*
6. Contact receiving hospital as soon as possible.

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**Cardiac Arrest Pit Crew CPR
Protocol**

The successful resuscitation of patients in cardiac arrest is dependent on a systematic approach of initiating life-saving CPR and early defibrillation and transferring care to advanced life support providers in a safe, timely, and effective manner. **The majority of adults who survive non-traumatic cardiac arrest are resuscitated from ventricular fibrillation with defibrillation but require high quality CPR, specifically chest compressions, for neurologically intact survival.** The primary factor for successful defibrillation and resuscitation is decreasing the time interval from onset of cardiac arrest to effective CPR, defibrillation and advanced life support. **Uninterrupted CPR without pauses is the goal of Pit Crew CPR.**

First Responder Care

First Responder Care should be focused on confirming that the patient is in full arrest and in need of CPR. Resuscitative efforts should be initiated *immediately* by beginning chest compressions, opening the airway and initiating ventilations while attaching a defibrillator.

1. Determine unresponsiveness. Confirm that a transporting unit (and/or ALS intercept) has been activated.
2. Immediately initiate CPR.
 - a) First rescuer at patient's right side.
 - i. Compressions at a rate of 120/ minute. Consider use of a portable metronome to keep high quality pace of compressions.
 - ii. Counting out every 20th compression.
 - iii. First and second rescuer change roles NOT locations every two minutes/ 240 compressions while rhythm/ pulse check occurs.
 - b) Second rescuer at patient's left side.
 - i. Place patient on AED or manual defibrillator.
 - ii. Defibrillating, if indicated, after every 2 minute cycle.
 - c) Third rescuer at patient's head.
 - i. Ensures seal of face mask of BVM with two hand seal.
 - ii. Reminds rescuer to provide the ventilations after every 20th compression.
3. Continue based on Pit Crew CPR sequence and roles.

BLS Care

BLS Care should focus on maintaining good CPR and defibrillation, if indicated. Transporting BLS units should initiate an ALS intercept as soon as possible. The decision to initiate transport should be made based on distance to ALS, number of providers currently available and potential for rendezvous locations.

1. BLS care includes all of the components of *First Responder Care*.

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**Cardiac Arrest Pit Crew CPR
Protocol**

BLS Care (Continued)

2. 2 minutes cycles of CPR should be continued. Ventilation via BVM is acceptable method while on scene so long as compliance is obtained.
 - a. Consider placement of OA/NA.
 - b. A Lucas II, rescue pump, or other system approved device can be implemented at any pulse check pause.
3. Place system approved **Supraglottic Airway Device** (when possible) and continue ventilations (third or subsequent rescuer).
4. **Place Waveform Capnography** (if equipped) to monitor airway placement and ID possible ROSC

ILS Care

ILS Care should focus on maintaining the continuity of care by confirming that the patient is in cardiac arrest and maintaining quality resuscitation initiated by earlier providers.

1. ILS care includes all of the components of *BLS Care*.
2. **Continue cycles of CPR.** Providers should be changed out at 2 minute interval or when not performing chest compressions.
 - a. Initial three responder positions should continue to provide the BLS Triangle care.
3. Transition from AED to ILS defibrillator.
4. Evaluate current resuscitation efforts and address any gaps.
5. Obtain **Vascular Access** via IO or IV.
6. Treat based on appropriate cardiac protocol.
7. Prior to patient movement for transport **Obtain Definitive Airway** based on *Supraglottic Airway Procedure* or *Advanced Airway Procedure* if not already done.
8. A system approved Impedance Threshold Device can be added after placement confirmation (for patients > 1 yr old).

ALS Care

ALS Care should focus on maintaining the continuity of care by confirming that the patient is in cardiac arrest and continuing resuscitative efforts initiated by the First Responders.

1. ALS care includes all of the components of *ILS Care*.
2. Determine appropriateness for transport.
3. Exercise caution so to not detract from high quality CPR and interventions in an attempt to expedite transport. There is greater potential for successful resuscitation if attention to quality supersedes a perceived need to rush to the Emergency Department.
6 rounds of high quality CPR/ care should be the goal prior to considering transport (unless prior ROSC is achieved and maintained).
4. Place **OG tube** if time permits to relieve gastric distention (if patient is intubated or supraglottic airway is in place).

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**Cardiac Arrest Pit Crew CPR
Protocol**

Pearls

- If the cardiac arrest is witnessed by EMS personnel, defibrillate as soon as possible.
- Do not touch, ventilate or move the patient while the AED is analyzing.
- Patients with implanted pacemakers or implanted defibrillators (AICDs) are treated the same way as any other patient; however do not place the electrodes, Quick Combo pads or Fast Patches over the top of the pacemaker or AICD site.
- Treat the patient – not the monitor. A rhythm present on the monitor screen should NOT be used to determine pulse. If the monitor shows a rhythm and the patient has no pulse, begin CPR.
- Trauma patients in cardiac arrest should be evaluated for viability. If the patient is to be resuscitated, begin **CPR and LOAD & GO**.
- A medical cardiac arrest patient will benefit from a controlled resuscitation rather than hasty resuscitation that results from the urge to transport immediately.
- Resuscitation and treatment decisions are based on the duration of the arrest, physical exam and the patient's medical history. Consider cease-effort orders if indicated.
- Consider underlying etiologies and treat according to appropriate protocols. Until likely cause is identified, treatment on scene encompasses nearly everything Emergency Department provides. Care on scene should focus on quality first before emergent transport.



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Cardiac Arrest Pit Crew CPR Protocol

	Position 1-Right	Position 2-Left	Position 3-Head	Position 4	Position 5-ALS	Position 6- Code Commander
2 minute cycle (240 compressions)	<ul style="list-style-type: none"> • Check LOC • Initiate Chest Compression (CC) • Rate of 120 • Full Recoil 	<ul style="list-style-type: none"> • Apply Defib • Situate defib at patient's L shoulder • Assist with Respirations every 20 CC • After clear-pushes Defib button until moved to manual defib 	<ul style="list-style-type: none"> • Count- every 20th announced • 2 hand seal on BVM • Insert Oral Airway • Remind 1/2 to ventilate during upstroke of CC 	<ul style="list-style-type: none"> • Assist where needed 	<ul style="list-style-type: none"> • May be ILS until ALS arrival 	<ul style="list-style-type: none"> • Can be same person as #5
	Defib	If	Indicated	CC	During	Charge
2 minute cycle (240 compressions)	<ul style="list-style-type: none"> • Situate airway bag at pt R shoulder • Hook up O2 to BVM • Assist with Respirations every 20 CC • Assemble supraglottic /ETT.. Insert 	<ul style="list-style-type: none"> • CC • After clear-pushes Defib button until moved to manual defib 	<ul style="list-style-type: none"> • Count- every 20th announced • 2 hand seal on BVM • Remind 1/2 to ventilate during upstroke of CC 	<ul style="list-style-type: none"> • Obtain history • Obtain patient info 		
	Defib	If	Indicated	CC	During	Charge
2 minute cycle (240 compressions)	<ul style="list-style-type: none"> • CC 	<ul style="list-style-type: none"> • Assist with Respirations • After clear-pushes Defib button until moved to manual defib 	<ul style="list-style-type: none"> • Count- every 20th noted • 2 hand seal on BVM • Remind 1/2 to ventilate during upstroke of CC 	<ul style="list-style-type: none"> • Develop plan for patient move 	<ul style="list-style-type: none"> • Situate ALS equipment at pt's feet. • Prep IO, fluids and pressure bag • Insert IO • Admin first Epi 	<ul style="list-style-type: none"> • Oversee status of code • Complete any interventions not already completed

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ADULT PREHOSPITAL CARE MANUAL**

Cardiac Arrest Pit Crew CPR Protocol

	Defib	If	Indicated	CC	During	Charge
2 minute cycle (240 compressions)	<ul style="list-style-type: none"> • If not already completed, plan for advanced airway • Assist with Respirations 	<ul style="list-style-type: none"> • CC • After clear-pushes Defib button until moved to manual defib 	<ul style="list-style-type: none"> • Count- every 20th announced • 2 hand seal on BVM • Remind 1/2 to ventilate during upstroke of CC 		<ul style="list-style-type: none"> • Transition to manual monitor mode • Transition to CC during charge AND THEN monitor check & defib 	<ul style="list-style-type: none"> • Review Hs & Ts • Correct and issues found
2 minute cycle (240 compressions)	Defib	If	Indicated	CC	During	Charge
2 minute cycle (240 compressions)	<ul style="list-style-type: none"> • CC 	<ul style="list-style-type: none"> • Assist with Respirations • After clear-pushes Defib button until moved to manual defib 	<ul style="list-style-type: none"> • Count- every 20th announced • 2 hand seal on BVM • Remind 1/2 to ventilate during upstroke of CC 		<ul style="list-style-type: none"> • Administer anti-arrhythmic 	
2 minute cycle (240 compressions)	Defib	If	Indicated	CC	During	Charge
Repeat	As	Needed	Repeat	As	Needed	Repeat

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**Cardiac Arrest Pit Crew CPR
Protocol**

Assumptions

- BLS CPR is the priority. ILS/ALS interventions begin when qualified personnel arrive and movement to ILS/ALS interventions will not detract from BLS CPR.
- Patient remains in cardiac arrest. If no shock indicated, may need to transition to different treatment guideline(s).
- Pulse check does not occur until monitor check at end of every 2 minute CPR cycle.
- Pit Crew CPR Algorithm is designed based on AHA guidelines, but supersedes AHA ratios to improve upon the quality of CPR given in the minutes after initial arrest.
- For agencies that have identified difficulties in number of responders, modifications may be needed. Those should be identified and developed early and in cooperation with local Medical Control and additional responding agencies.
- CPR should not be interrupted to switch out providers for advanced procedures (an ALS provider doing compressions should not stop compressions to move to another role) unless it is time for a pulse/ rhythm check.
- If at any time the patient regains a pulse (ROSC), consistent attention must be given to ensure the pulse is not lost. Treat patient based on appropriate protocol.

EMS Alert Patient Report- Arrest/ Near Arrest

The following information and format necessitate expedited delivery of information for arrest and near arrest patients (cardiac and respiratory). Trauma should follow trauma format.

1. Unit identification
2. ETA & Destination if other than Medical Control Center being contacted.
 - a. (Agencies should utilize their approved local Medical Control).
3. “Inbound EMS Alert Patient Report- Arrest.”
 - a. The above statement should be made within the first 5 seconds of the communication.
4. History of present illness
 - a. Witnessed or not, and time without CPR
 - b. Total time worked up to now
5. Patient Status
 - a. Current Rhythm
 - b. Airway status
 - c. If ROSC has been obtained at any time
6. Acknowledge necessary treatment plan. (May not be complete at time of communication.)
7. Determine destination (facility and location).

Pearls

- **Should ROSC be achieved and the patient is combative, follow Chemical Restraint Protocol 18.B.2**

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**Resuscitation of Pulseless
Rhythms Protocol**

The successful resuscitation of patients in cardiac arrest is dependent on a systematic approach to resuscitation. ACLS medications are an important factor in successful resuscitation of the pulseless patient when the initial rhythm is not ventricular fibrillation (VF) or in cases where defibrillation has not been successful. It is important that BLS providers understand the value of effective CPR and an ALS intercept in providing the patient with ACLS therapy.

First Responder Care

Not applicable. First Responders are not equipped with ACLS medications and shall treat the patient in accordance with the *Cardiac Arrest Protocol*.

BLS Care

Not applicable. BLS providers are not equipped with ACLS medications and shall treat the patient in accordance with the *Cardiac Arrest Protocol*.

Ventricular Fibrillation (VF) or Pulseless Ventricular Tachycardia (VT)

ILS Care

1. Initiate *Cardiac Arrest Protocol* and *Pit Crew Procedure*.
2. If pulseless V-fib/V-tach: **Defibrillate** at J setting per manufacturer's recommendations (or use maximum available per ACLS guidelines) every 2 minutes.
3. **Epinephrine 1:10,000**: 1mg IV/ IO if patient is pulseless and repeat every **3-5 minutes** as needed.
4. Continue with *Cardiac Arrest Protocol* and *Pit Crew Procedure*.
5. **Lidocaine**: 1.5mg/kg IV/IO for persistent VF or VT. Repeat bolus: 1.5mg/kg IV/IO in **3-5 minutes** to a total of 3mg/kg if patient remains in VF or VT.
6. **D10W**: 250 mL IV if blood sugar is < 60mg/dL.
7. Initiate ALS intercept and transport when resources are available.

ALS Care

1. ALS Care includes all components of *ILS Care*.
2. **Amiodarone**: 300 mg IV/IO for persistent VF/VT. Repeat bolus of 150 mg IV/IO in 3-5 minutes to a total of 450 mg if patient remains in VF/FT. **Not for use in pregnant females**. If known pregnancy, refer to Lidocaine above.
3. Be alert for changes in patient condition that require additional ALS Care. Treat based on appropriate protocol. Contact the receiving hospital as soon as possible.

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**Resuscitation of Pulseless
Rhythms Protocol**

Pulseless Electrical Activity

ILS Care

1. Initiate *Cardiac Arrest Protocol and Pit Crew Procedure*.
2. **Epinephrine 1:10,000:** 1mg IV/IO every **3-5 minutes**.
3. **IV Fluid Therapy:** 500mL fluid bolus for suspected hypovolemia.
4. **D10W:** 250 mL IV if blood sugar is < 60mg/dL.
5. Initiate ALS intercept and transport when resources are available.

ALS Care

1. ALS Care includes all components of *ILS Care*.
2. **Calcium Gluconate:** 1gm IV/IO if known Calcium channel blocker overdose, known beta blocker overdose, or patient suffers from chronic renal failure.
3. **Sodium Bicarbonate:** 50meq IV/IO if known tricyclic antidepressant (TCA) overdose, known Aspirin (ASA) overdose or patient suffers from chronic renal failure. *Sodium Bicarbonate and Calcium Gluconate should only be administered through different access points (2-IV's or IV/IO combo) – ensure line is properly flushed before and after administration.*
4. **Needle chest decompression:** for a patient in *traumatic* cardiac arrest with suspected tension pneumothorax.
5. Search for and treat possible causes.
6. Contact the receiving hospital as soon as possible.
7. Be alert for changes in patient condition that require additional ALS Care. Treat based on appropriate protocol.

Asystole

ILS Care

1. Initiate *Cardiac Arrest Protocol and Pit Crew Procedure*.
2. **Epinephrine 1:10,000:** 1mg IV/IO every **3-5 minutes**.
3. **IV Fluid Therapy:** 500mL fluid bolus for suspected hypovolemia.
4. **D10W:** 250 mL IV if blood sugar is < 60mg/dL.
5. Consider “cease efforts” order (see *Resuscitation vs. Cease Efforts Policy*).
6. Initiate ALS intercept and transport as resources are available.

Resuscitation of Pulseless Rhythms Protocol

Asystole (Continued)

ALS Care

1. ALS Care includes all the components of *ILS Care*.
2. **Calcium Gluconate:** 1gm IV/IO if known Calcium channel blocker overdose, known beta blocker overdose, or patient suffers from chronic renal failure.
3. **Sodium Bicarbonate:** 50meq IV/IO if known tricyclic antidepressant (TCA) overdose, known Aspirin (ASA) overdose or patient suffers from chronic renal failure. *Sodium Bicarbonate and Calcium Gluconate should only be administered through different access points (2-IV's or IV/IO combo) – ensure line is properly flushed before and after administration.*
4. **Needle chest decompression:** for a patient in *traumatic* cardiac arrest with suspected tension pneumothorax
5. Search for and treat possible causes.
6. Consider “cease efforts” order (see *Resuscitation vs. Cease Efforts Policy*).
7. Contact the receiving hospital as soon as possible.
8. Be alert for changes in patient condition that require additional ALS Care. Treat based on appropriate protocol.

Possible Causes of Pulseless Electrical Activity (PEA) / Asystole

- Hypovolemia
- Hypoxia
- Hydrogen Ions (Acidosis)
- Hypokalemia/Hyperkalemia
- Hypothermia
- Hypoglycemia
- Toxins / Tablets (Drug Overdose)
- Tamponade (Pericardial Tamponade)
- Tension Pneumothorax
- Thrombosis (Acute Coronary Syndrome or Pulmonary Embolism)
- Trauma

Pearls

- Consider underlying etiologies and treat according to appropriate protocols (e.g. airway obstruction, metabolic shock, hypovolemia, central nervous system injury, respiratory failure, anaphylaxis, drowning, overdose, poisoning, etc.).
- **If the cardiac arrest is witnessed by EMS personnel, start CPR and defibrillate immediately after Fast Patches or Quick Combos are placed for V-fib/pulseless V-tach.**

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**Unstable Bradycardia
Protocol**

Bradycardia is defined as a heart rate less than sixty beats per minute (< 60 bpm). Determining the stability of the patient with bradycardia is an important factor in patient care decisions. The assessment of the patient with bradycardia includes evaluation for signs and symptoms of hypoperfusion.

The patient is considered **stable** if the patient is asymptomatic (i.e. alert and oriented with warm, dry skin and a systolic BP > 100mmHg).

The patient is considered **unstable** if he/she presents with:

- An altered level of consciousness (ALOC).
- Diaphoresis.
- Dizziness.
- Chest pain or discomfort.
- Ventricular ectopy.
- Symptomatic hypotension (systolic BP < 100mmHg).

First Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to treat for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen**: If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%..$

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to treat for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. Initiate ALS intercept and transport as soon as possible.
3. Obtain **12-Lead EKG** and transmit to receiving hospital if capabilities exist.
4. Apply combo defib/pace pads.
5. Apply **Waveform Capnography** (if equipped)

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**Unstable Bradycardia
Protocol**

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. **IV Fluid Therapy:** 500mL fluid bolus's to achieve and maintain BP> 100 mmHg .
3. Initiate ALS intercept and transport as soon as possible. (*Transport can be initiated at any time during this sequence*).
4. Contact receiving hospital (or Medical Control if needed) as soon as possible.
5. If stable: monitor for worsening symptoms. Do not provide aggressive treatment.
6. If unstable: treat to correct cause of symptoms
7. **Atropine:** 1mg IVP concurrently to the fluid bolus if the patient's perfusion does not improve, if the patient is hemodynamically unstable or if the cardiac rhythm is an AV block (other than a 3rd degree block). May repeat 1mg IV every **5 minutes** as needed up to a total of 3mg.

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. Repeat assessment to determine patient stability to determine degree of EMS care.
3. **Immediate Transcutaneous Pacing:** If the patient is in a **3rd degree AV block** (or in a **Type II 2nd degree AV block** unresponsive to Atropine).
 - Target heart rate should be set at **70 bpm**.
 - Current should be set at minimum to start and increased until capture is achieved.
 - Refer to the *Transcutaneous Pacing Procedure* for additional information and transition of care process.
4. **Midazolam (Versed):** 2.5mg IV/IO for patient comfort after pacing is initiated. (May give intranasal (see dosing sheet) if IV or IO cannot be established). Re-check vital signs 5 minutes after administration. May repeat dose one time if systolic BP > 100mmHg and respiratory rate is > 10 rpm. Additional doses require **Medical Control order**.

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**Unstable Bradycardia
Protocol**

ALS Care {Continued}

5. **Dopamine:** If the patient remains hypotensive. Begin infusion at 24gtts/min. Increase by 12gtts/min every **2 minutes** to achieve and maintain a systolic BP of at least 100mmHg. Closely monitor vital signs.
 - a. *Dopamine is provided premixed (400mg in 250mL D5W). This yields a concentration of 1600mcg/mL. The initial rate of infusion is 1-10mcg/kg/min which can be achieved with a 24gtts/min infusion rate.*
 - b. *Dopamine premix and 60 gtt tubing must be stored together in drug bag.*
6. Transport as soon as possible (*Transport can be initiated at any time during this sequence*).
7. Contact receiving hospital as soon as possible.

Pearls

- Treat the patient – not the monitor. *Bradycardia does not necessarily mean that the patient is unstable or requires intervention.*
- Treat underlying etiologies according to protocol.
- Atropine is NOT to be given if the patient's blood pressure is normal or elevated.
- *Bradycardia may be present due to increased intracranial pressure from a stroke or head injury. Contact Medical Control.*
- Factors to consider during the assessment of the patient who presents with bradycardia include: patient health & physical condition (e.g. an athlete), current medications (e.g. beta blockers), trauma or injury related to the event (e.g. a head trauma patient exhibiting signs of herniation or *Cushing's response*), and other medical history.
- Assess for underlying causes (e.g. hypoxia, hypovolemic shock, cardiogenic shock, or overdose).
- Fluid bolus should not delay Atropine administration or TCP if the patient is unstable.
- If the patient's presenting rhythm is a 3rd degree block, immediately prepare to pace. If the patient is symptomatic, pacing should be started without delay.

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**Narrow Complex
Tachycardia Protocol**

Tachycardia is defined as a heart rate > 100 bpm. Once the heart rate reaches 150 bpm, the patient is at risk for shock. A narrow QRS complex indicates that the rhythm may be originating in the atrium. Determining the stability of the patient with tachycardia is an important factor in patient care decisions.

The patient is considered **stable** if the patient is alert and oriented with warm & dry skin and has a systolic BP > 100mmHg.

The patient is considered **unstable** if the patient has an altered level of consciousness, diaphoresis, dizziness, chest pain or discomfort, ventricular ectopy and/or is hypotensive.

First Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to treat for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen**: If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to treat for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. Obtain **12-Lead EKG** and transmit to receiving hospital if capabilities exist.
3. If unstable, place combo defib/pace pads.
4. Apply **Waveform Capnography** (if equipped)
5. Initiate ALS intercept and transport as soon as possible.

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. Obtain **IV/ IO access**.
3. If stable: monitor for worsening symptoms. Do not initiate aggressive treatment.
4. If unstable: treat to correct cause of symptoms.

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**Narrow Complex
Tachycardia Protocol**

ILS Care {Continued}

5. **Vagal Maneuvers:** if the patient is alert and oriented, has a systolic BP greater than 100mmHg, has a HR greater than 150bpm and is *obviously* not in atrial fib or atrial flutter. Having the patient attempt to move the plunger of a 12 or 20ml syringe by blowing from the small end is one technique. Having the patient "bear down" similar to having a bowel movement is another technique.
6. **Adenosine (Adenocard):** 6mg IV {rapid IV push} (**with Medical Control order only**) if the patient is alert and oriented, has a systolic BP greater than 100mmHg, has a HR greater than 150bpm and is *obviously* not in atrial fib or atrial flutter. If no response after **2 minutes**, administer 12mg IV {rapid IV push} (**with Medical Control order only**).

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. **Adenosine (Adenocard):** 6mg IV {rapid IV push} if the patient is alert and oriented, has a systolic BP greater than 100mmHg, has a HR greater than 150bpm and is *obviously* not in atrial fib or atrial flutter. If no response after **2 minutes**, administer 12mg IV {rapid IV push}.
3. **Midazolam (Versed):** 2.5mg IV/IO in preparation for synchronized cardioversion if the patient has a respiratory rate greater than 10 rpm. (May give intranasal (see dosing sheet) if IV or IO cannot be established). If the patient's respiratory rate is less than 10 rpm, proceed to immediate synchronized cardioversion without sedation.
4. **Synchronized Cardioversion:** *If the patient has an altered level of consciousness, diaphoresis, dizziness, chest pain or discomfort, ventricular ectopy and/or is hypotensive:*
 - a) Synchronized cardioversion based on J setting per manufacturer recommendations.
 - b) Repeat as needed with increase in J setting per manufacturer recommendations.
5. Contact the receiving hospital as soon as possible.

Pearls

- Treat the patient – not the monitor. Tachycardia does not necessarily mean that the patient is unstable or requires intervention.
- Assess for underlying causes (e.g. hypovolemic shock) and treat according to protocol.
- When administering Adenocard, be prepared for immediate defibrillation if the rhythm converts to v-fib.
- **DO NOT administer Adenocard if the heart rate is < 150 bpm without consulting Medical Control.**

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**Wide Complex
Tachycardia Protocol**

Tachycardia is defined as a heart rate > 100 bpm. Once the heart rate reaches 150 bpm, the patient is at risk for shock. A wide-complex QRS indicates the rhythm may be of ventricular origin. Determining the stability of the patient with tachycardia is an important factor in patient care decisions. The assessment of the patient with tachycardia includes evaluation for signs and symptoms of hypoperfusion.

The patient is considered **stable** if the patient is alert & oriented with warm & dry skin and a systolic BP > 100mmHg.

The patient is considered **unstable** if the patient has an altered level of consciousness, diaphoresis, dizziness, chest pain or discomfort, ventricular ectopy and/or hypotension.

First Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to treat for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to treat for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. Obtain **12-Lead EKG** and transmit to receiving hospital if capabilities exist.
3. If unstable, place combo defib/pace pads.
4. Apply **Waveform Capnography** (if equipped)
5. Initiate ALS intercept and transport as soon as possible.

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. Obtain **IV/ IO access**.
3. If the patient becomes pulseless at any time, refer to the *Resuscitation of Pulseless Rhythms Protocol (V-fib or Pulseless V-tach)*.

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**Wide Complex
Tachycardia Protocol**

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. If stable: monitor for worsening symptoms. Do not provide aggressive treatment, treat pharmacologically.
3. **If stable, Amiodarone:** 150 mg/10min IV. (Draw contents of 1 vial (150 mg) Amiodarone and inject into 100 mLs of D5W. Do NOT over agitate when mixing. Hang bag and infuse at 618 mLs/ hr. Using filter provided. The infusion should run at 5 gttbs/ 2 seconds with 15 gtt tubing or 5 gttbs/ 3 seconds with 10 gtt tubing.)
(Medical Control Only). If pregnant female, refer to Medical Control order regarding Amiodarone usage.
4. If unstable: treat to correct cause of symptoms
5. **If unstable, Midazolam (Versed):** 2.5mg IV/IO for patient comfort prior to cardioversion. (May give intranasal (see dosing sheet) if IV or IO cannot be established). Re-check vital signs 5 minutes after administration. May repeat dose one time if systolic BP > 100mmHg and respiratory rate is > 10 rpm. Additional doses require **Medical Control** order.
6. **Synchronized Cardioversion**:** If the patient has an altered level of consciousness, diaphoresis, chest pain or discomfort, pulmonary edema and/or is hypotensive:
 - a) Synchronized cardioversion, repeat as necessary.
7. **Contact Medical Control** as soon as possible..
8. If the patient becomes pulseless at any time, refer to the *Resuscitation of Pulseless Rhythms Protocol (V-Fib or Pulseless V-tach)*.

**Agencies must follow manufacturer recommendations for J settings.

Pearls

- Factors to consider during the assessment of the patient with tachycardia include: patient health & physical condition, trauma or injury related to the event, current medications and medical history. A patient may have a stable bundle branch block, and be tachycardic for other reasons, giving the appearance of a wide complex tachycardia.
- A 12 lead EKG is IMPERATIVE prior to initiating definitive treatment.
- Assess for underlying causes (e.g. hypovolemic shock) and treat according to protocol.
- If the patient becomes pulseless at any time, refer to the "V-fib and Pulseless V-tach" section of the *Resuscitation of Pulseless Rhythms Protocol*.
- Watch for signs of respiratory depression when giving sedatives.

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**Implanted Cardiac
Defibrillator (AICD) Protocol**

An implanted cardiac defibrillator (AICD) is a device that delivers an internal defibrillation (shock) whenever the patient's heart rate exceeds defined limits for > 10 seconds. Persons in contact with the patient at the time the device delivers the defibrillation will receive a shock of approximately 3 Joules. This energy level constitutes **NO DANGER** to EMS personnel.

First Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to treat for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to treat for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. Initiate ALS intercept and transport as soon as possible.
3. Apply **Waveform Capnography** (if equipped)

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. Obtain **IV/ IO access**.
3. Initiate ALS intercept and transport as soon as possible (*transport can be initiated at any time during this sequence*).
4. If the patient becomes pulseless at any time, refer to the *Resuscitation of Pulseless Rhythms Protocol*.

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. Treat arrhythmias per applicable protocol.

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**Implanted Cardiac
Defibrillator (AICD) Protocol**

ALS Care {Continued}

3. Manage pain, nausea and vomiting based on *Pain Control Protocol*. Contact the receiving hospital as soon as possible.
4. If the patient becomes pulseless at any time, refer to the *Resuscitation of Pulseless Rhythms Protocol*.
5. Contact the receiving hospital as soon as possible.

Pearls

- Any patient who has been shocked by an AICD should be strongly encouraged to seek medical attention and closely monitored en route regardless of patient condition.
- If the AICD is malfunctioning, alert Medical Control as early as possible so that a magnet can be available upon arrival.
- If a patient is unresponsive and pulseless, CPR must be initiated. If the AED recognizes a shockable rhythm, the shock should be delivered (even though the patient has an AICD).
- Avoid placing the Quick Combo pad or Fast Patches directly over the AICD unit as this could damage the device and reduce the efficacy of external defibrillation.
- Slightly alter pad placement if initial defibrillation is unsuccessful.

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Cardioversion Procedure

Electrical cardioversion is the therapy of choice for hemodynamically unstable ventricular or supraventricular tachydysrhythmias with a pulse. Synchronization of the delivered energy reduces the potential for induction of V-fib that can occur when electrical energy impinges on the relative refractory period of the cardiac cycle.

1. Apply Quick Combo pads or Fast Patches according to protocol and apply regular limb leads.
2. Push the synchronize sensor button on the defibrillator.
3. Confirm that the monitor is sensing “R” waves on the monitor screen (this is denoted by the darker mark on the screen with each complex).
4. Select the appropriate energy setting**.
5. Press the charge button.
6. Depress the discharge buttons simultaneously and wait for the shock to be delivered.
7. Note the rhythm and treat according to the appropriate protocol.
8. If the patient becomes pulseless at any time, turn off the synchronizer circuit and refer to the *Resuscitation of Pulseless Rhythms Protocol*.

**Agencies must follow manufacturer recommendations for J settings.

Critical Thinking Elements

- The energy levels vary in accordance with protocol for the presenting rhythm.
- Administration of Versed IV/IO/IN may be necessary.
- Most monitors are programmed so that the synchronize function reverts to defibrillation after the countershock is delivered. Providers must ensure they know the programming of the monitors they work with.
- There may be a delay between pressing the discharge buttons and delivery of the countershock due to the synchronization process.
- You must apply the limb leads so the monitor can sense the rhythm and deliver the shock at the same time.

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**Transcutaneous Pacing
(TCP) Procedure**

Transcutaneous pacing (TCP) is used to deliver an electrical stimulus to the heart that acts as a substitute for the heart's conduction system and is intended to result in cardiac depolarization and myocardial contraction.

TCP should be utilized for patients with symptomatic bradycardia, namely Type II 2nd Degree AV Block and 3rd Degree AV Block (Complete Heart Block).

1. Confirm the presence of the arrhythmia and the patient's hypoperfusion status.
2. Initiate *Routine ALS Care*, including application of the cardiac monitor using the regular limb leads.
3. Apply the pacing pads to the patient using anterior-posterior placement. Place the negative electrode on the anterior chest between the sternum and left nipple (the upper edge of the pad should be below the nipple line). Place the positive electrode on the left posteriorly to the left of the spine beneath the scapula.
4. Activate the pacer mode and observe a marker on each QRS wave. If the marker is not present, adjust the EKG size.
5. Set the target rate at **70 bpm**.
6. Set the current at **minimum** to start.
7. Activate the pacer and observe pacer spikes.
8. Increase the current slowly until there is evidence of electrical and mechanical capture.
9. Palpate patient's pulse and check BP.
10. If the patient is conscious, you may administer **Versed** 2.5mg IV/IO for patient comfort. (Intranasal Versed may be administered if IV/IO not available—see dosing sheet).
11. Document the patient's rhythm, vitals & tolerance of pacing and report the results to Medical Control.
12. Once successfully initiated, TCP is not to be stopped until receiving facility **ensures** that they have equipment in place to transition. This should be a coordinated effort. If at all possible, continue to utilize the monitor with which capture occurred.

Critical Thinking Elements

- Remember to evaluate the effectiveness of external pacing by assessing the electrical capture (presence of pacer spikes on the EKG) and mechanical capture (presence of a Femoral Pulse).

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**Post Return of Spontaneous
Circulation Care**

The period immediately following ROSC is critical to ensuring survival and good neurological outcomes. Patients who have achieved ROSC following CPR may have many critical findings including hypotension, tachycardia, obtundation/comatose and inability to protect airway. It is important to address these conditions **prior** to initiating transport. Therefore, **treating in place for a MINIMUM of 5 minutes** will ensure that the patient's needs have been addressed and the patient is more stable for transport. It is imperative everything possible is done to avoid re-arrest.

First Responder Care

1. Render Initial care in accordance with *Routine Patient Care Protocol*
2. Continue monitoring the patient's pulse.
 - a. One provider should have a hand on the pulse at all times.
3. **Oxygen:** 15 L/min via NRB mask. If the patient is unable to tolerate a mask, then 6 L/min via nasal canula. BVM/ OPA at a rate of 8-10 breaths per minute as needed, do not hyperventilate.
4. Maintain control of the scene until additional support arrives.
5. Call immediately for ALS intercept.

BLS Care

1. BLS care includes all components of *Emergency Medical Responder Care*
2. Support the airway and optimize oxygenation and ventilation.
 - a. **iGel:** Target SpO₂ 94-98%, with ventilations between 8-10 breaths per minute. DO NOT HYPERVENTILATE.
3. **Waveform Capnography:** (if equipped)
4. **12- Lead EKG:** (if equipped) and transmit to the receiving hospital if capabilities exist.
5. **Blood glucose:** Follow appropriate protocols for hypoglycemia.
6. Monitor for seizures.

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**Post Return of Spontaneous
Circulation Care**

ILS Care

1. ILS care includes all components of *BLS Care*
2. Assess airway.
 - a. **Endotracheal Intubation:** *If the patient is failing to maintain/protect their airway with current adjuncts.*
 - b. Maintain waveform capnography with ETCO₂ between 35-45. Avoid hypocapnia and hypercapnia.
3. Interpret 12 lead EKG and transmit to receiving hospital.
 - a. Declare prehospital STEMI if indicated on EKG.
4. Continuous Cardiac Monitoring.
5. Obtain **IV/ IO access:** (if not already performed).
 - a. Ready IVF on pressure bag.
 - b. **NS IV fluid bolus:** if hypotensive with a goal systolic blood pressure ≥ 90 mmHg. *Caution in the setting of CHF (Rales in lungs)*
6. Manage all dysrhythmias according to appropriate protocols.
7. Elevate the head of the bed to 30 degrees *if feasible and the patient is not hypotensive.*
8. Treat any seizures according to seizure protocol.

ALS Care

1. ALS care includes all components of *ILS Care*
2. Prepare Dopamine for possible post-ROSC hypotension.
3. **Dopamine:** If the patient remains hypotensive. Begin infusion at 24gtts/min. Increase by 12gtts/min every **2 minutes** to achieve and maintain a systolic BP of at least 100mmHg. Closely monitor vital signs.
 - a. *Dopamine is provided premixed (400mg in 250mL D₅W). This yields a concentration of 1600mcg/mL. The initial rate of infusion is 1-10mcg/kg/min which can be achieved with a 24gtts/min infusion rate.*
 - b. *Dopamine premix and 60 gtt tubing must be stored together in drug bag.*

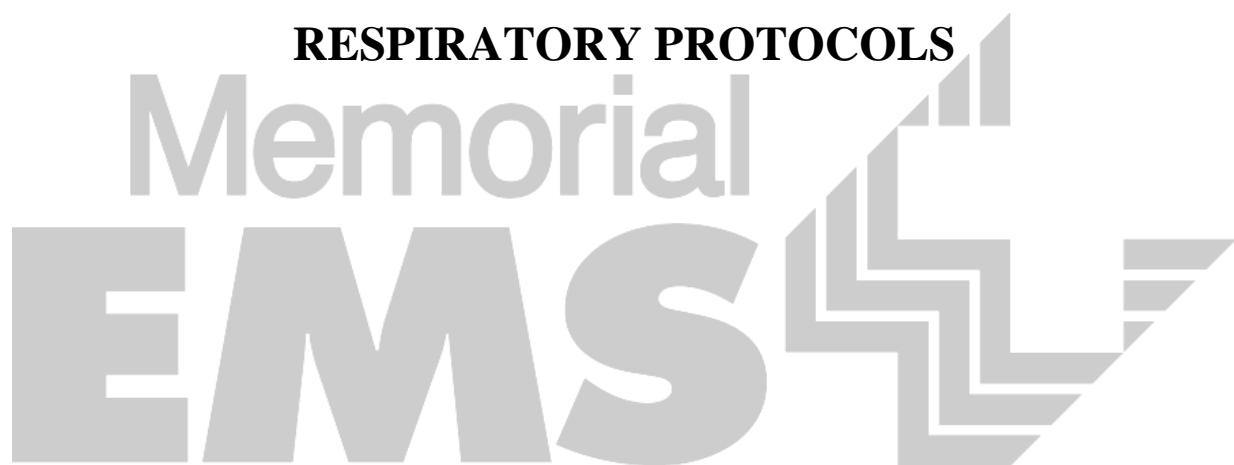
**Post Return of Spontaneous
Circulation Care**

Critical Thinking Elements

- Factors influencing survival include length of time in cardiac arrest, re-arrest and hypotension. It is therefore more important to prevent re-arrest and hypotension by providing care on the scene than transporting as soon as ROSC is achieved.
- If transport time is prolonged, consider serial EKGs—additional arrhythmias and/or ischemic changes may appear later in the course of care.
- Hyperventilation is a significant cause of hypotension and recurrence of cardiac arrest in the post resuscitation phase and must be avoided at all costs. Titrate FiO₂ to maintain SpO₂ of $\geq 94\%$.
- Initial End tidal CO₂ may be elevated immediately post-resuscitation but will usually normalize. While goal is 35–45 mmHg, the patient should not be hyperventilated to achieve it.
- Titrate fluid resuscitation and Dopamine administration to maintain SBP of ≥ 90 mmHg or Mean Arterial Pressure (MAP) of ≥ 65 mmHg.

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RESPIRATORY PROTOCOLS



**MEMORIAL EMS SYSTEM
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Basic Airway Control

Establishing and maintaining an open airway and assuring adequate ventilation is a treatment priority with all patients. Proper techniques must be used to assure treatment maneuvers do not inadvertently complicate the patient's condition.

Basic Airway Control

1. Assure an open airway by utilizing either the head tilt/chin lift maneuver; the modified jaw thrust maneuver or the tongue-jaw lift maneuver. The head tilt/chin lift maneuver is **NOT** to be used if there is any possibility of cervical spine injury.
2. Expose the chest and visualize for chest rise and movement, simultaneously listen and feel for air movement at the mouth and nose. This procedure will need to be done initially and after correcting an obstruction and securing the airway.
3. If the chest is not rising and air exchange cannot be heard or felt:
 - a) Deliver two positive-pressure ventilations. If resistance continues, follow AHA sequences for obstructed airway rescue.
 - b) Reassess breathing and check for a carotid pulse.
 - c) If spontaneous respirations return and a pulse is present, provide supplemental Oxygen by non-rebreather mask or assist respirations with bag-valve mask (BVM) at 15 L/min.
 - d) If the patient remains breathless and a pulse is present, initiate ventilations with a BVM at 15 L/min at a rate of 12 breaths per minute.
 - e) If the patient remains breathless and a pulse is not present, initiate CPR and institute the appropriate cardiac protocol.
4. If the patient presents with stridor, "noisy breathing" or snoring respirations, render treatment for partial airway obstruction in accordance with AHA guidelines.
 - a) Reassess effectiveness of the airway maneuver.
 - b) If initially unable to resolve partial airway obstruction, suction the airway and visualize the pharynx for any evidence of foreign objects. Perform a finger sweep if a foreign object can be seen.
 - c) If partial airway obstruction persists, treat according to AHA guidelines for resolving a complete airway obstruction.
5. Once the obstruction has been corrected:
 - a) Insert an oropharyngeal airway in the unconscious patient (without a gag reflex).

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Basic Airway Control

Basic Airway Control {Continued}

- b) Insert a nasopharyngeal airway in the conscious patient or an unconscious patient with a gag reflex. *Note:* NPA is the airway of last resort if the possibility of a head injury exists.
6. Establish the presence and adequacy of breathing by observing the frequency, depth and consistency of respirations. Also, observe the chest wall for any indications of injuries which may contribute to respiratory compromise.
7. Supplemental oxygen should be delivered to any patient who exhibits signs of difficulty breathing, sensation of shortness of breath, tachypnea or bradypnea, use of accessory muscles, altered level of consciousness/altered mental status, cyanosis, cardiac symptoms, head injury or any indications of shock. If indicated
 - a) Supplemental oxygen should be provided by a non-rebreather mask (NRM) at a rate of 15 L/min (assuring reservoir bag is inflated).
 - b) If patient is unable to tolerate the NRM, administer oxygen via nasal cannula at a rate of 6 L/min.
8. Bag-valve mask ventilation with supplemental oxygen at 15 L/min should be initiated at the rate of 12/min if respirations are absent, there is evidence of inadequate ventilation, respiratory rate is < 8/min, absent or diminished breath sounds or wounds to the chest wall.

ILS Care

ALS Care

1. If BVM ventilations are being performed, providers may add a PEEP valve at 5-10 cm of H₂O to the BVM when ventilating with OPA/NPA, supraglottic, or endotracheal tube to increase or improve oxygenation.

***PEEP valves will only be used in patients with a pulse and those ≥16.**

Pearls

- Inadequate maintenance of the patient's airway, inappropriate airway maneuvers, using inappropriately sized airway equipment and/or failure to recognize an obstructed airway will complicate the patient's condition.
- Do NOT use the head tilt/chin lift maneuver on a patient with a suspected cervical spine injury.
- Proper facemask seal during artificial ventilations is imperative to assure adequate ventilation.

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Airway Obstruction Procedure

An airway obstruction is life threatening and must be corrected immediately upon discovery.

1. If the patient has an obstructed airway and is still conscious:
 - a) Encourage the patient to cough.
 - b) Perform 5 abdominal thrusts or chest thrusts if the cough is unsuccessful.
 - c) Repeat until the obstruction is relieved or the patient becomes unconscious.
 - d) Administer oxygen at 15 L/min if the patient has a partial airway obstruction and is still able to breathe.
2. If the patient is unconscious:
 - a) Open the patient's airway and attempt to ventilate.
 - b) Reposition the head and reattempt to ventilate if initial attempt is unsuccessful.
 - c) Immediately begin CPR
 - d) Perform visualized finger sweep of the patient's mouth and reattempt to ventilate.
 - e) Repeat steps (c) and (d) if obstruction persists.
 - f) **BLS & ILS** immediately initiate ALS intercept.
 - g) **ILS & ALS** attempt direct extraction via laryngoscopy with Magill forceps.
 1. Use the laryngoscope and examine the upper airway for foreign matter and suction as needed.
 2. Remove any foreign objects with forceps and suction.
 3. Re-establish an open airway and attempt to ventilate.
 4. If the obstruction is relieved, continue with airway control, ventilations, assessment and care.
 - h) Continue CPR until obstruction is resolved. Follow appropriate algorithms.

Pearls

- Maintain in-line c-spine stabilization using 2 EMTs in patients with suspected cervical spine injury.

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Apneic Oxygenation

Flooding the nasopharynx with oxygen is one of the most effective ways to preoxygenate a patient prior to an elective airway procedure. The same principle applies to a non-elective (emergent airway) up until the point where the airway is occluded with the distal tube cuff. Utilizing apneic oxygenation can allow additional time for airway attempts and help ensure that the first airway attempt is the successful and non-traumatic airway attempt.

Procedure

1. Place a standard nasal cannula (not ETCO₂ style) on the patient with the prongs in the nares during the preoxygenation phase prior to intubation/ supraglottic airway placement.
2. Attach the nasal cannula to a secondary oxygen source and turn the oxygen up to 15L/min.
3. Additionally, the patient should be **pre-oxygenated prior to airway placement using either a bag valve mask attached to 15L/min via primary oxygen source or a nonrebreather mask** (if spontaneous respirations prior to intubation are adequate) at 15L/min.
4. Ensure patient is on a pulse oximeter and cardiac monitor. Just prior to airway placement, remove the primary pre-oxygenation source (BVM or nonrebreather) but leave the nasal cannula in place at 15L/min.
5. Obtain Definitive airway based on *Supraglottic Airway Procedure* or *Advanced Airway Procedure*.
6. Remove nasal cannula only after ETT or supraglottic airway placement is confirmed and secured.
7. Apneic oxygenation is intended to extend the safe apnea time during airway placement before desaturation occurs; it is not a replacement for adequate preoxygenation.

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**Supraglottic Airway Procedures
(BLS, ILS, and ALS)**

A Supraglottic Airway device is an effective airway adjunct when intubation is not available or difficult to perform. Insertion is rapid & easy and does not require specialized equipment or visualization of the larynx. MEMS currently utilizes The iGel as its approved SGA.

iGel

- The iGel is an airway device designed for emergency or difficult airway management in the apneic or unresponsive patient without a gag reflex.
- It is the primary airway of choice for adult and pediatric cardiac arrest patients.
- It is the back-up airway in cases of an unsuccessful intubation attempt.

Contraindications

- Active gag reflex
- Ingestion of a caustic substance (e.g. gasoline, drain cleaner, etc.)
- Morbid obesity
- Tracheostomy (it will be ineffective)
- Patient less than 30kg (BLS provider restriction only)
- Known or suspected esophageal disease (e.g. esophageal varices)
- Use caution in pregnant females

i-gel size	Patient size	Patient weight guidance (kg)
3	Small adult	30-60
4	Medium adult	50-90
5	Large adult+	90+

Confirm placement using *Airway Confirmation Procedure 13.H.1*

1. (ALS only) Insert appropriately sized gastric tube if time permits.
 - a. Use a 12Fr gastric tube for iGel sizes #2- #5
 - b. Use a 10Fr gastric tube for iGel size #1.5

Critical Thinking

- If unsuccessful in placing a Supraglottic Airway, remove the airway and a **second attempt** with the device following the same insertion procedures may be made. If this attempt is unsuccessful, immediately revert to *Basic Airway Control Procedures*.
- A proficient provider can insert an iGel in 5 seconds or less.
- Do NOT administer medications via any Supraglottic Airway Device.
- **Warning:** *In order to avoid the possibility of the device moving up out of position prior to being secured in place, it is essential that as soon as insertion has been successfully completed, the iGel is held in the correct position until being secured.*
- **Warning:** *Do not apply excessive force on the device during insertion.*
- Supraglottic Airways do not prevent the aspiration of gastric contents.

**MEMORIAL EMS SYSTEM
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**Advanced Airway Control
(ILS & ALS Only)**

Endotracheal intubation is the only way to provide a true definitive airway. However, if endotracheal intubation is difficult or unsuccessful, intubation may be attempted utilizing the “bougie” or consider a supraglottic airway. Basic airway control techniques should always be maintained prior to and during any advanced airway procedure, and should always be your primary means of airway control should other methods fail.

Video Laryngoscopy

As an alternative to direct laryngoscopy, video laryngoscopes may be used. You should follow the manufacturer directions specific to the particular video laryngoscope you are using. Video laryngoscopes should be used with proprietary stylets in the endotracheal tube as recommended by the manufacturer. Video laryngoscopy is not ideal for situations in which the camera may become obscured such as blood in the pharynx or excessive secretions, recent emesis, or hematemesis or hemoptysis. Many video laryngoscopes are advantageous for intubating while c-spine precautions must be maintained or if an anterior larynx is expected. Whenever using a video laryngoscope as a primary method of intubation, direct laryngoscopy must be also immediately available. Endotracheal tube placement should be confirmed just as with direct laryngoscopy.

Endotracheal tube introducer, AKA “Bougie” procedure

The endotracheal tube introducer, AKA “Bougie” is a useful tool to help facilitate difficult intubation. Unlike a stylet, a bougie is inserted independently of the ET tube and is used as a guide, over which an ET Tube may be placed into the trachea. It is used where a difficult intubation is anticipated, or a poor view of the glottic opening has been confirmed on laryngoscopy.

1. Prepare the endotracheal tube introducer for use: Curve the bougie and ensure the distal tip is formed into a J (coudé) shape.
2. Utilize the laryngoscope as you would do during intubation to obtain the best possible view of the glottic opening. You should always be able to view the tip of the epiglottis and, ideally, the arytenoid cartilages.
3. Advance the Bougie, continually observing its distal tip, with the concavity facing anteriorly.
4. Visualize the tip of the bougie passing posteriorly to the epiglottis and (where possible) anterior to the arytenoid cartilages.
5. Once the tip of the bougie has passed the epiglottis, continue to advance it in the mid-line so that it passes behind the epiglottis but in an anterior direction.
6. As the tip of the bougie enters the glottic opening you may feel “clicks” as it passes over the tracheal rings or the tip may stop against the wall of the airways. This suggests correct insertion, although this cannot be relied upon to indicate correct positioning.

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Advanced Airway Control
(ILS & ALS Only)

Endotracheal tube introducer, AKA “Bougie” procedure {Continued}

7. Hold the Bougie firmly in place and pass the endotracheal tube over the proximal end of the bougie.
8. As the proximal tip of the bougie is re-exposed, carefully grasp it, assuming control of the bougie.
9. The ET tube should then be carefully advanced along the Bougie and hence through the glottic opening, taking care to avoid movement of the bougie.
10. Once the ET tube is fully in place hold it securely as you slowly withdraw the Bougie.

Pearls

- The Bougie should never be allowed to move up and down during the procedure.

Airway Control in the Trauma Patient

Any type of airway manipulation may be dangerous during airway control of the suspected spinal injury patient. Maintain in-line stabilization while attempting airway control. Consider utilizing a supraglottic airway or video laryngoscopy *in lieu of traditional intubation*.

1. A minimum of two (2) trained rescuers is needed to assure special attention to spinal precautions.
2. One rescuer will apply manual in-line stabilization by placing the rescuer's hands about the patient's ears with the little fingers under the occipital skull and the thumbs on the face over the maxillary sinuses.
3. The rescuer performing airway placement should be at the head.
4. Maintain the patient's head in a neutral position during intubation or insertion of a supraglottic airway, taking care to prevent cervical manipulation.

Prohibited Advanced Airway Procedures

Attempting difficult, unfamiliar, and rarely performed procedures may pose a danger to the patients they are being performed on. Certain procedures that are used in the hospital setting are **not approved** for prehospital personnel in the Memorial EMS System. These include:

- Nasotracheal Intubation
- Percutaneous Transtracheal Ventilation
- Cricothyrotomy/Surgical Airway

Pearls

- If intubation attempts fail (2 attempts), switch to a supraglottic airway or revert to basic airway control.
- There should always be a waveform if the tube is in the proper position.

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**Advanced Airway Control
(ALS Only)**

Medication Assisted Intubation

Rare situations occur where the respiratory distress patient is so exhausted from the efforts of breathing that their ability to continue any respiratory effort has a very limited future. In such situations, patients (typically those with diagnosed respiratory and circulatory diseases) will identify that they have been intubated before and that they are not going to be able to continue the work of breathing.

ALS Care

1. Bag valve mask, OPA/NPA, supraglottic airway and intubation equipment including bougie must be readied. Until all equipment is readied, patient's respirations can be assisted with BVM and 100% Oxygen.
2. Apply **Waveform Capnography**
3. Provide **Apneic Oxygenation** at 15 LPM via nasal cannula.
4. **Ketamine:** 2mg/ kg IV/IO IBW over 2 minutes (dosing based on Ideal Body Weight)

The formula for calculating IBW is:

Men= 50 kg + 2.3 kg for every inch over 5 foot tall.

Women= 45.5 kg + 2.3 kg for every inch over 5 foot tall.

5. **Hurricane Spray:** 1-2 sprays in posterior pharynx. May repeat once in 30 seconds
 6. **Obtain Definitive Airway** based on Supraglottic Airway Procedure or Advanced Airway Procedure.
 - a. If intervention takes greater than 20 seconds, stop and ventilate the patient before second (final) attempt.
 7. **Fentanyl:** 1 mcg/kg (Maximum 100 mcg single dose) slow IV/IO for comfort **after** airway is placed and confirmed using *Airway Confirmation Procedure 13.H.1*
 8. If patient has a history of renal failure the dose should be reduced by half.
- Contact Medical Control for re-dosing of Ketamine and/or Fentanyl**
9. Medication assisted intubation will be reviewed through the CQI process. EMS paperwork should include EKG and capnography tracings.

Failed Airway

If unable to maintain $\text{SPO}_2 \geq 90\%$, regardless of patient positioning, the most proficient scene provider should

1. Re-assess ability to increase $\text{SPO}_2 \geq 90\%$ with all available, complaint appropriate adjuncts up to and including *Medication Assisted Intubation*. If $\text{SPO}_2 < 90\%$ revert to NPA with BVM (regardless of contraindications), immediate transport and hospital notification.

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**Orogastric (OG) Tube Insertion
Procedure (Transport ALS Only)**

Indications

Indication for orogastric (OG) tube placement in the Memorial EMS System is:

- Gastric decompression of an adult cardiac arrest patient after endotracheal intubation has been performed and placement verified; OR with use of a supraglottic airway.

Contraindications

- Known esophageal varices
- Esophageal stricture
- Esophageal or stomach cancer
- Esophagectomy or partial gastrectomy
- Gastric bypass surgery
- Penetrating neck trauma

OG Insertion Procedure

1. Estimate the length of the tube needed to reach the stomach by measuring the tube from the corner of the mouth to the earlobe and down to the xiphoid process. Mark the length with tape.
2. Lubricate the Salem sump tube (18F) with a water soluble lubricant (*e.g.* K Y Jelly).
3. Insert the tube through the oropharynx or through the gastric access lumen on the supraglottic airway until the marked depth is reached.
4. If the tube coils in the posterior pharynx, direct laryngoscopy can be utilized to place the tube in the esophagus.
5. Verify placement (see *OG Placement Verification*).

OG Placement Verification

1. Using a 60mL catheter tip syringe, instill 30mL of air into tube and auscultate over epigastrium for air sounds.
2. Aspirate for gastric contents and assess for cloudy, green, tan, brown, bloody or off-white color contents consistent with gastric contents.
3. Secure tube with tape.

Orogastric (OG) Tube Insertion Procedure (Transport **ALS Only**)

Gastric Decompression

Once placement of the Salem sump tube has been verified, begin gastric decompression in one of the following manners:

1. Attach the tube to portable suction (and suction intermittently as needed).
2. Attach the tube to the onboard suction (and suction intermittently as needed).
3. Attach the tube to continual low suction (approximately 60 mmHg) using the onboard suction.
4. If suction is not readily available, connect the 60mL syringe to the tube while keeping the (blue) air vent patent. This will allow the sump function of the tube to work until suction can be applied and will also prevent gastric contents from leaking from the tube.

Pearls

- If you cannot place the OG tube quickly (no more than 2 attempts), forego the procedure – do not delay transport.
- The **blue** air vent must remain patent to ensure proper sump function and to prevent damage to the gastric lining during suctioning.

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Respiratory Distress Protocol

Correct management of the patient in respiratory distress is dependent on identifying the etiology of the distress and recognizing the degree of the patient's distress. Signs and symptoms of respiratory distress will include:

- Shortness of breath
- Difficulty speaking
- Altered mental status
- Diaphoresis
- Use of accessory muscles
- Retractions
- Respiratory rate less than 8 or greater than 24

If the etiology is questionable or your assessment does not provide a clear etiology, [Consult Medical Control](#) for direction in patient care.

Asthma/COPD/Pneumonia

In addition to general signs & symptoms of respiratory distress, patients may present with inspiratory & expiratory wheezing and/or "tight" lung sounds with decreased air movement.

EMR Care

Emergency Medical Responder Care should be focused on assessing the situation and initiating routine patient care to treat for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen**: If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
3. May suggest and assist patient with home prescribed inhalers.
4. Be prepared to support with **BVM** if necessary.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to treat for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. **Proventil (Albuterol)**: 2.5mg in 3mL of normal saline via nebulizer over 15 minutes. May repeat Albuterol 2.5mg every **15 minutes** as needed.
3. Apply **Waveform Capnography** (if equipped).

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Respiratory Distress Protocol

Asthma/COPD/Pneumonia {Continued}

BLS Care (cont.)

4. Initiate **ALS intercept** if needed and transport as soon as possible.
5. Contact receiving hospital as soon as possible or Medical Control if necessary.

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport. ILS Care includes all components of *BLS Care*.

1. Obtain peripheral IV access.
2. **Proventil (Albuterol)**: 2.5mg in 3mL of normal saline **mixed with Ipratropium (Atrovent)**: 0.5 mg via nebulizer over 15 minutes. May repeat Albuterol 2.5mg with Atrovent 0.5mg every **15 minutes** as needed.
In-line nebulizer with in-line capnography may be utilized if patient is unresponsive or in respiratory arrest.
3. **Epinephrine 1:1000**: 0.3-0.5mg IM if the patient is suffering status asthmaticus.
Epinephrine administration should be the priority in these critical patients.
 - Special consideration should be given to administering Epinephrine if the patient is > 40 years old, has an irregular heart rate, has a heart rate > 150bpm or has a significant history of heart disease. **Consult Medical Control prior to administration if the patient meets any of these criteria.**
4. For ongoing respiratory distress, the provider may initiate **CPAP** (see CPAP protocol 13.I.1)

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.

Pearls

CPAP (Continuous Positive Airway Pressure) can be applied by **ILS/ALS** to achieve PEEP (Peak End Expiratory Pressure) for patients presenting with signs & symptoms of respiratory distress. The patient must be alert and able to adequately ventilate spontaneously in order for CPAP to be initiated.

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Respiratory Distress Protocol

CHF / Pulmonary Edema

In addition to general signs & symptoms of respiratory distress, patients may present with rales (or “crackles”), pedal edema, distended neck veins (JVD), orthopnea and tripod positioning.

First Responder Care

Emergency Medical Responder Care should be focused on assessing the situation and initiating routine patient care to treat for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
3. Be prepared to support with a **BVM** if necessary.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to treat for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. Be prepared to support the patient's respirations with BVM if necessary.
3. Apply **Waveform Capnography** (if equipped)
4. **Initiate ALS intercept** and transport as soon as possible.
5. Obtain **12-Lead EKG** and transmit to receiving hospital if capabilities exist and time permits.

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. For ongoing respiratory distress, the provider may initiate **CPAP** (see CPAP protocol 13.I.1)
3. Obtain peripheral **IV access**.

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ADULT PREHOSPITAL CARE MANUAL

Respiratory Distress Protocol

CHF / Pulmonary Edema {Continued}

ILS Care {Continued}

4. **Nitroglycerin (NTG)**: 0.4mg SL. May repeat every **3-5 minutes** to a total of 3 doses (if systolic BP remains > 110mmHg). Do not delay Nitroglycerin administration waiting for I.V. insertion if systolic BP is >120 mmHg.
5. Contact receiving hospital as soon as possible. *Communicate early in the transmission if your patient is on CPAP so the appropriate equipment is ready upon patient arrival.*

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of ILS care.

Critical Thinking Elements

- Constant reassessment of the respiratory distress patient is imperative to assure that the patient has adequate ventilation and oxygenation. Closely monitor the patient's response to treatment rendered.
- Patients in respiratory distress should be transported in an **upright position** to assist their respiratory effort.
- Do not delay CPAP application for administration of Nitroglycerin (*i.e.* you do not need to wait until all three (3) doses of NTG SL have been administered before applying CPAP).
- CPAP has its greatest effect when used without interruptions. CPAP should not be removed to administer NTG, a provider may coordinate those interruptions when CPAP must be transferred from portable to onboard O₂ tanks.

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**Airway Confirmation Procedure
(BLS, ILS, and ALS)**

Consistency in airway placement **confirmation** methods and the **documentation** of such is a priority in our EMS System. The following are provider-level specific requirements to confirm Supraglottic Airway and Endotracheal Tube placement. All SGA and ETT's placed or attempted will be reviewed via the MEMS CQI Process. Failure to document in this manner will be actionable by the EMS System.

BLS Care

A “confirmed airway” at the BLS level is defined as established bilateral breath sounds/ absent epigastric noises when BVM ventilations are performed and one of the following:

- Continuous waveform capnography (if equipped)
- + Colormetric device color change purple to gold (eg “Easycap”)
- Chest rise and fall
- Condensation/fogging in the tube
- Clinical improvement (eg skin color, VS, level of responsiveness)

These findings should be reassessed and **documented** following any major move of the patient, including but not limited to:

- Placing patient on a backboard or CPR device
- Loading patient in an ambulance/ transferring care to higher level
- Unloading the patient at the hospital/ transferring care to E.D. staff

ILS Care

ALS Care

A “confirmed airway” at the ILS and ALS level is defined as established bilateral breath sounds/ absent epigastric noises when BVM ventilations are performed and **continuous waveform capnography**. These must be performed and documented at the ILS and ALS level. Further supporting documentation may include any of the following:

- Visualization of tube passing chords (ETT only)
- + Colormetric device color change purple to gold (eg “Easycap”)
- Chest rise and fall
- Condensation/fogging in the tube
- Clinical improvement (eg skin color, level of responsiveness)

These findings should be reassessed and documented following any major move of the patient, including but not limited to:

- Placing patient on a backboard or CPR device
- Loading patient in an ambulance/ transferring care to higher level
- Unloading the patient at the hospital/ transferring care to E.D. staff

MEMORIAL EMS SYSTEM
ADULT PREHOSPITAL CARE MANUAL

Capnography Procedure
(BLS, ILS, ALS)

Capnography, specifically waveform capnography, provides assessment of the quality of respiratory efforts as well as patency of airway adjuncts. Capnography can identify changes much sooner than waiting for signs and symptoms in a patient who is not able to communicate those changes. **Capnography is the most reliable and easily assessable tool for verification of airway patency and effects of respiratory support.**

All patients with advanced airways and/or complaining of respiratory distress should be monitored based on their quantitative (waveform) capnography. Additional complaints such as sepsis, and trauma would also benefit from capnography.

Treatment and Interventions

1. Assemble all equipment prior to utilization.
 - a. If required by unit model, zero the unit.
2. Apply ETCO₂ adapter.
 - a. If utilizing for monitoring of conscious patient, nasal cannula can be applied.
 - b. If utilizing with ETT/ supraglottic airway, placement location in circuit should be based on manufacturer recommendations.
3. Resume ventilations (continue spontaneous respirations).
4. Observe monitor for numeric value and waveform.
 - a. Obtain documentation strip prior to and after each patient move.
 - b. If absent or low numeric value and/or absent or inappropriate waveform
 - i. Immediately verify placement of advanced airway via
 - Colormetric device
 - Direct laryngoscopy
 - ii. Assess circulation for possible cause of low/ absent/ inappropriate readings
5. Unless directed otherwise by specific treatment protocol, seek to maintain ETCO₂ range of **35-45 mmHg**.
 - a. A sudden decrease in ETCO₂ in any situation could signal a change in patient condition. Immediately assess patient and begin resuscitation as indicated.
 - b. A sudden increase in ETCO₂ during cardiac arrest may indicate ROSC. Assess patient.

Critical Thinking Elements

- **Failure to place and document capnography on patients with airways in place is both unsafe and actionable by the EMS System.**
- **Know your equipment. Providers must know the difference between no value detected and no signal detected.**
- **Reasons for no value detected must be immediately assessed and include**
 - **Loss of airway, apnea, obstruction**
 - **Circulatory collapse, cardiac arrest**
 - **Equipment failure: BVM or oxygen**

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CPAP Procedure
(ILS/ALS only)

CPAP (Continuous Positive Airway Pressure) can be applied by **ILS/ALS** providers to achieve PEEP (Peak End Expiratory Pressure) for patients presenting with signs & symptoms of respiratory distress. The patient must be alert and able to adequately ventilate spontaneously in order for CPAP to be initiated.

Indications for CPAP

CHF/ Pulmonary Edema
Asthma
COPD
Pneumonia
Near Drowning

Contraindications for CPAP

Systolic BP of < 90mmHg
Severe cardiorespiratory instability and impending arrest
Respiratory or cardiac arrest
Upper airway abnormalities or trauma
Penetrating chest trauma
Compromised thoracic organs
Persistent nausea and vomiting
Gastric distention
Obtunded patient/ questionable ability to protect own airway

CPAP Application

1. Assess vital signs.
2. If the systolic BP is between 90-100mmHg, Contact Medical Control prior to initiating.
3. Set up the circuit and mask as per the manufacturers' instructions and connect to a normal oxygen regulator. Apply to the patient.
4. The CPAP device pressure settings are now adjustable based upon O₂ flow rates.
5. Begin **CPAP** for all above indicated patients at **5cmH₂O** which is 8-9 LPM O₂ flow.
6. ***Suspected CHF/Pulmonary Edema or Near Drowning only:*** the provider may titrate the pressure by increasing 2.5cmH₂O every 5 minutes to a maximum of **10cmH₂O** which is 13-14 LPM O₂ flow (if continued respiratory distress/hypoxemia).
7. Consider inline nebulizer treatment as indicated per Respiratory Distress Protocol.
8. Treat continuously while en route to the receiving facility.
9. Obtain and record vital signs every 5 minutes.

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CPAP Procedure
(ILS/ALS only)

CPAP Application (Cont.)

10. In cases of continued deterioration, severe anxiety, or life-threatening complications:
 - a) **Stop** the CPAP treatment.
 - b) Initiate appropriate BLS & ALS support per protocol.
 - c) On arrival at the receiving hospital, immediately communicate any adverse reactions to emergency department staff.

Flow vs Pressure

Lightweight & Portable	
80 grams nominal (less mask & harness) 90 mm X 53 mm X 65 mm (unit only)	
Flow (LPM)	CPAP/PEEP (approx. cm H ₂ O)
6	2.0 - 3.0
10	6.0 - 7.0
12	8.0 - 9.0
15	11.0 - 12.0
8 - 9	5.0
10 - 12	7.5
13 - 14	10.0
Flush	13.0 (Max.)

Pearls:

- CPAP can be a very beneficial adjunct in treating patients with respiratory distress.
- MEMS approved CPAP devices currently deliver approx. 70% FiO₂.
- CPAP increases intrathoracic pressures.
 - As CPAP pressure increases **expect** the systolic BP to drop.
 - Monitor closely and use with caution in patients with SBP<110mmHg.
- For Asthma, COPD, and Pneumonia, do not titrate CPAP pressure above 5cmH₂O.

**MEMORIAL EMS SYSTEM
ADULT PREHOSPITAL CARE MANUAL**

Adult Tracheostomy

With today's technology and improving home health care, more critical care patients are being sent home earlier. Home health care professionals and family members can duplicate the care the patient receives in the hospital. This allows the patient to return home, spending less time in the hospital. EMS is activated when there is a problem with complex medical equipment, or the patient relapses into a more critical condition.

First Responder Care

First Responder Care should be focused on ensuring a patent airway.

1. Render initial care in accordance with the *Routine Adult Care Protocol*.
2. **Oxygen:** 15 L/min via tracheostomy collar.
3. Assess work of breathing.
4. Assess for abnormal airway sounds.
5. Place patient in a position of comfort.
6. If the tracheostomy tube is obstructed with secretions **direct the caregiver to:**
 - a. Suction with an appropriately sized whistle-tip catheter.
 - b. Repeat suction after removing inner cannula of tracheostomy tube.
 - c. Change the tracheostomy tube.
7. If the airway continues to be obstructed or if ventilatory effort is inadequate, **ventilate with 100% oxygen** by attaching a BVM to the tracheostomy tube.
8. If the tracheostomy tube is still not patent, ventilate in standard fashion while covering the stoma.
 - The balloon on the trach must be deflated prior to attempting ventilation.
9. Initiate ALS intercept as soon as possible.
10. Take patient's tracheotomy care bag with the patient.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment and ensuring that the patient has a patent airway.

1. BLS Care includes all components of *First Responder Care*.
2. BLS level and above caregivers may suction with a whistle-tip catheter. Pass the suction device, if unable to pass suction concern for obstruction vs false passage.
3. If BVM ventilations, then **apply in-line capnography** (if equipped).
4. Initiate transport ASAP.

**MEMORIAL EMS SYSTEM
ADULT PREHOSPITAL CARE MANUAL**

Adult Tracheostomy

ILS Care

ALS Care

ILS/ ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment and ensuring a patent airway.

1. Care includes all components of *BLS Care*.
2. If unable to pass suction, remove the inner cannula and visually inspect for evidence of obstruction, attempt ventilation w/o the inner cannula in place.
 - a. If breathing is inadequate and a spare tracheostomy is available, attempt to reposition/replace tracheostomy tube. **DO NOT PERFORM IF TRACHEOSTOMY STOMA IS LESS THAN TWO WEEKS OLD.**
 - i. Insert bougie through tracheostomy tube and advance to Carina (approx. 10cm).
 - ii. Deflate balloon.
 - iii. Remove tracheostomy tube over bougie while ensuring that bougie remains in the stoma and trachea to serve as a guide.
 - iv. Feed the new tracheostomy tube over bougie and into the stoma. Inflate balloon.
 - v. Remove the bougie.
 - vi. Secure tracheostomy tube in place.
 - b. If spare tracheostomy tube is unavailable, follow the above procedure for tracheostomy tube replacement using an ET tube the same size as the tracheostomy or 0.5 size smaller (e.g., for a 6.0 Shilley tracheostomy, use a 6.0 or 5.5 cuffed ET tube) Be sure not to force the ET tube and remain mindful of how deep you are inserting the tube (do not mainstem the patient).
 - i. If the size of tracheostomy tube is unknown, use a 6.0 ET tube.
 - c. If unsuccessful, orally intubate the patient (unless known Laryngectomy).
 - d. **Contact Medical Control.**

Critical Thinking Elements

- Know the difference between a tracheostomy and a laryngectomy.
 - a. Tracheostomy patient airways connect all the way to the mouth
 - b. Laryngectomy patient airways terminate at the stoma at base of neck
- Oral attempts at intubation of a laryngectomy patient will always result in esophageal intubation because the upper portion of the airway has been surgically removed.
- Important to obtain history as to why the patient has a tracheostomy - if for head/neck cancer beware of likely abnormal anatomy making attempts at oral intubation very difficult if not impossible.

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MEDICAL PROTOCOLS



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**Altered Level of Consciousness
(ALOC) Protocol**

A patient with an altered level of consciousness (ALOC) may present with a variety of symptoms from minor thought disturbances & confusion to complete unresponsiveness (syncope/ near syncope). The causes of ALOC include cardiac emergencies, hypoxia, hypoglycemia/diabetic emergencies, epilepsy/seizures, alcohol/drug related emergencies, trauma, sepsis, stroke or any other condition which disrupts brain perfusion.

- If an Opioid overdose is suspected, refer to *The Drug Overdose and Poisoning Protocol* directly while still ruling out any other causes such as hypoxia, hypo/hyperglycemia, stroke, seizure, etc.
- In cases of ALOC of unknown etiology **with respiratory depression/insufficiency**, *The Drug Overdose and Poisoning Protocol* (Narcan) may be utilized.
- If a patient is verifiably in Hospice and presents with diminished LOC/respiratory depression, Narcan administration may not be appropriate. [Contact Medical Control](#)

A patient who has experienced syncope or ALOC of any type should receive a thorough evaluation for secondary injuries (e.g. fall injuries associated with the ALOC) and for possible underlying causes. Although a patient's ALOC may be resolved in the field, the patient should still be strongly encouraged to accept EMS care and ambulance transport to the hospital for further evaluation.

Emergency Medical Responder Care

Emergency Medical Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
3. **Oral Glucose:** 15g PO if the patient has a history of diabetes and has in possession a tube of Oral Glucose, is alert, is able to sit in an upright position, has good airway control and an intact gag reflex.

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**Altered Level of Consciousness
(ALOC) Protocol**

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. Perform a **blood glucose level test** to re-evaluate blood sugar 5 minutes after administration of Oral Glucose. If blood sugar remains $\leq 60\text{mg/dL}$, administer a 2nd dose of Oral Glucose (15g). Patients with a blood glucose level of 100-249mg/dL do not require additional treatment.
3. **Glucagon:** 1mg IM if blood sugar is $\leq 60\text{mg/dL}$, the patient is unresponsive and/or has questionable airway control, or absent gag reflex.
4. Initiate ALS intercept if needed and transport as soon as possible.

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion, and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. Obtain **IV access**.
3. **D10W:** 250 mL IV if blood sugar is $\leq 60\text{mg/dL}$, Continue infusion until patient is capable of eating a meal.
 - a. Documentation should include approximate fluid administration of D10W.
4. Perform a 2nd **blood glucose level test** to re-evaluate blood sugar 5 minutes after administration of D10W or Glucagon.
5. **Fluid Bolus:** For glucose levels $\geq 250\text{mg/dL}$, give 500 ml and reassess. Repeat fluid bolus as needed. Do not give the bolus if fluid overload is a concern
6. Obtain **12-Lead EKG** and transmit to receiving hospital if non-opiate overdose (or opiate overdose unresponsive to Narcan) or if cause of ALOC is uncertain.

Altered Level of Consciousness (ALOC) Protocol

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. Contact receiving hospital as soon as possible.

Pearls

- Look for Medic Alert tags.
- The provider should know what "HI" and "LO" parameters are for their specific glucometers.
- Signs/symptoms of hypoglycemia include: Weakness/shakiness, tachycardia, cold/clammy skin, headache, irritability, ALOC/bizarre behavior or loss of consciousness.
- If the glucose reading is mildly above 60mg/dL with S/S of Hypoglycemia treat as such, but be hyper-alert for CVA S/S.
- Signs/symptoms of hyperglycemia include: increased thirst, increased hunger, and increased urination. The patient presentation can range from asymptomatic to more severe symptoms such as altered mental status, coma, and vomiting.
- Patients with a blood glucose of $\geq 800\text{mg/dL}$. can be profoundly hypovolemic, requiring large quantities of I.V. fluids for adequate resuscitation.
- Use caution when administering fluid boluses to patients with a Hx of CHF or chronic renal failure. Do not start a fluid bolus on a patient who already appears overloaded.
- No intercept is required if the patient becomes alert/oriented after the administration of Oral Glucose or Glucagon unless the patient has a condition that warrants intercept.
- **ILS / ALS:** If a patient refuses transport after administration of D10W (& is Alert, and oriented to person, place, time, and situation), the call may be treated as a low risk refusal as long as the following criteria are met (and documented in the Patient Care Report):
 - The cause of the patient's hypoglycemia can be easily explained (e.g. patient took insulin but did not eat).

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Suspected Stroke Protocol

A stroke or “brain attack” is a sudden interruption in blood flow to the brain resulting in neurological deficit. It affects approximately 750,000 Americans each year, is the 5th leading cause of death and is the leading cause of adult disability. With new treatment options available, **EMS personnel should alert Medical Control as quickly as possible whenever a potential stroke patient is identified.**

Signs & symptoms of a stroke include:

- Hemiplegia (paralysis on one side of the body)
- Hemiparesis (weakness on one side of the body)
- Decreased sensation or numbness without trauma
- Facial droop
- Unequal grips
- Dizziness, vertigo or syncope
- Aphasia or slurred speech
- ALOC or seizures
- Nausea/ vomiting
- Sudden, severe headache with no known cause
- Visual disturbances (e.g. blurred vision, double vision)
- Generalized weakness
- Frequent or unexplained falls

To facilitate accuracy in diagnosing stroke and to expedite transport, an easy-to-use neurological examination tool is recommended. Although there are several different types available, the most “user-friendly” is the *FAST Exam*. Additionally, for a more accurate assessment of the severity of the stroke the *Los Angeles Motor Score* should be utilized.

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Suspected Stroke Protocol

FAST Exam

FAST Exam

Facial Droop (ask the patient to show their teeth or smile):

- Normal – Both sides of the face move equally.
- Abnormal – One side of the face does not move as well as the other.

Arm Drift (ask the patient to close their eyes and hold both arms out straight for 10 seconds):

- Normal – Both arms move the same or do not move at all.
- Abnormal – One arm does not move or one arm drifts downward compared to the other.

Speech (ask the patient to say, “The sky is blue in Cincinnati”):

- Normal – The patient says the phrase correctly with no slurring of words.
- Abnormal – The patient slurs words, uses the wrong words or is unable to speak.

Los Angeles Motor Scale

Facial Droop with Smile

0	Absent
1	Present

Arm Drift

0	Absent
1	Drifts down on one side
2	Falls rapidly on one side

Grip Strength Deficit

0	Normal
1	Weak grip on one side
2	No grip on one side

Total patient score

Score of 1-2 is positive for stroke symptoms

Score of 4 or higher indicates high probability of Emergent Large Vessel Occlusion

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Suspected Stroke Protocol

Emergency Medical Responder Care

Emergency Medical Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
3. Check and record vital signs every **5 minutes** until the transporting unit arrives.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. Be prepared to support the patient's respirations with BVM if necessary and have suction readily available.
3. Perform **blood glucose level test** to rule out low blood glucose as a reason for ALOC. If the blood glucose is less than 60 refer to the ALOC Protocol.
4. If active seizure is noted, refer to Seizure Protocol.
5. Apply **Waveform Capnography**.
6. Initiate ALS intercept if needed and **transport without delay**.
7. If female patient aged 15-50 is hypertensive, question possibility of pregnancy or postpartum. Communicate such findings to transporting agency and receiving facility to ensure patient is being transported to most appropriate facility.
8. Check and record vital signs and GCS every **5 minutes**.
9. If **FAST** exam is positive (based on 1 or more elements of the exam), complete **LAMS** exam and communicate the **time of symptom onset**.

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Suspected Stroke Protocol

Transporting Units

While one goal of EMS is to provide expedient care prior to hospital arrival another is to provider for continuity of care. The stroke patient is a truly critical patient where every minute counts.

1. Scene time should be limited to ten (10) minutes or less.
 - a. Agencies working with EMD services who utilize the Stroke Diagnostic Tool card will be notified of dispatch assessment. Until proven otherwise, patient should be assessed for stroke and scene treatment be limited to most critical needs.
2. Communication to receiving ED should be completed as soon as possible.
 - a. Report should follow *Alert Radio Report* format.
3. In order to assist treating facility in treatment decisions regarding time sensitive treatment contact with family/ witness is very important.
 - a. If not transporting witness/ family with patient, obtain phone number where they can be reached.
4. Destination decisions must be informed decisions based on local and regional destination capabilities, time since onset and transportation distances.
 - a. See *EMS Region 3 Stroke Transfer Protocol* and *EMS Triage Destination Plan*.
 - b. Include **Medical Control** in the decision making

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. Obtain **IV access**.

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Suspected Stroke Protocol

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.

EMS Alert Patient Report- Stroke

The following information and format necessitate expedited delivery of information for potential pre-hospital stroke declaration.

1. Unit identification
2. ETA & Destination if other than Medical Control Center being contacted.
 - a. (Agencies should utilize their approved local Medical Control.)
 - b. (Agencies who's normal Medical Control Center may not always be the receiving destination of a stroke patient must communicate early to determine destination. Report should include everything needed to activate Stroke Team.)
3. "Inbound EMS Patient Report- Stroke Alert."
 - a. The above statement should be made within the first 5 seconds of the communication.
4. History of present illness
 - a. FAST exam results
 - b. LAMS exam results
 - c. Specific time of Last Known Well
5. Patient Status
 - a. Level of Consciousness
 - b. Vital Signs
 - c. Additional pertinent complaints
6. Acknowledge necessary treatment plan. (May not be complete at time of communication.)
7. Determine destination (facility and location).

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Suspected Stroke Protocol

Pearls

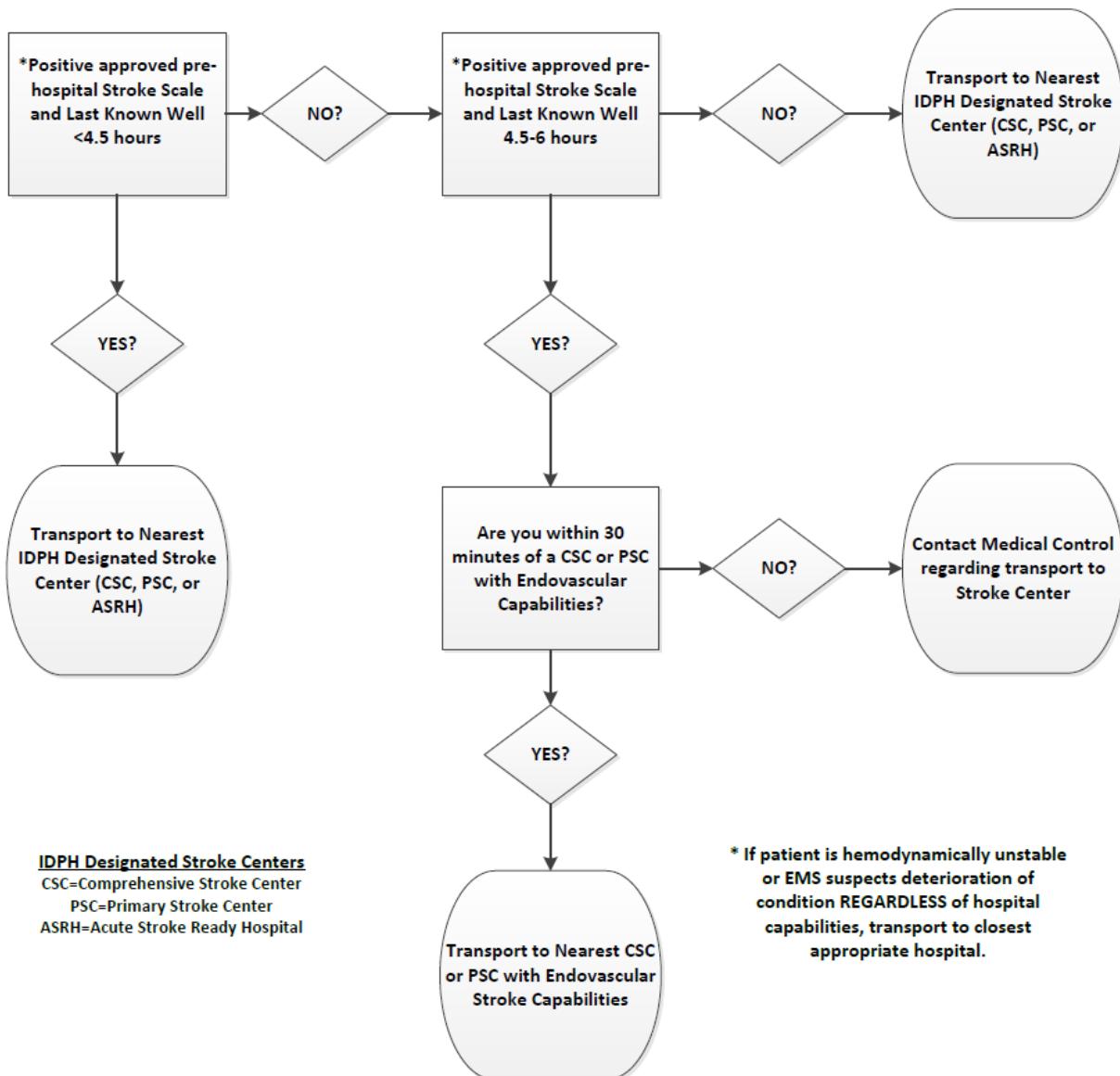
- **Stroke onset time** (defined as the last time the person was known to be normal) is key in determining the eligibility of IV TPA. EMS personnel should ask family members or bystanders the stroke onset time if the patient is unable to provide that information.
- The treatment window for Strokes is very time sensitive. Thrombolytics, the first step of treatment is only available for the first 270 minutes. **TIME IS BRAIN!!**
- Interventional angiography can be performed up to 24 hours after onset of symptoms.
- Bradycardia may be present in a suspected stroke patient due to increased ICP. Do NOT give Atropine if the patient's BP is normal or elevated. Contact Medical Control for consultation.
- Spinal immobilization should be provided if spinal cord injury or other trauma is suspected.
- Communicate acute stroke/suspected stroke early in the report to the receiving hospital or Medical Control.
- Document in the PCR whether the FAST exam is negative or positive. If positive, document "FAST exam positive" along with what components make it such and the findings of the LAMS.
- Do NOT administer Nitroglycerin (NTG) to a suspected stroke patient with elevated blood pressure in attempt to lower blood pressure. NTG may lower cerebral perfusion pressure (CPP) too much and actually increase ischemia to the brain tissue.

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Suspected Stroke Protocol

Region 3
Stroke Transfer Protocol

Approved by: EMS Regional committee
Date: 7.16.2014



<http://www.ihatoday.org/health-care-issues/hospital-preparedness.aspx>

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Seizure Protocol

A seizure is a temporary, abnormal electrical activity of the brain that results in loss of consciousness, loss of organized muscle tone and presence of convulsions. The patient will usually regain consciousness within 1 to 3 minutes followed by a period of confusion and fatigue (*post-ictal state*).

Multiple seizures in a brief time span or seizures lasting more than 5 minutes may constitute status epilepticus and require EMS intervention to stop the seizure. Causes of seizures include: epilepsy, stroke, head trauma, hypoglycemia, hypoxia, infection, a rapid change in core body temperature (e.g. febrile seizure), eclampsia, and alcohol withdraw and overdose.

Emergency Medical Responder Care

Emergency Medical Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
1. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
2. Be prepared to support the patient's respirations with BVM if necessary and have suction readily available.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. Perform **blood glucose level test**, if less than 60 refer to ALOC Protocol as well.
3. Apply **Waveform Capnography** (if equipped).
4. Initiate ALS intercept and transport ASAP.

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Seizure Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. **Midazolam (Versed):** 10 mg IM for seizure activity. May repeat 5 mg IM one time in **5 minutes** if the patient is still seizing.
3. Obtain **IV access**
4. If blood sugar is < 60mg/DL, refer to ALOC Protocol.

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. **Midazolam (Versed):** 10mg IM immediately if patient is still seizing and IV has not been established May repeat 5 mg IM one time in **5 minutes** if the patient is still seizing.
Or if IV is already established:
Midazolam (Versed): 5 mg IV/IO over 1 minute for seizure activity. May repeat 2.5 mg IV/IO every **5 minutes** as needed to a total of 15mg.
3. Contact the receiving hospital as soon as possible.

Critical Thinking

- Versed (Midazolam) typically comes in a concentration of 10mg/ 2ml (always check concentration and 5 rights). In this concentration $2.5\text{mg} = 0.5 \text{ ml}$, $5.0\text{mg} = 1 \text{ ml}$ etc. Keep in mind that should Versed come in 5mg/ 1ml, it is still this same concentration!
- A provider could choose to make a Versed 1mg/ 1ml concentration for **IV administration only**. To do this, take a NS pre-filled 10 ml flush and discard 2 ml. Then attach a needle, draw up the entire 10 mg/ 2 ml of Versed. Next, pull back on the syringe drawing in extra air. This extra space is needed to completely mix the new concentration (shake gently back and forth). **Mixing the medication completely is CRUCIAL.**
The provider now has made Versed into a 1mg/ 1ml concentration for ease of administration. This is the only MEMS approved Versed dilution should the provider choose to do so.

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Hypertensive Crisis Protocol

A hypertensive emergency is an elevation of the BP that may result in organ damage or dysfunction. The organs most likely damaged by a hypertensive emergency are the brain, heart and kidneys. Hypertension is also an indication that an underlying condition may exist which is causing the brain to demand more blood from the cardiovascular system. It can also be an indication of head injury with increased ICP, hypoxia or endocrine dysfunction. The goal of treatment is a slow, gradual reduction in BP rather than an abrupt lowering of BP that may cause further neurological complications.

Emergency Medical Responder Care

Emergency Medical Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing, has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. Be prepared to support the patient's respirations with BVM if necessary and have suction readily available.
3. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
4. Check and record vital signs every **5 minutes** until the transporting unit arrives.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. Initiate ALS intercept if needed and **transport suspected stroke patients without delay**.
3. If female patient aged 15-50 is hypertensive, question possibility of pregnancy or postpartum. Communicate such findings to transporting agency and receiving facility to ensure patient is being transported to most appropriate facility.
4. Check and record vital signs and GCS every **5 minutes**.
5. Keep the patient as calm as possible. Assist with patient movement as much as possible.
6. Contact the receiving hospital as soon as possible.

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Hypertensive Crisis Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. Treatment symptoms based on appropriate protocols.

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
3. Check and record vital signs and GCS every **5 minutes**.
4. Contact the receiving hospital as soon as possible.

Critical Thinking Elements

- A patient with a **systolic BP > 150mmHg and/or diastolic BP > 90mmHg without neurological deficit** should be considered stable.
- A patient with a **diastolic BP > 130mmHg with non-traumatic neurological deficits (e.g. visual disturbances, seizure activity, paralysis, ALOC) and/or chest pain/discomfort and/or pulmonary edema** should be considered an acute hypertensive crisis.
- Assess for **chest pain/discomfort and/or pulmonary edema**. If present, treat per appropriate protocol.

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Acute Abdominal Pain Protocol

Abdominal pain may vary from minor discomfort to acute pain. Correct management of the patient in abdominal pain depends on recognizing the degree of distress the patient is suffering and identifying the possible etiology of the distress.

Emergency Medical Responder Care

Emergency Medical Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. Allow the patient to remain in a position that is most comfortable.
3. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $>94\%$.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock & preparing the patient for or providing transport.

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. Initiate ALS intercept if needed and transport as soon as possible.

Transporting Units

Transporting units should have a heightened awareness that moving the patient could exacerbate the patient's pain as well as nausea.

1. **Ondansetron (Zofran) ODT:** 4mg **for nausea and/or vomiting.** May repeat in 30 minutes if needed. (If known pregnant female **contact medical control** prior)

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS care includes all components of *BLS care*. Obtain **IV access**.
2. **Ondansetron (Zofran):** 4mg ODT or IV **for nausea and/or vomiting.** May repeat in 30 minutes if needed. (If known pregnant female **contact medical control** prior)
3. **IV Fluid Therapy:** 500mL fluid bolus if the patient is hypotensive to achieve a systolic BP of at least 100mmHg.

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Acute Abdominal Pain Protocol

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. Place patient in position of comfort.
3. Pain medication
 - a. Based on *Pain Control Protocol* dosing.
4. Contact the receiving hospital as soon as possible.

Critical Thinking Elements

- Assess for thoracic aortic (aneurysm) rupture or trauma in addition to GI etiologies.
- Assess for leaking or ruptured abdominal aortic aneurysm (AAA). Common signs and symptoms may include previous history un-repaired AAA, abdominal distention, pulsating masses, lower extremity mottling, diaphoresis, anxiety/restlessness and/or sharp "tearing" pain between the shoulder blades or in the lower back.
- Give special attention to female patients of childbearing years. Acute abdominal pain should be considered to be an ectopic pregnancy until proven otherwise.
- Consider possible etiologies and obtain a detailed history & physical exam:
 - Inflammation = slow onset of discomfort, malaise, anorexia, fever & chills.
 - Hemorrhage = steady pain, pain radiating to the shoulders, signs & symptoms of hypovolemia.
 - Perforation = acute onset of severe symptoms and steady pain with fever.
 - Obstruction = cramping pain, nausea, vomiting, decreased bowel activity and upper quadrant pain.
 - Ischemia = acute onset of steady pain (usually no fever noted).
- Do not allow the patient to eat or drink.
- Signs & symptoms of renal calculi (i.e. kidney stone) include: acute & severe flank pain that starts in the back and radiates to the groin, extreme restlessness, hematuria and previous history of kidney stones.

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Acute Nausea & Vomiting Protocol

Acute nausea and vomiting may occur from a variety of illness including, but not limited to:

- Adverse medication effects
- Bowel obstruction
- Increased intracranial pressure
- Intraabdominal emergencies
- Myocardial infarction
- Other cardiac events such as dysrhythmias

An attempt at determining potential causes of isolated nausea or vomiting must be made in order to identify potential life threatening conditions.

Emergency Medical Responder Care

Emergency Medical Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. Place the patient in an upright or lateral recumbent position as tolerated.
3. Monitor airway status in vomiting patients as aspiration may occur. Reposition the patient as necessary to maintain a patent airway.
4. **Oxygen**: If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock & preparing the patient for or providing transport.

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. Perform **blood glucose level test**, if blood sugar is $< 60\text{mg/DL}$ refer to ALOC Protocol.
3. **Ondansetron (Zofran) ODT**: 4mg **for nausea and/or vomiting**. May repeat in 30 minutes if needed. (If known pregnant female **contact medical control** prior)
4. Consider **12 lead EKG** especially in elderly, female, and/or diabetic patients.
5. Initiate ALS intercept if needed and transport as soon as possible.

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Acute Nausea & Vomiting Protocol

ILS Care

ILS Care should be focused on continuing or initiating an advanced level of care, identifying potential serious conditions and stabilizing airway and circulation where appropriate.

1. ILS Care includes all components of *BLS Care*. Obtain **IV Access**.
2. **Ondansetron (Zofran)**: 4mg ODT or IV for nausea and/or vomiting. May repeat in 30 minutes if needed. (If known pregnant female **contact medical control** prior)
3. **IV Fluid Therapy**: 500mL fluid bolus if the patient is hypotensive to achieve a systolic BP greater than 100mmHg.

ALS Care

ALS Care should be directed at continuing or establishing a more advanced level of care, identifying potential serious conditions, stabilizing airway and circulation where appropriate and providing pharmacological relief from symptoms of nausea and vomiting.

1. ALS Care includes all components of *ILS Care*. Initiate transport ASAP

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**Allergic Reaction /
Anaphylaxis Protocol**

Allergic reactions can be triggered by virtually any allergen. An allergen is a substance (usually protein-based) which produces a hypersensitive reaction. Drugs, blood products, foods and envenomations are examples of substances which may produce hypersensitive reactions.

Signs & symptoms of a hypersensitive reaction may range from isolated hives to wheezing, shock and cardiac arrest. Anaphylaxis is a life threatening reaction that requires prompt recognition and intervention. An anaphylactic reaction may result in airway compromise and circulatory collapse within minutes.

Emergency Medical Responder Care

Emergency Medical Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
3. **Epi-Pen:** If the patient has a history of allergic reactions and has in their possession a prescribed Epi-Pen, is suffering from hives, wheezing, hoarseness, hypotension, ALOC or indicates a history of anaphylaxis, assist the patient with administering the Epi-Pen.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. Initiate ALS intercept and transport as soon as possible.
3. **Epinephrine 1: 1,000:** 0.3mg (auto-injector dose) or 0.5mg (draw-up dose) IM if the patient has a history of allergic reactions and/or is suffering from hives, wheezing, hoarseness, hypotension, ALOC or indicates a history of anaphylaxis.
 - a. Administer based on *Medication Administration Procedure*.
4. **Proventil (Albuterol):** 2.5mg in 3mL of normal saline via nebulizer over 15 minutes. May repeat Albuterol 2.5mg every **15 minutes** as needed
5. Apply **Waveform Capnography** (if equipped).
6. **Contact Medical Control** as soon as possible.

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Allergic Reaction /
Anaphylaxis Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS care*.
2. Obtain **IV/IO access**.
3. **In-line nebulizer** may be utilized if patient is unresponsive/in respiratory arrest.
4. **IV Fluid Therapy**: 500mL fluid bolus's if patient is hypotensive to maintain a systolic BP of at least 100mmHg.

****Do not use Ipratropium****

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. **Benadryl**: 50mg IV or IM for severe itching and/or hives.
3. Contact the receiving hospital as soon as possible.

****Epi IM Kits**, as an alternative to Epi-Pen auto-injectors, use epinephrine IM injection kits. These kits contain an ampule or vial of 1mg of 1:1000 epinephrine, syringes, IM needle and filter needle, and alcohol swabs as well as instructions for adults and children.

Critical Thinking:

- **Acute Dystonic reaction**: a common and distressing complication of certain anti-emetic and antipsychotic medications. Acute Dystonic Reactions are characterized by involuntary contractions of the muscles of the extremities, face, neck, tongue, abdomen, pelvis, or larynx that lead to abnormal movements or postures. If suspected, contact Medical Control for possible Benadryl administration order.
- The left Thigh is the preferred administration site for IM Epinephrine.

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**Drug Overdose and
Poisoning Protocol**

Poisoning may occur by ingesting, injecting, inhaling or absorbing a harmful substance or a substance in harmful quantities. Due to the magnitude and multiplicity of agents that are toxic or could be used as toxins, this protocol focuses on a general approach to the patient who has taken an overdose or has been exposed to a toxic agent. The substance container may have vital information for resuscitation of a poisoned patient. Communication with Medical Control is the best way to obtain rapid and accurate advice on treatment guidelines for specific substances.

Emergency Medical Responder Care

Emergency Medical Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock. Also of importance is to attempt to identify the substance (drug or poison) that was involved.

1. Consider possible scene & patient contamination and follow agency safety procedures.
2. Render initial care in accordance with the *Routine Patient Care Protocol*.
3. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
4. **Narcan:** 2mg IN if suspected narcotic overdose **and respiratory rate/ effort is insufficient.**

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. **Narcan:** 2mg IN/ IM if suspected narcotic overdose **and respiratory rate/ effort is insufficient.**
3. Apply **Waveform Capnography** (if equipped).

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**Drug Overdose and
Poisoning Protocol**

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. Obtain **IV/IO access**.
3. **Narcan**: 0.4mg – 2mg IV every 2-4 minutes to a max of 6 mg if suspected narcotic overdose **and respiratory rate/ effort is insufficient**.
If a patient is given Narcan and their condition improves as a result desires to refuse transport, follow the high risk refusal policy. Every effort should be made to make transport agreeable to the patient. If the patient continues to refuse, **contact medical control for direction.
4. **IV Fluid Therapy**: 500mL fluid bolus's if the patient is hypotensive to maintain a systolic BP of at least 100mmHg.
5. Initiate ALS intercept if needed and transport as soon as possible.
6. Contact the receiving hospital as soon as possible or Medical Control if necessary.

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. **Sodium Bicarbonate**: 50meq IV/IO if known tricyclic antidepressant (TCA) or known Aspirin (ASA) overdose.
3. **Midazolam (Versed)**: 2.5mg IV or 5mg IM for suspected stimulant poisoning/ over-ingestion. (Cocaine, Methamphetamine, Bath salts, Adderall, etc.)

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**Drug Overdose and
Poisoning Protocol**

Critical Thinking Elements

- Our goal (ALS) with Narcan is to counteract opioid induced (severe) respiratory depression, insufficiency, and apnea only. Our goal is NOT to “wake the patient up” or use it simply as a “rule out”. Using Narcan unnecessarily or excessively can cause withdrawals, agitation, vomiting, and possibly seizures. The use of Capnography is very beneficial for these patient encounters.
- Should EMS encounter a patient who received Narcan from Law Enforcement, EMS cannot resupply the officer. Law Enforcement agencies have their own supply process.
- DO NOT give a suspected poisoning patient anything by mouth.
- **Common Acids:** Hydrochloric Acid (swimming pool and toilet bowl cleaners), Sulfuric Acid (battery acid), Acetic Acid and Phenol.
- **Common Bases (Alkali):** Lye (washing powders and paint removers), drain pipe cleaners (Drano), disk batteries, bleach, ammonia, polishes, dyes and jewelry cleaners.
- **Common TCAs:** Amitriptyline, Elavil, Doxepin, Impramine, Clomipramine, etc. Patients who overdose on TCAs may initially appear well but may rapidly deteriorate. Monitor closely for ALOC and cardiovascular instability. Tachycardia and a widened QRS complex are generally signs of a life-threatening ingestion.
- **Central Nervous System Depressants:** examples include but are not limited to alcohol, benzodiazepines, and barbituates. AMS, respiratory depression, hypotension, bradycardia, and vomiting are all common symptoms of over-ingestion. AMS and Routine Patient Care Protocol should be initiated. Contact Medical Control.
- **Common Benzodiazepines:** Valium, Diazepam, Ativan, Lorazepam, Xanax, etc.
- **Beta Blockers:** examples include but are not limited to Metoprolol, Atenolol, Propanolol, Toprol, Bisoprolol. These medications commonly end with “lol” when in generic form. Bradycardia, hypotension, pallor, diaphoresis, and syncope/ near-syncope are all common symptoms of over-ingestion. Routine Cardiac Care Protocol should be initiated. Contact Medical Control.
- **Calcium Channel Blockers:** examples include but are not limited to Amlodipine, Diltiazem, Verapamil, Nicardipine, and Procardia. These medications commonly end in “pine” when in generic form. AMS, Bradycardia, hypotension, and ECG changes are all common symptoms of over-ingestion. Routine Cardiac Care Protocol should be initiated. Contact Medical Control.

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Sepsis

-Sepsis, or septic shock, refers to the massive immune response to an infection within the body. Often times the patient is suffering from a known infection (urinary tract infections and pneumonia being the most common). However the scale of the infection, and the body's response to it, forces the body to focus on reacting to the infection at the risk of other body systems. Sepsis ranks among the top ten causes of mortality, but also ranks as the most costly medical condition treated in the United States' hospitals.

-Septic shock is truly a life threatening emergency. However, when assessing a patient suffering from septic shock they present much more stable than the status of most life threatening conditions to which EMS responds. The septic shock patient may not appear to be in shock, there was not a sudden change in the patient's condition, nor was there a specific event that can be identified as the cause. Close examination will start to note a series of subtle changes that should be seen as key indicators of sepsis.

Emergency Medical Responder Care

1. Screen all patients ≥ 40 years old with medical complaint in addition to any with suspected underlying sepsis complaint.
2. Render initial care in accordance with the *Routine Patient Care Protocol*.
3. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
4. Focus should be given to a very thorough assessment.
5. Utilize the Miami Sepsis Scoring tool for initial indicators of shock.

Miami Sepsis Score

1	Body temp $\geq 38^{\circ}\text{C}$ (100.4°F) or $\leq 35.5^{\circ}\text{ C}$ (96.0°F) <i>*Make sure to specify how the temp was taken*</i>
1	Respiratory Rate $\geq 22/\text{minute}$
2	Shock Index ≥ 0.7 (Heart rate/ Systolic Blood Pressure)
	Composite score

BLS Care

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. Apply **Waveform Capnography**

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Sepsis

ILS Care

1. ILS Care includes all components of *BLS Care*.
2. Obtain **IV/IO access**.
3. **IV fluid therapy:** If Sepsis Score of 3-4 begin a 500mL fluid bolus. Assess for signs of pulmonary edema/ CHF. Reassess vital signs and for signs of fluid overload after each 500 mL infused. If no signs of fluid overload may repeat until 2 L infused.

ALS Care

1. ALS Care includes all components of *ILS Care*.
2. Contact the receiving hospital as soon as possible.

EMS Alert Patient Report- Sepsis

If Miami Sepsis Score of 3-4 **AND** ETCO₂ ≤ 25 , indentify patient as EMS Alert Patient Report- Potential Sepsis.

OR

If Miami Sepsis Score of 3-4 **AND** SBP ≤ 90 mmHg identify patient as EMS Alert Patient Report- Potential Sepsis.

The following information and format necessitate expedited delivery of information for potential pre-hospital sepsis identification.

1. Unit identification
2. ETA & Destination if other than Medical Control Center being contacted.
3. “Inbound EMS Alert Patient Report- Potential Sepsis.”
 - a. The above statement should be made within the first 5 seconds of the communication.
4. History of present illness
 - a. Miami Sepsis Score and ETCO₂
5. Patient Status
 - a. Level of consciousness
 - b. Vital Signs (including initial BP)
 - c. Additional pertinent complaints
6. Acknowledge necessary treatment plan. (May not be complete at time of communication.)
7. Determine destination (facility and location).

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Sepsis

Pearls

- ETCO₂ ≤ 25 correlates with a Lactic Acid ≥ 4 .
- Sepsis survival is currently correlated with aggressive fluid resuscitation and early antibiotic treatment.
- Most of the patients that present to the Emergency Department with Severe Sepsis and Septic Shock arrive via EMS.
- A Miami Sepsis Score of 3 or 4 correlates with Sepsis and Severe Sepsis.
- Other Disease States that can mimic Sepsis include cardiogenic shock, hypovolemic shock, dehydration, hyperthyroidism, medication/ drug interaction, lesser infection or allergic reaction.



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Sepsis Shock Index Chart

	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110	112	114	116	120	
70	0.86	0.89	0.91	0.94	0.97	1.00	1.03	1.06	1.09	1.11	1.14	1.17	1.20	1.23	1.26	1.29	1.31	1.34	1.37	1.40	1.43	1.46	1.49	1.51	1.54	1.57	1.60	1.63	1.66	1.71	
72	0.83	0.86	0.89	0.92	0.94	0.97	1.00	1.03	1.06	1.08	1.11	1.14	1.17	1.19	1.22	1.25	1.28	1.31	1.33	1.36	1.39	1.42	1.44	1.47	1.50	1.53	1.56	1.58	1.61	1.67	
74	0.81	0.84	0.86	0.89	0.92	0.95	0.97	1.00	1.03	1.05	1.08	1.11	1.14	1.16	1.19	1.22	1.24	1.27	1.30	1.32	1.35	1.38	1.41	1.43	1.46	1.49	1.51	1.54	1.57	1.62	
76	0.79	0.82	0.84	0.87	0.89	0.92	0.95	0.97	1.00	1.03	1.05	1.08	1.11	1.13	1.16	1.18	1.21	1.24	1.26	1.29	1.32	1.34	1.37	1.39	1.42	1.45	1.47	1.50	1.53	1.58	
S	78	0.77	0.79	0.82	0.85	0.87	0.90	0.92	0.95	0.97	1.00	1.03	1.05	1.08	1.10	1.13	1.15	1.18	1.21	1.23	1.26	1.28	1.31	1.33	1.36	1.38	1.41	1.44	1.46	1.49	1.54
y	80	0.75	0.78	0.80	0.83	0.85	0.88	0.90	0.93	0.95	0.98	1.00	1.03	1.05	1.08	1.10	1.13	1.15	1.18	1.20	1.23	1.25	1.28	1.30	1.33	1.35	1.38	1.40	1.43	1.45	1.50
s	82	0.73	0.76	0.78	0.80	0.83	0.85	0.88	0.90	0.93	0.95	0.98	1.00	1.02	1.05	1.07	1.10	1.12	1.15	1.17	1.20	1.22	1.24	1.27	1.29	1.32	1.34	1.37	1.39	1.41	1.46
t	84	0.71	0.74	0.76	0.79	0.81	0.83	0.86	0.88	0.90	0.93	0.95	0.98	1.00	1.02	1.05	1.07	1.10	1.12	1.14	1.17	1.19	1.21	1.24	1.26	1.29	1.31	1.33	1.36	1.38	1.43
o	86	0.70	0.72	0.74	0.77	0.79	0.81	0.84	0.86	0.88	0.91	0.93	0.95	0.98	1.00	1.02	1.05	1.07	1.09	1.12	1.14	1.16	1.19	1.21	1.23	1.26	1.28	1.30	1.33	1.35	1.40
i	88	0.68	0.70	0.73	0.75	0.77	0.80	0.82	0.84	0.86	0.89	0.91	0.93	0.95	0.98	1.00	1.02	1.05	1.07	1.09	1.11	1.14	1.16	1.18	1.20	1.23	1.25	1.27	1.30	1.32	1.36
c	90	0.67	0.69	0.71	0.73	0.76	0.78	0.80	0.82	0.84	0.87	0.89	0.91	0.93	0.96	0.98	1.00	1.02	1.04	1.07	1.09	1.11	1.13	1.16	1.18	1.20	1.22	1.24	1.27	1.29	1.33
B	92	0.65	0.67	0.70	0.72	0.74	0.76	0.78	0.80	0.83	0.85	0.87	0.89	0.91	0.93	0.96	0.98	1.00	1.02	1.04	1.07	1.09	1.11	1.13	1.15	1.17	1.20	1.22	1.24	1.26	1.30
I	94	0.64	0.66	0.68	0.70	0.72	0.74	0.77	0.79	0.81	0.83	0.85	0.87	0.89	0.91	0.94	0.96	0.98	1.00	1.02	1.04	1.06	1.09	1.11	1.13	1.15	1.17	1.19	1.21	1.23	1.28
L	96	0.63	0.65	0.67	0.69	0.71	0.73	0.75	0.77	0.79	0.81	0.83	0.85	0.88	0.90	0.92	0.94	0.96	0.98	1.00	1.02	1.04	1.06	1.08	1.10	1.13	1.15	1.17	1.19	1.21	1.25
O	98	0.61	0.63	0.65	0.67	0.69	0.71	0.73	0.76	0.78	0.80	0.82	0.84	0.86	0.88	0.90	0.92	0.94	0.96	0.98	1.00	1.02	1.04	1.06	1.08	1.10	1.12	1.14	1.16	1.18	1.22
O	100	0.60	0.62	0.64	0.66	0.68	0.70	0.72	0.74	0.76	0.78	0.80	0.82	0.84	0.86	0.88	0.90	0.92	0.94	0.96	0.98	1.00	1.02	1.04	1.06	1.08	1.10	1.12	1.14	1.16	1.20
O	102	0.59	0.61	0.63	0.65	0.67	0.69	0.71	0.73	0.75	0.76	0.78	0.80	0.82	0.84	0.86	0.88	0.90	0.92	0.94	0.96	0.98	1.00	1.02	1.04	1.06	1.08	1.10	1.12	1.14	1.18
D	104	0.58	0.60	0.62	0.63	0.65	0.67	0.69	0.71	0.73	0.75	0.77	0.79	0.81	0.83	0.85	0.87	0.88	0.90	0.92	0.94	0.96	0.98	1.00	1.02	1.04	1.06	1.08	1.10	1.12	1.15
P	106	0.57	0.58	0.60	0.62	0.64	0.66	0.68	0.70	0.72	0.74	0.75	0.77	0.79	0.81	0.83	0.85	0.87	0.89	0.91	0.92	0.94	0.96	0.98	1.00	1.02	1.04	1.06	1.07	1.11	
R	108	0.56	0.57	0.59	0.61	0.63	0.65	0.67	0.69	0.70	0.72	0.74	0.76	0.78	0.80	0.81	0.83	0.85	0.87	0.89	0.91	0.93	0.95	0.96	0.98	1.00	1.02	1.04	1.05	1.09	
E	110	0.55	0.56	0.58	0.60	0.62	0.64	0.65	0.67	0.69	0.71	0.73	0.75	0.76	0.78	0.80	0.82	0.84	0.85	0.87	0.89	0.91	0.93	0.95	0.96	0.98	1.00	1.02	1.04	1.07	
S	112	0.54	0.55	0.57	0.59	0.61	0.63	0.64	0.66	0.68	0.70	0.71	0.73	0.75	0.77	0.79	0.80	0.82	0.84	0.86	0.88	0.90	0.91	0.93	0.95	0.96	0.98	1.00	1.02	1.04	1.07
S	114	0.53	0.54	0.56	0.58	0.60	0.61	0.63	0.65	0.67	0.68	0.70	0.72	0.74	0.75	0.77	0.79	0.81	0.82	0.84	0.86	0.88	0.89	0.91	0.93	0.95	0.96	0.98	1.00	1.02	1.05
S	116	0.52	0.53	0.55	0.57	0.59	0.60	0.62	0.64	0.66	0.67	0.69	0.71	0.72	0.74	0.76	0.78	0.79	0.81	0.83	0.84	0.86	0.88	0.90	0.91	0.93	0.95	0.97	0.98	1.00	1.03
U	118	0.51	0.53	0.54	0.56	0.58	0.59	0.61	0.63	0.64	0.66	0.68	0.69	0.71	0.73	0.75	0.76	0.78	0.80	0.81	0.83	0.85	0.86	0.88	0.90	0.92	0.93	0.95	0.97	0.98	1.02
R	120	0.50	0.52	0.53	0.55	0.57	0.58	0.60	0.62	0.63	0.65	0.67	0.68	0.70	0.72	0.73	0.75	0.77	0.78	0.80	0.82	0.83	0.85	0.87	0.88	0.90	0.92	0.93	0.95	0.97	1.00
E	122	0.49	0.51	0.52	0.54	0.56	0.57	0.59	0.61	0.62	0.64	0.66	0.67	0.69	0.70	0.72	0.74	0.75	0.77	0.79	0.80	0.82	0.84	0.85	0.87	0.89	0.90	0.92	0.93	0.95	0.98
124	0.48	0.50	0.52	0.53	0.55	0.56	0.58	0.60	0.61	0.63	0.65	0.66	0.68	0.69	0.71	0.73	0.74	0.76	0.77	0.79	0.81	0.82	0.84	0.85	0.87	0.89	0.90	0.92	0.94	0.97	
128	0.47	0.48	0.50	0.52	0.53	0.55	0.56	0.58	0.59	0.61	0.63	0.64	0.66	0.67	0.69	0.70	0.72	0.73	0.75	0.77	0.78	0.80	0.81	0.83	0.84	0.86	0.88	0.89	0.91	0.94	
130	0.46	0.48	0.49	0.51	0.52	0.54	0.55	0.57	0.58	0.60	0.62	0.63	0.65	0.66	0.68	0.69	0.71	0.72	0.74	0.75	0.77	0.78	0.80	0.82	0.83	0.85	0.86	0.88	0.89	0.92	
132	0.45	0.47	0.48	0.50	0.52	0.53	0.55	0.56	0.58	0.59	0.61	0.62	0.64	0.65	0.67	0.68	0.70	0.71	0.73	0.74	0.76	0.77	0.79	0.80	0.82	0.83	0.85	0.86	0.88	0.91	
134	0.45	0.46	0.48	0.49	0.51	0.52	0.54	0.55	0.57	0.58	0.60	0.61	0.63	0.64	0.66	0.67	0.69	0.70	0.72	0.73	0.75	0.76	0.78	0.79	0.81	0.82	0.84	0.85	0.87	0.90	
136	0.44	0.46	0.47	0.49	0.50	0.51	0.53	0.54	0.56	0.57	0.59	0.60	0.62	0.63	0.65	0.66	0.68	0.69	0.71	0.72	0.74	0.75	0.76	0.78	0.79	0.81	0.82	0.84	0.85	0.88	
138	0.43	0.45	0.46	0.48	0.49	0.51	0.52	0.54	0.55	0.57	0.58	0.59	0.61	0.62	0.64	0.65	0.67	0.68	0.70	0.71	0.72	0.74	0.75	0.77	0.78	0.80	0.81	0.83	0.84	0.87	
140	0.43	0.44	0.46	0.47	0.49	0.50	0.51	0.53	0.54	0.56	0.57	0.59	0.60	0.61	0.63	0.64	0.66	0.67	0.69	0.70	0.71	0.73	0.74	0.76	0.77	0.79	0.80	0.81	0.83	0.86	
142	0.42	0.44	0.45	0.46	0.48	0.49	0.51	0.52	0.54	0.55	0.56	0.58	0.59	0.61	0.62	0.63	0.65	0.66	0.68	0.69	0.70	0.72	0.73	0.75	0.76	0.77	0.79	0.80	0.82	0.85	
144	0.42	0.43	0.44	0.46	0.47	0.49	0.50	0.51	0.53	0.54	0.56	0.57	0.58	0.60	0.61	0.63	0.64	0.65	0.67	0.68	0.69	0.71	0.72	0.74	0.75	0.76	0.78	0.79	0.81		
146	0.41	0.42	0.44	0.45	0.47	0.48	0.49	0.51	0.52	0.53																					

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**Alternate Vascular Access
(ALS Only)**

A pre-existing vascular access device is an indwelling catheter placed into a central vein to provide vascular access for those patients requiring long term intravenous therapy or hemodialysis.

Should EMS respond to a location where nursing staff have already accessed such devices and the patient needs fluid or medications, EMS may continue to utilize the device.

Patients Without Protocols

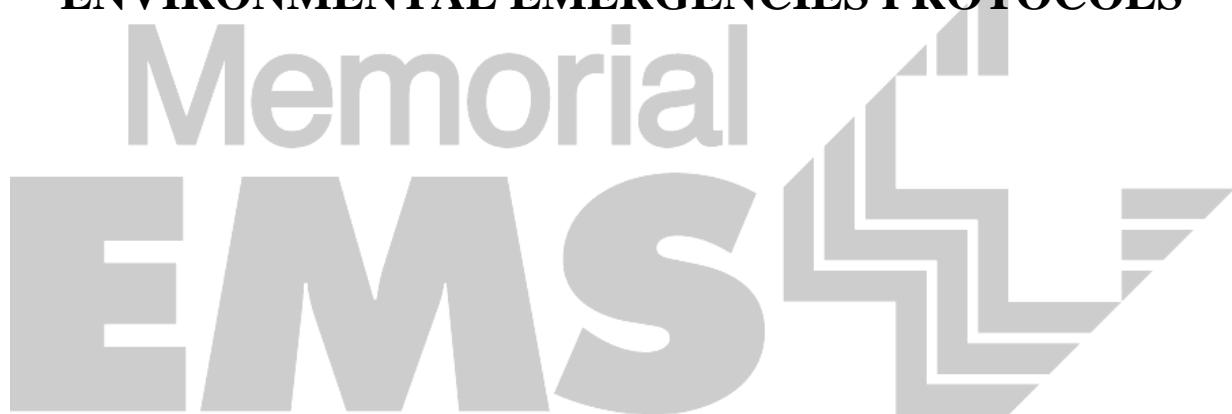
It is not realistically possible to include every potential situation that EMS may encounter during the course of their work. As such, this protocol should be referred to any times EMS encounters a situation where they have a known condition, but no specific protocol with which to refer.

EMR Care, BLS Care, TEMS Care, ILS Care, ALS Care

1. In any situation where EMS feels a specific condition exists which they do not have a protocol to specifically address the patient should be treated based on the protocol with which there signs and symptoms align.
2. Prompt notification and consultation with Medical Control can assist in specific nuances of the patient condition.
 - a. If the patient has a known medical or functional need, gaining information from caregiver or family member and/or the medical resource binder may be the most expeditious means to appropriate information.

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ENVIRONMENTAL EMERGENCIES PROTOCOLS



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**Hazardous Materials
Exposure Protocol**

Injuries from hazardous materials incidents vary depending on the *manner* of exposure (inhalation, ingestion, injection or absorption), the *type* of material involved (acids, ammonia, chlorine, hydrocarbon solvents, sulfides, organophosphates) and the *amount* of exposure (time & concentration).

Harmful products are widely used in home gardening and cleaning, commercial agriculture and cleaning & industrial operations. Civil defense agencies have indicated the increasing threat concerning the use of *Weapons of Mass Destruction* (WMD) as a foreign and domestic terrorist tool. WMD represent an **intentional** hazardous materials, biological agent, or radiological event incident.

Due to the magnitude and multiplicity of hazardous materials, this protocol focuses on a general approach to the patient involved in a hazardous materials incident. The substance container may have vital information for resuscitation of an exposed patient. Communication with Medical Control is the best way to obtain rapid and accurate advice on treatment guidelines for specific materials.

Emergency Medical Responder Care

Emergency Medical Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock. Remain uphill, upwind, and upstream and upgrade of the incident. Stay out of the “Hot Zone” unless trained, equipped and authorized to enter.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. Look for possible scene and patient contamination. Follow agency safety procedures.
3. Notify IEMA if needed at 1-800-782-7860.
4. The patient's clothing should be completely removed to prevent continued exposure and the patient decontaminated **prior to** being placed in the ambulance for transport.
5. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.

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**Hazardous Materials
Exposure Protocol**

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport. Remain uphill, upwind, upstream and upgrade of the incident. Stay out of the “Hot Zone” unless trained, equipped and authorized to enter.

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. **Proventil (Albuterol)**: 2.5mg in 3mL of normal saline via nebulizer over 15 minutes if the patient has been exposed to an irritant gas (acids, ammonia, chlorine, carbon monoxide). May repeat Albuterol 2.5mg every **15 minutes** as needed.
3. Apply **waveform capnography** (if equipped).
4. Initiate ALS intercept if needed and transport as soon as possible. Be alert for suspected organophosphate poisoning (OPP). Signs & symptoms include “SLUDGE” (salivation, lacrimation, urination, defecation, gastroenteritis & emesis). Early indications of OPP include: headache, dizziness, weakness & nausea.
5. **Contact Medical Control** and make sure the receiving hospital is aware of (**prior to arrival at the facility**) the patient’s exposure to hazardous materials and what decontamination procedures were followed at the scene.

ILS Care

TEMS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient’s perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. **Proventil (Albuterol)**: 2.5mg in 3mL normal saline mixed with **Ipratropium (Atrovent)**: 0.5mg via nebulizer over 15 minutes if the patient has been exposed to an irritant gas (acids, ammonia, chlorine, carbon monoxide). Repeat Albuterol 2.5mg with Atrovent 0.5mg every **15 minutes** as needed
3. **Atropine**: 2mg IV/IO or IM (if suspected organophosphate poisoning (OPP) and signs & symptoms of “SLUDGE” are present (salivation, lacrimation, urination, defecation, gastroenteritis & emesis)). Early indications of OPP include: headache, dizziness, weakness & nausea. Repeat Atropine 2mg IV or IM every **5 minutes** or until signs & symptoms of “SLUDGE” subside.

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**Hazardous Materials
Exposure Protocol**

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.

PEARLS

- If at all possible decontaminate patients on scene prior to transport. If contaminated patient is transported, the ambulance and its crew are removed from service until appropriate decontamination can be completed.
- If transporting a contaminated patient to an Emergency Department, information about the need for decontamination, suspected substance and total number of victims should be communicated immediately to receiving facility.
- Contaminated patient and crew should offload only when given direction by Emergency Department/ hospital decontamination staff.
- If suspected large group exposure, notify receiving Emergency Departments immediately to discuss the potential need to forward additional medications to the scene (CHEMPACK).

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Hypothermic Emergencies Protocol

Injury and illness from environmental exposure varies depending on the *manner* of exposure (wet or dry) and the *amount* of exposure (time, temperature, wind chill factor, and ambient air). Cold weather emergencies range from localized frostbite to severe hypothermia with unresponsiveness and unconsciousness.

The patient's health and predisposing factors may increase the likelihood of environmental illness and injury. Patients suffering from trauma, shock, hypoglycemia and stroke are at greater risk of developing hypothermia. Newborns, infants, drug & alcohol abuse patients and the elderly have increased predisposition to hypothermia. The primary goal in the treatment of the patient at risk for hypothermia is to insulate the patient and prevent further heat loss.

Emergency Medical Responder Care

Emergency Medical Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. Handle the patient as **gently** as possible.
3. **Create a warm environment for the patient.** Remove wet or frozen clothing and cover the patient with warm blankets. Prevent re-exposure to cold. Warm packs may be utilized for the neck (posterior), armpits, groin and along the thorax.
4. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
5. Do not rub frostbitten or frozen body parts. Protect injured parts (*e.g.* blisters) with light, sterile dressings and avoid pressure to the area. Do not allow patient to walk on affected extremities.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. Apply **waveform capnography** (if equipped).
3. Treat other symptoms per the appropriate protocol.
4. Initiate ALS intercept if needed and transport as soon as possible.

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Hypothermic Emergencies Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. **IV Fluid Therapy:** 500mL fluid bolus only if needed to maintain $\text{BP} \geq 90\text{mmHG}$
3. Treat other symptoms per the appropriate protocol. Be on alert for the development for cardiac arrhythmias.

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. Transport as soon as possible.

Critical Thinking Elements

- Warmed IV fluid should be achieved only with device designed for the purpose of warming intravenous fluids to a maximum temperature of 45°C (113°F). Only fluids with protective outer bags should be used for warming- bags must remain in place. Fluids can be warmed for a maximum of fourteen (14) days and then must be removed from warmer, marked so as not to be returned to warmer.
- If the hypothermic patient presents as a **cardiac arrest**, high quality CPR and airway management are the absolute priority. Limit medications to the 1st dose only. Defibrillation is limited to 1 shock as well.
- Patients with hypothermia should be considered at high risk for ventricular fibrillation. It is imperative that these patients be handled gently and not re-warmed aggressively.
- The presence of delirium, bradycardia, hypotension and/or cyanosis is usually indicative of severe hypothermia (core body temperature of less than 90 degrees Fahrenheit).

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ADULT PREHOSPITAL CARE MANUAL**

Heat-Related Emergencies Protocol

Injury and illness from heat exposure varies depending on the *manner* of exposure (sun, humidity, exertion) and the *amount* of exposure (time, temperature & ambient air). Heat exposure emergencies range from localized cramping to severe hyperthermia (heat stroke) with unresponsiveness and unconsciousness. The patient's health, predisposing factors and medications may increase the likelihood of heat-related illness. The primary goal in the treatment of the patient at risk for hyperthermia is to cool the patient and restore body fluids.

Emergency Medical Responder Care

Emergency Medical Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. Move the patient to a cool environment. Remove clothing as necessary to make the patient comfortable. Cold packs may be utilized for the neck (posterior), armpits, groin and along the thorax. Rapid cooling is a priority. If possible, full-body ice-water submersion is a preferred method used by many hot-weather sporting events. If full-body submersion is being performed let them continue.
3. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. Apply **waveform capnography** (if equipped).
3. Treat other symptoms per the appropriate protocol.
4. Initiate ALS intercept if needed and transport as soon as possible.

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.

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Heat-Related Emergencies Protocol

ILS Care {Continued}

2. **IV Fluid Therapy:** 500mL fluid bolus if the patient is hypotensive to achieve a systolic BP of at least 90mmHg.
3. Treat other symptoms per the appropriate protocol.

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.

Heat Disorders

Heat (Muscle) Cramps – Heat cramps are muscle cramps caused by overexertion and dehydration in the presence of high temperatures. Signs & symptoms include: **Normal or slightly elevated body temperature; generalized weakness; dizziness; warm, moist skin and cramps in the fingers, arms, legs or abdominal muscles.**

Heat Exhaustion – Heat exhaustion is an acute reaction to heat exposure and the most common heat-related illness a prehospital provider will encounter. Signs & symptoms include: **Increased body temperature; generalized weakness; cool, diaphoretic skin; rapid, shallow breathing; weak pulse; diarrhea; anxiety; headache and possible loss of consciousness .**

Heatstroke – Heatstroke occurs when the body's hypothalamic temperature regulation is lost. Cell death and damage to the brain, liver and kidneys can occur. Signs & symptoms include: **Cessation of sweating; very high core body temperature; hot, usually dry skin; deep, rapid, shallow respirations (which later slow); rapid, full pulse (which later slows); hypotension; neurologic compromise (confusion, disorientation or unconsciousness and possible seizure). Heat Stroke is a serious emergency associated with a high mortality rate.**

Fever (Pyrexia) – A fever is the elevation of the body temperature above the normal temperature for that person (~ 98.6° F +/- 2 degrees). Fever is sometimes difficult to differentiate from heatstroke; however, there is usually a history of infection or illness with a fever.

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Burn Protocol

Burn injuries vary depending on the *type* of burn (thermal, electrical, chemical) and the *amount* of exposure (time and depth). Burn injuries range from localized redness to deep tissue destruction and airway compromise. Signs of burn injury include: blisters, pain, tissue destruction, charred tissue and singed hair.

Emergency Medical Responder Care

Emergency Medical Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. Make sure the scene is safe to enter.
3. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a) If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
4. **THERMAL BURN TREATMENT:**
 - a) If the burn occurred within the last 20 minutes, reverse the burning process and cool the area by flushing the area with **1 Liter of sterile saline** (or sterile water if sterile saline is not available). The goal of cooling is to extinguish the burning process – not to systemically cool the patient. Fluid application should be held to a minimum and discontinued if the patient begins shivering.
 - b) Remove jewelry and loose clothing. Do not pull away clothing or jewelry that is stuck to the burn.
 - c) Cover the wound with sterile dressings***
 - d) Place a sterile burn sheet on the stretcher. If the patient's posterior is burned, place a sterile burn pad on top of the sheet with the absorbent side toward the patient.
 - e) Place patient on the stretcher.
 - f) Cover the patient with additional sterile burn sheets and blanket to conserve body heat.
5. **ELECTRICAL BURN and LIGHTNING STRIKE TREATMENT:**
 - a) Assure that the power service has been cut off and remove the patient from the source of electricity. Be alert of EKG changes.
 - b) Immobilize based on *Field Immobilization Decision Scheme*. Consider forces of electrical current and possible injuries.
 - c) Assess for entry and exit wounds. No cooling or flushing is necessary due to the type of burn.

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Burn Protocol

Emergency Medical Responder Care (continued)

- d) Cover the burn with dry, sterile dressings.
 - e) Closely monitor the patient.
- 6. CHEMICAL BURN TREATMENT:**
- a) Consider possible scene and patient contamination and follow agency safety procedures.
 - b) Note which chemical agent caused the burn and obtain the SDS (safety data sheet) for that chemical (if possible).
 - c) The patient's clothing should be completely removed to prevent continued exposure and the patient decontaminated **prior to** being placed in the ambulance for transport.
 - d) **Dry chemical powder** should be brushed off before applying water.
 - e) Irrigate the patient with sterile water and if the SDS indicates use of water will not cause an adverse reaction. Body parts should be flushed for at least 1-2 minutes. Do not use sterile saline on chemical burns.
 - f) Irrigate burns to the eye with sterile water for at least 20 minutes. Alkaline burns should receive continuous irrigation throughout transport.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

- 1. Includes all components of *Emergency Medical Responder Care*. Be alert for events that create multiple types of injuries as well as internal injuries and treat accordingly.
 - 1. Apply **waveform capnography** (if equipped).
 - 2. Initiate ALS intercept and transport as soon as possible.

Transporting Units

- 1. Destination decisions must be informed decisions based on local and regional destination capabilities, time since onset and transportation distances.
 - a. See *EMS Triage Destination Plan*.
 - b. Include **Medical Control** in the decision making

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Burn Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

2. Includes all components of *BLS Care*.
3. **IV Fluid Therapy:** 500mL fluid bolus. Repeat if necessary to maintain $\text{BP} \geq 90\text{mmHg}$

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. Includes all components of *ILS Care*.
2. Be prepared to intubate if necessary refer to MAI Protocol is needed.
3. **Treat pain** based on *Pain Control Protocol*.
4. Transport and **Contact Medical Control** as soon as possible for significant burns.

Critical Thinking Elements

- Treat other symptoms or trauma per the appropriate protocol (e.g. if someone suffers from smoke inhalation along with being burned, refer to the *Smoke Inhalation Protocol*).
- IV access should not be obtained through burned tissue unless no other site is available.
- Closely monitor the patient's response to IV fluids and assess for pulmonary edema.
- Closely monitor the patient's airway – have BVM, suction and/or intubation equipment readily available.
- Do not delay transport of a “Load and Go” trauma patient to care for burns.
- For chemical/powder burns, be aware of inhalation hazards and closely monitor for changes in respiratory status.

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Smoke Inhalation Protocol

Smoke inhalation injury is the result of various inhaled components of combustion and direct thermal injury to the airway. Signs and symptoms include: evidence of exposure to fire, stridor, wheezing, acute upper airway obstruction, chemical pneumonia and non-cardiac pulmonary edema. Effects of the exposure may be immediate or delayed several hours.

Carbon monoxide (CO) poisoning is a common secondary complication to smoke inhalation. Direct exposure to the gas is also common (especially in winter months). Signs and symptoms include: evidence of exposure to fire or natural gases produced by incomplete combustion, headache, dizziness, tinnitus, nausea, weakness, chest pain and ALOC.

Emergency Medical Responder Care

Emergency Medical Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen:** If there is any suspicion of smoke inhalation or carbon monoxide poisoning apply O₂ 15 LPM via NRM.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. Initiate ALS intercept and transport as soon as possible.
3. **Proventil (Albuterol):** 2.5mg in 3mL of normal saline via nebulizer over 15 minutes.
May repeat Albuterol 2.5mg every **15 minutes** as needed.
4. Apply **waveform capnography** (if equipped).

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Smoke Inhalation Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. **Proventil (Albuterol)**: 2.5mg in 3mL of normal saline **mixed with**
3. **Ipratropium (Atrovent)**: 0.5mg via nebulizer over **15 minutes**.via nebulizer over 15 minutes. May repeat Albuterol 2.5mg with Atrovent 0.5mg every 15 minutes.
4. **In-line nebulizer** may be utilized if patient is unresponsive/in respiratory arrest.
5. **CyanoKit**: 5g in 200 mL of Normal Saline if available.

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. See **MAI Protocol** if needed.
3. Contact the receiving hospital as soon as possible.

PEARLS

- The symptoms of carbon monoxide poisoning and cyanide poisoning are very similar. Many patients with carbon monoxide poisoning also could be suffering from cyanide poisoning. Be alert for altered LOC in setting of industrial or residential fire with normal CO levels. Elevated Cyanide (CN) levels could be present even if CO levels are normal or elevated.
- Agencies with the capabilities to monitor carbon monoxide levels via total hemoglobin concentration should ensure equipment is maintained and calibrated based on manufacturer's specifications. Patients and providers with readings of 10-15% CO or higher should be strongly encouraged to seek transport and treatment in Emergency Department. Smokers can have a residual CO level of 5-8%.
- Cyanide poisoning is often found in patients pulled from structure fires. Symptoms of cyanide poisoning include weakness, confusion, headache, dizziness, vomiting, abdominal pain, sleepiness- coma and seizures. Agencies wishing to stock Cyanokits will be trained to do so, but will be required to assist in transport of patient to receiving facility.

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Near Drowning Protocol

Near drowning results from submersion in water or other liquid for a period of time that does not result in irreversible death. The time interval of submersion that causes irreversible death is dependent on several factors such as: temperature of the water, the health of the victim and any trauma suffered during the event. All persons submerged **1 hour or less** should be vigorously resuscitated in spite of apparent death. Initial care of the near drowning victim should begin in the water.

Emergency Medical Responder Care

Emergency Medical Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol* and *Routine Trauma Care Protocol*.
2. Make sure the scene is safe. Use appropriate personnel and equipment for rescue.
3. Immobilize based on *Field Immobilization Decision Scheme*.
1. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
4. Be prepared to support with BVM if necessary.
5. Initiate **CPR** if indicated.
6. Treat respiratory and/or cardiac symptoms per the appropriate protocol.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. Includes all components of *Emergency Medical Responder Care*.
2. Apply **waveform capnography** (if equipped).
3. **Initiate ALS intercept** and transport as soon as possible.

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Near Drowning Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. Includes all components of *BLS Care*.
2. Obtain **IV access**.
3. For ongoing respiratory distress, the provider may initiate **CPAP** (see CPAP protocol 13.I.1)
4. If BVM ventilations are performed, providers may add a **PEEP valve** at 5-10 cm of H₂O to the BVM (regardless of mechanism: OA/NA, supraglottic airway or endotracheal tube) to increase or improve oxygenation. ***Patient must have a pulse for PEEP valve usage.**

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

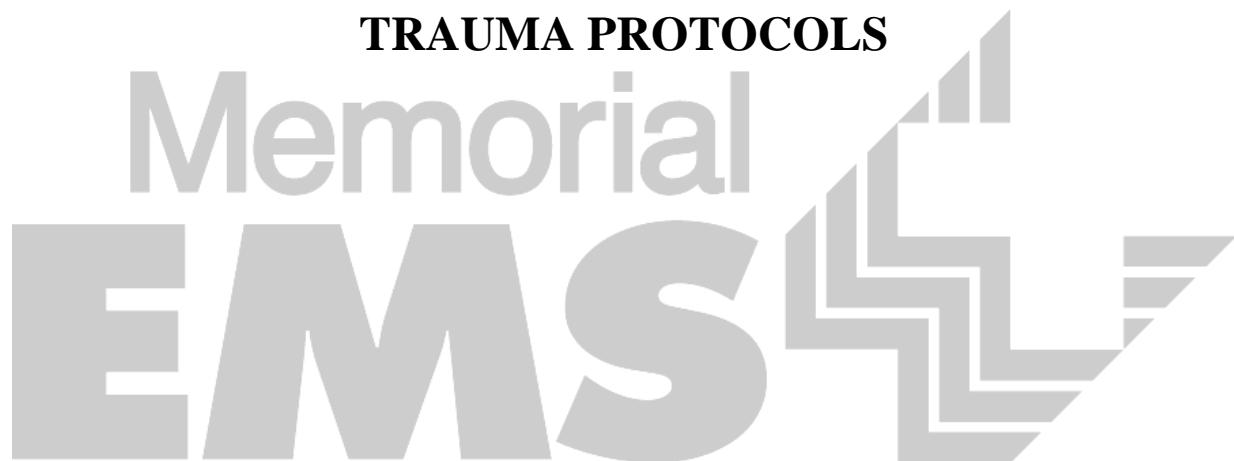
1. Includes all components of *ILS Care*.
2. Contact the receiving hospital as soon as possible.

Critical Thinking Elements

- Near drowning patients should be strongly encouraged to accept transport despite possibly showing only minimal signs/symptoms following a water subversion event. These patients can rapidly deteriorate.
- Contact Medical Control for advice and/or a high-risk refusal.

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TRAUMA PROTOCOLS



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Routine Trauma Care Protocol

Assessment and management of patients with injury or suspected injury shall be conducted in accordance with ITLS/ PHTLS guidelines. Time from injury to definitive trauma center care is a critical factor in the morbidity and mortality of the injured patient. Scene times should be kept to a minimum and the patient should be promptly transported to the trauma center.

Trauma notification should be made via telemetry as soon as possible.

EMR Care, BLS Care, TEMS Care, ILS Care, ALS Care

1. Scene Assessment (Scene Size-Up)

- Ensure scene safety – identify any hazards (e.g. fire, downed power lines, unstable vehicle, leaking fuel, weapons).
- Determine the number of patients.
- Identify the **mechanism of injury** (gunshot wound, vehicle rollover, high speed crash, ejection from the vehicle).
- Identify special extrication needs, if any.
- Call for additional resources if needed. If ALS needed, start intercept early.

2. Primary Survey (Initial Assessment)

The purpose of the primary assessment is for the prehospital provider to rapidly identify and manage life-threatening conditions:

- Obtain a general impression of the patient's condition.
- Assess, secure and maintain a patent airway while simultaneously using C-spine precautions.
- Assess breathing and respiratory effort:
 - Approximate respiratory rate.
 - Assess quality of respiratory effort (depth of ventilation and movement of air).
- **Oxygen:** If respiratory distress noted, 15 LPM via NRM or 6 LPM via nasal cannula.
 - Maintain SPO₂ ≥ 94%
 - **Chest Seal:** if open chest wound identified apply occlusive dressing.
 - **Needle Chest Decompression (TEMS and ALS only):** if patient is in severe respiratory distress or cardiac arrest with s/s of tension pneumothorax.
- Assess circulation:
 - Evaluate carotid and radial pulses.
 - Evaluate skin color, temperature and condition.
 - Immediately control major external bleeding. Treat based on *Bleeding Control Protocol* if needed.
- **Critical Decision** (based on mechanism of injury & initial exam):
 - Limit scene time to 10 minutes or less if the patient has a significant mechanism of injury or meets “Load & Go” criteria.

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Routine Trauma Care Protocol

EMR Care, BLS Care, TEMS Care, ILS Care, ALS Care

3. Primary Survey (Initial Assessment) (continued)

- Obtain GCS (this will be conveyed in the patient report to receiving hospital).
- Determine disability (level of consciousness):
 - **A – Alert**
 - **V – Responds to verbal stimuli**
 - **P – Responds to painful stimuli**
 - **U – Unresponsive**
- Expose the patient:
 - Cut the patient's clothing away quickly to adequately assess for the presence (or absence) of injuries.

4. Secondary Survey (Focused History & Physical Exam)

The secondary survey is a head-to-toe evaluation of the patient. The object of this survey is to identify injuries or problems that were not identified during the primary survey.

- Examine the head:
 - Search for any soft tissue injuries.
 - Palpate the bones of the face & skull to identify deformity, depression, crepitus or other injury.
 - Check pupils for size, reactivity to light, equality, accommodation, roundness and shape.
- Examine the neck:
 - Examine for contusions, abrasions, lacerations or other injury.
 - Check for JVD, tracheal deviation, deformity.
 - Palpate the c-spine for deformity & tenderness.
- Examine the chest:
 - Closely examine for deformity, contusions, redness, abrasions, lacerations, penetrating trauma or other injury.
 - Look for flail segments, paradoxical movement & crepitus.
 - Auscultate breath sounds.
 - Watch for supraclavicular and intercostals retractions.
- Examine the abdomen:
 - Examine for contusions, redness, abrasions, lacerations, penetrating trauma or other injury.
 - Palpate the abdomen and examine for tenderness, rigidity and distention.
- Examine the pelvis:
 - Examine for contusions, redness, abrasions, lacerations, deformity or other injury.
 - Palpate for instability and crepitus. **DO NOT** perform pelvic rock.

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Routine Trauma Care Protocol

EMR Care, BLS Care, TEMS Care, ILS Care, ALS Care

5. Secondary Survey (Focused History & Physical Exam) (continued)

- Examine the back:
 - Log roll with a minimum of 2 rescuers protecting the spine.
 - Look for contusions, abrasions, lacerations, penetrating trauma, deformity or any other injury.
 - Log roll onto long spine board and immobilize based on *Field Immobilization Decision Scheme*.
- Examine the extremities:
 - Examine for contusions abrasions, lacerations, penetrating trauma, deformity or any other injury.
 - Manage injuries en route to the hospital.
- Neurological exam:
 - Calculate Glasgow Coma Scale (GCS)
 - Reassess pupils
 - Assess grip strength & equality and sensation.
 - Calculate Revised Trauma Score (RTS)
- Vital signs:
 - Blood pressure
 - Pulse
 - Respirations
 - Pulse Oximetry
- History:
 - Obtain a SAMPLE history if possible.
 - Signs & symptoms
 - Allergies
 - Medications
 - Past medical history
 - Last oral intake
 - Events of the incident
- **Interventions (en route)**
 - Cardiac monitor
 - Blood glucose level
 - IV access / fluid bolus
 - Wound care
 - Splinting

6. Monitoring and Reassessment (Ongoing Assessment)

- Evaluate effectiveness of interventions
- Vital signs every 5 minutes
- Reassess mental status (GCS) every 5 minutes
- Reassess Revised Trauma Score (RTS) every 5 minutes

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Routine Trauma Care Protocol

EMR Care, BLS Care, TEMS Care, ILS Care, ALS Care

EMS Alert Patient Report- Trauma

The following information and format necessitate expedited delivery of information for potential pre-hospital trauma declaration. Scene time should be limited to ten minutes or less unless extrication is needed. Report should be provided as early as possible to activate trauma teams

1. Unit identification
2. ETA & Destination if other than Medical Control Center being contacted.
 - a. (Agencies should utilize their approved local Medical Control.)
 - b. (Agencies whose normal Medical Control Center may not always be the receiving destination of a Trauma patient must communicate early to determine destination. Report to include everything needed to activate TraumaTeam.)
3. "Inbound EMS Alert Patient Report- Potential Trauma."
 - a. The above statement should be made within the first 5 seconds of the communication.
4. Mechanism of injury and comorbidities
 - a. Type (MVC/ fall/ stab/ GSW/ burn)
 - b. Incident details (speed/ protective factors/height/ scale/ etc.)
 - c. Blood thinner status
 - d. Any loss or decrease of consciousness
5. Patient status
 - a. Level of conscious
 - b. Significant injuries
 - c. Vitals and if ever hypotensive
6. Acknowledge necessary treatment plan. (May not be complete at time of communication.)
7. Determine destination (facility and location).

Transporting Units

1. Destination decisions must be informed decisions based on local and regional destination capabilities, time since onset and transportation distances.
 - a. See *EMS Triage Destination Plan*.
 - b. Include **Medical Control** in the decision making.

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Routine Trauma Care Protocol

Glasgow Coma Scale

Eye Opening	Spontaneous	4
	To Voice	3
	To Pain	2
	None	1
Verbal Response	Oriented	5
	Confused	4
	Inappropriate Words	3
	Incomprehensible Words	2
	None	1
Motor Response	Obeys Commands	6
	Localizes Pain	5
	Withdraw (pain)	4
	Flexion (pain)	3
	Extension (pain)	2
	None	1
TOTAL		<input type="text"/>

Revised Trauma Score

		<u>Score</u>
A. Ventilatory Rate	10-29/min	4
	> 29/min	3
	6-9/min	2
	1-5/min	1
	0	0
B. Systolic Blood Pressure	> 89 mmHg	4
	76-89 mmHg	3
	50-75 mmHg	2
	01-49 mmHg	1
	No pulse	0
C. Glasgow Coma Scale Score	13-15	4
	9-12	3
	6-8	2
	4-5	1
	< 4	0

RTS Total = A+B+C

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**Trauma Shock
Protocol**

Common signs and symptoms of shock include:

- Confusion
- Restlessness
- Combativeness
- ALOC
- Pallor
- Diaphoresis
- Unexplained tachycardia (persistent or worsening after stress of the event subsides)
- Tachypnea
- Hypotension

Conditions that may indicate impending shock include:

- Significant mechanism of injury
- Tender and/or distended abdomen
- Pelvic instability
- Bilateral femur fractures

“Load & Go” with any trauma patient with signs and symptoms of shock – on scene treatment should be minimal. Conduct a *Primary Survey*, manage the airway, take C-spine precautions & immobilize if indicated, and control any life-threatening hemorrhage. Contact Medical Control as early as possible.

Emergency Medical Responder Care

Emergency Medical Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol* and *Routine Trauma Care Protocol*.
2. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
3. Control bleeding based on *Bleeding Control Protocol*.

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**Trauma Shock
Protocol**

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. Apply **waveform capnography** (if equipped)
3. Initiate ALS intercept and transport as soon as possible.

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. **IV Fluid Therapy:** 500mL fluid bolus's as needed to maintain a systolic BP of 90mmHg. 90 mmHg is optimum so as to avoid dislodging a clot. *This permissive hypotension does NOT apply to significant TBI and pregnant patients*.

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. If advanced airway control becomes necessary, maintain inline cervical immobilization. Consider first line use of airway adjuncts such as the supraglottic airway if intubation appears difficult, or if unable to strictly maintain inline cervical immobilization.
3. **Contact Medical Control** as soon as possible.

Critical Thinking Elements

- Hypotension may not occur in the early stages of shock. However, aggressive therapy is indicated if there is a significant mechanism of injury and/or shock is suspected.
- IV access should be obtained en route and should not delay transport time.
- IV fluid bolus/flow rate should be regulated and patient response to fluid monitored closely.

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**Traumatic Head Injury
Protocol**

Injuries to the head may cause underlying brain tissue damage. Increased intracranial pressure from bleeding or swelling tissue is a common threat after head trauma.

Common signs and symptoms of increased intracranial pressure include:

- Confusion
- ALOC
- Dilated or unequal pupils
- Markedly increased systolic blood pressure
- Decreased pulse (bradycardia)
- Abnormal respiratory patterns
- Nausea/ vomiting

Hypotension, hypoxia, and hyperventilation should be avoided at all costs as they significantly increase the mortality of head injury patients.

Emergency Medical Responder Care

Emergency Medical Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. Be prepared for vomiting and have suction readily available.
3. **Oxygen**: If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
4. **Patients with poor respiratory effort may require ventilation with a BVM at 8-10 breaths/min. Remember: hyperventilating causes cerebral vasoconstriction and in turn decreased cerebral blood flow.**
5. Control bleeding based on *Bleeding Control Protocol*.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. Repeat vital signs, GCS & RTS every **5 minutes**.

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**Traumatic Head Injury
Protocol**

BLS Care (Cont.)

3. If patient has an altered mental status, perform **blood glucose level test**. Treat based on *Altered Mental Status Protocol* as appropriate.
4. Apply **waveform capnography** (if equipped).
5. Initiate ALS intercept if needed and transport as soon as possible.

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. **IV Fluid Therapy**: 500mL fluid bolus's as needed to maintain a systolic BP ≥ 110 mmHg.
3. Avoid hyperventilation. If any assisted ventilations (BVM, Supraglottic, ETI) are required, goal directed ETCO₂ should be 35- 45.

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. **Contact Medical Control** as soon as possible.

Critical Thinking Elements

- **Head trauma patients should receive oxygen to keep SpO₂ > 94%, preferably via NRM.** Even just one SPO₂ reading below 90% can double the mortality in a patient with significant TBI.
- **Abnormal Pupils and Neuro-defects are strong indicators of Neurological outcomes.**
- **Deeply comatose patients may require advanced airway placement (GCS < 8).** Consider a supraglottic airway or BVM.
- **Treat for hemorrhagic shock if the patient's systolic BP is < 110mmHg.** Hypotension decreases cerebral perfusion and worsens brain injury and must be corrected.

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Spinal Trauma Protocol

Injuries to the spine commonly result from mechanism of injury involving high kinetic energy. Any neurovascular impairment or spinal deformities are indicative of possible spinal trauma. Refer to Field Triage Decision Scheme for most common mechanisms of injury.

Emergency Medical Responder Care

Emergency Medical Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen**: If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
 - b. Frequently reassess the patient's airway & ventilatory status.
3. Assess and record any pain on palpation of the spine, any motor/sensory deficits of the extremities, abnormal arm position, ptosis and/or priapism.
4. Assess skin for temperature which will initially be warm, flushed and dry (below the point of injury). Cover the patient and keep him/her warm.
5. Assess for neurogenic shock: decreased BP, decreased pulse, & decreased respiratory rate.
6. Fully immobilize the patient and protect paralyzed limbs by securing the patient to the backboard. Refer to *Field Immobilization Decision Scheme* if any question regarding immobilization.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. Repeat vital signs, GCS & RTS every **5 minutes**.
3. Initiate ALS intercept and transport as soon as possible.
4. Apply **waveform capnography** (if equipped).

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Spinal Trauma Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. **IV Fluid Therapy**: 500mL fluid bolus's as needed to maintain a systolic BP of 90 mmHg.
 - a. All hypotension in trauma patients should be presumed to be caused by blood loss and should be treated/ monitored accordingly until proven otherwise.

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. **Dopamine**: If the patient remains hypotensive. Begin infusion at 24gtts/min. Increase by 12gtts/min every **2 minutes** to achieve and maintain a systolic BP of at least 90 mmHg. Closely monitor vital signs.
 - *Dopamine is provided premixed (400mg in 250mL D5W). This yields a concentration of 1600mcg/mL. The initial rate of infusion is 1-10mcg/kg/min which can be achieved with a 24gtts/min infusion rate*
3. **Contact Medical Control** as soon as possible.

**Bites and Envenomation
Protocol**

EMR Care, TEMS Care, BLS Care, ILS Care, ALS Care:

1. Routine Trauma Care Protocol should be initiated.
2. **Contact Medical Control**.

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Traumatic Arrest Protocol

Resuscitation success rates of trauma patients in cardiac arrest are extremely poor, usually due to prolonged hypoxia. Efforts to resuscitate are more likely to be successful if EMS arrives early in the arrest, understands the differences between traumatic cardiac arrest patients & medical cardiac arrest patients and treatment is directed at identifying & treating the underlying cause. Traumatic arrest is usually caused by airway problems (unmanaged airway during unconsciousness), breathing problems (from chest trauma) and/or circulatory problems (internal or external hemorrhaging).

Patients who are found in **asystole** after massive blunt trauma or penetrating trauma of a vital organ are dead and may be pronounced dead at scene with the concurrence of Medical Control.

EMR Care, TEMS Care, BLS Care, ILS Care, ALS Care

Care should be focused on rapid assessment confirming that the patient is in cardiac arrest and determine if resuscitation will be attempted. Medical Control must be consulted for death determination on scene. If resuscitative efforts are going to be attempted, begin resuscitation *immediately* and “Load & Go” with the patient.

1. Rapidly assess to determine possible causes of the arrest and determine if resuscitation will be attempted. If treatment cannot be started immediately consider how the delay will impact the ability to resuscitate the patient.
2. Initiate cardiac arrest protocols and procedures.
3. **Rapidly extricate, fully immobilize and “Load & Go”. Once transport is on scene, all treatment should be done enroute to hospital.**
4. “Load & Go” with any type of penetrating trauma. If transport agency is not on scene at the time traumatic arrest occurs or is identified, work to minimize scene time.
5. **BLS Care:** High Quality CPR. Place a **Supraglottic Airway** using in-line stabilization of the cervical spine or utilize basic airway control techniques.
6. **TEMS Care, ILS Care and ALS Care:** If advanced airway control is indicated: May attempt **intubation x1** maintaining strict inline cervical immobilization. If airway appears difficult, or if inline cervical immobilization is not feasible during airway control, utilize a supraglottic airway or utilize basic airway control techniques. Obtain **IV access** en route to the hospital with a 14g or 16g IV catheter (if possible). A 2nd line may be established if time permits.
IV Fluid Therapy: 500mL fluid bolus to achieve and maintain a systolic BP of >90mmHg. Repeat as necessary.
7. **TEMS Care and ALS Care Only:** **Bilateral needle chest decompression** if chest trauma is present and the patient is in traumatic cardiac arrest.

**MEMORIAL EMS SYSTEM
ADULT PREHOSPITAL CARE MANUAL**

Field Triage Scheme

National Guideline for the Field Triage of Injured Patients

**RED CRITERIA
High Risk for Serious Injury**

Injury Patterns	Mental Status & Vital Signs
<ul style="list-style-type: none"> ▪ Penetrating injuries to head, neck, torso, and proximal extremities ▪ Skull deformity, suspected skull fracture ▪ Suspected spinal injury with new motor or sensory loss ▪ Chest wall instability, deformity, or suspected flail chest ▪ Suspected pelvic fracture ▪ Suspected fracture of two or more proximal long bones ▪ Crushed, degloved, mangled, or pulseless extremity ▪ Amputation proximal to wrist or ankle ▪ Active bleeding requiring a tourniquet or wound packing with continuous pressure 	<p>All Patients</p> <ul style="list-style-type: none"> ▪ Unable to follow commands (motor GCS < 6) ▪ RR < 10 or > 29 breaths/min ▪ Respiratory distress or need for respiratory support ▪ Room-air pulse oximetry < 90% <p>Age 0-9 years</p> <ul style="list-style-type: none"> ▪ SBP < 70mm Hg + (2 x age years) <p>Age 10-64 years</p> <ul style="list-style-type: none"> ▪ SBP < 90 mmHg or ▪ HR > SBP <p>Age ≥ 65 years</p> <ul style="list-style-type: none"> ▪ SBP < 110 mmHg or ▪ HR > SBP

Patients meeting any one of the above RED criteria should be transported to the highest-level trauma center available within the geographic constraints of the regional trauma system

**YELLOW CRITERIA
Moderate Risk for Serious Injury**

Mechanism of Injury	EMS Judgment
<ul style="list-style-type: none"> ▪ High-Risk Auto Crash <ul style="list-style-type: none"> - Partial or complete ejection - Significant intrusion (including roof) <ul style="list-style-type: none"> ▪ >12 inches occupant site OR ▪ >18 inches any site OR - Need for extrication for entrapped patient - Death in passenger compartment - Child (Age 0-9) unrestrained or in unsecured child safety seat <ul style="list-style-type: none"> - Vehicle telemetry data consistent with severe injury ▪ Rider separated from transport vehicle with significant impact (eg, motorcycle, ATV, horse, etc.) ▪ Pedestrian/bicycle rider thrown, run over, or with significant impact ▪ Fall from height > 10 feet (all ages) 	<p>Consider risk factors, including:</p> <ul style="list-style-type: none"> ▪ Low-level falls in young children (age ≤ 5 years) or older adults (age ≥ 65 years) with significant head impact ▪ Anticoagulant use ▪ Suspicion of child abuse ▪ Special, high-resource healthcare needs ▪ Pregnancy > 20 weeks ▪ Burns in conjunction with trauma ▪ Children should be triaged preferentially to pediatric capable centers <p>If concerned, take to a trauma center</p>

Patients meeting any one of the YELLOW CRITERIA WHO DO NOT MEET RED CRITERIA should be preferentially transported to a trauma center, as available within the geographic constraints of the regional trauma system (need not be the highest-level trauma center)



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Field Triage Scheme

- *For the RED CRITERIA transport recommendations, patients in extremis (e.g., unstable airway, severe shock, or traumatic arrest) may require transport to the closest hospital for initial stabilization, prior to transport to a level I-II trauma center for definitive care.
- Pediatric patients meeting the RED CRITERIA should be preferentially triaged to pediatric-capable trauma centers.
- The EMS Judgement criteria should be considered in the context of resources available in the regional trauma system, including consideration of on-line medical control for further direction.
- Examples of patients with special, high resource healthcare needs include tracheostomy with ventilator dependence, cardiac assist devices, etc.
- Patients with combined burns and trauma should be preferentially transported to a trauma center with burn care capability. If not available, then a trauma center takes precedence over a burn center.
- Specific age used to define “children” is based on local system resources and practice patterns.

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Spinal Immobilization Procedure

Any type of patient manipulation may be dangerous during the care of a suspected spinal injury patient. Spinal injury should be suspected in all patients presenting with:

- Head, neck or facial trauma (*i.e.* injury above the clavicles)
- ALOC with unknown history of events
- Complaints of neck or back pain unrelated to the patient's medical history
- Complaint of head pain related to trauma
- Physical findings suggesting neck or back pain
- Unknown mechanism of injury
- High mechanism of injury despite complaints
- Suspected deceleration injuries

General Spinal Management

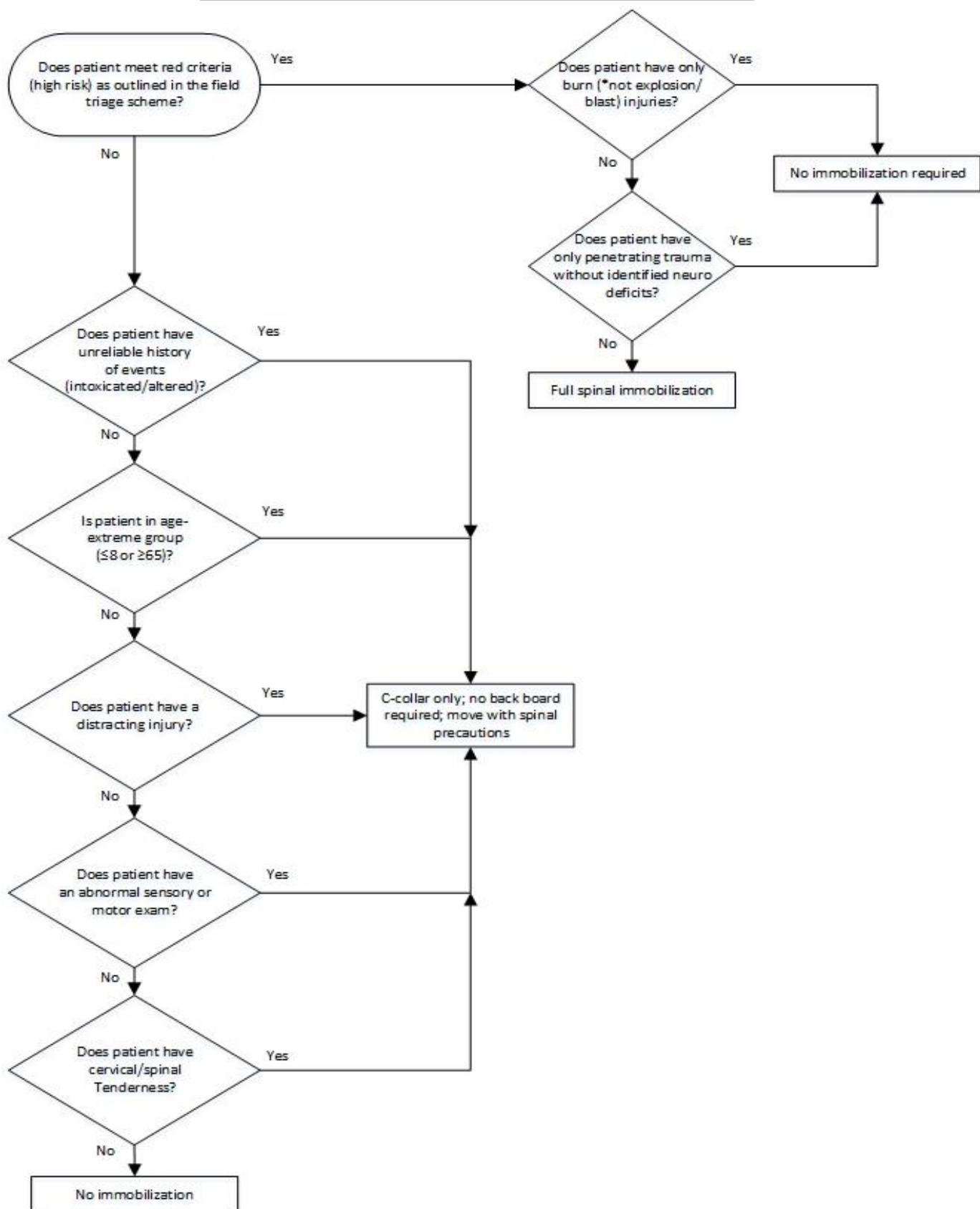
1. Render initial care according to *Routine Trauma Care*.
2. Immediately establish manual stabilization of the cervical spine.
 - a) Approach the patient in a manner that prevents the patient from moving his/her head & neck to see you or answer your questions.
 - b) Stabilize the patient's head & neck in a neutral in-line position by grasping the patient's head along the lateral aspects (and perform a modified jaw thrust if indicated).
 - c) Assess based on *Field Immobilization Decision Scheme* (16.G.2).
 - a. If patient does not meet immobilization criteria, but requires spinal precautions, a C- Collar should be applied. Patient should be moved along long axis. Assistance of slide boards may be utilized.
3. If the patient does meet immobilization criteria; apply a rigid C-collar after airway, breathing, and circulatory status have been assessed.
4. Log-roll the patient onto a long backboard. Assess and document neurovascular status *before and after* immobilization.
5. Secure the patient's torso and extremities to the backboard using spider straps or belts.
6. Reassess (perform ongoing assessment).

Spinal Management of Patients in a Sitting Position

1. Patients found in a sitting position that have a suspected spinal injury and meet immobilization criteria should be secured to an extrication device (*i.e.* KED).
2. Patients who meet "Load & Go" criteria should be moved using the rapid extrication technique. Proper manual stabilization must be maintained throughout the extrication.
 - a. Secure neutral, in-line stabilization of the head & neck (as per *General Spinal Management*).
 - b. Keeping the patient's spine in a neutral position, pivot the patient in order to place a long backboard under the patient's buttocks and behind his/her back.
 - c. Lower the patient to the long backboard and secure (as per *General Spinal Management*).

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Field Immobilization Decision Scheme



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Extremity Injury Protocol

Attention should be given to extremity injuries to limit further damage and discomfort for the patient. However, extremity care should never interfere with lifesaving decisions or interventions and should not delay transport of trauma patients.

Signs of extremity injury include:

- Deformity
- Contusion
- Tenderness
- Swelling
- Instability
- Crepitus
- Absence of distal pulses

EMR Care, BLS Care, ILS Care, ALS Care

Care should be focused on assessing the situation and initiating care to assure the patient is maintaining an airway, is breathing, and has a perfusing pulse and beginning treatment for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a) If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
3. Control any external bleeding:
 - a) Apply direct pressure and pressure dressing.
 - b) Refer to bleeding control protocol (tourniquet) for bleeding not quickly controlled with direct pressure and dressings.
4. If the extremity is angulated, pulseless, and/or other concerns for neurovascular compromise, reduce it by gently applying manual traction (back to anatomical position) until the pulse returns or attempts are found to be unsuccessful.
 - a) Reassess distal pulse, motor and sensation.
5. Splint musculoskeletal injuries:
 - a) Immobilize the joints with a rigid splint above and below the injury for long bone injuries.
 - b) Immobilize the long bones with a rigid splint above and below the injured site for joint injuries.
 - c) Assure the joints and bones are immobilized sufficiently to stabilize the injured structures (especially when using a soft splint or pillow).
 - d) Assess distal pulse, motor & sensation.

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Extremity Injury Protocol

EMR Care, BLS Care, TEMS Care, ILS Care, ALS Care
(Continued)

5. Amputation cases:
 - a) Control external bleeding.
 - b) Dress, bandage and/or splint the injured extremity.
 - c) Attempt to recover the severed part:
 - Grossly decontaminate any debris from the severed part with NS or sterile water.
 - Wrap in slightly damp sterile gauze, towel, or sheet. (care must be taken to not make the part “soggy”).
 - Place severed part in waterproof bag or container if possible and seal.
 - Place the bag/container in another container filled with ice.
 - DO NOT immerse the amputated part in any solutions.
 - DO NOT allow the tissue to freeze.
 - Transport the container with the patient.
6. Initiate ALS intercept if needed and transport as soon as possible.
7. Contact the receiving hospital as soon as possible or Medical Control if necessary.

TEMS Care

ILS Care

1. ILS Care includes all components of *BLS Care*.
2. Obtain **IV access**.
3. **IV Fluid Therapy**: 500mL fluid bolus's as needed to maintain a systolic BP \geq 90 mmHg.
4. **Manage patient pain** based on *Pain Control Protocol*.

ALS Care

1. ALS Care includes all components of *ILS Care*.
2. Contact the receiving hospital as soon as possible or Medical Control if necessary.

Needle Thoracentesis (Needle Chest Decompression) Procedure (TEMS &ALS Only)

Thoracic decompression involves placement of a needle through the chest wall of a **critical patient who has a life-threatening tension pneumothorax and is rapidly deteriorating due to intrathoracic pressure**. Remember: a simple pneumothorax usually requires routine to supportive care only, a tension pneumothorax is an immediate life threat!

Signs and symptoms of **tension** pneumothorax include:

- Absent lung sounds on the affected side
- Unequal breath sounds
- Severe respiratory distress
- Traumatic cardiac arrest
- Restlessness and agitation
- Hypotension/ tachycardia
- Increased airway resistance with ventilations
- JVD
- Subcutaneous emphysema
- Hyper resonance to percussion on the affected side
- Cyanosis
- Tracheal deviation
- Respiratory arrest

Initiate *Routine Trauma Care*. If a **tension** pneumothorax is identified:

1. Locate the 4th intercostal space at the mid-axillary line on the side of the pneumothorax. (if this location is inaccessible, use the 2nd intercostal space at the mid-clavicular line on the same side as the pneumothorax).
2. Cleanse the site with providone-iodine preps and maintain as much of a sterile field as possible.
3. Attach a 10-20mL syringe to a 3.25 inch (minimum) 10-14g IV catheter (or system approved device).
4. Puncture the skin perpendicularly, just superior to the 5th rib (in the 4th intercostal space). Direct the needle just over the 5th rib (or 3rd rib if mid-clavicular access) and into the thoracic cavity. A “pop” should be felt as well as a “rush of air” along with the plunger of the syringe moving outward.
5. Advance the catheter while removing the needle and syringe.
6. Secure the catheter in the chest wall with a dressing and tape.
7. Monitor the patient **closely** and continue to reassess.

Critical Thinking Elements

- Nerve bundles and blood vessels are located under the ribs and puncturing them could cause nerve damage and extensive bleeding. Ensure that the puncture is being made over the top of the 5th rib.
- Should the tension pneumothorax reoccur, repeat the above process on the affected side with a new needle.

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Flail Chest Treatment Protocol

Flail chest occurs when two or more adjacent ribs are fractured in more than one place along their length. The result is a segment of chest wall that is no longer in continuity with the remainder of the chest. When the respiratory muscles contract to raise the ribs up and out and lower the diaphragm, the flail segment paradoxically moves inward in response to the negative pressure being created within the thoracic cavity. Similarly, when these muscles relax, the segment may move outward as pressure inside the chest increases. This paradoxical motion of the flail segment makes ventilation less efficient. The degree of inefficiency is directly related to the size of the flail segment. The significant force necessary to produce such a lesion is generally transmitted to the underlying lung, resulting in a pulmonary contusion. The patient thus may have two mechanisms that compromise ventilation. Management of flail chest is directed toward pain relief, ventilatory support, and monitoring for deterioration.

Emergency Medical Responder Care

Care should be focused on assessing the situation and initiating care to assure the patient is maintaining an airway, is breathing, and has a perfusing pulse and beginning treatment for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol* and *Routine Trauma Care Protocol*.
2. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
 - b. **Patients with poor respiratory effort may require ventilation with a BVM at 8-10 breaths/min.**
3. Control bleeding based on *Bleeding Control Protocol*.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. Repeat vital signs, GCS & RTS every **5 minutes**.
3. Initiate ALS intercept and transport as soon as possible.
4. Apply **waveform capnography** (if equipped).

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Flail Chest Treatment Protocol

TEMSS Care

ILS Care

5. ILS Care includes all components of *BLS Care*.
6. Obtain **IV access**.
7. **IV Fluid Therapy**: 500mL fluid bolus as needed to maintain a systolic BP \geq 90 mmHg.
8. **Manage patient pain** based on *Pain Control Protocol*.

ALS Care

3. ALS Care includes all components of *ILS Care*.
4. Contact the receiving hospital as soon as possible or Medical Control if necessary.

Critical Thinking Elements

- Support of ventilation with bag-mask device assistance or endotracheal intubation may be necessary (particularly with longer transport times) for those patients who are having difficulty maintaining adequate oxygenation.
- Efforts to stabilize the flail segment with sandbags or other means are contraindicated as they may further compromise chest wall motion and possibly impair ventilations.
- Always maintain a high index of suspicion for pneumothorax/hemothorax!

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**Unstable Pelvic Fracture
Protocol**

Pelvic fractures and more specifically unstable pelvic fractures have some of the highest morbidity rates of all traumas. Patients who have signs or symptoms of an unstable pelvic injury need that injury stabilized early in treatment to limit internal bleeding.

Signs of an unstable pelvic injury include:

- Pain in the abdomen and/ or pelvic region
- Pain to the super pubic region upon light palpation
- Inability to relax lower extremities straight out
- Uneven lower extremities
- Bruising over abdomen
- Distended abdomen

EMR Care, BLS Care, ILS Care, ALS Care

Care should be focused on assessing the situation and initiating care to assure the patient is maintaining an airway, is breathing, has a perfusing pulse and beginning treatment for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a) If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
 - b) Use great care when moving patient.
3. If symptoms indicate Pelvic Sling can be applied before patient is moved from position found.
4. **Apply Pelvic Sling**
 - a) Remove any objects from patient's pockets and pelvic area.
 - b) Place Sling with white side closest to patient beneath the hips (trochanters). Do not apply over the Iliac Crest.
 - c) Place black strap through buckle and pull completely through until snug.
 - d) Hold orange strap and pull black strap in opposite direction until you hear and feel **one** buckle click. A second click after the device is secured is not uncommon.
 - e) Must have **Medical Control Order** for Pediatrics and adolescents. The standard sized device should fit most of the adult population but there are three sizes of the device.
 - f) Secure ankles/ lower legs together with Kling to provide additional stability.
5. Render care in accordance with *Routine Trauma Protocol* and *Trauma Shock Protocol*.

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Bleeding Control Protocol

Recent military campaigns have provided increased medical evidence as well as necessitated improved design of bleeding control techniques that can be rapidly deployed in the prehospital setting. Increasing evidence shows that tourniquets can be useful tools in the prehospital treatment of some critically injured patients if applied for short periods of time without creating an absolute desolate outcome for the extremity where applied.

When assessing the patient with uncontrolled hemorrhage, the prehospital provider must make a rapid assessment of if the bleeding can be controlled via traditional means (direct pressure, pressure points, elevation) or if more aggressive treatment is needed. If initial assessment determines that bleeding cannot be controlled with traditional means, immediately move to tourniquet and/or wound packing/hemostatic agents.

Direct Pressure

Direct Pressure is the mainstay of bleeding control.

- Apply direct-pressure to the site of bleeding with dressing and gauze, hold steady pressure for 5 minutes without removing the dressings.
- Some bleeding will require immediately moving to a tourniquet and/or wound packing.

Wound Packing

Indications for Wound Packing

- Uncontrolled bleed that direct pressure cannot reach and tourniquet will not address.
- Neck, chest or torso injuries (typically puncture wounds) with bleeding that cannot be controlled because the injury cannot be reached with traditional means or tourniquet.

Contraindications for Wound Packing

- Any bleed that can be controlled by traditional means or by tourniquet

Procedure for Wound Packing

- Obtain Hemostatic Gauze or rolled gauze.
- With gloved hand, find source of bleeding and apply direct pressure with 1-2 fingers.
- Without releasing pressure begin packing unrolled gauze into injury cavity until bleeding stops or no area in wound cavity remains unpacked.
- If unable to control with initial roll and using Hemostatic Gauze, **remove** Hemostatic Gauze to apply fresh gauze to bleeding site. If using rolled gauze, continue packing with another roll. **Do not remove** previous roll.
- When bleeding is controlled apply direct pressure for three minutes

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Bleeding Control Protocol

EMR Care, BLS Care, ILS Care, ALS Care

Combat Application Tourniquet

Indications for tourniquet use:

- Severe, ongoing hemorrhage from an extremity which is not alleviated quickly by standard direct-pressure/ bandaging measures.
- Trauma with partial extremity amputation or extreme soft tissue injury.
- Bleeding from ruptured graft or fistula.

Contraindications for tourniquet use:

- Any bleeding that can be managed by direct pressure, elevation, and/ or pressure points.
- Major bleeding to a non-extremity.

The CAT (Combat Application Tourniquet) is the recommended tourniquet of choice.

1. Render care in accordance with *Routine Trauma Protocol* and *Shock Protocol*.
2. **Oxygen**: If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
3. Recognition that bleeding is uncontrollable with direct pressure, elevation and/ or pressure points and immediately begin application of CAT.
 - a. Wrap CAT around extremity proximal to bleeding site, do not cover joints. If unable to rapidly identify the injury location, then apply “high and tight”.
 - b. Pass Self Adhering Band through both sides of the Friction Adapter Buckle (Generation 6) or through the single side of the Friction Adapter Buckle (Generation 7).
 - c. Pass Self Adhering Band through outside slit of Buckle.
 - d. Pull Self Adhering Band tight and Secure back against itself.
 - e. Twist Tension Rod until bleeding stops.
 - f. Lock Tension Rod in the Windlass Clip.
 - g. Secure Tension Rod with the Windlass Clip Strap.
 - h. Make note of application time (on patient and/or on tourniquet).

Use great care when moving patient. Conscious patients may try to fight against the tourniquet due to the pain it can cause when occluding blood flow (consider pain meds). Tourniquets (once applied) should **NOT** be removed by EMS.

1. If bleeding continues apply a second tourniquet proximal to the first (not covering joints) in the previously described fashion.
2. Continuously reassess for hemostasis. Reassess after every move!

Critical Thinking Elements

- **Do not remove gauze/wound packing to assess bleeding. This may dislodge/interrupt clotting and result in rebleeding.**

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**Tranexamic Acid/ TXA
Protocol
-ALS Only-**

Traumatic injuries continue to be the leading cause of death in patients under forty years of age. TXA is now being used to treat severely injured trauma patients who have or are at great risk for severe hemorrhage.

Tranexamic Acid (TXA) is a synthetic amino acid (Lysine) that blocks plasminogen from being converted to the enzyme plasmin. Plasmin works to break down already-formed blood clots in the human body by attacking and breaking down fibrin destroying clots in a process known as fibrinolysis. Studies have shown Tranexamic Acid to improve clotting ability while reducing the magnitude of the inflammatory response by the body.

Assessment

When considering the appropriateness of Tranexamic Acid therapy, all of the following inclusion criteria must be considered.

Inclusion criteria for the administration of Tranexamic Acid.

1. Patient age of 18 years or older.
2. Penetrating trauma to chest, abdomen or pelvis who are at high risk for ongoing hemorrhage.
 - a. Sustained tachycardia HR >120.
 - b. Sustained hypotension SBP < 90 mmHg.
3. Signs of peripheral vasoconstriction
 - a. Cool, pale skin.
 - b. Delayed cap refill.
4. **Injury occurred \leq 3 hours prior to TXA administration.**
5. Consult **Medical Control** for orders prior to TXA administration.

Absolute exclusion criteria

1. Head injury
2. Time of injury $>$ 3 hours or unknown.
3. Patients who antifibrinolytic therapy is contraindicated.
 - a. A history of DVT/PE or procoagulant disorder (i.e. protein c, protein s or Antithrombin III disorder)
4. Age less than 18

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**Tranexamic Acid/ TXA
Protocol (Cont.)
-ALS Only-**

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview* and *Trauma Care Overview*.
2. **Tranexamic Acid:** 1 gm in 100 mL D5W over 10 minutes IV infusion

Critical Thinking Elements

- TXA should never be administered at a “wide open” rate.
- Female patients taking or using any form of birth control containing estrogen or progestin are at increased risk for blood clots. This medication significantly increases that risk.
- Hypotension has been observed when TXA is administered too rapidly.
- Use with caution in patients with a history of DVT, PE, known clotting disorders, and severe renal failure.

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Crush Injury Protocol

For patients with limb entrapment / evidence of crush and prolonged time to extrication from point of injury (>30 minutes), initiate treatment of crush.

Emergency Medical Responder Care

Emergency Medical Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for potential development of shock.

1. Render initial care in accordance with the Routine Patient Care Protocol and Routine Trauma.
2. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
3. Control bleeding based on Bleeding Control Protocol

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, assuring that the patient has a patent airway, is breathing, and has a perfusing pulse. Begin treatment for potential development of shock while preparing the patient for extrication.

1. BLS Care includes all components of Emergency Medical Responder Care.
2. Apply **waveform capnography** (if equipped).
3. If airway control becomes necessary, maintain inline cervical immobilization while doing so.
4. Initiate ALS intercept and transport as soon as possible.

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion, initiating components of diuresis (fluids), and preparing for extrication.

1. ILS Care includes all components of BLS Care.
2. Obtain **IV access**.
3. **IV Fluid Therapy:** 1000mL fluid bolus of Normal Saline "wide open". Continue as needed 500 mL at a time to maintain a systolic BP ≥ 90 mmHg.

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Crush Injury Protocol

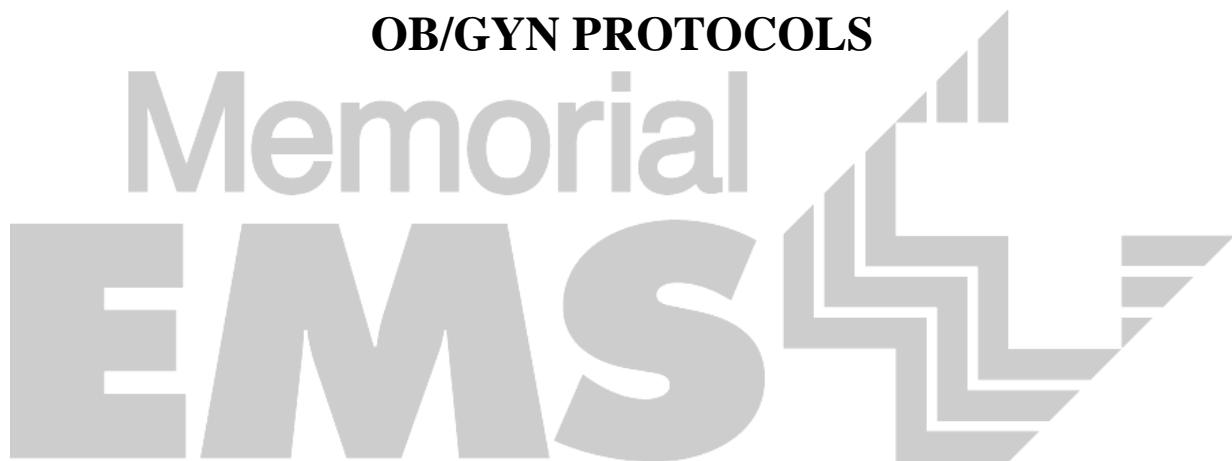
ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion, influencing diuresis (fluids), treating electrolyte disturbances, and preparing for or providing patient extrication and transport.

1. ALS Care includes all components of ILS Care.
2. **Cardiac monitor** or perform **12-lead-ekg** to evaluate for evidence of hyperkalemia, including widening QRS > 120msec and peaked T-waves.
3. If evidence of Hyperkalemia (as above) is noted:
 - a. **Calcium Gluconate:** 1gm IV/IO slow push over 2 minutes.
 - b. If no change in patient condition, proceed with **Sodium Bicarbonate:** 50mEq IV/IO push. *Sodium Bicarbonate and Calcium Gluconate should only be administered through different access points (2-IV's or IV/IO combo) – ensure line is properly flushed before and after administration.*
6. For patients without clinical signs of hyperkalemia but the history/exam is concerning for high risk of hyperkalemia (e.g. Crushed >1 hour), **contact Medical Control** for possible orders for Calcium Gluconate and/or Sodium Bicarb.

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OB/GYN PROTOCOLS



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Childbirth Protocol

Childbirth is a natural process. EMS providers called to a woman in labor should determine whether there is enough time to transport the expecting mother to the hospital or if delivery is imminent. If childbirth appears imminent, immediately prepare to assist with the delivery.

EMR Care, BLS Care, ILS Care, ALS Care

EMR, BLS, ILS & ALS Care should be focused on assessing the situation, initiating routine patient care and preparing for or providing patient transport. Special attention should be given to the privacy of the mother and concerns of immediate family members should be addressed.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a) If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
3. Obtain a history on the patient including:
 - a) Gravida (# of pregnancies) and PARA (# of live births)
 - b) Expected delivery date
 - c) Length of previous labor and if complications of previous pregnancies
 - d) Onset of contractions
 - e) Prenatal care (if any)
4. Allow the expectant mother to remain in a position that is most comfortable.
 - a) If patient is supine, one provider should be dedicated to provide manual left uterine displacement, moving uterus to patients left side.
5. If delivery is not imminent, transport the patient on her left side.
6. Determine if there is adequate time to transport:
 - a) Assess the nature, extent and time of contractions.
 - b) Assess the patient for high-risk factors.
 - c) Assess the status of the membranes and any discharge.
 - d) Assess for pushing with contractions.
 - e) Take into consideration the length of previous labor.
7. If delivery is imminent:
 - a) Consider requesting additional ambulance.
 - b) DO NOT ATTEMPT TO RESTRAIN OR DELAY DELIVERY
 - c) Position the mother supine on a flat surface if possible.
 - d) Use full PPE – gloves, gown & goggles.
8. **(ILS & ALS) IV Fluid Therapy:** IVF 500mL fluid bolus's to maintain a systolic BP of at least 90mmHg.
 - a) IV placement should be higher than the level of the diaphragm for medication administration.
 - b) While not a preferred location, if IO access is required, proximal humerus should be utilized (trauma, arrest, and/or hemorrhage situations)

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ADULT PREHOSPITAL CARE MANUAL**

Childbirth Protocol

9. Prepare for delivery:
 - a) Control delivery of the head so that it does not emerge too quickly. Support the infant's head as it emerges and protect the perineum with gentle hand pressure.
 - b) Assess for nuchal cord and, if present, gently remove the cord from around the newborn's neck.
 - c) Suction the mouth, then nose of the newborn with a bulb syringe as soon as the head is delivered.
 - d) As the shoulders emerge, guide the head & neck downward to deliver the anterior shoulder. Support and lift the head & neck slightly to deliver the posterior shoulder.
 - e) Ensure a firm hold on the baby as the rest of the newborn's body delivers.
 - f) Keep the newborn level with the mother's vagina until the cord stops pulsating and is double clamped.

Infant Post Partum Care

1. Begin the *Emergency Childbirth Record*.
2. Dry the newborn and wrap in a warm blanket, keeping the baby at the level of the mother's vagina until the cord is clamped and cut.
3. Continue to suction the nose and mouth. Spontaneous respirations should begin within 15 seconds.
 - If spontaneous respirations are not present, begin artificial ventilations with **BVM**: 100% O₂ at 30-40 bpm.
 - If no brachial pulse is present **OR** the pulse is less than 100 bpm, begin **CPR**.
4. After the umbilical cord stops pulsating, clamp the cord at 3" & at 4" from the newborn's abdomen and cut between the clamps with the sterile scalpel found in the OB kit.
5. Assess the cord for bleeding and note the number of vessels present.
6. Obtain an APGAR score at **1 minute** and again at **5 minutes** after delivery.
7. Place ID tags on the mother and infant with the following information:
 - Name of the mother
 - Sex of the infant
 - Date and time of delivery
8. **DO NOT** separate the mother and infant unless both have ID tags.

Post Partum Care of the Mother

1. The placenta should deliver within 5-20 minutes. Collect the placenta in a plastic bag and bring it to the hospital with the mother. **DO NOT** pull on the cord to facilitate delivery of the placenta.
2. Do not delay transport for delivery of the placenta.
3. If the perineum is torn and bleeding, apply direct pressure with a 5x9 dressing or trauma dressing and have the patient bring her legs together.

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Childbirth Protocol

Post- Partum Hemorrhage

Be alert, excessive **maternal bleeding (most commonly uterine atony)** is a life-threatening condition that requires aggressive treatment. Communication to the receiving facility and providing focused care for the mother will be required for successful resuscitation.

1. Massage the fundus vigorously until firm.
 - a) *To massage the fundus, place one hand with fingers fully extended just above the mother's pubic bone and use the other hand to press down into the abdomen and gently massage the uterus approximately 3 to 5 minutes until it becomes firm.*
2. Keep the mother warm, baby to breast when possible.
3. (EMR) **Oxygen:** Titrate O₂ admin to maintain SpO₂ \geq 94%.
4. (BLS) Apply **Waveform Capnography**
5. (ILS) **IV Fluid Therapy:** Continue fluid bolus to maintain BP \geq 100mmHg.
6. (ALS) **Tranexamic Acid:** 1 gm in 100 mL D5W over 10 minutes IV infusion

Inclusion criteria for the administration of Tranexamic Acid:

- a) Patient age of 18 years or older.
- b) Ongoing hemorrhage with estimated blood loss $> 500\text{mL}$
 - a. Sustained tachycardia HR > 120 .
 - b. Sustained hypotension SBP $< 90\text{mmHg}$.
- c) Signs of peripheral vasoconstriction
 - a. Cool, pale skin.
 - b. Delayed cap refill.
- d) **Delivery occurred ≤ 3 hours prior to TXA administration.**

Absolute exclusion criteria:

- a) Time of delivery > 3 hours or unknown.
- b) Patients who antifibrinolytic therapy is contraindicated.
 - a. A history of DVT/PE or procoagulant disorder (i.e. protein c, protein s or Antithrombin III disorder)
- c) Age < 18

Critical Thinking Elements

- **TXA should never be administered at a "wide open" rate.**
- **Hypotension has been observed when TXA is administered too rapidly.**
- **Use with caution in patients with a history of DVT, PE, known clotting disorders, and severe renal failure.**

MEMORIAL EMS SYSTEM
ADULT PREHOSPITAL CARE MANUAL

Childbirth Protocol

High-Risk Pregnancy Factors

- Lack of prenatal care
- Drug abuse
- Teenage pregnancy
- Diabetes
- Hypertension
- Cardiac disease
- Previous breech or C-section delivery
- Pre-eclampsia / Toxemia / Eclampsia
- Twins / Multiple birth pregnancy

Pre-Term OB

Transporting Units

Destination decisions must be informed decisions based on local and regional destination capabilities, time since onset and transportation distances.

- a. See *EMS Triage Destination Plan*.
- b. Patient refusal of appropriate destination must be documented as a refusal of care prior to patient being transported to a facility that is not certified to meet the patient's clinical needs.

Documentation Requirements

1. Completed *Emergency Childbirth Record*
2. Document the date, time and place of delivery
3. Presence or absence of a nuchal cord
 - *If nuchal cord is present, document how many times the cord was wrapped around the baby's neck.*
4. Appearance of the amniotic fluid
5. Time the placenta was delivered and its condition
6. APGAR score at **1 minute** and **5 minutes**
7. Any resuscitation / treatment rendered and newborn response to treatment

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Childbirth Protocol

Emergency Childbirth Record
(Complete and attach to the newborn patient care record)

1. Presentation (head or feet): _____
2. Date of Birth: _____
3. Time of Birth (*military time*): _____
4. Nuchal Cord: **YES** **NO** # of times cord wrapped around neck: _____
5. Time membranes ruptured (*military time*): _____
6. Appearance of amniotic fluid: **CLEAR (Cloudy)** **MECONIUM** **BLOOD-TINGED**
7. **APGAR Score:** Must be completed at **1 minute** and again at **5 minutes**.

<i>Element</i>	<i>0</i>	<i>1</i>	<i>2</i>	<i>1 minute Score</i>	<i>5 minute Score</i>
Appearance (Color)	Body and extremities blue, pale	Body pink, extremities blue	Completely pink		
Pulse rate	Absent	< 100 bpm	> 100 bpm		
Grimace (Irritability)	No response	Grimace	Cough, sneeze, cry		
Activity (Muscle tone)	Limp	Some flexion of extremities	Active motion		
Respirations	Absent	Slow and irregular	Strong cry		
TOTAL SCORE:					

8. Time placenta delivered (*military time*): _____ **INTACT** **NOT INTACT**

9. Number of vessels in cord: _____

10. Infant resuscitation: **STIMULATION only** **OXYGEN** **O₂ with BVM**

• **CPR** Time CPR began: _____ Time CPR terminated: _____

11. Remarks: _____

12. Signature & ID# of Paramedic/EMT: 1. _____ 2. _____

MEMORIAL EMS SYSTEM
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Childbirth Protocol

Critical Thinking Elements

- Lower than normal blood pressure and higher than usual heart rate are normal vital sign changes with pregnancy.
- Signs & symptoms of shock in the pregnant patient include a systolic BP less than 90mmHg, lightheadedness and ALOC.
- Average labor lasts 8-12 hours but can be as short as 5 minutes.
- The desire to push during contractions is an indicator that delivery is imminent.
- Be respectful of the expected mother's privacy.
- Assess the patient for peripheral edema. This may indicate Pre-eclampsia / Eclampsia. Monitor patient closely and watch for seizure activity.
- Tag the mother and baby with the same information. Consider keeping a zip lock bag with name tags/ Sharpie attached to the O.B. kit itself.
- Green or brown amniotic fluid indicates the presence of Meconium (fetal stool) and should be reported immediately to the receiving facility staff.

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**Obstetrical Complications
Protocol**

Obstetrical complications can rapidly lead to hypovolemic shock and threaten the life of the mother and child. Care should be focused on assessing the situation, initiating routine patient care and beginning treatment for shock. Monitor vitals closely.

EMR Care, BLS Care, ILS Care, ALS Care

Placenta Previa

Placenta previa occurs as a result of abnormal implantation of the placenta on the lower half of the uterine wall. Bleeding occurs when the lower uterus begins to contract and dilate in preparation for labor and pulls the placenta away from the uterine wall. The hallmark of *placenta previa* is the onset of painless bright red vaginal bleeding, usually in the 3rd trimester of pregnancy.

1. **(BLS)** Initiate ALS intercept.
2. Note the amount of bleeding.
3. Place the patient on her left side.
4. Load and transport as soon as possible.
5. **(ILS & ALS) IV Fluid Therapy:** 500mL fluid bolus's to maintain a systolic BP of at least 100mmHg.
6. **Contact Medical Control** as soon as possible.

Ectopic Pregnancy

Ectopic Pregnancy refers to the abnormal implantation of the fertilized egg outside of the uterus, usually in the fallopian tube. It can be a life-threatening condition and accounts for approximately 10% of maternal mortality in the 1st trimester. Typical presentation occurs in weeks 4-11 after LMP. Patient may not know she is pregnant.

Ectopic pregnancy presents as abdominal pain which starts out as diffuse tenderness and then localizes as a sharp pain in the lower abdomen on the effected side. Assume that any female of childbearing age with lower abdominal pain is experiencing an ectopic pregnancy.

1. **(BLS)** Initiate ALS intercept.
2. **(ILS & ALS) IV Fluid Therapy:** 500mL fluid bolus's to maintain a systolic BP of at least 100mmHg.
3. **Contact Medical Control** as soon as possible.

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**Obstetrical Complications
Protocol**

Abruptio Placentae

Abruptio placentae is the premature separation of a normally implanted placenta from the uterine wall. Signs and symptoms can vary depending on the extent and character of the abruption. Abruptio placentae can be caused by even minor trauma. Bleeding can be massive.

1. Note the amount of bleeding.
2. Place the patient on her left side.
3. Load and transport as soon as possible.
4. (BLS) Initiate ALS intercept.
5. (ILS & ALS) **IV Fluid Therapy:** 500mL fluid bolus's to maintain a systolic BP of at least 90mmHg.
6. Establish a 2nd IV en route if time permits.
7. **Contact Medical Control** as soon as possible.

Antepartum & Postpartum Hypertension

Pre-eclampsia is defined as an increase in systolic blood pressure by 30mmHg and/or a diastolic increase of 15mmHg over baseline on at least two occasions at least 6 hours apart. *Pre-eclampsia* is most commonly seen in the last 10 weeks of gestation and is thought to be caused by abnormal vasospasm.

Pre-Eclampsia: Characterized by hypertension and edema to the hands and face (and protein in the urine).

Severe Pre-Eclampsia: Characterized by marked hypertension (160/100 or higher), generalized edema, headache, visual disturbances, pulmonary edema and a dramatic decrease in urine output (along with a significant increase of protein in the urine). May also present with RUQ pain.

Eclampsia: Characterized by generalized tonic-clonic seizure activity often preceded by flashing lights or spots before the eyes. Altered Mental Status may be present.

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**Obstetrical Complications
Protocol**

Antepartum & Postpartum Hypertension {Continued}

Antepartum Hypertension: Characterized by pregnancy with SBP> 140 or DPB > 90, headache, visual complications, AMS, stroke symptoms, or seizures.

Postpartum Hypertension: Characterized by pregnancy with SBP> 140 or DPB > 90, headache, visual complications, AMS, stroke symptoms, or seizures in the post delivery patient for up to six weeks.

Note: The risk of fetal mortality increases by 10% with each maternal seizure.

1. Assure minimal CNS stimulation to prevent seizures (*i.e.* do not check papillary light reflex).
2. Place the patient on her left side (if pregnant).
3. Load and transport as soon as possible.
4. **(BLS)** Initiate ALS intercept.
5. **(ILS & ALS) IV Fluid Therapy:** TKO.
6. If the patient is actively seizing, refer to the Seizure Protocol.
7. **Contact Medical Control** as soon as possible.

Transporting Units

Hypertensive antepartum and postpartum patients are especially challenging patients who can have very complex care needs. As such, transport to the most appropriate facility is necessary to provide the patient the best treatment options.

1. Patients meeting *EMS Triage Destination Plan* should be transported to a Level III Perinatal facility if at all possible.
 - a. If unable to safely transport directly, include in documentation.
 - b. If patient refuses, include documentation of informed refusal in communication with **Medical Control**.

MEMORIAL EMS SYSTEM
ADULT PREHOSPITAL CARE MANUAL

Abnormal Delivery Protocol

EMR Care, BLS Care, ILS Care, ALS Care

Abnormal delivery situations can be especially challenging in the pre-hospital setting. Care should be focused on initiating *Routine Patient Care* to treat for shock and rapid transport to the hospital.

Breech Presentation

A *breech* presentation is the term used to describe a situation in which either the buttocks or both feet present first.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
3. Load and transport as soon as possible.
4. **(BLS) Initiate ALS intercept.**
5. Never attempt to pull the baby from the vagina by the trunk or legs.
6. As soon as the legs are delivered, support the baby's body (wrapped in a towel).
7. After the shoulders are delivered, gently elevate the trunk and legs to aid in the delivery of the head.
8. The head should deliver in 30 seconds. If it does not – reach 2 fingers into the vagina to locate the infant's mouth. Press the vaginal wall away from the baby's mouth to provide unrestricted respirations.
9. **Contact Medical Control** as soon as possible.

Shoulder Dystocia

Shoulder dystocia is a halting of the natural progress of delivery due to failure to deliver the baby's shoulders. This occurs when the anterior shoulder becomes stuck on the mother's pubic symphysis. Occurs in up to 3% of deliveries. Failure to deliver the anterior shoulder in a timely fashion can result in permanent brachial plexus injury, fetal hypoxia and death. Risk factors for dystocia are a large for gestational age infant (estimated weight >3500 grams), maternal diabetes and maternal obesity.

Signs you should be concerned about shoulder dystocia:

- Turtle sign: delivery of the fetal head followed by retraction of the head into the vaginal canal
- >60 seconds between delivery of the fetal head and delivery of the shoulders

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Abnormal Delivery Protocol

Shoulder Dystocia (cont.)

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $>94\%$.
3. **(BLS)** Initiate ALS intercept. **If you are concerned about the possibility of shoulder dystocia update medical control of a complicated delivery.**

Steps to assist in shoulder delivery:

McRoberts Maneuver – hyperflexion of hips creates superior displacement of the pubic symphysis and sacral extension. Additional gentle downward suprapubic pressure helps further disengage the stuck anterior shoulder.

1. Ask mother to pull her knees to her chest keeping her thighs against her abdomen
2. Make a fist and apply gentle downward suprapubic (not fundal) pressure to help disengage the stuck shoulder
3. If these maneuvers fail to assist in delivery move on to the next maneuver

Rubin II Maneuver – gentle sweeping of the anterior shoulder in the direction the baby is facing to disengage the anterior shoulder from the pubic symphysis

1. Insert two fingers into the vaginal canal to the between baby's head and maternal pubic symphysis
2. Gently push the shoulder in the direction the baby is facing to disengage the shoulder from the symphysis
4. If this maneuver fails to assist in delivery move on to the next maneuver

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Abnormal Delivery Protocol

Prolapsed Cord

A *prolapsed cord* occurs when the umbilical cord precedes the fetal presenting part. This causes the cord to be compressed between the fetus and the pelvis and blocks fetal circulation. Fetal death will occur quickly without prompt intervention.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
3. **(BLS)** Initiate ALS intercept.
4. Place the mother in Trendelenburg Position..
5. **Do not pull on the cord and do not attempt to push the cord back into the vagina.**
6. Place a gloved finger/hand in the vagina between the pubic bone and the presenting part with the cord between the fingers and exert counter pressure against the presenting part.
7. Palpate the cord for pulsations.
8. Keep the exposed cord warm and moist.
9. Keep the hand in position and transport immediately.
10. **Contact Medical Control** as soon as possible.

Limb Presentation

Although relatively uncommon, the baby may be lying transverse across the uterus. In these cases, an arm or leg is the presenting part protruding from the vagina and will require delivery by cesarean section. **Under no circumstances should you attempt a field delivery with a limb presentation.**

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
3. **(BLS)** Initiate ALS intercept.
4. Place the mother in the Trendelenburg Position.
5. Avoid touching the limb (doing so may stimulate the infant to gasp). **Do not pull on the extremity and do not attempt to push the limb back into the vagina.**
6. **Contact Medical Control** as soon as possible.

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**Rape/Sexual Assault
Protocol**

Rape and sexual assault are acts of violence and may be associated with traumatic injuries, both external and internal. A thorough assessment of the patient's condition should be done and special attention should be given to the patient's mental health needs as well.

EMR Care, BLS Care, ILS Care, ALS Care

Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
3. Treat injuries according to the appropriate protocol.
4. Survey the scene and give special consideration to preserving any articles of evidence on or around the patient. Gloves must be worn at all times to avoid evidence contamination.
 - a. Strongly discourage the patient from urinating, washing/showering or changing clothes.
 - b. Collaborate with police to determine what articles (*i.e.* clothing) will be transported with the patient.
 - c. **Do not** physically examine the genital area unless there are obvious injuries that require treatment.
 - d. All linen used by the patient should be left with the patient in the Emergency Department.
5. Transport the patient and notify law enforcement of patient destination.
6. The following information / telephone numbers regarding services available to victims of abuse shall be offered to all victims of abuse, whether they are treated & transported or if they refuse treatment & transport to the hospital:

Crime Victims Compensation Program
(800)228-3368

Prairie Center Against Sexual Assault
(217) 744-2560
3 West Old State Capitol
Springfield, IL 62701

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ADULT PREHOSPITAL CARE MANUAL

**Rape/Sexual Assault
Protocol**

The use of drugs to facilitate a sexual assault is occurring with increasing frequency. These drugs can render a person unconscious or weaken the person to the point that they cannot resist their attacker. Some of the drugs can also cause amnesia and the patient will have no memory of the assault. Date rape drugs have a rapid onset and varying duration of effect. It is important for prehospital personnel to be aware of these agents as well as their effects.

Date Rape Drugs

Rohypnol – A potent benzodiazepine that produces a sedative effect, amnesia, muscle relaxation and slowing of psychomotor response. It is colorless, odorless & tasteless and can be dissolved in a drink without being detected. Street names include: *Ruffies, R2, Roofies, Forget-Pill and Roche*.

GHB – An odorless, colorless liquid depressant with anesthetic-type qualities. It causes relaxation, tranquility, sensuality and loss of inhibitions. Street names include: *Liquid Ecstasy and Liquid X*.

Ketamine – A potent anesthetic agent that is chemically similar to LSD. It causes hallucinations, amnesia and dissociation. Street names include: *K, Special K, Jet and Super Acid*.

Ecstasy – Causes psychological difficulties including confusion, depression, sleep problems, severe anxiety and paranoia. It can also cause physical symptoms including muscle tension, involuntary teeth clenching, nausea, blurred vision, faintness, chills and sweating. Street names include: *Beans, Adam, XTC, Roll, E, M and X*.

Critical Thinking Elements

- **Carefully and objectively document all of your findings including a thorough description of how & where the patient was found, all injuries/assessment findings and patient history.**
- **If a patient refuses treatment, refer to the *Patient Right of Refusal Policy*.**
- **Request local law enforcement if they have not already been called to the scene.**
- **Illinois law requires emergency services to bill a victim relief fund rather than bill the patient. Agencies must ensure they comply with all specifics of billing this patient population.**

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ABERRANT SITUATIONS



MEMORIAL EMS SYSTEM
ADULT PREHOSPITAL CARE MANUAL

**Domestic Abuse and Elder
Abuse/Neglect Protocol**

Illinois law establishes requirements that any person licensed, certified or otherwise authorized to provide healthcare shall offer immediate and adequate information regarding services available to abuse and neglect victims.

Abuse is defined as physical, mental or sexual injury to (a child or) eligible adult. An eligible domestic partner is defined as a spouse or person who resides in a domestic living situation with another individual suspected of abuse. **EMS personnel should not rely on another mandated reporter to file a report on the victim's behalf.**

EMR Care, BLS Care, ILS Care, ALS Care

Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. Maintain control of the scene and request law enforcement if they have not already been called.
3. Survey the scene for evidence of factors that could adversely affect the patient's welfare:
 - Environmental
 - Interaction with family members
 - Discrepancies in history of events
 - Injury patterns that do not correlate with the history of patient use and mobility
 - Signs of intentional injury or emotional harm
4. Treat injuries and/or illness according to protocol.
5. Initiate transport as soon as possible.

Reporting Methods

The following telephone numbers regarding services available to victims of abuse shall be offered to all victims of abuse whether they are treated & transported or if they refuse treatment & transport to the hospital:

**Elderly Abuse Hotline
Crime Victims Compensation Program**

**(866) 800-1409
(800) 228-3368**

MEMORIAL EMS SYSTEM
ADULT PREHOSPITAL CARE MANUAL

**Behavioral Emergencies /
Chemical Restraint Protocol**

Behavioral episodes may range from despondent and withdrawn behavior to aggressive and violent behavior. Behavioral changes may be a symptom of a number of medical conditions including head injury, trauma, substance abuse, metabolic disorders, stress and psychiatric disorders. Patient assessment and evaluation of the situation is crucial in differentiating medical intervention needs from psychological support needs.

Emergency Medical Responder Care

Emergency Medical Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as assuring personal safety.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq \%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
3. Maintain control of the scene and request law enforcement if needed.
4. **Never is a patient to be transported in the prone position.**

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as assuring personal safety and preparing the patient for or providing transport.

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. Determine if the patient is a threat to self or others.
3. **Contact Medical Control** as early as possible if **restraints** have been used to ease in safe patient handoff. **All field activations of physical restraint qualify for QI (CQI). A copy of the call must be forwarded by the crew to the EMS Office within 24 hours, via HIPAA acceptable mechanism.**
4. Apply **Waveform Capnography** (if equipped).
5. Call for ALS intercept if needed and initiate transport as soon as possible.

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, ensuring personal safety and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. Initiate **IV access** when safe to do so.

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**Behavioral Emergencies /
Chemical Restraint Protocol**

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, ensuring personal safety and preparing for or providing patient transport. The goal of utilizing the Chemical Restraint Protocol is to administer the minimum amount of medication required to ensure patient and crew safety while still allowing for a thorough E.D. evaluation upon arrival or ASAP.

1. ALS Care includes all components of *ILS Care*.
2. **Midazolam (Versed):** 0.1mg/kg IM (max single dose is 10mg) for agitated delirium *if absolutely necessary.*
 - a. **OR**
 - b. **Ketamine:** 4mg/ kg IBW IM for agitated delirium *if absolutely necessary.*
Dose on ideal body weight (see formula below).

The formula for calculating IBW is:

Men= 50 kg + 2.3 kg for every inch over 5 foot tall.

Women= 45.5 kg + 2.3 kg for every inch over 5 foot tall.

Patient height must be documented in the PCR

3. Contact **Medical Control** for repeat dosing of either medication.
4. Initiate transport as soon as possible, **Monitor VS, cardiac monitor, waveform capnography, and SPO2 closely during entire patient contact**
5. These patients are medical patients and must be transported by EMS to the E.D.
 - All physical and chemical restraints are reviewed via the MEMS CQI process. **A copy of the call must be forwarded by the crew to the EMS Office within 24 hours, via HIPAA acceptable mechanism.**
 - **Failure to document complete VS (including waveform capnography) or time-stamped attempts with reasons as to failures are an actionable event by the EMS System.**

Critical Thinking Elements

- **Consider Versed over Ketamine** -in cases of suspected stimulant ingestion and/or true Excited Delirium (with elevated HR, BP, and RR). The downward trending of these elevated vitals following Versed administration are a desired effect.
- Use with extreme caution in the Alzheimers, Dementia, and Intellectually Disabled patient populations.
- Document the patient's behavior, statements, actions and surroundings.
- Verbally attempt to calm and/or re-orient the patient to reality.
- When IBW is calculated, the estimated height must be documented in the PCR.
- If restraints are used, thoroughly document the reasons for applying restraints, time of application, condition of the patient before and after application, method of restraint and any law enforcement involvement, including any use of law enforcement equipment (e.g. handcuffs) and the time Medical Control was contacted.

MEMORIAL EMS SYSTEM
ADULT PREHOSPITAL CARE MANUAL

**Petitioning an Emotionally
Disturbed Patient Policy**

EMS providers should consider the mental health needs of a patient who appears emotionally or mentally incapacitated. This involves cases that the EMS provider has reasonable cause or evidence to suspect a patient may intentionally or unintentionally physically injure himself/herself or others, is unable to care for his/her own physical needs, or is in need of mental health treatment against his/her will.

This does not include a person whose mental processes have merely been weakened or impaired by reason of advanced years and the patient is under the supervision of family or another healthcare provider, unless the family or healthcare provider has activated EMS for a specific behavioral emergency.

1. Attempt to persuade the patient that there is a need for evaluation and compel him/her to be transported to the hospital.
2. If persuasion is unsuccessful, contact Medical Control and relay the history of the event. Clearly indicate your suspicions and/or evidence and have the base station physician discuss the patient's needs with the parties involved in the situation. Suggest that the Medical Control Physician talk directly with the patient to assist in determining capacity or lack thereof.
3. The EMS crew will then follow the direction of the base station physician in determining the disposition of the patient or termination of patient contact. Another agency's or party's opinion should not influence the EMS provider's assistance to a mental health need.
4. Under no circumstances does transport of the patient, whether voluntarily or against his/her will, commit the patient to a hospital admission. It simply enables the EMS providers to transport a person suspected to be in need of mental health treatment.
5. If a patient is combative or may harm self or others, call law enforcement for assistance and follow the *Patient Restraint Policy*.

Critical Thinking Elements

- **Many of these patients fit into a syndrome known as “excited delirium” that has been associated with adverse medical outcomes, including SUDDEN DEATH, especially when restraints are utilized. Careful monitoring should be exercised when dealing with these patients.**

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Patient Restraint Policy

BLS Care

Patients will only be restrained if clinically justified. The use of restraints is only utilized if the patient is violent and may cause harm to themselves or others. Physical and/or chemical restraints are a last resort in caring for the emotionally disturbed patient.

1. To safely restrain the patient, use a minimum of 4 people.
2. **Contact Medical Control** if the restraint protocol has been initiated to develop plan for continuity of care.
3. If available, may use police protective custody.
4. Explain the procedure to the patient (and family) if possible. The team leader should be the person communicating with the patient.
5. If attempts at verbally calming the patient have failed and the decision is made to use restraints, do not waste time bargaining with the patient.
6. Remember to remove any equipment from your person which can be used as a weapon against you (e.g. trauma shears).
7. Assess the patient and surroundings for potential weapons.
8. Approach the patient, keeping the team leader near the head to continue communications and at least one person on each side of the patient.
9. Move the patient to a backboard or the stretcher.
10. Place the patient **supine** and place **soft, disposable restraints** on 2-4 limbs and fasten to the backboard or stretcher. **Never is a patient to be transported in the prone position.**
11. Transport as soon as possible.
12. Document **circulation checks** every **15 minutes** (of all restrained limbs). **Monitor VS, cardiac monitor, waveform capnography (if equipped), and SPO₂ continuously during entire patient contact.** Thoroughly document the reasons for applying restraints, time of application, condition of the patient before and after application, method of restraint and any law enforcement involvement, including any use of law enforcement equipment (e.g. handcuffs) and the time Medical Control was contacted. Handcuffs should be placed in front of the patient in order to assess circulation during transport. Law enforcement should accompany the patient anytime they are in custody. Attempts should be made to change the patient from handcuffs to soft restraints when safe to do so. Document reasons if unable.
13. Do not remove restraints until released by medical personnel at the receiving hospital (or if a patient safety issue is recognized).
14. The only items that should be placed over top of a patient are linens, cot straps, and masks to control spitting. Use of a posey vest is allowed so long as circulation is assessed.
15. **All field activations of physical restraint qualify for QI (CQI). A copy of the call must be forwarded by the crew to the EMS Office within 24 hours, via HIPAA acceptable mechanism.**

**MEMORIAL EMS SYSTEM
ADULT PREHOSPITAL CARE MANUAL**

Less Lethal Weapons Protocol

As law enforcement agencies look for alternative means of subduing dangerous subjects and bringing individuals into custody, they have begun using a set of devices known as “**less lethal**” weapons. These include but are not limited to:

- Teargas / Oleoresin capsicum sprays (*i.e.* pepper spray)
- Tasers
- Pneumatic Fired Projectiles

All levels of providers in the System should do the following when encountering these patients:

1. Ensure that the scene has been secured by law enforcement personnel and that the scene is safe to enter.
2. Ensure no cross contamination occurs to providers or equipment.
3. Ensure that the patient is subdued and is no longer a threat to EMS personnel.

Teargas / Oleoresin Capsicum (Pepper Spray) Exposure

Emergency Medical Responder Care

Emergency Medical Responder Care should be focused on assessing the airway and breathing.

1. Render initial care in accordance with the *Routine Patient Care Protocol*.
2. **Oxygen**: If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
3. **Flush eyes (if affected) with sterile water** to get rid of gross contamination and to aid in recovery.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment and preparing the patient for or providing transport.

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. **Proventil (Albuterol)**: 2.5mg in 3mL of normal saline via nebulizer over 15 minutes **if the patient is short of breath and wheezing**. May repeat Albuterol 2.5mg every **15 minutes** as needed.
3. Assess for secondary trauma that may be present and treat appropriately per trauma protocols.

MEMORIAL EMS SYSTEM
ADULT PREHOSPITAL CARE MANUAL

Less Lethal Weapons Protocol

BLS Care {Continued}

4. Assess for any secondary causes of patient behavior which lead to law enforcement subduing the patient. These secondary causes include:
 - Alcohol intoxication
 - Drug abuse
 - Hypoglycemia or other medical disorder
 - Psychotic disorder
5. See “Patient Restraint Policy” if needed.
6. If the patient has an altered mental status, then the patient must be assumed incompetent to refuse care. **Contact Medical Control** for ALL refusal issues.
7. Initiate ALS intercept if needed and transport as soon as possible.
8. Contact receiving hospital as soon as possible or Medical Control if necessary.

ILS Care

ILS Care should be directed at conducting a thorough patient assessment and preparing the patient for or providing transport.

1. ILS care includes all components of *BLS Care*.
2. **Ipratropium (Atrovent)**: 0.5mg (with Albuterol) via nebulizer over ***15 minutes if the patient is short of breath and wheezing***. Repeat Albuterol 2.5mg with Atrovent 0.5mg every 15 minutes as needed.
3. Initiate **IV access** if safe to do so.
4. **IV Fluid Therapy**: 500mL fluid bolus if the patient is cooperative and to maintain a systolic BP of at least 90mmHg.
5. Initiate cardiac monitoring per *Routine Cardiac Care Protocol* or if the patient appears agitated.

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient’s perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.

MEMORIAL EMS SYSTEM
ADULT PREHOSPITAL CARE MANUAL

Less Lethal Weapons Protocol

Critical Thinking Elements

- Chemical defense sprays such as oleoresin capsicum (pepper spray) leave residue that may be contacted and transferred to providers. Care must be taken to ensure cross contamination does not occur. Avoid touching your own face, eyes or any other mucous membrane.
- Due to the oil base of oleoresin capsicum, if exposure to responders, washing with baby shampoo may be most effective way to remove.
- Patients who have been subdued using *less lethal* weapons are commonly agitated and may be combative. Safety of the EMS crew is of utmost importance.
- Contaminated clothing should be removed and sealed in a plastic bag to prevent further irritation and to reduce cross contamination.

Taser-Related Injuries

A taser is an electrical device that is capable of shooting out two small barbed probes that are designed to pierce a subject's skin for the purpose of delivering a subduing pulse of electricity that causes the subject to lose voluntary muscular control. Anecdotal and theoretical consequences of taser use include *cardiac arrhythmias* and *seizures* (especially if the subject is under the influence of alcohol and/or illegal drugs).

Emergency Medical Responder Care

Emergency Medical Responder Care should be focused on assessing the airway, breathing and circulation.

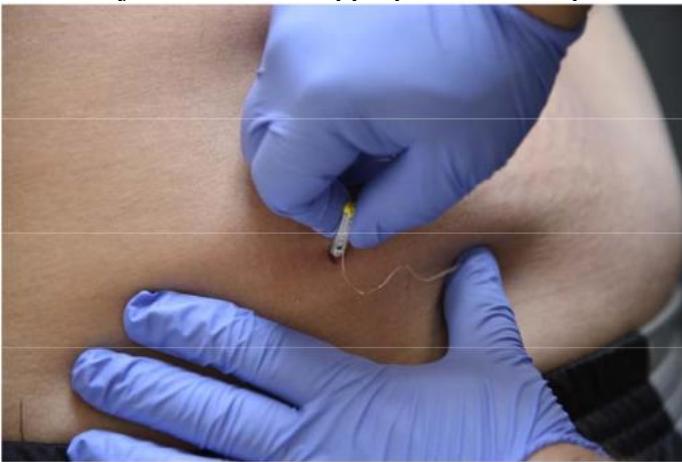
1. Ensure that the law enforcement officer has removed the cartridge from the gun.
2. Render initial care in accordance with the *Routine Patient Care Protocol*.
3. **Oxygen:** If respiratory distress is noted, 15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
4. If the probes are in a sensitive area such as the *face, eye, neck, genitalia* or a *female's breast*, leave the probes in place and bandage.
5. Removing sooner after use causes less discomfort to the patient as sensation is reduced.

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ADULT PREHOSPITAL CARE MANUAL

Less Lethal Weapons Protocol

Taser-Related Injuries {Continued}

6. To **remove barbs**, break the wire 5-10 inches away from the probe.
7. Place non-dominant hand approximately 5 inches away but on patient.
8. Firmly grasp barb with dominant hand thumb and fore finger.
9. Pull up at 90 degree angle to impact location. If unable to remove in quick pull, discontinue efforts and transport.
10. Ensure the perpendicular barb is removed intact.
11. Place removed barb upside down in used cartridge and return to law enforcement.
12. Assess for bleeding and clean wound with alcohol wipe. Treat identified and suspected injuries based on appropriate trauma protocol(s).



Source: Smart Probe Wound Study

BLS Care

BLS Care should be directed at conducting a thorough patient assessment and preparing the patient for or providing transport.

1. BLS Care includes all components of *Emergency Medical Responder Care*.
2. Assess for any secondary causes of patient behavior which lead to law enforcement subduing the patient. These secondary causes include:
 - Alcohol intoxication
 - Drug abuse
 - Hypoglycemia or other medical disorder
 - Psychotic disorder
3. See “**Patient Restraint Policy**” if needed.
4. If the patient has an altered mental status, then the patient must be assumed incompetent to refuse care. **Contact Medical Control** for ALL refusal issues.
5. Initiate ALS intercept if needed and transport as soon as possible.
6. Contact receiving hospital as soon as possible or Medical Control if necessary.

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ADULT PREHOSPITAL CARE MANUAL

Less Lethal Weapons Protocol

Taser-Related Injuries {Continued}

ILS Care

ILS Care should be directed at conducting a thorough patient assessment and preparing the patient for or providing transport.

ILS Care includes all components of *BLS Care*.

1. Initiate **IV access** if safe to do so.
2. Initiate **cardiac monitoring**.

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of ILS Care.
2. See **Chemical Restraint** Protocol if needed.

MEMORIAL EMS SYSTEM
ADULT PREHOSPITAL CARE MANUAL

Less Lethal Weapons Protocol

Critical Thinking Elements

- If law enforcement has removed the probes, treat the probes as biohazards. Exercise caution to prevent accidental needlestick-like injuries.
- Be alert for potential for patient to fall, forcing probes in further.
- Patients who have been subdued using *less lethal* weapons are commonly agitated and may be combative. If the patient is not yet subdued and/or is violent, do not initiate contact. Safety of the EMS crew is of utmost importance.

Pneumatic Fired Projectile

EMR Care, BLS Care, ILS Care, ALS Care

Care for any patient who has received impact with a pneumatic fired projectile should include care assessment and ongoing monitoring for injury to underlying organs and tissues. Treat identified and suspected injuries based on appropriate trauma protocol(s).

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ADULT PREHOSPITAL CARE MANUAL

Do Not Resuscitate (DNR) Policy

A *Do Not Resuscitate (DNR)* policy is a tool to be used in the prehospital setting to set forth guidelines for providing CPR or for withholding resuscitative efforts. The purpose of this policy is to specify requirements for valid DNR orders and to establish a procedure for field management of these situations.

A *DNR* policy shall be implemented only after it has been reviewed and approved by the Illinois Department of Public Health in accordance with the requirements of Section 515.380 of the Illinois Administrative Code.

1. Any EMR, EMT-B, EMT-I, EMT-P or PHRN who is actively participating in a Department approved EMS system may honor, follow and respect a valid DNR.
2. *DNR* refers to the withholding of life-sustaining treatment such as CPR, electrical therapy (e.g. pacing, cardioversion & defibrillation), endotracheal intubation and/or manually/mechanically assisted ventilation, unless otherwise stated on the DNR order.
3. By itself, a DNR order does not mean that any other life-prolonging therapy, hospitalization or use of EMS is to be withheld. DNR orders **do not affect treatment of patients who are not in full arrest (pulseless and breathless)**.
4. A DNR order may be invalidated if the immediate cause of a respiratory or cardiac arrest is related to trauma or mechanical airway obstruction or in any situation where non-natural causes should reasonably be suspected.
5. When EMS personnel arrive on scene and discover the patient is pulseless and breathless and CPR is not in progress, resuscitation (at minimum CPR) must be initiated unless one or more of the following conditions exist in addition to Asystole noted in 2 EKG leads:
 - Obvious signs of biological death are present:
 - Decapitation
 - Rigor mortis **without** profound hypothermia
 - Dependent lividity
 - Obvious mortal wounds with no signs of life
 - Decomposition
 - Cold to touch, not associated with environmental temperature or drowning
 - Death has been declared by the patient's physician or the coroner.
 - A valid DNR order is present and the EMS provider has made reasonable effort to verify the identity of the patient named in the order (i.e. identification by another person, ID band, photo ID or facility, home-care or hospice nursing staff).

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Do Not Resuscitate (DNR) Policy

- If the above signs of death are recognized, EMS personnel should contact the appropriate law enforcement and/ or coroner's office.
 - The EMS provider should immediately institute BLS measures and contact Medical Control for further direction if he or she has concerns regarding the validity of the DNR orders, the degree of life-sustaining treatment to be withheld or the status of the patient's condition.
6. When EMS personnel arrive on scene and discover that CPR is in progress, the EMS provider should:
- Determine if signs of death are present or a valid DNR exists (a copy of a valid DNR is also acceptable).
 - If signs of death are present and/or the patient does not have a pulse, has no respirations, is Asystolic, and a valid DNR does exist, **contact Medical Control** for orders, including possible cease efforts order.
 - If no valid DNR exists, continue CPR (refer to cardiac resuscitation policy).
7. If the patient's primary care physician is at the scene of (or on the phone) and requesting specific resuscitation or DNR procedures, EMS personnel should verify the physician's identity (if not known to the EMT) and notify Medical Control of the request of the on-scene physician. Follow Medical Control orders.
8. If EMS is called to transport a patient with a valid DNR to the hospital and EMS perceives the patient has lost vitals, EMS should continue transport to the ED for declaration so long as no county lines are involved.
9. EMS providers are obligated to honor, follow & respect the standardized *State of Illinois Do Not Resuscitate (DNR) Order* and the *Illinois Department of Public Health Uniform Do-Not-Resuscitate (DNR) Advanced Directive Physician Orders for Life-Sustaining Treatment (POLST)* form which have the *Seal of the State of Illinois* in the upper left and right corners, respectively. All signature lines must be completed in order for the DNR to be valid. A copy of a valid DNR/ POLST is also acceptable.
10. Any other advance directives or "living will" **cannot be honored, followed and respected by pre-hospital care providers**. EMS personnel must contact Medical Control for direction regarding any other type of advanced directive. Resuscitation should not be withheld during the process of contacting or discussing the situation with the on-line Medical Control physician.

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ADULT PREHOSPITAL CARE MANUAL

Do Not Resuscitate (DNR) Policy

11. A *Durable Power of Attorney for Healthcare* is an agent who has been delegated by the patient to make any healthcare decisions (including the withholding or withdrawal of life-sustaining treatment) which the patient is unable to make. When a patient's surrogate decision-maker is present or has been contacted by prehospital personnel and they direct that resuscitative efforts not be instituted:

- Ask the *Durable Power of Attorney for Healthcare* agent to provide positive identification (i.e. driver's license, photo ID, etc.), see the document and ask the agent to point out the language that confirms that the "power" is in effect and that it covers the situation at hand (i.e. assure the scope of authority the *Durable Power of Attorney for Healthcare* has and that the patient's medical or mental condition complies with the document designating the *Durable Power of Attorney for Healthcare*).
- The *Durable Power of Attorney for Healthcare* agent or a surrogate decision-maker can provide consent to a DNR order, but the order itself must be written by a physician.
- An EMS Provider cannot honor a verbal or written DNR request/order made directly by a *Durable Power of Attorney for Healthcare* agent, surrogate decision-maker or any person other than a physician. If such a situation is encountered, contact Medical Control for direction.

12. Revocation of a written DNR order is accomplished when the DNR order is physically destroyed or verbally rescinded by the physician who signed the order and/or the person who gave consent to the order.

13. Prehospital care providers have a duty to act and provide care in the best interest of the patient. This requires the provision of full medical and resuscitative interventions when medically indicated and not contraindicated by the appropriately documented wishes of the patient.

14. When managing a patient that is apparently non-viable, but desired and/or approved medical measures appear unclear (i.e. upset family members, disagreement regarding DNR order, etc.), EMS personnel should provide assessment, initiate resuscitative measures and contact Medical Control for further direction.

15. If EMS personnel encounter a patient with a valid DNR from a **long-term care facility, hospice, during an inter-hospital transfer or when transporting to or from home** and the patient arrests enroute, do not initiate resuscitative measures and contact Medical Control for orders.

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Do Not Resuscitate (DNR) Policy

16. If EMS personnel arrive at the scene and the family states that the patient is a hospice patient with a valid DNR order, do not initiate resuscitative measures and contact Medical Control for orders.
17. On occasion, EMS personnel may encounter an out-of-town patient with a valid DNR order visiting in the Memorial EMS System area. If the DNR order appears to be valid (signed by the patient and physician), contact Medical Control for orders.
18. The coroner will be notified of any patient or family wishes that there is to be tissue donation in cases where the patient is not transported to the hospital.
19. The Medical Control physician's responsibility is to make reasonable effort to confirm the DNR order is valid and order resuscitative measures within the directives of the DNR order.
20. Appropriate patient care reports will be completed on all patients who are not resuscitated in the prehospital setting. A copy of the DNR form should be retained and attached as supporting documentation to the prehospital care report form.
21. All Memorial EMS System personnel are to submit an incident report to the EMS Coordinator and the EMS Medical Director regarding any difficulties experienced with DNR situations. These cases will be evaluated on an individual basis.
22. Follow the System's *Coroner Notification Policy*.

Critical Thinking Elements

- Ask the patient's family to produce an actual copy of the DNR / Advanced Directives. Family members will often identify themselves as "Power of Attorney" when in fact, they are solely "Power of Attorney for Finance".
- "Power of Attorney for Finance" does NOT convey authority for healthcare decisions. Only a valid "Durable Power of Attorney for Healthcare" conveys authority for healthcare decisions.

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**Resuscitation vs.
Cease Efforts Policy**

The EMS provider is responsible to make every effort to preserve life. In the absence of an advanced directive, resuscitative measures shall be attempted if there is any chance that life exists.

When EMS personnel arrive on scene and discover the patient is pulseless and breathless and CPR is not in progress, resuscitation (at minimum CPR) must be initiated unless one or more of the following conditions exist in addition to Asystole noted in 2 EKG leads:

- Obvious signs of biological death are present:
 - Decapitation
 - Rigor mortis **without** profound hypothermia
 - Dependent lividity
 - Obvious mortal wounds with no signs of life
 - Decomposition
 - Cold to touch, not associated with environmental temperature
- Death has been declared by the patient's physician or the coroner.
- A valid DNR order is present and the EMS provider has made reasonable effort to verify the identity of the patient named in the order (*i.e.* identification by another person, ID band, photo ID or facility, home-care or hospice nursing staff).
- If the above signs of death are recognized, EMS personnel should contact the appropriate law enforcement and/ or coroner's office.
- The EMS provider should immediately institute BLS measures and contact Medical Control for further direction if he or she has concerns regarding the validity of the DNR orders, the degree of life-sustaining treatment to be withheld or the status of the patient's condition.

When EMS personnel arrive on scene and discover that CPR is in progress, the EMS provider should:

1. Assess circulation, airway and breathing and analyze EKG activity at the next pause in CPR cycle.
2. Determine if signs of death are present or a valid DNR exists. Continue resuscitation if signs of death are not obvious and a valid DNR is not available.

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**Resuscitation vs.
Cease Efforts Policy**

3. **Contact Medical Control** for orders, including possible cease efforts order for any of the following

- A *cease efforts* order may be considered and the base station physician may order resuscitative efforts be discontinued (or not initiated at all) if the following conditions exist:
 - No signs of life are present (*i.e.* pulseless & apneic), patient “down time” is unknown, EKG is **asystole** or **PEA**, and on-site resuscitative efforts have been unsuccessful.
 - The patient has injuries inconsistent with life (even if the patient’s body temperature is warm).
 - Triage or patient prioritization deems resuscitative resources would be more beneficial for use on other victims.

Critical Thinking Elements

- Pediatric patients and patient with hypothermia may have no signs of life but still be viable. Prolonged resuscitative efforts are indicated in these cases. No Cease Efforts Order will be given.
- Traumatic arrest patients, may meet criteria for resuscitation if immediately accessible.
- In situations where decision to cease efforts is not believed to be a safe option for EMS, the patient should be treated based upon most appropriate treatment protocol and transported. Information about such decision should be included in the telemetry communication.

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ADULT PREHOSPITAL CARE MANUAL

**Functional Needs/ Special
Needs Population**

EMR Care, BLS Care, ILS Care, ALS Care

These guidelines should be used when an EMS provider, responding to a call, is confronted with a patient using specialized medical equipment that the EMS provider has not been trained to use, and the operation of that equipment is outside of the EMS provider's scope of practice. The EMS provider may treat and transport the patient, as long as the EMS provider doesn't monitor or operate the equipment in any way while providing care.

When providing care to patients with special needs, EMS personnel should provide the level of care necessary, within their level of training and certification. When possible, the EMS provider should consider utilizing a family member or caregiver who has been using this equipment to help with monitoring and operating the special medical equipment if necessary during transport. If a caregiver is unavailable or unwilling to accompany the patient, transport as usual. Contact Medical Control should you encounter any complications.

Some examples of special medical devices include.

- Out-patient infusion pumps to include but not be limited to PCA (patient controlled analgesic), TPN, Anti-biotic infusions, Chemo-agents.
- Chest Tube
- Ventilator
- Wound Drainage Devices (i.e. Wound Vac)
- Left Ventricular Assist Device (LVAD)
- Life-vest

If a communication barrier exists between the EMS Provider and the patient, then that provider should utilize staff, caregivers, family etc. to facilitate the best possible assessment and Hx. The EMS provider should notify the E.D. staff of these communication difficulties during the call-in patient report.

This protocol is not intended for inter-facility transfers.

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ADULT PREHOSPITAL CARE MANUAL**

Relinquished Newborn

The Illinois Abandoned Newborn Infant Protection Act (325 ILCS 2/) recognizes that newborn infants have been abandoned to the environment or to other circumstances that may be unsafe to the newborn infant. This Act is intended to provide a mechanism for a newborn infant to be relinquished to a safe environment, for the parents of the infant to remain anonymous if they choose, and to avoid civil or criminal liability for the act of relinquishing the infant.

Fire stations, police stations, and emergency medical facilities: Every fire station, police station, and emergency medical facility must accept and provide all necessary emergency services and care to a relinquished newborn infant, in accordance with this Act.

The act of relinquishing a newborn infant serves as implied consent for the fire station, police station, or emergency medical facility and its emergency medical professionals to treat and provide care for the infant, to the extent that those emergency medical professionals are trained to provide those services.

After the relinquishment of a newborn infant, the fire station, police station, or emergency medical facility's personnel must arrange for the transportation of the infant to the nearest hospital as soon as transportation can be arranged.

If the parent of a newborn infant returns to reclaim the child within 72 hours after relinquishing said child, staff must inform the parent of the name and location of the hospital to which the infant was transported.

"Newborn infant" is defined as a child who a licensed physician reasonably believes is 30 days old or less at the time the child is initially relinquished.

EMS will care for the child and transport to the closest appropriate facility regardless of suspected age.

The following link provides facility specific details such as signage, on-site packet requirements, and liability etc.

<http://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=1459&ChapterID=32>

EMR Care, BLS Care, ILS Care, ALS Care

Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. Render initial care in accordance with the Routine Patient Care Protocol.
2. Maintain control of the scene and request law enforcement if they have not already been called.
3. Assess the infant for signs of abuse.
4. Treat injuries and/or illness according to protocol.
5. Initiate transport as soon as possible.

**MEMORIAL EMS SYSTEM
ADULT PREHOSPITAL CARE MANUAL**

Communicable/ Highly Infectious Diseases Protocol

Ebola Virus Process

Dispatcher Screening and EMS Guidance for possible Ebola Virus Disease patients

When a call taker receives call for a patient with any of the following:

- Fever
- Abdominal Pain
- Nausea/ Vomiting
- Diarrhea
- Body Aches

AND who has traveled from [any country with widespread Ebola virus transmission](#) in the last 2-21 days **or** has had contact with someone who has been diagnosed or presumed to have Ebola by a physician.

1. Request that the patient meet EMS at the door of the house/ apartment, when EMS rings the bell/ knocks at the door, if possible.
2. Dispatch is to notify EMS of all symptoms **PRIOR** to EMS arrival. EMS is to don protective gear prior to any patient contact. Level of gear is based on level of symptoms.
 - a. Fever/body aches: gloves, mask, eye protection, and gown.
 - i. Limit the number of care givers who interact with the patient.
 - b. Nausea/ vomiting/ diarrhea: gloves, mask (N-95 or PAPR if available), eye protection, impervious gown or impervious jump suits.
 - i. Limit the number of care givers who interact with the patient.
 - ii. Limit intravenous procedures. **Contact medical control** for guidance in regard to any interventions beyond supportive care.
 - iii. If patient is actively passing fluid/ bleeding, and time allows, all surfaces need to be covered with Visqueen to protect the interior of the ambulance. If no, use a layer of Visqueen under the blanket on the stretcher. Soap and water cleaning and then decontamination are needed. Decontamination of the surfaces needs to be done be using 1:10 bleach solution or a solution such a Cavicide. Any soiled items need to be left in the patient room.
3. **St. John's Hospital** (Springfield, IL) is the current Regional Ebola Assessment Center, any patient meeting the above criteria will be directed there unless unstable. St. John's Hospital may direct cases to **Carle Hospital** in Champaign as the Regional Ebola Treatment Center. EMS **must** communicate "possible Ebola Virus Disease symptoms" to ED in report. EMS may need to wait shortly in ambulance bay to deliver patient into appropriate room.
 - a. This destination criteria could be applicable for a future suspected highly infectious disease yet to be determined, based upon CDC notification and guidelines.
4. If such a situation arises that meets this criteria, the information is still patient protected and only those with a need to know, should be involved in the discussions regarding. Information should be transmitted via telephone and CAD as much as possible.

*Springfield Memorial
Hospital
EMS System*



Pediatric Prehospital Care Manual

Developed June 2013
Implemented September 2013
Updated November 2023

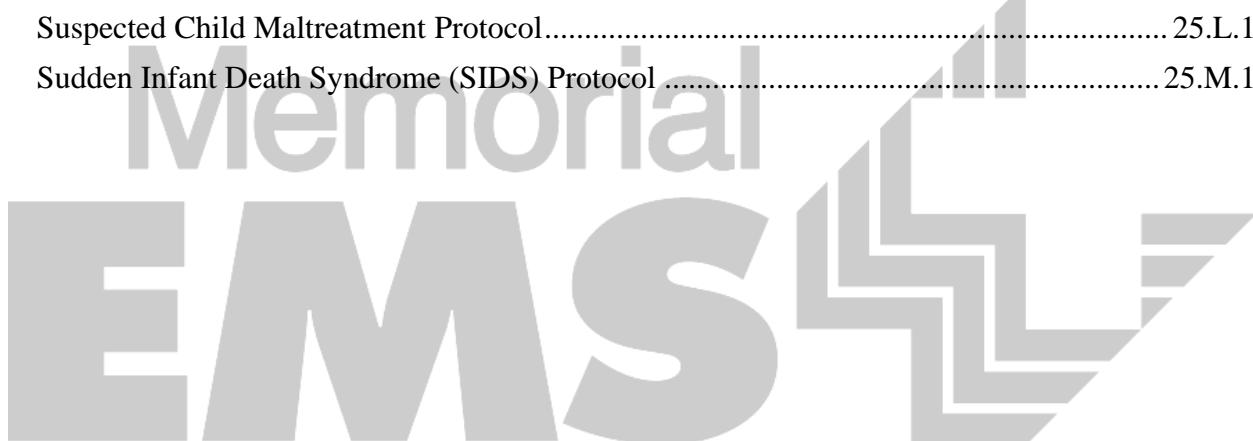
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PEDIATRIC PREHOSPITAL CARE MANUAL**

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MEMORIAL EMS SYSTEM
PEDIATRIC PREHOSPITAL CARE MANUAL

Pediatric Assessment Process



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Pediatric Assessment Process and Management

A patient **under the age of sixteen (16)** is considered to be a pediatric patient. Utilization of pediatric treatment guidelines and the extent of care rendered are based on the general impression of the pediatric patient's condition, physical examination findings and the history of the event. *Patients 16 years or older will treated with adult protocols.* The goal of the pediatric patient assessment process is similar to that of the adult patient. However, children are not "little adults". The causes of catastrophic events, such as cardiac arrest, are most often related to respiratory failure, shock or central nervous system injuries. Early recognition and treatment of the pediatric patient's injuries or illness is important to ensure the best outcome.

Special attention and awareness must be given to the pediatric patient's exceptional ability to compensate for respiratory failure and shock. Vital signs are valuable in the assessment of the pediatric patient but do have significant limitations and can be dangerously misleading. For example, hypotension is a late and often sudden sign of cardiovascular decompensation. Tachycardia (which varies by age group) will persist until cardiac reserve is depleted. Bradycardia is an ominous sign of impending cardiac arrest.

Infants and children are able to maintain their blood pressure by increasing peripheral vascular resistance (shunting) and heart rate. **The pediatric patient can be in compensated shock and exhibit a normal blood pressure and skin condition.** This increases the importance of the EMS provider understanding of pediatric vital signs and behavior patterns.

The EMS provider must establish a general impression of the pediatric patient. This impression, which is critical, should be done from the doorway of the room. Therefore, the pediatric patient will not be disturbed by a "hands-on" assessment. A simple question to ask yourself is, "How sick is this child?"

Three (3) key areas of importance of a general impression are:

1. **Appearance**
2. **Work of breathing**
3. **Circulation to skin**

The three components are known as the *Pediatric Assessment Triangle (PAT)* established by the American Academy of Pediatrics (2000).

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PEDIATRIC PREHOSPITAL CARE MANUAL

Pediatric Assessment Process and Management

Pediatric Assessment Triangle (PAT)

Appearance

The appearance of the pediatric patient should be assessed from the doorway. This is the most important aspect to consider when determining how sick or injured the child is. *Appearance* will give the EMS provider insight on oxygenation, neurological status and ventilation. Remember, the sick child may be alert on the conventional AVPU scale, but still have an abnormal appearance. Children need a more subtle assessment tool so that life-threatening injuries can be identified earlier. A good mnemonic to remember when assessing appearance is "tickles" (TICLS):

Characteristic	Features to look for:
Tone	Is he/she moving or resisting examination vigorously? Does he/she have good muscle tone? Or, is he/she limp, listless, or flaccid?
Interactivity	How alert is the child? How readily does a person, object, or sound distract him/ her or draw his/ her attention? Will he/she reach for, grasp and play with a toy or exam instrument such as a penlight or tongue blade? Or, is he/she uninterested in playing or interacting with the caregiver or professional?
Consolability	Can he/she be consoled or comforted by the caregiver or by the prehospital profession? Or, is his/her crying or agitated unrelieved by gentle assurance?
Look/Gaze	Does he/she fix his/her gaze on a face? Or, is there a 'nobody home,' glassy-eyed stare?
Speech/Cry	Is his/her cry strong and spontaneous, or weak or high-pitched? Is the content of speech age-appropriate, or confused or garbled?

The *TICLS* Mnemonic (PEPP/AAP 2nd Edition 2006)

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Pediatric Assessment Process and Management

Pediatric Assessment Triangle (PAT) {Continued}

Work of Breathing

Assessing work of breathing must go beyond the rate and quality of respirations that is used for adult patients. Work of breathing is an accurate indicator of the oxygenation and ventilation status of the pediatric patient. This is another ‘hands off’ evaluation method in order to avoid disturbing the pediatric patient and causing any more respiratory distress (other than what is already present in the patient).

<i>Characteristic</i>	<i>Features to look for:</i>
Abnormal Airway Sounds	Snoring, muffled or hoarse speech; stridor; grunting; wheezing
Abnormal Positioning	Sniffing position, tripoding, refusing to lie down
Retractions	Supraclavicular, intercostals, or substernal retractions of the chest wall; “head bobbing” in infants
Flaring	Flaring of the nares on inspiration

Characteristics of Work of Breathing (PEPP/AAP 2nd Edition 2006)

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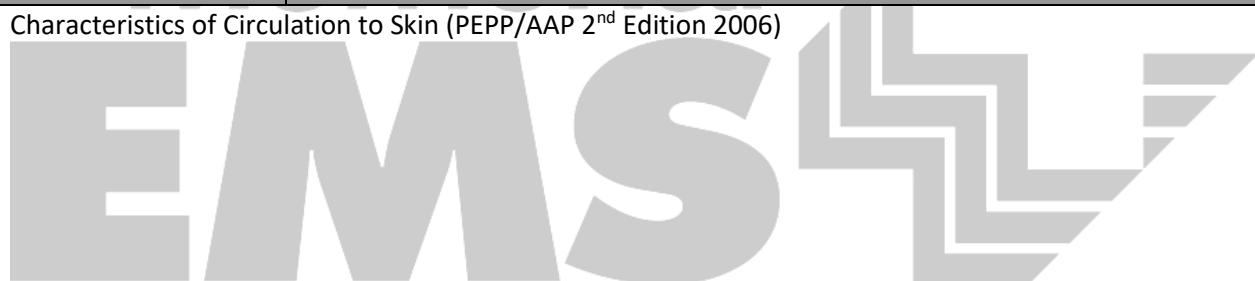
Pediatric Assessment Triangle (PAT) {Continued}

Circulation to Skin

A rapid circulatory assessment is needed to determine the perfusion status of the pediatric patient. The key is to assess the core perfusion status of the child. Assessing the skin and mucous membranes can do this. Circulation to the skin reflects the overall status of core circulation.

<i>Characteristic</i>	<i>Features to look for:</i>
Pallor	White or pale skin/ mucous membrane coloration from inadequate blood flow
Mottling	Patchy skin discoloration due to vasoconstriction/vasodilatation
Cyanosis	Bluish discoloration of skin and mucous membranes

Characteristics of Circulation to Skin (PEPP/AAP 2nd Edition 2006)



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Pediatric Assessment Process and Management

Pediatric Assessment Triangle (PAT) {Continued}

Putting it all Together

The goal of pediatric patient care is to identify patients in shock or at risk of shock, initiating care that will directly assist maintaining the patient's perfusion and safely transporting the patient to an emergency department or trauma center in a timely manner.

The benefit of remaining on scene to establish specific treatments versus prompt transport to a definitive care facility should be a consideration of each patient contact. Requesting advanced assistance is another important resource that BLS & ILS providers should consider.

Notes on Pediatric Shock:

Mechanism	Medical	Traumatic
Hypovolemia	Blood Loss-Internal Bleeding Fluid Loss-Dehydration	Blood Loss-Trauma Fluid Loss-Burns
Cardiogenic (Pump Failure)	Respiratory Failure Airway Obstruction Dysrhythmia	Chest Trauma Pneumothorax Pericardial Tamponade
Cyanosis	Sepsis Anaphylaxis Chemical/ Poisoning Endocrine Dysfunction	Spinal Cord Injury (Neurogenic)

Memorial EMS System Notes on Pediatric Shock

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Pediatric Assessment Process and Management

Pediatric Age Definitions

Neonate (0-1 Month):

- Utilization of APGAR Scoring is helpful in assessing the neonate patient.

Infant (1-12 Months):

- Approach the infant slowly and calmly. Fast motion and loud noises may startle or agitate the infant.
- Use warm hands and assessment tools.
- Avoid doing anything potentially painful or distressing until after the assessment is completed.
- Have the caregiver assist in care -this is less threatening to the infant.
- Children over six (6) months of age are usually best examined in the arms of a parent. "Stranger anxiety" may be present and could eliminate other assessment options.
- If needed, calm the infant with a pacifier, blanket or favorite toy.

Toddler (1-3 Years):

- Approach the toddler slowly. Keep physical contact at a minimum until he/she feels familiar with you.
- Perform the assessment at the level of the toddler by sitting or squatting next to them and **allow the toddler to remain in the caregiver's lap** whenever possible.
- Assessment should be **toe to head**. This is less threatening to the toddler.
- Give limited choices such as "Do you want me to listen to your chest or feel your wrist first?"
- Use simple, concrete terms and continually reassure the toddler.
- Do not expect the toddler to sit still and cooperate-be flexible.

Preschooler (3-5 Years):

- A preschool aged child is a "magical thinker." Concrete concepts must be described in short, simple terms.
- A preschooler is often very cooperative during the assessment process and may be able to provide a history.

Pediatric Assessment Process and Management

Pediatric Age Definitions {Continued}

Preschooler (3-5 Years) {Continued}:

- Questions should be simple and direct.
- Allow the child to handle equipment.
- Use distractions.
- **Do not lie to the child. If the procedure is going to hurt, tell them.**
- Set limits on behavior (*i.e.* “You can cry and scream, but not bite or kick.”)
- Focus on one thing at a time.
- Play games with immobilizing preschoolers to distract him/her and prevent them from squirming.

School Age (5-13 Years):

- The school aged child is usually cooperative and can be the primary source for the patient history.
- Explain all procedures simply and completely and respect the patient's modesty.
- Substance abuse issues may be present in this age group and should be considered during the care of altered level of consciousness cases.
- Children at this age are afraid of losing control, so let him/her be involved in the care. However, do not negotiate patient care unless the child really has a choice.
- Reassure the child that being ill or injured is not a punishment and praise them for cooperating.

Adolescent (13-16 Years):

- **The adolescent is more of an adult than a child and should be treated as such.** Depending on the nature of the problem, an accurate history may not be possible with parents observing. It may be necessary to separate the parent and child during the assessment.
- Regardless of who is present, respect the patient's modesty. Avoid exposing the adolescent unnecessarily.
- Explain what you are doing and *why* you are doing it!
- Show respect- speak to the adolescent directly. Do not turn to the caregiver for the initial information.

Pediatric Assessment Process and Management

Assessment of the Pediatric Patient

1. Scene Size-Up

- Note anything suspicious at the scene (e.g. medications, household chemicals, other ill family members, etc.).
- Assess for any discrepancies between the history and the patient presentation (e.g. infant fell on hard floor but there is carpet throughout the house).

2. General Approach to the Stable/Conscious Pediatric Patient

- Utilize the PAT (*Pediatric Assessment Triangle*) to gain a general impression of the child.
- Assessments and interventions must be tailored to each child in terms of age, size and development.
- Smile, if appropriate to the situation.
- Keep voice at an even, quiet tone - do not yell.
- Speak slowly. Use simple, age appropriate terms.
- Keep small children with their caregiver(s) whenever possible and complete assessment while the caregiver is holding the child.
- Kneel down to the level of the child if possible.
- Be cautious in the use of touch. In the stable child, make as many observations as possible before touching (and potentially upsetting) the child.
- Adolescents may need to be interviewed without their caregivers present if accurate information is to be obtained regarding drug use, alcohol use, LMP, sexual activity or child abuse.
- Observe general appearance and determine if behavior is age appropriate.
- Observe for respiratory distress or extreme pain.
- Look at the position of the child.
- What is the level of consciousness?
- Muscle tone: good vs. limp.
- Movement: spontaneous, purposeful or symmetrical.
- Color: pink, pale, flushed, cyanotic or mottled.
- Obvious injuries: bleeding, bruising, gross deformities, etc.
- **Determine weight** - ask patient, caregiver(s) or use Broselow tape.
 - If utilizing Broselow tape or such devise, assess child to validate that child meets the average size benchmark used.

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Pediatric Assessment Process and Management

Assessment of the Pediatric Patient {Continued}

3. Initial Assessment

Airway access/maintenance with c-spine control

- Maintain with assistance: positioning
- Maintain with adjuncts: oral airway, nasal airway
- Listen for any audible airway noises (e.g. stridor, snoring, gurgling, wheezing)
- Patency: suction secretions as necessary

Breathing

- Rate & rhythm of respirations - compare to normal rate for age and situation
- Chest expansion - symmetrical?
- Breath sounds - compare both sides and listen for sounds (present, absent, normal, abnormal)
- Positioning - sniffing position, tripod position
- Work of breathing- retractions, nasal flaring, accessory muscle use, head bobbing, grunting

Circulation

- Heart rate - compare to normal rate for age and situation
- Central pulses (e.g. brachial, carotid, femoral)- strong, weak or absent
- Distal/Peripheral pulses (e.g. radial)- present/absent, thready, weak or strong
- Color- pink, pale, flushed, cyanotic, mottled
- Skin temperature - hot, warm, cool, or cold
- Blood pressure- use appropriately sized cuff and compare to normal for the age of the child
- Hydration status - observe anterior fontanel in infants, mucous membranes, skin turgor, crying tears, urine output, history to determine

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Pediatric Assessment Process and Management

Assessment of the Pediatric Patient {Continued}

Disability- Brief Neurological Examination:

- Assess responsiveness- APGAR or TICLS
- Assess pupils
- Assess for transient numbness/tingling

Expose and Examine:

- Expose the patient as appropriate based on age and severity of illness.
- Immediately after assessment complete work to prevent heat loss and keep the child from becoming hypothermic.

4. Rapid Assessment vs. Focused History & Physical Assessment

- Tailor assessment to the needs and age of the patient.
- Rapidly examine areas specific to the chief complaint.
- *Responsive medical patients:* Perform focused assessment based on chief complaint. A full review of systems may not be necessary. If the chief complaint is vague, examine all systems and proceed to detailed exam.
- *Unresponsive medical patients:* Perform rapid assessment (*i.e.* ABCs & a quick head-to-toe exam). Render emergency care based on signs & symptoms, initial impression and standard operating procedures.
- Proceed to detailed exam.
- *Trauma patients with NO significant mechanism of injury:* Focused assessment is based on specific injury site.
- *Trauma patients with significant mechanism of injury:* Perform rapid assessment of all body systems and then proceed to detailed exam.

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Pediatric Assessment Process and Management

Assessment of the Pediatric Patient {Continued}

5. Detailed Assessment

- SAMPLE history - acquire/incorporate into physical exam.
- Vital signs (*i.e.* pulse, BP, respirations, skin condition, capnography, pulse ox)
- Assessment performed (usually en route) to detect non life-threatening conditions and to provide care for those conditions or injuries

6. Ongoing Assessment

- To effectively maintain awareness of changes in the patient's condition, repeated assessments are essential and should be performed **at least every 5 minutes on the unstable patient and at least every 15 minutes on the stable patient.**

Critical Thinking Elements

- **Remember:** Pediatric patients have extraordinary ability to compensate and may show normal vital signs even though they are in shock.

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Pediatric Assessment Process and Management

Normal Pediatric Vital Sign Ranges			
	Heart Rate	Respiratory Rate	Minimum Blood Pressure
Infant	100-160 bpm	30-60 rpm	> 60mmHg systolic
Toddler	90-150 bpm	24-40 rpm	> 70mmHg systolic
Preschooler	80-140 bpm	22-34 rpm	> 75mmHg systolic
School Age	70-120 bpm	18-30rpm	> 80mmHg systolic
Adolescent	60-100 bpm	12-16 rpm	> 90mmHg systolic



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Pediatric Assessment Process and Management

Routine Pediatric Care Protocol

First Responder Care

First Responder Care should be focused on assessing the situation and establishing initial care to treat and prevent shock:

1. Open and/or maintain an open airway. Have suction equipment readily available to suction nose and mouth as needed.
2. Protect the child from environmental exposure. Give special consideration to the warmth of the infant (*i.e.* cover the head to prevent heat loss).
3. Reassure the patient and caregiver(s). Speak softly and calmly, maintaining conversation and explanation of exam and treatment. Use age-appropriate communication techniques.
4. Patient positioning will be based on assessment, patient condition, age, development and safety. Both the patient and caregiver should have the appropriate safety restraint devices, seat belts in place for transport.
5. Administer oxygen, preferably 10-15 L/min via non-rebreather mask (either on the child's face or holding the mask close to the face). If the patient does not tolerate a mask, then administer 4-6 L/min by nasal cannula.
6. Ensure that EMS has been activated for further care and transport. Provide responding units with pertinent patient information.
7. Monitor the patient's level of consciousness, vital signs, etc. for any acute changes.

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Pediatric Assessment Process and Management

Routine Pediatric Care Protocol {Continued}

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, providing care to treat for shock and preparing for or providing patient transportation.

1. BLS Care includes the components of *First Responder Care*.
2. Attach pulse oximeter and obtain analysis, if indicated.
3. Apply Capnography (if equipped).
4. Attach cardiac monitor and print rhythm strip for documentation, if indicated.
5. Initiate ALS intercept, if indicated (or ILS intercept **if** ALS is unavailable).
6. Simultaneously with above, perform physical exam/assessment, obtain baseline vital signs and obtain patient history.
7. Establish on-line Medical Control as indicated.
8. Continue to reassess patient en route to the hospital.
9. Transport should be initiated at the earliest possible opportunity.

ILS Care

ILS Care should be directed at conducting a thorough patient assessment, providing care to treat for shock and preparing for or providing patient transportation. The necessity of establishing IV access is determined by the patient's condition and chief complaint. Consideration should also be given to the proximity of the receiving facility.

1. ILS Care includes all of the components of *BLS Care*.
2. If indicated, establish IV access using a 1000 mL solution of Lactated Ringers with macro drip or blood tubing. No more than one (1) attempt should be made on scene. Infuse at a rate to keep the vein open (TKO) - approximately 8 to 15 drops (gtts) per minute.
Dependent upon patient condition, consider initiating IV access when enroute.

Pediatric Assessment Process and Management

Routine Pediatric Care Protocol {Continued}

ALS Care

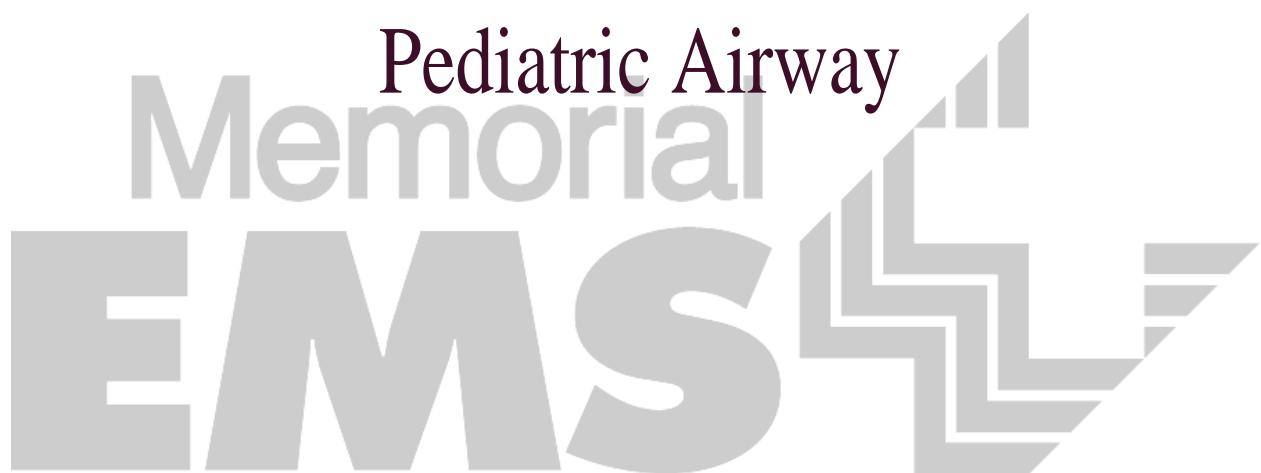
ALS Care should be directed at conducting a thorough patient assessment, providing care to treat for shock and preparing or providing patient transportation. The necessity of establishing IV access is determined by the patient's condition and chief complaint. Consideration should also be given to the proximity of the receiving facility.

1. ALS Care includes all of the components of *ILS Care*.

Critical Thinking Elements

- When determining the extent of care needed to stabilize the pediatric patient, the EMS provider should take into consideration the patient's presentation, chief complaint, risk of shock and proximity to the receiving facility.
- IV access in pediatric patients is difficult and may complicate the situation. Indications and benefits vs. patient disturbance and complications should be considered.
- If the patient exhibits signs of shock, administer fluid bolus at 20mL/kg over 2 minutes.
- If the pediatric patient is in emergent need of fluids and/or medications (*i.e.* cardiac arrest, trauma, decompensated shock or severe burns) and peripheral IV access is unobtainable, proceed with intraosseous infusion (**ILS** and **ALS only**).
- Saline locks may be used as a drug administration route if fluid replacement is not indicated.
- IV access should not significantly delay initiation of transportation or be attempted on scene with a trauma patient meeting load-and-go criteria.

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Basic Airway Management of the Pediatric Patient

Establishing and maintaining an open airway and assuring adequate ventilation is a treatment priority with all patients. Proper techniques must be used to assure treatment maneuvers do not inadvertently complicate the patient's condition. Special consideration needs to be given when caring for the pediatric airway due to anatomical difference from adult.

Basic Airway Control

1. Assure an open airway by utilizing with the head tilt/chin lift maneuver or the modified jaw thrust maneuver (without head tilt). The head tilt/chin lift maneuver is NOT to be used if there is any possibility of cervical spine injury.
2. Expose the chest and visualize for chest rise and movement, simultaneously listen and feel for air movement at the mouth and nose. This procedure will need to be done initially and after correcting an obstruction and securing the airway.
3. If the chest is not rising and air exchange cannot be heard or felt:
 - a. Deliver two positive-pressure ventilations. If resistance continues, follow AHA sequences for obstructed airway rescue.
 - b. Reassess breathing and check for brachial or carotid pulse.
 - c. If spontaneous respirations return and a pulse is present, provide supplemental oxygen by non-rebreather mask or assist respirations with bag-valve mask (BVM) at 15 L/min.
 - d. If the patient remains breathless and a pulse is present, initiate ventilations with a BVM at 15 L/min at a rate of 20-30 breaths per minute.
 - e. If the patient remains breathless and a pulse is not present, initiate CPR and institute the appropriate cardiac protocol.
4. If the patient presents with stridor, 'noisy breathing' or snoring respirations, render treatment for partial airway obstruction in accordance with AHA guidelines:
 - a. Reassess effectiveness of the airway maneuver.
 - b. If partial airway obstruction progresses to inability to move any air, treat according to AHA guidelines for resolving a complete airway obstruction.
5. Once the obstruction has been corrected
 - a. Insert an oropharyngeal airway in the unconscious patient (without gag reflex).
 - b. Insert a nasopharyngeal airway in the conscious patient or an unconscious patient with a gag reflex. *Note:* nasopharyngeal airways are the airway of last resort if the possibility of a head injury exists.

Basic Airway Management of the Pediatric Patient

Basic Airway Control {Continued}

6. Establish the presence of adequacy of breathing by observing the frequency, depth and consistency of respiration. Also, observe the chest wall for any indications of injuries which may contribute to respiratory compromise.
7. Supplemental oxygen should be delivered to any patient who exhibits signs of difficulty breathing, sensation of shortness of breath, tachypnea, use of accessory muscles, altered level of consciousness/altered mental status, cyanosis, cardiac symptoms, head injury or any indications of shock.
 - a. Supplemental oxygen should be provided by a non-rebreather mask (NRM at a rate of 10-15 L/min (assuring reservoir bag is inflated).
 - b. If patient is unable to tolerate the NRM, administer oxygen via nasal cannula at a rate of 4-6 L/min.
8. Bag-valve mask ventilation with supplemental oxygen at 15L/min should be initiated at the rate of 20-30 if respirations are absent or there is evidence of inadequate ventilation.

Critical Thinking Elements

- The pediatric airway varies anatomically from the adult airway. The airway is smaller and more flexible, the tongue is relatively larger and the epiglottis is higher. These differences must be taken into consideration when positioning the head to maintain the airway (*i.e.* less hyperextension is needed to open the pediatric airway than the adult).
- Mucous, blood, and vomit may easily block the pediatric airway. Therefore, careful attention must be given to clear the airway and appropriate pediatric suction equipment should be available.
- Inadequate maintenance of the patient's airway, inappropriate maneuvers, using inappropriately sized airway equipment and/or failure to recognize an obstructed airway will complicate the patient's condition and can lead to brady-arrhythmias/ cardiac arrest.
- Do NOT use the head tilt/chin lift maneuver on a patient with a suspected cervical spine injury.
- Proper facemask seal during artificial ventilations is imperative to assure adequate ventilation.
- Inadequate oxygen delivery settings (*i.e.* too low) will complicate the patient's condition.

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Pediatric Airway Obstruction Procedure

An airway obstruction is life threatening and must be corrected immediately upon discovery.

1. If the patient has an obstructed airway and is still conscious:
 - a. Encourage the child to cough.
 - b. Perform 5 abdominal thrusts if the cough is unsuccessful (5 back blows and 5 chest thrusts in the infant).
 - c. Repeat until the obstruction is relieved or the patient becomes unconscious.
 - d. Administer oxygen at 15 L/min if the patient has a partial airway obstruction and is still able to breathe.
2. If the patient is unconscious:
 - a. Open the patient's airway and attempt to ventilate.
 - b. Reposition the head and reattempt to ventilate if initial attempt is unsuccessful.
 - c. Begin CPR.
 - d. Remove object if visualized. **Do not perform a blind finger sweep of the patient's mouth.** Reattempt to ventilate.
 - e. Repeat step c if obstruction persists.
 - f. **BLS & ILS** immediately initiate ALS intercept.
 - g. **ILS & ALS** attempt direct extraction via laryngoscope and Magill forceps.
 - I. Use the laryngoscope and examine the upper airway for foreign matter and suction as needed.
 - II. Remove any foreign objects with forceps and suction.
 - III. Re-establish an open airway and attempt to ventilate.
 - IV. If the obstruction is relieved, continue with airway control, ventilations, assessment and care.

Critical Thinking Elements

- Maintain in-line c-spine stabilization using 2 EMTs in patients with suspected cervical spine injury.
- Poor abdominal/chest thrust technique, inappropriate airway maneuvers, and/or failure to recognize an obstructed airway will complicate the patient's condition.

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**Supraglottic Airway Procedures
(ILS & ALS ONLY)**

A Supraglottic Airway device is an effective airway adjunct when intubation is not available or difficult to perform. Insertion is rapid & easy and does not require specialized equipment or visualization of the larynx. They are latex-free and should be considered safe to use on latex-sensitive patients. MEMS currently utilizes The iGel as the approved supraglottic airway

iGel

- The iGel is an airway device designed for emergency or difficult airway management in the apneic or unresponsive patient without a gag reflex.
- It **is** the airway of choice in all pediatric cardio/respiratory arrests.
- Consider for all pediatric patients who require more than BVM and OPA/NPA ventilations.
- It is the back-up airway in cases of an unsuccessful intubation attempt.

iGel size	ALS ONLY 1	ALS ONLY 1.5	ALS/ILS 2	ALS/ILS 2.5
Patient Criteria	2-5kg (based on ideal body weight)	5-12kg (based on ideal body weight)	10-25kg (based on ideal body weight)	25-35kg (based on ideal body weight)
Patient Size/color	Neonate	Infant	Small Pediatric	Large Pediatric

Contraindications

- Active gag reflex
- Ingestion of a caustic substance (e.g. gasoline, drain cleaner, etc.)
- Tracheostomy (it will be ineffective)

iGel Airway Insertion Procedure

1. Don appropriate PPE
2. Pre-Oxygenate the patient with 100% Oxygen. Utilize Apneic Oxygenation Protocol if time permits.
3. Select the appropriate i-gel size from the chart above. (If > 35 kg ideal body weight use Adult iGel sizing)
4. Remove the device from the packaging and check for signs of damage.

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**Supraglottic Airway Procedures
(ILS & ALS ONLY)**

5. Place water-soluble jelly in the middle of the cradle packaging.
6. Lubricate the back, sides, and tip of the iGel's non-inflatable cuff. Ensure no lubricant is inside the cuff.
7. Grasp along the integral bite block and face the cuff towards the patients' chin.
8. Insert the iGel into the mouth in the direction of the hard palate.
9. Glide the device down and back along the hard palate with continuous, gentle pressure until resistance is met.

iGel Airway Insertion Procedure (Cont.)

10. Connect the iGel to the BVM.
11. Confirm placement using *Airway Confirmation Procedure 21.E.1*
12. Secure using a commercial tube-holder.
13. Continuously monitor the patient.
14. (**ALS only**) Insert appropriately sized gastric tube if time permits.
 - a. Use a 12Fr gastric tube for IGel sizes #2- #5
 - b. Use a 10Fr gastric tube for IGel size #1.5

Critical Thinking

- **Consider the iGel the primary airway of choice for all pediatric patients.**
- If unsuccessful in placing a Supraglottic Airway, remove the airway and a second attempt with the device following the same insertion procedures may be made. If this attempt is unsuccessful, immediately revert to the *Basic Airway Control Procedures*.
- Sizes for the iGel are based on ideal body weight for the size of the patient.
- A proficient provider can insert an iGel in 5 seconds or less.
- Do NOT administer medications via any Supraglottic Airway Device. It is designed as an airway adjunct only and cannot be utilized as a medication route.
- **Warning:** *In order to avoid the possibility of the device moving up out of position prior to being secured in place, it is essential that as soon as insertion has been successfully completed, the iGel is held in the correct position until being secured.*
- **Warning:** *Do not apply excessive force on the device during insertion.*
- Supraglottic Airways do not prevent the aspiration of gastric contents.

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**Advanced Airway Procedure
(ALS ONLY)**

Endotracheal intubation is an effective method of securing the airway. However, if endotracheal intubation is difficult or unsuccessful in one (1) attempt basic airway control measures should be re-established without delay and maintained throughout transport with no additional attempts made at intubation.

Indications

- Endotracheal intubation is an airway device designed for securing the airway in the apneic or unresponsive pediatric patient without a gag reflex.

Contraindication

- Active gag reflex
- Suspected Epiglottis

Endotracheal Intubation Procedure

1. Implement basic airway measures in accordance with the *Basic Airway Control Procedure*.
2. Initiate Oxygen based on *Apneic Oxygenation Protocol*.
3. **Only one intubation attempt is permitted.** Consider the pediatric Bougie for this intubation. If unsuccessful return immediately to using a BVM with OPA or NPA and then consider Supraglottic Airway placement.

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**Advanced Airway Procedure
(ALS ONLY)**

Endotracheal Intubation Procedure {Continued}

4. Select the proper tube size (based on patient size) and attach a 10mL syringe, if appropriate. (May need adult size for larger pediatric patients.)
5. Procedure per scope of practice guidelines.
6. Confirm placement using *Airway Confirmation Procedure 21.E.1*

Ave. Age	0-12 mos.	1-2 yrs.	3-4 yrs.	5 yrs	6-7 yrs	8-11 yrs.	>12 yrs.
Wt. in kg.	3-9 kg	10-13 kg	14-16 kg	16-20 kg	18-25 kg	24-32 kg	32-54 kg
Blade size	0-1 Miller	1 Miller	2 Miller	2 Miller	2 Miller	2 Miller/Macintosh	3 Miller/Macintosh
ET tube	3-4.0 NC	4.0 NC	4.5 NC	5.0 NC	5.5 NC	6.0 Cuffed	6.5 Cuffed
Distance to upper lip	7-10.5 cm	11-12cm	12.5-13.5cm	14-15 cm	15.5-16.5cm	17-18 cm	18.5-22 cm

Video Laryngoscopy

As an alternative to direct laryngoscopy, video laryngoscopes may be used. You should follow the manufacturer directions specific to the particular video laryngoscope you are using. Video laryngoscopy is not ideal for situations in which the camera may become obscured such as blood in the pharynx or excessive secretions, recent emesis, or hematemesis or hemoptysis. Many video laryngoscopes are advantageous for intubating while c-spine precautions must be maintained or if an anterior larynx is expected. Whenever using a video laryngoscope as a primary method of intubation, direct laryngoscopy must be also immediately available. Endotracheal tube placement should be confirmed just as with direct laryngoscopy.

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**Advanced Airway Procedure
(ALS ONLY)**

Airway Control in the Trauma Patient

Any type of airway manipulation may be dangerous during airway control of the suspected spinal injury patient. Maintain in-line stabilization.

1. A minimum of two (2) trained rescuers is needed to assure special attention to spinal precautions.
2. One rescuer will apply manual in-line stabilization by placing the rescuers hands about the patient's ears with the little fingers under the occipital skull and the thumbs on the face over the maxillary sinuses.
3. The rescuer performing airway placement should be at the head.
4. Maintain the patient's head in a neutral position and perform endotracheal intubation without cervical manipulation.

Prohibited Advanced Airway Control Procedures

Attempting difficult and unfamiliar procedures poses a danger to the patients those procedures are being performed on. Certain procedures that are used in the hospital setting are **not approved** for prehospital personnel in the Memorial EMS System. These include:

- Nasotracheal Intubation
- Percutaneous Transtracheal Ventilation
- Cricothyrotomy/Surgical Airway

Critical Thinking Elements

- If intubation attempt fails (1 attempt), switch to basic airway control immediately and then consider a Supraglottic Airway.
- The definition of an “attempt” is actually trying to pass the ET tube through the vocal chords.
- If an intubated patient deteriorates, consider: Displacement of the tube, Obstruction of the tube, Pneumothorax, and Equipment failure (mnemonic - DOPE).

MEMORIAL EMS SYSTEM
PEDIATRIC PREHOSPITAL CARE MANUAL

**Airway Confirmation Procedure
(BLS, ILS, and ALS)**

Consistency in airway placement **confirmation** methods and the **documentation** of such is a priority in our EMS System. The following are provider-level specific requirements to confirm Supraglottic Airway and Endotracheal Tube placement. All SGA and ETT's placed or attempted will be reviewed via the MEMS CQI Process. Failure to document in this manner will be actionable by the EMS System.

BLS Care

A “confirmed airway” at the BLS level is defined as established bilateral breath sounds/ absent epigastric noises when BVM ventilations are performed and one of the following:

- Continuous waveform capnography (if equipped)
- + Colormetric device color change purple to gold (eg “Easycap”)
- Chest rise and fall
- Condensation/fogging in the tube
- Clinical improvement (eg skin color, VS, level of responsiveness)

These findings should be reassessed and documented following any major move of the patient, including but not limited to:

- Placing patient on a backboard or CPR device
- Loading patient in an ambulance/ transferring care to higher level
- Unloading the patient at the hospital/ transferring care to E.D. staff

ILS Care

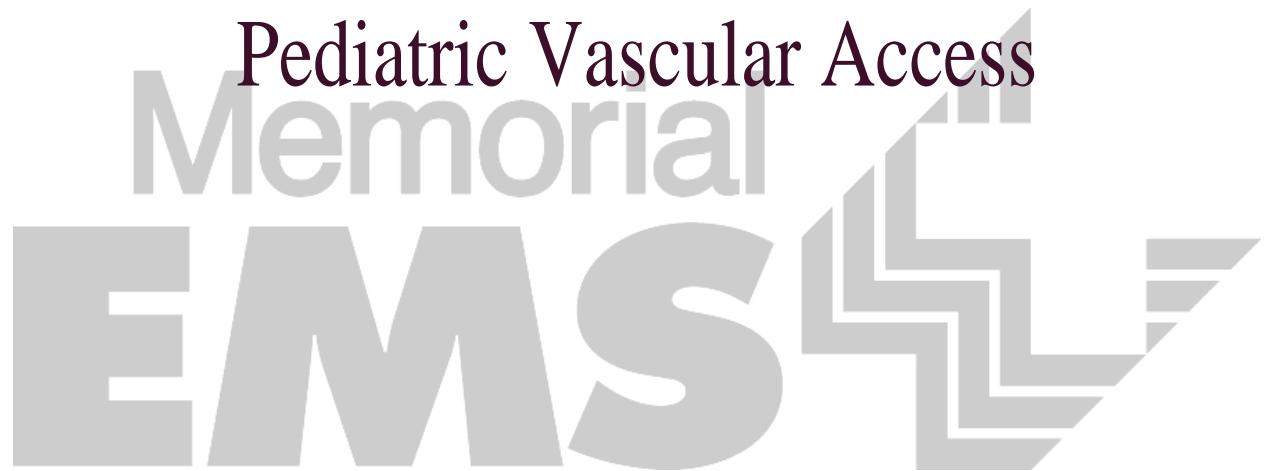
ALS Care

A “confirmed airway” at the ILS and ALS level is defined as established bilateral breath sounds/ absent epigastric noises when BVM ventilations are performed and **continuous waveform capnography**. These must be performed and documented at the ILS and ALS level. Further supporting documentation may include any of the following:

- Visualization of tube passing chords (ETT only)
- + Colormetric device color change purple to gold (eg “Easycap”)
- Chest rise and fall
- Condensation/fogging in the tube
- Clinical improvement (eg skin color, level of responsiveness)

These findings should be reassessed and documented following any major move of the patient, including but not limited to:

- Placing patient on a backboard or CPR device
- Loading patient in an ambulance/ transferring care to higher level
- Unloading the patient at the hospital/ transferring care to E.D. staff



MEMORIAL EMS SYSTEM
PEDIATRIC PREHOSPITAL CARE MANUAL

**Pediatric Intravenous Cannulation Protocol
(ILS & ALS ONLY)**

IV Access

Intravenous cannulation is used in the pre-hospital setting to establish a route for drug administration and/or to provide fluid replacement. Intravenous cannulation should not significantly delay scene times or be attempted while on scene with a trauma patient who meets load-and-go criteria.

1. Explain to the patient the need for and a brief description of the procedure. Use distraction therapy to put the pediatric patient more at ease.
2. Observe the universal precautions for body substance exposure.
3. Obtain an appropriately sized catheter:
 - a) 18 or 20 gauge for trauma patients.
 - b) 20 or 22 gauge for fluid replacement.
4. Check the fluid:
 - a) Is it the right fluid?
 - b) Check the expiration date.
 - c) Check for color and clarity (IVF should be clear with no particles).
5. Connect the administration set to the IV fluid. Make sure that air bubbles are expelled from the tubing and that all chambers have the appropriate fluid levels.
6. Procedure per scope of practice.

**MEMORIAL EMS SYSTEM
PEDIATRIC PREHOSPITAL CARE MANUAL**

**Pediatric Intravenous Cannulation Protocol
(ILS & ALS ONLY)**

Saline Locks

Saline locks may be used if fluid replacement is not indicated:

1. Procedure per scope of practice.

Fluid Replacement

Age	Average Weight for Age in Pounds (lbs)	Average Weight for Age in Kilograms (kg)	Fluid Bolus at 20mL/kg
Newborn	7	3	60
3 months	13	6	120
6 months	15	7	140
9 months	20	9	180
12 months	22	10	200
2 years	26	12	240
4 years	35	16	320
6 years	44	20	400
8 years	57	26	520
10 years	66	30	600
12 years	90	41	820

****Total fluid bolus must not exceed 40mL/kg without Medical Control Order. Maximum fluid replacement not to exceed 60mL/kg.**

Pediatric Intraosseous Infusion Procedure (ILS & ALS ONLY)

Intraosseous infusion is defined as a puncture into the medullary cavity of a bone that provides a rapid access route for fluids and medications. Obtaining emergency intravenous access in critically ill pediatric patients (especially those less than 3 years old) can be extremely difficult, time consuming and, at times, impossible. Intraosseous access is performed on critically ill children in whom fluid and/or drug treatment is paramount and intravascular access is not rapidly accessible or feasible.

Indications for IO (*No I.V. attempts required*)

- Any infant/ child in extremis and in need of immediate drug administration or fluid resuscitation.
- Unresponsive or severely altered LOC that is not readily explainable (i.e. not Post-ictal, Hypoglycemia etc.).
- Cardiac/ respiratory arrest.

EZ-IO Procedure

NOTE: The EZ-IO System is the preferred device. However, this device can only be used on children **greater than 3kg**. For children **<3kg**, refer to the Jamshidi procedure.

1. Observe universal precautions.
2. Prepare the EZ-IO driver and pediatric needle set:
 - a) 15ga, 15mm long needle (**pink**) for patients weighing **between 3kg and 39kg**
 - b) 15ga, 25mm long needle (**blue**) for patients weighing **greater than 40kg**
3. Locate landmark of insertion site by palpating the anterior surface of the tibial bone 1-3 cm below the tibial tuberosity and slightly medial. Landmark for insertion must avoid the joint and epiphyseal plate.
4. Prep the site with Betadine and set up infusion solution as for regular IV.
5. Stabilize site and insert appropriate needle set.
6. Remove EZ-IO driver from needle set while stabilizing catheter hub.
7. Remove stylet from the catheter; place stylet in EZ-IO shuttle or approved sharps container.
8. Attach 5-10mL syringe and aspirate bone marrow to confirm placement.
 - a) IO catheter should be at a 90 degree angle and firmly seated in the tibial bone.
 - b) Blood may be visible at the tip of the stylet.
 - c) The IO catheter should flush freely without difficulty or evidence of extravasation.
9. Connect the luer-lock equipped IV administration set.
10. For **conscious** patients you may first administer **Lidocaine (slowly): 0.5mg/kg IO (maximum dose; 40mg)**.

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PEDIATRIC PREHOSPITAL CARE MANUAL

**Pediatric Intraosseous Infusion Procedure
(ILS & ALS ONLY)**

EZ-IO Procedure {Continued}

11. Then rapidly flush the IO catheter with 5mL of normal saline.
12. Utilize a pressure bag for continuous infusions where applicable. If a pressure bag is not available, wrap a BP cuff around the bag of IV fluids and inflate the cuff until desired flow rate is achieved.
13. Dress site, secure tubing and apply wristband as directed.
14. Closely monitor EZ-IO site en route.

Critical Thinking Elements

- Do not access a site that is fractured at or above the insertion site or has obvious indications of infection.
- Do not use an area previously used for IO attempts.
- **Sometimes marrow cannot be aspirated and does not necessarily indicate improper placement.**
- Excessive movement of the IO needle may result in leakage.
- The volume of pediatric fluid resuscitation is based on weight and clinical response. Pediatric fluid administration must be carefully regulated.

Pediatric Intraosseous Infusion (IO) Procedure (ALS ONLY)

Jamshidi Style IO Procedure- ALS Only

NOTE: The EZ-IO System is the preferred device for children weighing greater than 3kg. The Jamshidi IO should be used in children weighing less than 3kg.

1. Observe universal precautions.
2. Assemble and prepare equipment.
3. Locate landmarks of insertion site by palpating the anterior surface of the tibial bone 1-3 cm below the tibial tuberosity and slightly medial. Landmark for insertion must avoid the joint and epiphyseal plate.
4. Prep the site with Betadine and set up infusion solution as for regular IV.
5. With sterile technique, using a commercial IO (Jamshidi) needle, insert needle at a 90 degree angle and slightly 10-15 degrees inferior through the bone using firm downward pressure with a twisting motion. You should feel a “pop” when the needle goes into the medullary space.
6. Remove the inner stylet and attach a 5-10mL syringe. Aspirate for bone marrow contents, and then connect a conventional IV line with pressure infuser (or BP cuff).
7. Secure the line with tape and dressing.
8. Administer drugs and fluids as needed.
9. Assess sight for signs of infiltration or leakage. Discontinue IO line if either of these occurs.

Critical Thinking Elements

- Do not access a site that is fractured at or above the insertion site or has obvious indications of infection.
- Do not use an area previously used for IO attempts.
- Sometimes marrow cannot be aspirated and does not necessarily indicate improper placement.

Pediatric Medication Administration

**MEMORIAL EMS SYSTEM
PEDIATRIC PREHOSPITAL CARE MANUAL**

Pediatric Medication Administration Procedure

Medication administration is accomplished by specific routes as indicated by the protocols. Pediatric medication routes and procedures are analogous to the adult patient with the exception of the intraosseous (IO).

Special consideration needs to be given to patient age and weight when administering medications. Resources for medication dosages include:

- Specific treatment protocol
- Medical Control
- Broselow Tape**

Per Memorial EMS System protocol, **do not exceed the adult dose when administering pediatric medications.

Approximate weight based on age:

<u>Age</u>	<u>Weight</u>
Newborn	3 kg / 7 lbs
2 months	5 kg / 8 lbs
6 months	7 kg / 15 lbs
1 year	10 kg / 22 lbs
5 years	20 kg / 44 lbs
10 years	30 kg / 66 lbs
15 years	Adult values

MEMORIAL EMS SYSTEM
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Pediatric Pain Control Protocol

Pain, and the lack of relief from the pain, is one of the most common complaints among patients. Pediatric pain must not be ignored and must be identified and treated if appropriate. The prehospital provider must use clinical observations and a pain scale to rate the pain of the child.

First Responder Care

First Responder Care should focus on the reduction of the patient's anxiety due to the pain.

1. Render initial care in accordance with the *Routine Pediatric Care Protocol*
2. **Oxygen:** If respiratory distress is noted, 10-15 LPM via NRM or if unable to tolerate the mask, 6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
3. Assess level of pain using the Pain Assessment Scale (0-10) or the Wong-Baker Faces Pain Rating Scale.
4. Place patient in a position of comfort.
5. Reassure the patient.
6. Use distraction therapy to help reduce the patient's anxiety (*e.g.* stuffed animals, discussing favorite foods, toys, etc.)
7. Consider **ice or splinting**.
8. Reassess level of pain using the approved pain scale.

BLS Care

BLS Care should focus on the reduction of the patient's anxiety due to the pain.

1. BLS Care includes all of the components of *First Responder Care*.
2. **Apply Capnography** (if equipped).
3. Initiate ALS intercept, if indicated and begin transport.

ILS Care

ILS Care should focus on the reduction of the patient's anxiety due to the pain.

1. ILS Care includes all of the components of *BLS Care*.
2. Establish **IV access**.

MEMORIAL EMS SYSTEM
PEDIATRIC PREHOSPITAL CARE MANUAL

Pediatric Pain Control Protocol

ALS Care

ALS Care should focus on the pharmaceutical management of pain.

1. ALS Care includes all of the components of *ILS Care*.
2. In cases of **extremity pain (deformity, inability to bear weight, inability to flex joints etc.), back pain, burns, abdominal/ flank pain, and discomfort from an IO infusion pain** medication may be given without calling medical control as long as the patient BP remains age appropriate. **Any other situation involving pain medication administration requires Medical Control order prior to giving the medication.**
3. Manage the patient's pain by using one of the following medications. Situation can dictate which medication is first and second option or if medication are both given or only one medication given:

Morphine Sulfate	0.1mg/kg IV/IM (Max single dose: 4 mg) every 15 minutes (I.V.) and 30 minutes (I.M.) to reduce the patient's anxiety and severity of pain.
Fentanyl	1mcg/kg IV over 2 minutes for pain (Max single dose: 50mcg). Fentanyl 1mcg/kg may be repeated every 15 minutes (I.V.). If unable to establish IV access may administer Intranasal Fentanyl. (See intranasal dosing sheet of <i>Pediatric Prehospital Care Manual</i>).

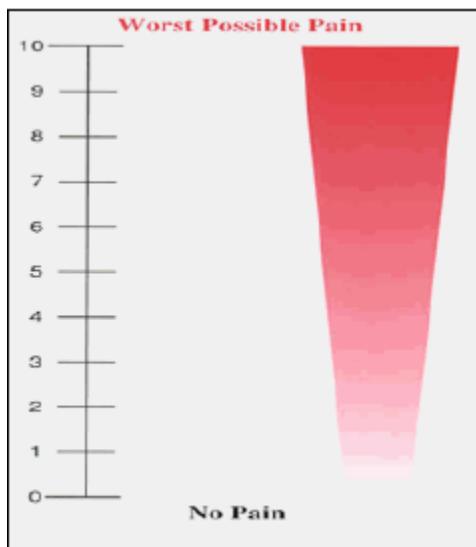
Critical Thinking Elements

- **Closely monitor the patient's airway – have BVM and suction readily available.**
- Memorial EMS protocol does not include Zofran for patients under the age of 16
- The left thigh is the preferred site for IM medication administration in the infant patient population

MEMORIAL EMS SYSTEM
PEDIATRIC PREHOSPITAL CARE MANUAL

Pediatric Pain Control Protocol

Pain Assessment Scales



0-10 Numeric Pain Scale



MEMORIAL EMS SYSTEM
PEDIATRIC PREHOSPITAL CARE MANUAL

Pediatric Pain Control Dosing

Fentanyl Dosing for Pediatrics

Intranasal Fentanyl Dosing Chart

Patient Weight	Dosage (2mcg/kg)	Dead Space Volume
3-5kg (6-11 Lbs)	10 mcg (0.2 ml)	(+0.1 ml)
6-10kg (13-22 Lbs)	20 mcg (0.4 ml)	(+0.1 ml)
11-15kg (24-33 Lbs)	30 mcg (0.6 ml)	(+0.1 ml)
16-20kg (35-44 Lbs)	40 mcg (0.8 ml)	(+0.1 ml)
21-25kg (46-55 Lbs)	50 mcg (1.0 ml)	(+0.1 ml)
26-30kg (57-66 Lbs)	60 mcg (1.2 ml)	(+0.1 ml)
31-35kg (68-77 Lbs)	70 mcg (1.4 ml)	(+0.1 ml)
36-40kg (79-88 Lbs)	80 mcg (1.6 ml)	(+0.1 ml)
41-45kg (90-99 Lbs)	90 mcg (1.8 ml)	(+0.1 ml)
46-50kg (101-110 Lbs)	100 mcg (2.0 ml)	No Extra
51-55kg (112-121 Lbs)	100 mcg (2.0 ml)	No Extra
56-60kg (123-132 Lbs)	100 mcg (2.0 ml)	No Extra
61-70kg (134-154 Lbs)	100 mcg (2.0 ml)	No Extra
71-80kg (156-176 Lbs)	100 mcg (2.0 ml)	No Extra
81-90kg (178-198 Lbs)	100 mcg (2.0 ml)	No Extra
91-100kg (200-220 Lbs)	100 mcg (2.0 ml)	No Extra

**Max 1 ml per nare

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Pediatric Seizure Dosing
(ILS/ ALS only)

Midazolam (Versed) Dosing for Pediatrics

Intranasal Versed (Midazolam) Dosing Chart

Patient Age	Weight	5mg/5mL Concentration		10mg/2mL Concentration	
		Dose (mg)	Dose (mL)	Dose (mg)	Dose (mL)
(years)					
Neonate	3kg (6) Lbs	0.6 mg	0.7 ml	0.6 mg	0.3 mL
< 1 yr.	6kg (13) Lbs	1.2 mg	1.3 ml	1.2 mg	0.4 mL
1	10kg (22) Lbs			2.0 mg	0.5 mL
2	14kg (30) Lbs			2.8 mg	0.7 mL
3	16 kg (35) Lbs			3.2 mg	0.8 mL
4	18kg (40) Lbs			3.6 mg	0.9 mL
5	20kg (44) Lbs			4.0 mg	1.0 mL
6	22kg (48) Lbs			4.4 mg	1.0 mL
7	24kg (53) Lbs			4.8 mg	1.1 mL
8	26kg (57) Lbs			5.2 mg	1.2 mL
9	28kg (62) Lbs			5.6 mg	1.3 mL
10	30kg (66) Lbs			6.0 mg	1.4 mL
11	32kg (70) Lbs			6.4 mg	1.4 mL
12	34kg (75) Lbs			6.8 mg	1.5 mL
Small Teenager	40kg (88) Lbs			8.0 mg	1.8 mL
Full Grown Teen or Adult	>50kg (>110) Lbs			10.0 mg	2.0 mL

For Children: Total weight (kg) x 0.2 mg = total mg dose of Midazolam, maximum dose of 10 mg

*Volume is based on the calculated dose PLUS 0.10 mL dead space in the device.

The total volume is then rounded off to the next highest 0.1 mL. In some children a higher dose may be needed (0.3 mg/kg)

MEMORIAL EMS SYSTEM
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Pediatric Resuscitation &
Respiratory Emergencies

The logo consists of the word "Memorial" in a smaller, semi-transparent font above the word "EMS". The "EMS" is in a large, bold, sans-serif font. A stylized graphic element resembling a four-pointed star or a cross made of lines is positioned to the right of the "S".

MEMORIAL EMS SYSTEM
PEDIATRIC PREHOSPITAL CARE MANUAL

Pediatric Cardiac Arrest Protocol

The successful resuscitation of a child in cardiac arrest is dependent of a systematic approach of initiating life-saving CPR, recognition of any airway obstructions, adequate oxygenation & ventilation, early defibrillation and transferring care to advanced life support providers in a timely manner. The majority of pediatric patients found in non-traumatic cardiac arrest are found to have some form of airway obstruction or respiratory failure. Providing good BLS care with regards to relieving foreign body airway obstructions and/or initiation of CPR, pediatric patients have a better chance at a positive outcome. Adequate ventilation is the most important step in pediatric resuscitation. **Always refer to your Broslowe Tape!**

First Responder Care

First Responder Care should be focused on confirming that the patient is in full arrest and in need of CPR. Resuscitative efforts should be initiated by opening the airway and initiating ventilations & chest compressions while attaching a defibrillator. It is important to assure that CPR is being performed correctly following AHA guidelines.

1. Determine unresponsiveness. Confirm that a transporting unit (and ALS intercept) has been activated).
2. Maintain patent airway and assess breathing. If breathing is absent or inadequate, give two (2) rescue breathe with a barrier device,
3. Check for a pulse (10 seconds). If pulseless, **begin CPR**. The patient should be ventilated at 20-30 breaths/min using **oxygen at 15 L/min via BVM**.
4. Apply an AED **after 2 min of CPR** to determine if defibrillation is needed.
 - a) If PEDIATRIC PADS *are available*-apply as pictured on each of the AED electrodes with proper contact and without any overlap of the pads. If overlap of the pads occurs, use anterior (front)/ posterior (back) placement with cervical spine precautions if neck/back injury is suspected.
 - b) If ADULT PADS *only*- apply anterior (front)/ posterior (back) with cervical spine precautions if neck/back injury is suspected (see diagram at the end of the protocol).
5. Continue CPR until the AED is attached and turned on. Stop CPR when the AED is analyzing:
 - a) If the AED indicates “SHOCK ADVISED”, call out “CLEAR!” check for the safety of others, and push the shock button (or stand clear if the AED device does not require shock activation).
 - b) Immediately **resume CPR for 2 minutes**.

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PEDIATRIC PREHOSPITAL CARE MANUAL

Pediatric Cardiac Arrest Protocol

First Responder Care {Continued}

- c) Reassess the patient and allow the AED to analyze
 - d) If the AED indicates “SHOCK ADVISED”, call out “CLEAR!” check for the safety of others and push the shock button (or stand clear if the AED device does not require shock activation).
 - e) Check for a pulse if the AED states “NO SHOCK ADVISED”.
 - f) **Continue CPR if pulse is absent.**
 - g) **Reassess every 2 minutes.** Shock if indicated.
 - h) If the patient regains a pulse at any time during resuscitation, then maintain the airway and assist ventilations.
 - i) Re-analyze the patient’ rhythm with the AED if the patient returns to a pulseless state. Shock if indicated.
6. Immediately turn the patient over to the transporting provider or ALS intercept crew upon their arrival
 7. Complete all necessary cardiac arrest documentation.

BLS Care

BLS Care should focus on maintaining the continuity of care by confirming the patient is in cardiac arrest and continuing resuscitative efforts initiated by the First Responders. Transporting BLS units should initiate an ALS intercept as soon as possible.

1. BLS Care includes all of the components of *First Responder Care*.
2. Shocks delivered to the patient prior to the transporting unit arriving on scene should be taken into consideration during the transition of care. Transporting crews may want to utilize the AED used by the non-transporting First Responders if circumstances allow for exchange of equipment or personnel ride-along.
3. Call for ALS intercept and initiate transport as soon as possible.
4. **Contact Medical Control.**

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Pediatric Cardiac Arrest Protocol

ILS Care

ILS Care should focus on maintaining the continuity of care by confirming that the patient is in cardiac arrest and beginning resuscitative efforts or continuing efforts initiated by the First Responders.

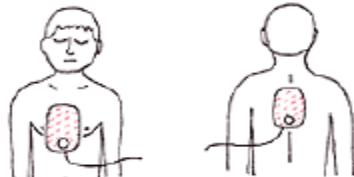
1. ILS Care includes all components of *BLS Care*.
2. Apply Quick-Combo pads (or Fast Patches).
3. Evaluate rhythm.
4. If V-fib or pulseless V-tach, immediately **defibrillate at 2 J/kg**.
5. **Immediately resume CPR for 2 minutes**.
6. Evaluate the patient rhythm and **defibrillate if needed at 4J/kg. Continue CPR and re-evaluate patient rhythm every 2 minutes**.
7. Obtain **peripheral IV or IO** access when resources exist.
8. If BVM with OPA/NPA is adequately ventilating the patient, no additional airway is required. If the patient is inadequately ventilated with a BVM and OPA/NPA then proceed with **Supraglottic Airway** insertion..

ALS Care

ALS Care should focus on maintaining the continuity of care by confirming that the patient is in cardiac arrest and beginning resuscitative efforts or continuing resuscitative efforts initiated by the First Responders.

1. ALS Care includes all components of *ILS Care*.
2. Obtain **peripheral IV or IO** access.
3. Identify and treat cardiac dysrhythmias according to the appropriate protocol.
4. If BVM with OPA/NPA or a Supraglottic Airway is adequately ventilating the patient, no additional airway is required. If the patient is inadequately ventilated with a BVM and OPA/NPA or a Supraglottic Airway then proceed with **intubation**.

Anterior/Posterior pad placement: Placement of the anterior AED pad (electrode) on the front of the patient mid-chest and the posterior pad of the back of the patient mid-back. (Always follow manufacturer's recommendations and diagrams for pad placement). –see following diagram**



**Use the anterior/posterior pad placement if no pediatric pads are available and adult Quick Combos or Fast Patches are being utilized for a pediatric patient.

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Pediatric Cardiac Arrest Protocol

Critical Thinking Elements

- If the cardiac arrest is witness by EMS personnel, start CPR and defibrillate immediately after the Fast Patches or Quick Combos are placed.
- Treat the patient- not the monitor. A rhythm present on the monitor screen should NOT be used to determine pulse. If the monitor shows a rhythm and the patient has no pulse, begin CPR (the patient is in PEA- *pulseless electrical activity*.)



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Resuscitation of Pediatric Pulseless Rhythms Protocols

The successful resuscitation of patients in cardiac arrest is dependent on a systematic approach to resuscitation. ACLS medications are an important factor in successful resuscitation of the pulseless patient when the initial rhythm is not ventricular fibrillation (V-fib) or in cases where defibrillation has been unsuccessful. It is important that BLS providers understand the value of effective CPR and an ALS intercept is providing the patient with ACLS therapy.

First Responder Care

Not applicable. First Responders are not equipped with ACLS medications and shall treat the patient in accordance with the *Pediatric Cardiac Arrest Protocol*.

BLS Care

Not applicable. BLS Providers are not equipped with ACLS medications and shall treat the patient in accordance with the *Pediatric Cardiac Arrest Protocol*.

Ventricular Fibrillation (V-fib) or Pulseless Ventricular Tachycardia (V-tach)

ILS Care

1. Initiate *Pediatric Cardiac Arrest Protocol*.
2. Evaluate the rhythm after 2 minutes of CPR. If V-Fib or pulseless V-Tach: **Defibrillate at 2 J/Kg****
 - **If the patient converts to a perfusing rhythm (with a heart rate > 80 bpm), administer **Lidocaine: 1mg/ kg IV/IO (with Medical Control order only)**.
3. **Immediately resume CPR for 2 minutes** and re-evaluate the patient/rhythm.
4. **Obtain IV/IO access.**
5. **Epinephrine 1:10,000:** 0.01mg/kg IV/IO Minimum dose 0.1 mg (**Max single dose: 1 mg**) and repeat every **3 to 5 minutes** as needed.
6. If pulseless F-fib/V-tach persists: **Defibrillate at 4J/kg.**
7. **Immediately resume CPR for 2 minutes** and re-evaluate patient/rhythm every 2 minutes.

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Resuscitation of Pediatric Pulseless Rhythms Protocols

Ventricular Fibrillation (V-fib) or Pulseless Ventricular Tachycardia (V-tach) {Continued}

ILS Care {Continued}

8. **Lidocaine:** 1 mg/kg IV/IO. Repeat bolus: 1 mg/kg IV/IO in **3-5 minutes** to a total of 3 mg/kg for refractory V-fib/ V-tach.
9. If pulseless V-fib/ V-tach persists: **Defibrillate at 4J/ kg.**
10. **Immediately resume CPR** and re-evaluate patient rhythm every 2 minutes.
11. **IV Fluid Therapy:** 20 mL/kg fluid bolus for suspected hypovolemia.
12. If blood sugar is < 60mg/dL, refer to ALOC Protocol
13. If suspected narcotic ingestion, refer to Ingestion/Overdose Protocol.
14. Initiate ALS intercept and transport as soon as possible.
15. **Contact Medical Control** as soon as possible.

ALS Care

1. ALS Care includes all components of *ILS Care*.
2. **Amiodarone:** 5mg/kg IV/IO. Max single does 300 mg.

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Resuscitation of Pediatric Pulseless Rhythms Protocol

Pulseless Electrical Activity and Asystole

ILS Care

1. Initiate *Pediatric Cardiac Arrest Protocol*.
2. Evaluate rhythm after 2 minutes of CPR.
3. **Epinephrine 1:10,000:** 0.01 mg/kg IV/IO (*Minimum does 0.1mg*) (**Max single dose: 1mg**) every 3-5 minutes as needed.
4. **Continue CPR** and re-evaluate patient/rhythm every 2 minutes.
5. **IV Fluid Therapy:** 20 mL/kg fluid bolus for suspected hypovolemia.
6. If blood sugar is < 60mg/dL, refer to ALOC Protocol
7. If suspected narcotic ingestion, refer to Ingestion/Overdose Protocol.
8. Initiate ALS intercept and transport as soon as possible.
9. **Contact Medical Control** as soon as possible.

ALS Care

1. ALS Care includes all components of *ILS Care*.
2. **Needle chest decompression** for a patient in *traumatic* cardiac arrest with suspected tension pneumothorax. Use a 14ga angiocath 2 inches or less in length. Ensure that the specific safety mechanism will allow for the release of air.

Critical Thinking Elements

- Pediatric cardiac arrest is often related to hypoxia and poor ventilation. Ensure proper oxygenation and ventilation.
- CPR and good BVM are the only procedures needed initially.
- Broselow tapes are an effective means to estimate weight. Refer to the Memorial EMS protocols for medication doses.

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Pediatric Bradycardia Protocol

Pediatric bradycardia is defined as a heart rate less than the normal beats per minute for a given age group. Determining the stability of the pediatric patient with bradycardia is an important factor in patient care decisions. The assessment of the patient with bradycardia should include evaluation for signs and symptoms of hypoperfusion and hypoventilation.

First Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to treat for shock.

1. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
2. Assess the pediatric for signs and symptoms of hypoperfusion and possible causes, including:
 - Respiratory difficulty
 - Cyanosis
 - Cool/Cold Skin
 - Hypotension/ Lack of palpable blood pressure
 - Decreasing level of consciousness
3. **Oxygen:** 15 L/min via BVM if the child has Alt Loc and in respiratory distress.
4. **Oxygen:** If the child is alert with respiratory distress, 15 LPM via NRM or if unable to tolerate the mask, 4-6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
5. For children **< 12 months of age:** If, despite oxygen and ventilation the child continues to appear hypoperfused and has a pulse **< 60 beats per minute**, **initiate chest compressions**.
6. *Immediately* turn patient care over to the transporting provider or ALS intercept upon their arrival.

BLS Care

BLS Care should be directed at conduction a thorough patient assessment, initiating routine patient care to treat for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. Place defib pads on those patients exhibiting S/S of hypoperfusion.
3. **Apply Capnography** (if equipped).
4. Initiate ALS intercept and transport as soon as possible. (*Transport can be initiated at any time during this sequence.*)
5. **Contact Medical Control** as soon as possible.

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Pediatric Bradycardia Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. **IV Fluid Therapy:** 20mL/kg bolus if hypovolemia is suspected.
3. **Epinephrine 1:10,000:** 0.01mg/kg (*Minimum does 0.1mg*) (**Max single dose: 1mg**) (with Medical Control order only) and repeat every **3 to 5 minutes** as needed.
4. **Atropine:** 0.02mg/kg IV (with Medical Control order only) (*Minimum dose: 0.1mg*) (**Max single dose: 1mg**) for children greater than 6 months of age.

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. **Immediate Transcutaneous Pacing:** If the patient remains bradycardic with continued signs of hypoperfusion
 - a) **Set the rate based on age appropriate guidelines. Contact Medical Control if assistance is needed.**
 - b) Current should be set at minimum to start and increase until capture is achieved
 - c) Refer to the *Transcucaneous Pacing Procedure* for additional information.
3. **Midazolam (Versed):** 0.1mg/kg IV/IO (**Max single dose: 2.5mg**) for patient comfort after pacing is initiated. Re-check vital signs 5 minutes after administration. May repeat dose one time if systolic BP > 100 mmHg and respiratory rate > 10 RPM. Additional doses require **Medical Control order**.
4. **Midazolam (Versed):** Versed Intranasal may also be used if unable to give IV/IO Versed. (See *intranasal dosing sheet*, pg 45 of *Pediatric Prehospital Care Manual*).
5. **Contact Medical Control** regarding destination choice.

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Pediatric Bradycardia Protocol

Critical Thinking Elements

- Monitor the child's respiratory status, SPO₂ and or Waveform Capnography if available.
- Assess for the possibility of foreign body.
- Hypothermia-warm the patient
- Assess for mechanical problems with oxygen delivery
- Hypoxemia
- Hypoglycemia, severe dehydration and narcotic effects may produce bradycardia
- Most maternal medication passes through breast milk to the infant.



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Pediatric Narrow Complex Tachycardia Protocol

Tachycardia may be a nonspecific sign of fear, anxiety, pain, fever or shock in the pediatric patient. The heart rate needs to be assessed in conjunction with the PAT & ABCDEs. As with all cardiac dysrhythmias, assess the heart rate and EKG with knowledge based on PALS principles and normal ranges for children. Always ask the child/caregiver about history of illness, congenital heart disease or cardiac surgery. Pediatric Supraventricular Tachycardia is defined as a narrow QRS (<0.08 seconds) and a heart rate greater than 220 BPM.

First Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to treat for shock.

1. Render initiate care in accordance with the *Routine Pediatric Care Protocol*.
2. **Oxygen:** 15 L/min via BVM if the child has Alt Loc and in respiratory distress.
3. **Oxygen:** If the child is alert with respiratory distress, 15 LPM via NRM or if unable to tolerate the mask, 4-6 LPM via nasal cannula.
 - b. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to treat for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. **Capnography** (if equipped).
3. Initiate ALS intercept and transport as soon as possible.

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Pediatric Narrow Complex Tachycardia Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing transport.

1. ILS Care includes all components of *BLS Care*.
2. **IV Fluid Therapy:** 20 mL/kg fluid bolus.
3. **Vagal Maneuvers:** if the patient is alert and oriented, has an age appropriate BP, has a HR greater than 220 bpm, and is *obviously* not in atrial fib or atrial flutter. Having the patient attempt to move the plunger of a 12 or 20ml syringe by blowing from the small end is one technique. Splashing the face with ice cold water or carotid massage are other techniques for younger patients who may not be able to follow directions.
4. **Contact Medical Control** as soon as possible.
5. **Adenosine (Adenocard):** 0.1 mg/kg IV/IO {Rapid IV push} (**Max single dose: 6 mg**) (with medical control order only) if the child is alert and still has a HR greater than 220 BPM. If no response after 2 minutes, administer 0.2 mg/kg IV/IO {Rapid IV/IO push} (**Max single dose: 12 mg**) (with Medical Control order only).

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. **Midazolam (Versed):** 0.1mg/kg IV/IO (**Max single dose: 2mg**) **in preparation for synchronized cardioversion** if the patient has a respiratory rate > 10 RPM. If the patient's respiratory rate is < 10 RPM, proceed to immediate synchronized cardioversion without sedation.
3. **Midazolam (Versed):** Versed Intranasal may also be used if unable to give IV/IO Versed. (*See intranasal dosing sheet, pg 45 of Pediatric Prehospital Care Manual*).
4. **Synchronized Cardioversion:** If the patient has an altered level of consciousness, diaphoresis, pale/mottled skin and/or is hypotensive:
 - a) Synchronized Cardioversion at **1 J/kg** if tachycardia persists.
 - b) Synchronized Cardioversion at **2 J/kg** if tachycardia persists.

Reactivate Syncronizer before any subsequent attempt at Cardioversion.

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Pediatric Wide Complex Tachycardia Protocol

Tachycardia should be assessed in conjunction with the PAT and ABCDEs. Pediatric ventricular tachycardia is defined as a wide complex QRS and a heart rate > 180 BPM. The child may have a history of serious systematic illness/ congenital heart defects.

First Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to treat for shock.

1. Render care in accordance with the *Routine Pediatric Care Protocol*.
2. **Oxygen:** 15 L/min via BVM if the child has Alt Loc and in respiratory distress.
3. **Oxygen:** If the child is alert with respiratory distress, 15 LPM via NRM or if unable to tolerate the mask, 4-6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to treat for shock and preparing the patient for or proving transport.

1. BLS Care includes all components of *First Responder Care*.
2. **Apply Capnography** (if equipped).
3. Initiate ALS intercept and transport as soon as possible.

ILS Care

ILS Care should be directed at continuing or establishing a thorough patient assessment, stabilizing the patient's perfusion and preparing the patient for or proving transport.

1. ILS Care includes all components of *BLS Care*.
2. **IV Fluid Therapy:** 20 mL/kg fluid bolus.
3. If the patient becomes pulseless at any times, refer to the *Resuscitation of Pediatric Pulseless Rhythms Protocol (V-fib or Pulseless V-tach)*.
4. **Lidocaine:** 1mg/kg IV/ IO slowly over 2 minutes if the child is alert (with medical control order only). If no response, administer Lidocaine 0.5mg/kg every 5 minutes as needed to a total of 3 mg/kg (with Medical Control order only).

Pediatric Wide Complex Tachycardia Protocol

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing the patient for or providing transport.

1. ALS Care includes all components of *ILS Care*.
2. **Contact Medical Control** as soon as possible.
3. **Lidocaine:** 1 mg/kg IV/IO. Repeat bolus: 0.5 mg/kg IV/IO in **3-5 minutes** to a total of 3 mg/kg for refractory V-fib/ V-tach. If not given by ILS provider.

OR

- Amiodarone:** 5mg/kg IV/IO. Max single dose 150 mg given IVP over 10 minutes. If Lidocaine has not been given.
4. **Midazolam (Versed):** 0.1 mg/kg IV/IO (**max single dose: 2 mg**) for patient comfort prior to cardioversion. Re-check vital signs 5 minutes after administration. Additional doses also require Medical Control order.
 5. **Midazolam (Versed):** Versed intranasal may also be used if unable to give IV Versed. (See intranasal dosing sheet, pg 45 of *Pediatric Prehospital Care Manual*).
 6. **Synchronized Cardioversion:** If the patient has an altered level of consciousness, is in shock, and is in V-Tach with a heart rate > 180 BPM:
 - a) Synchronized Cardio version at **1 J/kg** if tachycardia persists.
 - b) Synchronized cardio version at **2 J/kg** if tachycardia persists

Reactivate Synchronizer before any subsequent attempt at Cardioversion.

Critical Thinking Elements

- Monitor the child's SPO₂ and or Waveform Capnography if available.
- Cardiac dysrhythmias such as V-tach are rare in children. Ask the caregiver if the child has a chronic or genetic cardiac condition.
- V-tach with a pulse could be from a serious illness, hypoxia or dehydration.

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Pediatric Respiratory Distress Protocol

Respiratory Distress is common in the pediatric patient. The small airways of children are compromised more quickly during medical and traumatic problems. Identifying the degree of respiratory distress is crucial for stopping a process that can lead into respiratory failure. At that point, the child has lost the ability to compensate for the lack of oxygen. If not treated immediately, respiratory failure will lead to arrest.

First Responder Care

First Responder Care should be focused on assessing the situation and initiated routine patient care to treat for shock.

1. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
2. **Oxygen:** 15 L/min via BVM if the child has Alt Loc and in respiratory distress.
3. **Oxygen:** If the child is alert with respiratory distress, 15 LPM via NRM or if unable to tolerate the mask, 4-6 LPM via nasal cannula.
4. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
5. Utilize the *Pediatric Assessment Triangle* to gain a general impression.
6. Assess abnormal airway sounds.
7. If wheezing is noted and the child has their **prescribed inhalers** present, suggest and/or help with the self- administration of those medicines by the patient.
8. Place patient in a position of comfort.

BLS Care

BLS Care should be directed at conduction a thorough patient assessment, initiating routine patient care to treat for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. **Proventil (Albuterol):** For patients ≥ 1 year old, 2.5 mg in 3 mL of normal saline via nebulizer over 15 minutes for wheezing or absent/diminished breath sounds. May repeat Albuterol 2.5 mg every **15 minutes** as needed.
3. **Apply Capnography** (if equipped).
4. Initiate ALS intercept and transport as soon as possible.

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Pediatric Respiratory Distress Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. **Proventil (Albuterol)**: If ≥ 3 months of age, 2.5 mg in 3 mL of normal saline mixed with **Ipratropium (Atrovent)**: 0.5 mg via nebulizer over 15 minutes for wheezing or absent/diminished breath sounds. If < 3 months of age, reduce to Proventil (Albuterol) 1.25 mg in 1.5 mL **without** Ipratropium (Atrovent).
3. **Epinephrine 1:1,000** If ≤ 30 kg 0.15 mg IM if the patient is suffering status asthmaticus and does not improve with nebulizer treatment. If > 30 kg 0.3 mg IM. May repeat every **20 minutes**.
 - a. Administer based on *Medication Administration Procedure*
4. Obtain peripheral IV or IO access.

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. In-line nebulizer may be utilized if the patient is unresponsive or in respiratory arrest.
3. **Contact Medical Control** as soon as possible.

****Epi IM Kits**, as an alternative to Epi-Pen auto-injectors, use epinephrine IM injection kits. These kits contain an ampule or vial of 1mg of 1:1000 epinephrine, syringes, IM needle and filter needle, and alcohol swabs as well as instructions for adults and children.

Critical Thinking Elements

- The thigh is the preferred site for IM medication administration in the infant patient population

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Pediatric Respiratory Distress Protocol

Epiglottitis

Symptoms of epiglottitis may include:

- ALOC
- Fever
- Hoarseness
- Brassy cough
- Inspiratory stridor
- Drooling
- Tripod position

If Epiglottitis is suspected:

First Responder, BLS, ILS Care

1. Initiate *Routine Pediatric Care Protocol*.
2. **Do not look in the child's mouth or attempt to visualize the interior of the throat.**
3. **Do not agitate the child.** He/she should be kept as calm as possible- do not attempt to obtain IV access.
4. **Oxygen:** 10-15 L/min via non-rebreather mask or by best means tolerated by the patient (i.e. blow-by or 4-6 L/min via nasal cannula).
5. **Apply Capnography** (if equipped) and as tolerated.
6. Transport the child sitting up.

ALS Care

1. ALS Care includes all components of *ILS Care*.
2. **Epinephrine 1:1,000:** If ≤ 30 kg 0.15 mg IM if the patient is suffering **severe S/S** of Epiglottitis. If > 30 kg 0.3 mg IM. May repeat every **20 minutes**.

Critical Thinking Elements

- The thigh is the preferred site for IM medication administration in the infant patient population

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Pediatric Tracheostomy Protocol

With today's technology and improving home health care, more critical care patients are being sent home earlier. Home health care professionals and family members can duplicate the care the patient receives in the hospital. This allows the patient to return home, spending less time in the hospital. EMS is activated when there is a problem with complex medical equipment, or the patient relapses into a more critical condition.

First Responder Care

First Responder Care should be focused on ensuring a patent airway.

1. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
2. **Oxygen:** 15 L/min via tracheostomy collar.
3. Assess work of breathing.
4. Assess for abnormal airway sounds.
5. Place patient in a position of comfort.
6. If the tracheostomy tube is obstructed with secretions **direct the caregiver to:**
 - a. Suction with an appropriately sized whistle-tip catheter.
 - b. Repeat suction after removing inner cannula of tracheostomy tube.
 - c. Change the tracheostomy tube.
7. If the airway continues to be obstructed or if ventilatory effort is inadequate, **ventilate with 100% oxygen** by attaching a BVM to the tracheostomy tube.
8. If the tracheostomy tube is still not patent, ventilate in standard fashion while covering the stoma.
 - The balloon on the trach must be deflated prior to attempting ventilation.
9. Initiate ALS intercept as soon as possible.
10. Take patient's tracheotomy care bag with the patient.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment and ensuring that the patient has a patent airway.

1. BLS Care includes all components of *First Responder Care*.
2. BLS level and above caregivers may suction with a whistle-tip catheter. Pass the suction device, if unable to pass suction concern for obstruction vs false passage.
3. If BVM ventilations, then **apply in-line capnography** (if equipped).
4. Initiate transport ASAP.

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Pediatric Tracheostomy Protocol

ILS Care

ALS Care

ILS/ ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment and ensuring a patent airway.

1. Care includes all components of *BLS Care*.
2. If unable to pass suction, remove the inner cannula and visually inspect for evidence of obstruction, attempt ventilation w/o the inner cannula in place.
 - a. If breathing is inadequate and a spare tracheostomy is available, attempt to reposition/replace tracheostomy tube. **DO NOT PERFORM IF TRACHEOSTOMY STOMA IS LESS THAN TWO WEEKS OLD.**
 - i. Insert bougie through tracheostomy tube and advance to Carina (approx. 10cm).
 - ii. Deflate balloon.
 - iii. Remove tracheostomy tube over bougie while ensuring that bougie remains in the stoma and trachea to serve as a guide.
 - iv. Feed the new tracheostomy tube over bougie and into the stoma. Inflate balloon.
 - v. Remove the bougie.
 - vi. Secure tracheostomy tube in place.
 - b. If spare tracheostomy tube is unavailable, follow the above procedure for tracheostomy tube replacement using an ET tube the same size as the tracheostomy or 0.5 size smaller (e.g., for a 6.0 Shiley tracheostomy, use a 6.0 or 5.5 cuffed ET tube) Be sure not to force the ET tube and remain mindful of how deep you are inserting the tube (do not mainstem the patient).
 - i. If the size of tracheostomy tube is unknown, **Contact Medical Control**.
 - c. If unsuccessful, orally intubate the patient (unless known Laryngectomy).

Critical Thinking Elements

- Know the difference between a tracheostomy and a laryngectomy.
 - a. Tracheostomy patient airways connect all the way to the mouth
 - b. Laryngectomy patient airways terminate at the stoma at base of neck
- Oral attempts at intubation of a laryngectomy patient will always result in esophageal intubation because the upper portion of the airway has been surgically removed.
- Important to obtain history as to why the patient has a tracheostomy - if for head/neck cancer beware of likely abnormal anatomy making attempts at oral intubation very difficult if not impossible.

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Pediatric Respiratory Arrest Protocol

When the pediatric patient enters respiratory arrest, cardiac arrest (and poor outcome) is sure to follow. Assisted ventilations with a BVM can be the most useful skill in resuscitation of the child in respiratory arrest. Remember- the pediatric patient responds to oxygen very favorably. Therefore, it is important to try to identify the cause of the respiratory arrest after securing the patient airway and providing proper ventilation.

First Responder Care

First Responder Care should be focused on ensuring a patent airway and proper ventilation

1. Assess airway. If agonal respirations are present or the child is not breathing at all
 - a. Perform jaw thrust
 - b. Suction airway
 - c. Insert **oropharyngeal or nasopharyngeal airway**
2. Administer **100% oxygen** using appropriately sized **BVM**
3. If chest rise is inadequate:
 - a. Relieve upper airway obstruction
 - b. Reposition airway
 - c. Refer to *Basic Airway Management of the Pediatric Patient Protocol*.
4. Refer to *Pediatric Respiratory Distress Protocol* if breathing resumes.
5. If hypoperfusion is present, refer to *Pediatric Shock Protocol*.
6. Follow *Routine Pediatric Care Protocol* for general treatment guidelines.
7. Ensure ALS has been dispatched.

BLS Care

BLS Care should be directed as conducting a thorough patient assessment, ensuring that the child has a patent airway and proper ventilation.

1. BLS Care includes all components of *First Responder Care*.
2. Apply **pulse oximetry** and document oxygen saturation.
3. Apply **Waveform Capnography** (if equipped).
4. Transport as soon as possible.

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Pediatric Respiratory Arrest Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, ensuring a patent airway and proper ventilation.

1. ILS Care includes all components of *BLS Care*.
2. Consider underlying etiologies and treat according to the appropriate protocol:
 - Airway obstruction
 - Cardiac dysrhythmias
 - CNS injury
 - Anaphylaxis
 - Poisoning/Overdose
 - Suffocation
 - Metabolic (refer to *Pediatric ALOC Protocol*)
 - Hypovolemia (refer to *Pediatric Shock Protocol*)
 - Near Drowning
 - Carbon monoxide exposure
3. Initiate **IV access**, if possible.
4. Initiate ALS intercept and transport as soon as possible.
5. If BVM with OPA/NPA is adequately ventilating the patient, no additional airway is required. If the patient is inadequately ventilated with a BVM and OPA/NPA then proceed with **Supraglottic Airway** insertion.

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Pediatric Respiratory Arrest Protocol

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, ensuring a patent airway and proper ventilation.

1. ALS Care includes all components of *ILS Care*.
2. If BVM with OPA/NPA or a Supraglottic Airway is adequately ventilating the patient, no additional airway is required. If the patient is inadequately ventilated with a BVM and OPA/NPA or a Supraglottic Airway then proceed with **intubation**.
3. **Needle chest decompression** of the affected side with a 14g angiocath (\leq 2inch in length) if tension pneumothorax is suspected. (**With Medical Control order only**)
4. Contact Medical Control as soon as possible.

Critical Thinking Elements

- Gastric distention is very common in pediatric patients and may cause poor compliance.
- **Ventilation too fast or giving too much tidal volume are the top two reasons for distention.**
- Use proper ventilation techniques and an appropriately sized BVM for the pediatric patient.

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Pediatric ALTE/ BRUE

Apparent life threatening events (ALTE)/ Brief Resolved Unexplained Events are challenging for both parents and emergency rooms. Infants with these events are defined as having an episode that is frightening to the observer and characterized by some combination of apnea, color change, change in muscle tone, and choking or gagging that requires vigorous stimulation. Typically the patient has returned to baseline upon EMS arrival.

The EMS care for a suspected pediatric ALTE patient will be based upon presentation and the signs/ symptoms that are discovered during assessment. Follow the most appropriate care protocol based upon this assessment.

Over 50% of these patients are admitted to the hospital after evaluation in the Emergency Department. **These patients should be evaluated at the closest appropriate facility.** The EMS provider must not dismiss the caregivers' story and should reiterate the danger of not getting this patient evaluated by a physician.

The consistent result of an emergency room visit for ALTE is a complex evaluation that results in no clear answer as to what caused the ALTE in most cases. We still do not know what causes ALTE.

**** "BRUE" is now replacing the term "ALTE"****

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Pediatric Altered Level of Consciousness Protocol

The EMS Professional needs to consider *all causes* of a child's altered level of consciousness. A good assessment is paramount to identify life-threatening injuries. Focus should also be on causes for the event and the child's past medical history. **If a drug overdose is suspected, refer to the "Pediatric Ingestion/ Overdose/ Toxic Exposure Protocol".**

Emergency Medical Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
2. **Oxygen:** 15 L/min via BVM if the child has Alt Loc and in respiratory distress.
3. **Oxygen:** If the child is alert with respiratory distress, 15 LPM via NRM or if unable to tolerate the mask, 4-6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all of the components of *First Responder Care*.
2. Perform **blood glucose level test**.
3. **Oral Glucose:** 15g PO if the patient's blood sugar is $<60\text{mg/dL}$, the patient is alert to verbal stimuli, is able to sit in an upright position, has good airway control and has an intact gag reflex.
4. Perform a **2nd blood glucose level test** to re-evaluate blood sugar 5 minutes after administration of Oral Glucose. If blood sugar remains $<60\text{mg/dl}$, administer a 2nd dose of Oral Glucose (15g).
5. Apply **Waveform Capnography** (if equipped).
6. Initiate ALS intercept if needed and transport as soon as possible.
7. Contact the receiving hospital as soon as possible.

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Pediatric Altered Level of Consciousness Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport

1. ILS Care includes all of the components of *BLS Care*.
2. Perform **blood glucose level test**.
3. **Dextrose:** if blood sugar is < 60mg/dL
 - a) **D10W:** 5mL/ kg infusion. Max dose 250 mL.
 - b) If dose is less than 100 mL, medication should be administered via IVP rather than infusion.
 - c) At any point in time if patient LOC increases enough so that patient would be able to consume a meal, infusion can be stopped.
4. Perform a 2nd **blood glucose level test** to re-evaluate blood sugar 5 minutes after administration of Dextrose or Glucagon. Repeat dose of Dextrose if BS is still <60mg/dL.
5. **Glucagon:** 0.5 mg IM for patient \leq 6 years of age. For all other patients 1mg IM if the patient's blood sugar is <60mg/dL and unable to establish an IV.

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all of the components of *ILS Care*.

Critical Thinking Elements

- ALOC in a child can range from trauma to a systemic infection (sepsis). A good medical history might provide clues as to the reason for the ALOC.
- Accidental overdose/ingestion of medications can be a cause of the ALOC.
- Make sure to check for or ask family about an insulin pump being on the patient.
- The thigh is the preferred site for IM medication administration in the infant patient population

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Pediatric Seizure Protocol

Seizures are common in childhood. About 5% of all children will have at least one seizure by the age of three. (Febrile seizures account for the largest percentage of pediatric seizures.) This condition can cause much concern and anxiety in the caregiver and EMS is called. Pediatric seizures are usually short-lived and stop before the arrival of EMS. Since there are many causes of pediatric seizures, treatment and transport to an appropriately equipped emergency department is necessary.

Classification of Seizures (PEPP 2019)

Generalized Seizure	Description
Tonic-Clonic (Grand Mal Seizure)	Trunk rigidity and loss of consciousness with sudden, jerking movements of both arms and/or both legs; may be only tonic (rigidity) or clonic (jerking) seizure activity.
Absence (Petit Mal Seizure)	Brief loss of awareness without any abnormal movements; child may appear to be staring.
Partial (Focal) Seizure	Description
Simple Seizure	Focal motor jerking without loss of consciousness; may be sensory, autonomic or psychic without jerking.
Complex Seizure	Focal motor jerking with loss of consciousness; secondary generalization to a tonic-clonic seizure.

Common Causes of Seizures in Pediatric Patients:

- Fever
- Trauma
- Hypoxia
- Hypoglycemia
- Infection/Sepsis
- Ingestion of toxins
- Cerebral hemorrhage
- Metabolic disorders
- Congenital neurological problems

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Pediatric Seizure Protocol

Emergency Medical Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
2. During active convulsive seizures: Protect the patient from harmful objects. Place the patient on left side and protect from head injury.
3. **Oxygen:** 15 L/min via BVM if the child has Alt Loc and in respiratory distress.
4. **Oxygen:** If the child is alert with respiratory distress, 15 LPM via NRM or if unable to tolerate the mask, 4-6 LPM via nasal cannula.
5. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
6. Be prepared to support the patient's respirations with BVM/ NPA if necessary and have suction readily available.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. Perform blood glucose level test. If blood glucose $\leq 60\text{mg/dL}$ refer to ALOC Protocol.
3. Check Temperature if possible.
4. Apply **Waveform Capnography**
5. Initiate ALS intercept and **transport without delay**.
6. Check and record vital signs and GCS every **5 minutes**.

**MEMORIAL EMS SYSTEM
PEDIATRIC PREHOSPITAL CARE MANUAL**

ILS Care

Pediatric Seizure Protocol

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. **Midazolam (Versed):** 0.2mg/kg IM (preferred), Max single dose 5mg if the patient is actively seizing. May repeat the dose one time in 5 minutes if the patient is still seizing. Total maximum of 10mg.
3. **Midazolam (Versed):** Versed Intranasal may also be used if unable to give Versed IM. (See intranasal dosing sheet, page 30.D.1 in the appendix)

Critical Thinking Elements

- The thigh is the preferred site for IM medication administration in the infant patient population

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. **Midazolam (Versed):** 0.2mg/kg IM immediately if patient is still seizing and IV has not been established, (Max single dose 5mg). May repeat the dose one time in 5 minutes if the patient is still seizing. Total maximum of 10mg.
Or if IV/IO has been established
3. **Midazolam (Versed):** 0.1mg/kg IV/IO (Max single dose: 2.5 mg) over 1 minute for seizure activity. May repeat Midazolam (Versed) 0.1 mg/kg IV/IO every 5 minutes as needed to a total maximum of 10mg.
4. Contact Medical Control ASAP.

Critical Thinking Elements

- Benzodiazepines can cause severe respiratory depression. Monitor the child's respiratory status, SPO₂ and or Wave Form Capnography if available. Ventilate if needed.
- 30% of all pediatric seizures are febrile in nature. However, the presence of a fever may not necessarily be the cause of the seizure. The child needs to be transported to the hospital for further evaluation.
- Seizure activity usually indicates a serious underlying problem. Check the oxygenation and perfusion of the child along with the blood glucose level and temperature. Treat accordingly.

Pediatric Allergic Reaction/ Anaphylaxis Protocol

Emergency Medical Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
2. **Oxygen:** 15 L/min via BVM if the child has Alt Loc and in respiratory distress.
3. **Oxygen:** If the child is alert with respiratory distress, 15 LPM via NRM or if unable to tolerate the mask, 4-6 LPM via nasal cannula.
4. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
5. Be prepared to support the patient's respirations with BVM if necessary
6. **Epi-Pen Jr.:** If the patient has a history of allergic reactions and has in their possession a prescribed Epi-Pen Jr., is suffering from hives, wheezing, hoarseness, hypotension, ALOC, or indicated a history anaphylaxis, assist the patient with administering the Epi-Pen Jr.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. Initiate ALS intercept and transport as soon as possible.
3. **Epinephrine 1: 1,000:** If ≤ 30 kg give 0.15 mg IM if the patient is suffering S/S of anaphylactic shock, If > 30 kg 0.3 mg IM.
4. **Proventil (Albuterol):** If ≥ 3 months of age 2.5 mg in 3 mL of normal saline via nebulizer. May repeat Albuterol 2.5 mg every **15 minutes** as needed. In-line nebulizer may be utilized if patient is unresponsive or in respiratory arrest. If < 3 months of age reduce to **Proventil (Albuterol)** 1.25 mg.
5. Apply **Waveform Capnography** (if equipped).

***Do not administer Ipratropium (Atrovent) to patients experiencing an allergic reaction/anaphylaxis.**

****Epi IM Kits**, as an alternative to Epi-Pen auto-injectors, use epinephrine IM injection kits. These kits contain an ampule or vial of 1mg of 1:1000 epinephrine, syringes, IM needle and filter needle, and alcohol swabs as well as instructions for adults and children.

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PEDIATRIC PREHOSPITAL CARE MANUAL

Pediatric Allergic Reaction/ Anaphylaxis Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. **IV Fluid Therapy:** 20mL/kg fluid bolus if patient is hypotensive. May repeat x2 to a maximum of 60mL/kg (**Note:** Exceeding 40mL/kg requires **Medical Control order**.)

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of ILS Care.
2. **Benadryl:** 1 mg/kg IV or IM (Max single dose: 50mg) for severe itching and/or hives.
3. **Contact Medical Control** as soon as possible.

Critical Thinking Elements

- The Thigh is the preferred site for IM medication administration in the infant patient population
- Patients who have an allergic reaction can develop anaphylaxis over time. Monitor patients very closely.
- Avoid establishing an IV in the same extremity as a bee sting / allergy site.
- Both an allergic reaction & anaphylaxis can present with hives.
- Remember: An allergic reaction is localized while anaphylaxis is a systemic reaction.
- Do not waste time on scene – begin transport as soon as possible and treat en route.
- **Epinephrine is the treatment priority for true Anaphylaxis!**

MEMORIAL EMS SYSTEM
PEDIATRIC PREHOSPITAL CARE MANUAL

Pediatric Ingestion/ Overdose/ Toxic Exposure Protocol

This protocol focuses on two problems. First, exposure to a chemical substance that causes adverse medical effects. Secondly, the protocol covers accidental or intentional ingestion of harmful substances into the body. Toddlers explore their environment with all five senses and ingestion of toxic substances is common for this age group. The adolescent age group deals mainly with intentional overdoses due to attempted suicide or recreational pharmaceuticals & alcohol use.

General response information:

1. If the scene is considered a *Hazardous Materials* incident, do not treat patients unless they are decontaminated or proper precautions have been implemented to protect EMS personnel.
2. In the event that the patient has not been decontaminated when EMS makes patient contact, removing all of patient's clothing take away 80-90% of the contaminated materials. Get patient to decontamination area as soon as possible.
3. If there is no patient contact but EMS has determined this to be a *Hazardous Materials* incident, **do not enter the scene under any circumstances**. Refer to Memorial EMS *Disaster Protocols*.

Emergency Medical Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Consider possible scene & patient contamination and follow agency safety procedures.
2. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
3. **Oxygen:** 15 L/min via BVM if the child has Alt Loc and in respiratory distress.
4. **Oxygen:** If the child is alert with respiratory distress, 15 LPM via NRM or if unable to tolerate the mask, 4-6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
5. Be prepared to support the patient's respirations with BVM if necessary.
6. If suspected narcotic overdose with associated respiratory depression,
 - a. **Narcan:** 2 mg IN

Pediatric Ingestion/ Overdose/ Toxic Exposure Protocol

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. If suspected narcotic overdose with associated respiratory depression,
 - a. **Narcan:** 2 mg IM
 3. Apply **Waveform Capnography** (if equipped).
 4. Initiate ALS intercept if needed and transport as soon as possible.

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. **IV Fluid Therapy:** 20mL/kg fluid bolus if the patient is hypotensive. May repeat bolus x 2 to a maximum of 60mL/kg (**Note:** Exceeding 40mL/kg requires **Medical Control order**).
3. If patient is seizing, follow the *Pediatric Seizure Protocol*.
4. If suspected narcotic overdose with associated respiratory depression,
 - a. **Narcan:** 1 mg IV/IO (if patient is \leq 5 yr old) or 2mg IV/IO (if patient is \geq 6 yr old).
5. If the patient has signs & symptoms of *organophosphate poisoning* or *nerve agent exposure*, **contact Medical Control**.
 - a. Ensure that the patient has been decontaminated prior to transport.
 - b. **Atropine:** 0.02mg/kg IV/IO (Max single dose: 2mg) every 5 minutes until symptoms are suppressed. (**with med control order**)

OR

Atropine: 0.05mg/kg IM (Max single dose: 2mg) every 5 minutes until symptoms are suppressed. (**with med control order**)

 - c. If patient is actively seizing due to nerve agent exposure, refer to Pediatric Seizure Protocol.
 - d. Transport as soon as possible.

MEMORIAL EMS SYSTEM
PEDIATRIC PREHOSPITAL CARE MANUAL

Pediatric Ingestion/ Overdose/ Toxic Exposure Protocol

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion, and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. **Sodium Bicarbonate:** 1mEq/kg IV (**Max single dose: 50meq**) ([with Medical Control order only](#)) if known tricyclic antidepressant (TCA) or Aspirin (ASA) overdose.
3. **Contact Medical Control** as soon as possible.



MEMORIAL EMS SYSTEM
PEDIATRIC PREHOSPITAL CARE MANUAL

Routine Pediatric Trauma Care Protocol

The majority of pediatric contacts the prehospital professional will face involve traumatic injuries. Trauma care in the pediatric patient must be aggressive, due to the child's ability to compensate and mask otherwise obvious signs and symptoms of shock. Early recognition of potential life-threatening injuries due to trauma will help save the pediatric patient.

In addition, pediatric patients may not always have obvious injuries. The anatomical position and size of internal organs are drastically different compared to the adult trauma patient.

Children may not bruise or show marks of impact, thus disguising underlying life-threatening problems. When the pediatric patient presents as a possible trauma patient, treat them as such. Stay within the "*platinum 10 minutes*" of scene time, effectively immobilize the spine, keep the child warm and treat pain and anxiety.

EMR Care, BLS Care, ILS Care, ALS Care

1. Scene Assessment (Scene Size-Up)

- Ensure scene safety – identify any hazards (e.g. fire, downed power lines, unstable vehicle, leaking fuel, weapons).
- Determine the number of patients.
- Identify the mechanism of injury (gunshot wound, vehicle rollover, high speed crash, ejection from the vehicle).
- Identify special extrication needs, if any.
- Call for additional resources if needed.

2. Primary Survey (Initial Assessment)

The purpose of the primary assessment is for the prehospital provider to rapidly identify and manage life-threatening conditions:

- Obtain a general impression of the patient's condition
- Assess, secure and maintain a patent airway while simultaneously using C-spine precautions.
- Assess breathing and respiratory effort:
 - Approximate respiratory rate.
 - Assess quality of respiratory effort (depth of ventilation and movement of air).
 - **Oxygen:** 10-15 L/min via non-rebreather mask.
 - Be prepared to suction the airway and support the patient's respirations with BVM if necessary.
- Assess circulation:
 - Evaluate carotid and radial pulses.
 - Evaluate skin color, temperature and condition.
 - Immediately control major external bleeding.

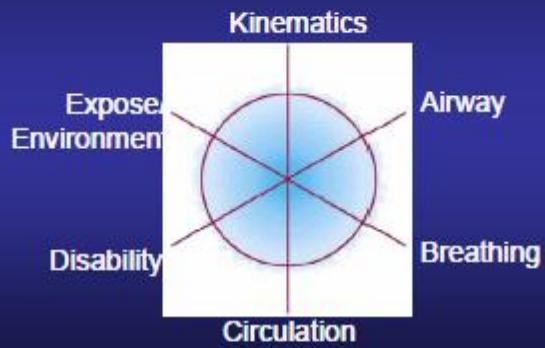
MEMORIAL EMS SYSTEM
PEDIATRIC PREHOSPITAL CARE MANUAL

Routine Pediatric Trauma Care Protocol

EMR Care, BLS Care, ILS Care, ALS Care {Continued}

- Critical Decision (based on mechanism of injury & initial exam):
 - Limit scene time to 10 minutes or < if the patient has a significant mechanism of injury or meets “Load & Go” criteria.
- Determine disability:
 - **T – Tone**
 - **I – Interactivity**
 - **C – Consolability**
 - **L – Look / Gaze**
 - **S – Speech / Cry**
- Expose the patient:
 - Cut the patient’s clothing away quickly to adequately assess for the presence (or absence) of injuries.

Scene Assessment & Primary Survey



3. Secondary Survey (Focused History & Physical Exam)

The secondary survey is a head-to-toe evaluation of the patient. The object of this survey is to identify injuries or problems that were not identified during the primary survey.

- Examine the head:
 - Search for any soft tissue injuries.
 - Palpate the bones of the face & skull to identify deformity, depression, crepitus or other injury.
 - Check pupils for size, reactivity to light, equality, accommodation, roundness and shape.

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PEDIATRIC PREHOSPITAL CARE MANUAL

Routine Pediatric Trauma Care Protocol

EMR Care, BLS Care, ILS Care, ALS Care {Continued}

3. Secondary Survey {Continued}

- Examine the neck:
 - Examine for contusions, abrasions, lacerations or other injury.
 - Check for JVD, tracheal deviation, deformity.
 - Palpate the c-spine for deformity & tenderness.
- Examine the chest:
 - Closely examine for deformity, contusions, redness, abrasions, lacerations, penetrating trauma or other injury.
 - Look for flail segments, paradoxical movement & crepitus.
 - Auscultate breath sounds.
 - Watch for supraclavicular and intercostals retractions.
- Examine the abdomen:
 - Examine for contusions, redness, abrasions, lacerations, penetrating trauma or other injury.
 - Palpate the abdomen and examine for tenderness, rigidity and distention.
- Examine the pelvis:
 - Examine for contusions, redness, abrasions, lacerations, deformity or other injury.
 - Palpate for instability and crepitus.
- Examine the back:
 - Log roll with a minimum of 2 rescuers protecting the spine.
 - Look for contusions, abrasions, lacerations, penetrating trauma, deformity or any other injury.
 - Log roll onto long spine board with padding or approved pediatric spinal immobilization device.
 - Log roll onto long spine board and immobilize based on *Field Immobilization Decision Scheme*.
- Examine the extremities:
 - Examine for contusions abrasions, lacerations, penetrating trauma, deformity or any other injury.
 - Manage injuries en route to the hospital.
- Neurological exam:
 - Calculate Glasgow Coma Scale (GCS)
 - Reassess pupils
 - Assess grip strength & equality and sensation.
 - Calculate Revised Trauma Score (RTS)

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PEDIATRIC PREHOSPITAL CARE MANUAL

Routine Pediatric Trauma Care Protocol

EMR Care, BLS Care, ILS Care, ALS Care {Continued}

3. Secondary Survey {Continued}

- Vital signs:
 - Blood pressure
 - Pulse
 - Respirations
 - Capnography
 - Pulse Oximetry
- History:
 - Obtain a SAMPLE history if possible.
 - Signs & symptoms
 - Allergies
 - Medications
 - Past medical history
 - Last oral intake
 - Events of the incident
- Interventions (en route)
 - Cardiac monitor
 - Blood glucose level
 - IV access / fluid bolus
 - Wound care
 - Splinting

4. Monitoring and Reassessment (Ongoing Assessment)

- Evaluate effectiveness of interventions
- Vital signs every *5 minutes*
- Reassess mental status (GCS) every *5 minutes*
- *Reassess Revised Trauma Score (RTS) every 5 minutes*

5. **CONTACT MEDICAL CONTROL AS SOON AS POSSIBLE**

Transporting Units

1. Destination decisions must be informed decisions based on local and regional destination capabilities, time since onset and transportation distances.
 - a. See *EMS Triage Destination Plan*.
 - b. Patient refusal of recommended destination must be documented as a refusal of care prior to the patient being transported to a facility that is not certified to meet the patient's clinical needs.

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PEDIATRIC PREHOSPITAL CARE MANUAL

Routine Pediatric Trauma Care Protocol

Critical Thinking Elements

- Prompt transport with EARLY Medical Control contact & receiving hospital notification will expedite the care of the trauma patient.
- IVs should be established en route to the hospital thereby not delaying transport of critical trauma patients (unless scene time is extended due to prolonged extrication).



MEMORIAL EMS SYSTEM
PEDIATRIC PREHOSPITAL CARE MANUAL

Pediatric Shock Protocol

The pediatric patient in shock can pose a challenge to the prehospital professional. Since pediatric patients have young, strong cardiovascular systems, they can compensate extremely well. This can mask the signs and symptoms of shock until the child's cardiovascular system tires and begins to decompensate. Once the pediatric patient enters into a state of decompensated shock, prognosis for a full recovery is poor.

Conditions that may indicate impending shock include:

- Significant mechanism of injury
- Tender and/or distended abdomen
- Pelvic instability
- Bilateral femur fractures

"Load & Go" with any trauma patient with signs and symptoms of shock – on scene treatment should be minimal. Conduct a *Primary Survey*, manage the airway, take C-spine precautions & immobilize and control any life-threatening hemorrhage. Contact Medical Control as early as possible.

Emergency Medical Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Pediatric Care Protocol* and *Routine Pediatric Trauma Care Protocol*.
2. **Oxygen:** 15 L/min via BVM if the child has Alt Loc and in respiratory distress.
3. **Oxygen:** If the child is alert with respiratory distress, 15 LPM via NRM or if unable to tolerate the mask, 4-6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
4. Be prepared to support the patient's respirations with BVM if necessary.
5. Control bleeding using direct pressure, pressure dressings and pressure points. If bleeding is severe immediately move to combat application tourniquet and/ or wound packing to control bleeding.

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PEDIATRIC PREHOSPITAL CARE MANUAL

Pediatric Shock Protocol

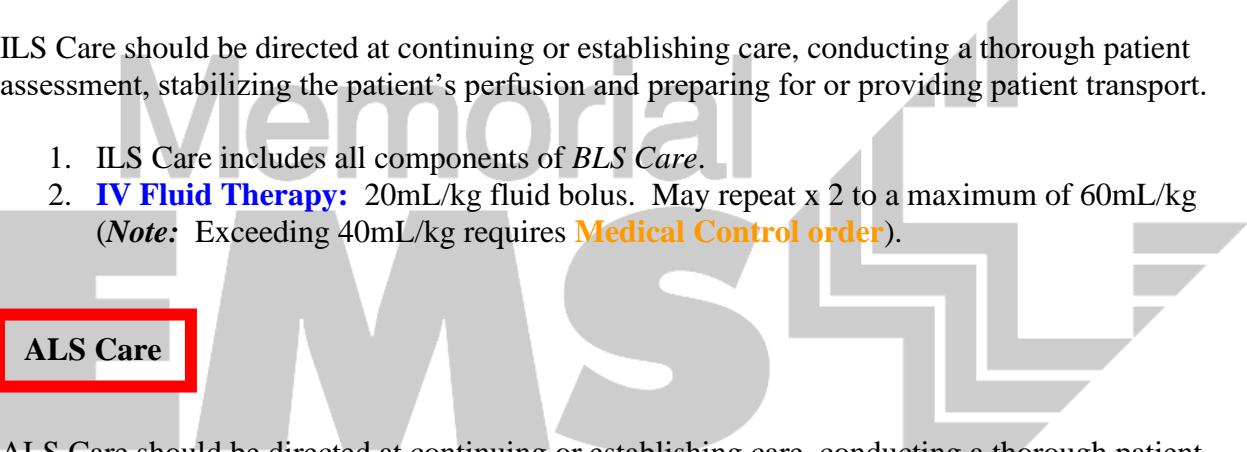
BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. Apply **Waveform Capnography** (if equipped).
3. Repeat vital signs, GCS & RTS every **5 minutes**.
4. Initiate ALS intercept and transport as soon as possible.

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. **IV Fluid Therapy:** 20mL/kg fluid bolus. May repeat x 2 to a maximum of 60mL/kg
(Note: Exceeding 40mL/kg requires **Medical Control order**).


ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. **Contact Medical Control** as soon as possible.

Critical Thinking Elements

- Pediatric patients will compensate for shock as long as they have the energy to do so.
Once pediatric patients start to decompensate due to shock, it is exceedingly difficult to reverse the process. Therefore, it is **imperative** that shock is identified and treated early!

MEMORIAL EMS SYSTEM
PEDIATRIC PREHOSPITAL CARE MANUAL

Pediatric Closed Head Injury Protocol

The causes of closed head injuries in pediatric patients are numerous. Injuries resulting from vehicular accidents or failure to wear proper safety gear (e.g. helmets) are common. The most effective way of determining the extent of closed head injury is mechanism of injury and level of consciousness.

The head is the largest body part of a pediatric patient which makes him/her “top heavy” and quick to fall head first during a trauma. The head is usually more seriously injured than any other area of the body in pediatric trauma. Proper management of a closed head injury patient can impact long term damage.

Priorities for the treatment of head injury patients include airway management, maintenance of adequate oxygenation & blood pressure as well as appropriate C-spine control & immobilization. **Hypotension, hypoxia, and hyperventilation should be avoided at all costs as they significantly increase the mortality of head injury patients.**

Emergency Medical Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Pediatric Care Protocol* and *Routine Pediatric Trauma Care Protocol*.
2. Be prepared for vomiting and have suction readily available.
3. **Oxygen:** 15 L/min via non-rebreather mask.
4. Be prepared to support the patient's respirations with BVM if necessary. **Avoid hyperventilation when doing so!**
5. Control bleeding using direct pressure, pressure dressings and pressure points.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. Apply **Waveform Capnography** (if equipped).
3. Repeat vital signs, GCS & RTS every **5 minutes**.
4. Initiate ALS intercept and transport as soon as possible.

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PEDIATRIC PREHOSPITAL CARE MANUAL

Pediatric Closed Head Injury Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. Avoid hyperventilation, if any assisted ventilations (BVM, Supraglottic, ETI) are required goal directed ETCO₂ should be 35- 45.
3. Treat for hemorrhagic shock if the patient's systolic BP is below age appropriate normal. Hypotension decreases cerebral perfusion, worsens brain injury, and must be corrected.
 - 28 days and younger > 70 mmHg
 - 1-12 months > 84 mmHg
 - 1-5 years > 90 mmHg
 - 6 years and older > 100 mmHg
4. **IV Fluid Therapy:** 20mL/kg fluid bolus **only if needed** to a maximum of 60mL/kg
(Note: Exceeding 40mL/kg requires **Medical Control order**).

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. Contact Medical Control ASAP.

Critical Thinking Elements

- Head trauma patients should receive oxygen to keep SpO₂ > 94%, preferably via NRM. Even just one SPO₂ reading below 90% can double the mortality in a patient with significant TBI.
- Deeply comatose patients may require advanced airway placement (GCS < 8). Consider a Supraglottic Airway or BVM.

**MEMORIAL EMS SYSTEM
PEDIATRIC PREHOSPITAL CARE MANUAL**

Pediatric Closed Head Injury Protocol

Pediatric Glasgow Coma Scale

ACTIVITY	SCORE	INFANT	CHILDREN
Eye Opening	4	Spontaneous	Spontaneous
	3	To speech or sound	To Speech
	2	To painful stimuli	To painful stimuli
	1	None	None
Verbal	5	Appropriate words or sounds, social smile, fixes and follows	Oriented
	4	Cries, but consolable	Confused
	3	Persistently irritable	Inappropriate words
	2	Restless, agitated	Incomprehensible sounds
Motor	1	None	None
	6	Spontaneous movement	Obeys commands
	5	Localizes to pain	Localizes to pain
	4	Withdraws to pain	Withdraws to pain
	3	Abnormal flexion (decorticate)	Abnormal flexion (decorticate)
	2	Abnormal extension (decerebrate)	Abnormal extension (decerebrate)
	1	None	None
	13-15	Minor head injury	
9-15 Moderate head injury			
≤ 8 Severe head injury / Coma			

**MEMORIAL EMS SYSTEM
PEDIATRIC PREHOSPITAL CARE MANUAL**

Pediatric Closed Head Injury Protocol

Pediatric Trauma Score

Components	+2	+1	-1	SCORE
Weight	> 20 kg (44 lbs)	10-20 kg (22-44 lbs)	< 10 kg (22 lbs)	
Airway	Patent	Maintainable	Un-maintainable	
Systolic BP Pulses	> 90 Radial	50-90 Carotid	< 50 Non-palpable	
CNS	Awake	+LOC (responsive)	Unresponsive	
Fractures	None	Closed or suspected	Multiple closed or open	
Wounds	None	Minor	Major, penetrating or Burns > 10%	
TOTAL SCORE				
9 - 12	Minor Trauma (Use local guidelines/protocols)			
6 – 8	Potentially Life Threatening (Suggests need for Trauma Center)			
0 – 5	Life Threatening (Need for Trauma Center)			
< 0	Usually Fatal (Transport to Nearest Facility)			

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PEDIATRIC PREHOSPITAL CARE MANUAL

Pediatric Burn Protocol

The primary goal in the treatment of the pediatric burn patient is the same as when caring for an adult – to stop the acute burning process by removing the patient from direct contact with the source of the burn and maintaining the patient’s body fluids. Special attention should be given to limit further pain and damage of the burn to the patient. However, burn care should not interfere with lifesaving measures.

One aspect of pediatric burn care is different and prehospital providers need to be aware of it – **suspicious burns**. Suspicious burns include burns that have a familiar pattern (e.g. circumferential burns, burns from a cigarette lighter, etc.) or a story that does not fit the injury sustained. Pediatric burns carry a high index of suspicion for abuse and neglect. Follow local protocol for reporting abuse and neglect if suspected.

Emergency Medical Responder Care

First Responder Care should be focused on assessing the situation, removing the child from harm and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Make sure the scene is safe to enter.
2. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
3. **Oxygen:** 15 L/min via BVM if the child has Alt Loc and in respiratory distress.
4. **Oxygen:** If the child is alert with respiratory distress, 15 LPM via NRM or if unable to tolerate the mask, 4-6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/ symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
5. Be prepared to support the patient’s respirations with BVM if necessary.
6. **THERMAL BURN TREATMENT:**
 - a) If the burn occurred within the last 20 minutes, reverse the burning process and cool the area by flushing the area with **1 Liter of Sterile Saline** (or Sterile Water if Sterile Saline is not available). The goal of cooling is to extinguish the burning process – not to systemically cool the patient. Fluid application should be held to a minimum and discontinued if the patient begins shivering.
 - b) Remove jewelry and loose clothing. Do not pull away clothing that is stuck to the burn.
 - c) Cover the wound with sterile dressings***
 - d) Place a sterile burn sheet on the stretcher. If the patient’s posterior is burned, place a sterile burn pad on top of the sheet with the absorbent side toward the patient.
 - e) Place patient on the stretcher.
 - f) Cover the patient with additional sterile burn sheets and blanket to **conserve body heat**.

MEMORIAL EMS SYSTEM
PEDIATRIC PREHOSPITAL CARE MANUAL

Pediatric Burn Protocol

Emergency Medical Responder Care {Continued}

3. ELECTRICAL BURN TREATMENT:

- a) Assure that the power service has been cut off and remove the patient from the source of electricity.
- b) Consider full immobilization of the patient due to forces of electrical current and possible trauma.
- c) Assess for entry and exit wounds. No cooling or flushing is necessary due to the type of burn.
- d) Cover the burn with dry, sterile dressings.
- e) Closely monitor the patient.

4. CHEMICAL BURN TREATMENT:

- a) Consider possible scene and patient contamination and follow agency safety procedures.
- b) Note which chemical agent caused the burn and obtain the MSDS for that chemical (if possible.)
- c) The patient's clothing should be completely removed to prevent continued exposure and the patient decontaminated **prior to** being placed in the ambulance for transport.
- d) **Dry chemical powder** should be brushed off before applying water.
- e) Irrigate the patient with Sterile Water **IF** the MSDS indicates use of water will not cause an adverse reaction. Body parts should be flushed for at least 1-2 minutes. Do not use Sterile Saline on chemical burns.
- f) Irrigate burns to the eye with Sterile Water for at least 20 minutes. Alkaline burns should receive continuous irrigation throughout transport.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. Apply **Waveform Capnography** (if equipped).
3. Initiate ALS intercept and transport as soon as possible.

Transporting Units

The management of a pediatric burn patient is especially complex. Determining the most appropriate destination for a pediatric patient suffering burn trauma is a complex decision and should include online direction from **Medical Control**

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Pediatric Burn Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. **IV Fluid Therapy:** 20mL/kg fluid bolus to a maximum of 60mL/kg (**Note: Exceeding 40mL/kg requires Medical Control order**).

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. **Manage pain** based upon *Pediatric Pain Control Protocol*.
3. Transport and **Contact Medical Control** as soon as possible for significant burns.

Transporting Units

1. Destination decisions must be informed decisions based on local and regional destination capabilities, time since onset and transportation distances.
 - a. See *EMS Triage Destination Plan*.
 - b. Patient refusal of recommended destination must be documented as a refusal of care prior to the patient being transported to a facility that is not certified to meet the patient's clinical needs.

Critical Thinking Elements

- Pediatric patients will lose body heat much faster than adults, **keep them warm!**
- Treat other symptoms or trauma per the appropriate protocol.
- IV access should not be obtained through burned tissue unless no other site is available.
- Closely monitor the patient's response to IV fluids and assess for pulmonary edema.
- **Closely monitor the patient's airway** – have BVM and suction readily available.
- Do not delay transport of a “Load and Go” trauma patient to care for burns.
- For chemical/powder burns, be aware of inhalation hazards and closely monitor for changes in respiratory status.

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Pediatric Heat-Related Emergencies Protocol

Heat-related emergencies can often be seen in the pediatric population involved in intense sporting activities. When the body loses the ability to cool itself off, the body will retain heat, elevating core body temperature. Symptoms can range from muscle cramps up to loss of consciousness and death.

Emergency Medical Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
2. Move the patient to a cool environment. Remove clothing as necessary to make the patient comfortable. Cold packs may be utilized for the neck (posterior), armpits, and groin and along the thorax. Utilize AC, fans, cool misting, etc. Do not cool the patient to a temperature that will cause them to shiver.
3. **Oxygen:** 15 L/min via BVM if the child has Alt Loc and in respiratory distress.
4. **Oxygen:** If the child is alert with respiratory distress, 15 LPM via NRM or if unable to tolerate the mask, 4-6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
5. Be prepared to support the patient's respirations with BVM if necessary.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. Monitor the patient temperature.
3. Treat other symptoms per the appropriate protocol.
4. Apply **Waveform Capnography** (if equipped).
5. Initiate ALS intercept if needed and transport as soon as possible.

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. **IV Fluid Therapy:** 20mL/kg fluid bolus if the patient is hypotensive. May repeat x 2 to a maximum of 60mL/kg (**Note:** Exceeding 40mL/kg requires **Medical Control order**).

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Pediatric Heat-Related Emergencies Protocol

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. Contact Medical Control as soon as possible.

Heat Disorders

Heat (Muscle) Cramps – Heat cramps are muscle cramps caused by overexertion and dehydration in the presence of high temperatures. Signs & symptoms include: *Normal or slightly elevated body temperature; generalized weakness; dizziness; warm, moist skin and cramps in the fingers, arms, legs or abdominal muscles.*

Heat Exhaustion – Heat exhaustion is an acute reaction to heat exposure and the most common heat-related illness a prehospital provider will encounter. Signs & symptoms include: *Increased body temperature; generalized weakness; cool, diaphoretic skin; rapid, shallow breathing; weak pulse; diarrhea; anxiety; headache and possible loss of consciousness.*

Heatstroke – Heatstroke occurs when the body's hypothalamic temperature regulation is lost. Cell death and damage to the brain, liver and kidneys can occur. Signs & symptoms include: *Cessation of sweating; very high core body temperature; hot, usually dry skin; deep, rapid, shallow respirations (which later slow); rapid, full pulse (which later slows); hypotension; confusion, disorientation or unconsciousness and possible seizures.*

Fever (Pyrexia) – A fever is the elevation of the body temperature above the normal temperature for that person ($\sim 98.6^{\circ}\text{ F} \pm 2$ degrees). Fever is sometimes difficult to differentiate from heatstroke; however, there is usually a history of infection or illness with a fever.

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Pediatric Hypothermia Protocol

Hypothermia in children is common at any time of the year. Children dissipate heat faster than adults due to their body mass compared to the surface area of skin. EMS providers must suspect an onset of hypothermia in all cold environmental emergencies, child neglect and trauma. Rapid identification and treatment of hypothermia can have a significant effect on the outcome of the pediatric patient.

Emergency Medical Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
2. Handle the patient as **gently** as possible.
3. Create a warm environment for the patient. Remove wet or frozen clothing and cover the patient with warm blankets. Prevent re-exposure to cold. Warm packs may be utilized for the neck (posterior), armpits, and groin and along the thorax.
4. **Oxygen:** 15 L/min via BVM if the child has Alt Loc and in respiratory distress.
5. **Oxygen:** If the child is alert with respiratory distress, 15 LPM via NRM or if unable to tolerate the mask, 4-6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
6. Be prepared to support the patient's respirations with BVM if necessary.
7. Do not rub frostbitten or frozen body parts. Protect injured parts (e.g. blisters) with light, sterile dressings and avoid pressure to the area.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. Treat other symptoms per the appropriate protocol.
3. Apply **Waveform Capnography** (if equipped).
4. Initiate ALS intercept if needed and transport as soon as possible.

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PEDIATRIC PREHOSPITAL CARE MANUAL

Pediatric Hypothermia Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. **IV Fluid Therapy:** 20mL/kg fluid bolus only if hypotensive for age range.

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. Transport as soon as possible.

Critical Thinking Elements

- Fluid bolus's will cause a decrease in temp, run fluids only if hypotensive.
- Do not thaw frozen parts in the field if there is a chance of refreezing. Protect frostbitten areas from refreezing.
- **In cases of cardiac arrest due to suspected hypothermia, EMS providers should limit defibrillation and medications to the first rounds only. High quality CPR, airway management, re-warming, and transport are the priority.**
- Patients with hypothermia should be considered at high risk for ventricular fibrillation. It is imperative that these patients be handled gently and not re-warmed aggressively.

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Pediatric Near Drowning Protocol

Drowning remains one of the top five reasons pediatric patients are killed each year. EMS efforts need to focus on airway control and hypothermia management. Complications may arise from the fluid the child has drowned in. Remember – children can drown in as little as two inches of fluid. Children not only drown in rivers or pools but also mop buckets and bathtubs. Until the patient's temperature can be validated to be normal range, patient resuscitation measures should be started

Emergency Medical Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol* and *Routine Trauma Care Protocol*.
2. Unless able to guarantee that patient did not suffer trauma, treat as a trauma patient.
3. Make sure the scene is safe. Use appropriate personnel and equipment for rescue.
4. Establish and maintain spinal immobilization.
5. **Oxygen:** 15 L/min via BVM if the child has Alt Loc and in respiratory distress.
6. **Oxygen:** If the child is alert with respiratory distress, 15 LPM via NRM or if unable to tolerate the mask, 4-6 LPM via nasal cannula.
 - a. If no obvious respiratory distress is noted, apply a pulse ox. If $\geq 94\%$ and no signs/symptoms of respiratory distress, no Oxygen is required. If $\leq 94\%$ apply nasal cannula at 2-6 LPM or 15 LPM via NRM as needed to raise pulse ox to $\geq 94\%$.
7. Be prepared to clear the airway and support the patient's respirations with **BVM** if necessary.
8. Initiate **CPR** if indicated.
9. Treat respiratory and/or cardiac symptoms per the appropriate protocol.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. Apply **Waveform Capnography** (if equipped).
3. Initiate ALS intercept and transport as soon as possible.
4. Treat respiratory and/or cardiac symptoms per the appropriate protocol.

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Pediatric Near Drowning Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. Obtain **IV or IO access** as appropriate.
3. **IV Fluid Therapy:** 20mL/kg fluid bolus if the patient is hypotensive. May repeat x 2 to a maximum of 60mL/kg (**Note:** Exceeding 40mL/kg requires **Medical Control order**).

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. **Contact Medical Control** as soon as possible.

Critical Thinking Elements

- A near-drowning victim should **always** be transported to the E.D. for further evaluation despite an unremarkable assessment. These patients can appear to be fine following the event only to rapidly decline after EMS has left the scene.
- Contact Medical Control for any refusal of transport as these patients are considered very high-risk.

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Suspected Child Maltreatment Protocol

Illinois state law mandates that EMS providers report any suspicious acts of suspected maltreatment. There is no profile of the “typical” family in which abuse is taking place. Maltreatment of children affects all socio-economic classes. As EMS professionals, we need to be aware of the warning signs, treat the injuries of the child and report accordingly.

EMR Care, BLS Care, ILS Care, ALS Care

1. Consider scene safety issues:
 - a) If the offender is present and interferes with transportation of the patient, or is influencing the patient's acceptance of medical care, contact law enforcement and Medical Control for consultation on the appropriate action to take.
 - b) If the parent/guardian refuses to allow transportation of the child, contact law enforcement and Medical Control for consultation on the appropriate action to take.
2. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
3. Treat obvious injuries or illnesses.
4. Survey the scene for evidence of factors that could adversely affect the child's welfare:
 - a) Environmental
 - b) Interaction with parents/guardians
 - c) Discrepancies in the history of events
 - d) Injury patterns inconsistent with history of events or anticipated motor skills based on the child's growth and development stage
 - e) Signs of intentional injury or emotional harm
5. Transport regardless of extent of injuries.
6. Upon arrival at the ED, notify the receiving physician or nurse of the suspected maltreatment. **Remember** – healthcare workers (including EMR, EMT, and Paramedics) are mandated by Illinois state law to report cases of suspected abuse or neglect to the Department of Children and Family Services (DCFS) by calling 1-800-252-2873. **Notifying the receiving facility of concerns does not meet this requirement.**
7. **Thoroughly document** the child's history & physical exam findings.
8. The following information / telephone numbers regarding services available to victims of abuse shall be offered to all victims of abuse:

Crime Victims Compensation Program

Phone (800) 228-3368
TTY (877)398-1130

Illinois Child Abuse Hotline

Phone (800) 252-2873
TTY (800) 358-5117

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Suspected Child Maltreatment Protocol

Critical Thinking Elements

- At no time should EMS confront the caregivers about the abuse.
- Do not make accusations on the PCR. Document objective physical findings, not opinion.
- A copy of the *Manual for Mandated Reporters* can be downloaded at www.state.il.us/dcfs.
- Willful failure to report suspected incidents of child abuse/neglect is a misdemeanor (1st violation) or a class 4 felony (2nd or subsequent violations).
- Reports must be confirmed in writing to the local investigation unit within 48 hours of the Hotline call.



Sudden Infant Death Syndrome (SIDS) Protocol

Sudden Infant Death Syndrome (SIDS) and the death of a child are among the most difficult patient care experiences for the prehospital professional. SIDS is the leading cause of infant mortality in the United States and the causes are not known.

The death of a child is a horrible event and creates difficult emotional issues for the caregivers as well as the prehospital professional. The infant may be in the care of a parent/caregiver or babysitter at the time of death and may not be at home. Absence of one or both parents may complicate field management and interactions at the scene (PEPP 2001).

EMR Care, BLS Care, ILS Care, ALS Care

1. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
2. **If obvious signs of biological death are present** (*pulseless, apneic, cold skin, frothy/blood tinged fluid in the mouth, lividity, dark red mottling on the body, rigor mortis*):
 - a) Confirm absence of breathing and pulse.
 - b) Confirm asystole in two (2) or more leads.
 - c) **Contact Medical Control** and follow procedure for death at scene.
 - d) Provide for the needs of the family:
 - Have at least one prehospital professional stay with the family until a support network is established.
 - Contact support personnel:
 - Clergy
 - Other family members
 - Friends
 - Professional counselors
3. Consider the possibility of child maltreatment:
 - a) Refer to *Suspected Child Maltreatment Protocol*.
 - b) Obtain past medical history and the history of events.
 - Refrain from asking judgmental or leading questions.
 - Do not place blame or accusations.
4. Consider CISM for prehospital personnel.

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Sudden Infant Death Syndrome (SIDS) Protocol

Critical Thinking Elements

- The decision of staying on scene or transporting a dead infant to the ED is a difficult one.
Consider these factors:
 - Could this be a crime scene?
 - Am I giving false hope to the family?
- The prehospital caregiver cannot determine the true cause of death in an infant. Therefore, do not rush to judgment. Treat every caregiver as a grieving parent regardless of the situation.
- There are nearly 3,000 SIDS cases per year in the United States:
 - 90-95% of SIDS cases are less than 6 months old.
 - Premature infants are at higher risk for SIDS.
 - SIDS cases occur more frequently in males & during the winter months.
 - 5% of SIDS cases are actually due to child neglect.



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Appendix/ Resources



Updated November 2023

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Ketamine Dosing

The formula for calculating IBW is:

Men = 50 kg + 2.3 kg for every inch over 5 foot tall.

Males

Hgt	Kgs	Pain Control 0.3mg/kg IV/IO	Chemical Restraint 4mg/kg IM only	Medication assisted Intubation 2mg/kg IV/IO
5'0"	50	15mg 0.3 mL	200mg 4 mL	100mg 2 mL
5'1"	52.3	15mg 0.3 mL	200mg 4 mL	100mg 2 mL
5'2"	54.6	15mg 0.3 mL	200mg 4 mL	100mg 2 mL
5'3"	56.9	15mg 0.3 mL	200mg 4 mL	100mg 2 mL
5'4"	59.2	20mg 0.4 mL	250mg 5 mL	125mg 2.5 mL
5'5"	61.5	20mg 0.4 mL	250mg 5 mL	125mg 2.5 mL
5'6"	63.8	20mg 0.4 mL	250mg 5 mL	125mg 2.5 mL
5'7"	66.1	20mg 0.4 mL	250mg 5 mL	125mg 2.5 mL
5'8"	68.4	20mg 0.4mL	250mg 5 mL	125mg 2.5 mL
5'9"	70.7	20mg 0.4mL	300mg 6 mL	150mg 3 mL
5'10"	73	20mg 0.4mL	300mg 6 mL	150mg 3 mL
5'11"	75.3	25mg 0.5mL	300mg 6 mL	150mg 3 mL
6'0"	77.6	25mg 0.5mL	300mg 6 mL	150mg 3 mL
6'1"	79.9	25mg 0.5mL	300mg 6 mL	150mg 3 mL
6'2"	82.2	25mg 0.5mL	350 mg 7 mL	175mg 3.5 mL
6'3"	84.5	25mg 0.5mL	350 mg 7 mL	175mg 3.5 mL
6'4"	86.8	30mg 0.6ml	350 mg 7 mL	175mg 3.5mL
6'5"	89.1	30mg 0.6mL	400mg 8 mL	200mg 4.0mL
6'6"	91.4	30mg 0.6mL	400mg 8 mL	200mg 4.0mL
6'7"	93.7	30mg 0.6mL	400mg 8 mL	200mg 4.0mL

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Ketamine Dosing

The formula for calculating IBW is:

Women = 45.5 kg + 2.3 kg for every inch over 5 foot tall.

Females

Hgt	Kgs	Pain Control 0.3mg/kg IV/IO	Chemical Restraint 4mg/kg IM only	Medication Assisted Intubation 2mg/kg IV/IO
4'8"	36.3	10mg 0.2 mL	150mg 3 mL	75mg 1.5 mL
4'9"	38.6	10mg 0.2 mL	150mg 3 mL	75mg 1.5 mL
4'10"	40.9	10mg 0.2 mL	150mg 3 mL	75mg 1.5 mL
4'11"	43.2	15mg 0.3 mL	150mg 3 mL	75mg 1.5 mL
5'0"	45.5	15mg 0.3 mL	200mg 4 mL	100mg 2 mL
5'1"	47.8	15mg 0.3 mL	200mg 4 mL	100mg 2 mL
5'2"	50.1	15mg 0.3 mL	200mg 4 mL	100mg 2 mL
5'3"	52.4	15mg 0.3 mL	200mg 4 mL	100mg 2 mL
5'4"	54.7	15mg 0.3 mL	200mg 4 mL	100mg 2 mL
5'5"	57	15mg 0.3 mL	200mg 4 mL	100mg 2 mL
5'6"	59.3	20mg 0.4 mL	250mg 5 mL	125mg 2.5 mL
5'7"	61.6	20mg 0.4 mL	250mg 5 mL	125mg 2.5 mL
5'8"	63.9	20mg 0.4 mL	250mg 5 mL	125mg 2.5 mL
5'9"	66.2	20mg 0.4 mL	250mg 5 mL	125mg 2.5 mL
5'10"	68.5	20mg 0.4 mL	250mg 5 mL	125mg 2.5 mL
5'11"	70.8	20mg 0.4 mL	300mg 6 mL	150mg 3 mL
6'0"	73.1	25mg 0.5ml	300mg 6 mL	150mg 3ml
6'1"	75.4	25mg 0.5ml	350mg 7 ml	175mg 3.5ml
6'2"	77.7	25mg 0.5ml	350mg 7 ml	175mg 3.5ml
6'3"	80	25mg 0.5ml	350mg 7 ml	175mg 3.5ml
6'4"	82.3	25mg 0.5ml	350mg 7 ml	175mg 3.5ml

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Quick Reference Peds Weight/ Vital Signs

Per Memorial EMS System protocol, **do not exceed the adult dose when administering pediatric medications.

Approximate weight based on age:

<u>Age</u>	<u>Weight</u>
Newborn	3 kg / 7 lbs
2 months	5 kg / 8 lbs
6 months	7 kg / 15 lbs
1 year	10 kg / 22 lbs
5 years	20 kg / 44 lbs
10 years	30 kg / 66 lbs
15 years	Adult values

Normal Pediatric Vital Sign Ranges

	Heart Rate	Respiratory Rate	Minimum Blood Pressure
Infant	100-160 bpm	30-60 rpm	> 60mmHg systolic
Toddler	90-150 bpm	24-40 rpm	> 70mmHg systolic
Preschooler	80-140 bpm	22-34 rpm	> 75mmHg systolic
School Age	70-120 bpm	18-30rpm	> 80mmHg systolic
Adolescent	60-100 bpm	12-16 rpm	> 90mmHg systolic

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Quick Reference Peds Morphine/Fentanyl Dosing

Morphine Sulfate	0.1mg/kg IV/IM (Max single dose: 4 mg) every 15 minutes (I.V.) and 30 minutes (I.M.) to reduce the patient's anxiety and severity of pain.
Fentanyl	1mcg/kg IV over 2 minutes for pain (Max single dose: 50mcg). Fentanyl 1mcg/kg may be repeated every 15 minutes (I.V.). If unable to establish IV access may administer Intranasal Fentanyl. (See intranasal dosing sheet of <i>Pediatric Prehospital Care Manual</i>).

Intranasal Fentanyl Dosing Chart

Patient Weight	Dosage (2mcg/kg)	Dead Space Volume
3-5kg (6-11 Lbs)	10 mcg (0.2 ml)	(+0.1 ml)
6-10kg (13-22 Lbs)	20 mcg (0.4. ml)	(+0.1 ml)
11-15kg (24-33 Lbs)	30 mcg (0.6 ml)	(+0.1 ml)
16-20kg (35-44 Lbs)	40 mcg (0.8 ml)	(+0.1 ml)
21-25kg (46-55 Lbs)	50 mcg (1.0 ml)	(+0.1 ml)
26-30kg (57-66 Lbs)	60 mcg (1.2 ml)	(+0.1 ml)
31-35kg (68-77 Lbs)	70 mcg (1.4 ml)	(+0.1 ml)
36-40kg (79-88 Lbs)	80 mcg (1.6 ml)	(+0.1 ml)
41-45kg (90-99 Lbs)	90 mcg (1.8 ml)	(+0.1 ml)
46-50kg (101-110 Lbs)	100 mcg (2.0 ml)	No Extra
51-55kg (112-121 Lbs)	100 mcg (2.0 ml)	No Extra
56-60kg (123-132 Lbs)	100 mcg (2.0 ml)	No Extra
61-70kg (134-154 Lbs)	100 mcg (2.0 ml)	No Extra
71-80kg (156-176 Lbs)	100 mcg (2.0 ml)	No Extra
81-90kg (178-198 Lbs)	100 mcg (2.0 ml)	No Extra
91-100kg (200-220 Lbs)	100 mcg (2.0 ml)	No Extra

**Max 1 ml per nare

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Quick Reference Peds Versed Dosing

Intranasal Midazolam (Versed) Dosing Chart

Patient Age	Weight	5mg/5mL Concentration		10mg/2mL Concentration	
(years)		Dose (mg)	Dose (mL)	Dose (mg)	Dose (mL)
Neonate	3kg (6) Lbs	0.6 mg	0.7 mL	0.6 mg	0.3 mL
< 1 yr.	6kg (13) Lbs	1.2 mg	1.3 mL	1.2 mg	0.4 mL
1	10kg (22) Lbs			2.0 mg	0.5 mL
2	14kg (30) Lbs			2.8 mg	0.7 mL
3	16 kg (35) Lbs			3.2 mg	0.8 mL
4	18kg (40) Lbs			3.6 mg	0.9 mL
5	20kg (44) Lbs			4.0 mg	1.0 mL
6	22kg (48) Lbs			4.4 mg	1.0 mL
7	24kg (53) Lbs			4.8 mg	1.1 mL
8	26kg (57) Lbs			5.2 mg	1.2 mL
9	28kg (62) Lbs			5.6 mg	1.3 mL
10	30kg (66) Lbs			6.0 mg	1.4 mL
11	32kg (70) Lbs			6.4 mg	1.4 mL
12	34kg (75) Lbs			6.8 mg	1.5 mL
Small Teenager	40kg (88) Lbs			8.0 mg	1.8 mL
Full Grown Teen or Adult	>50kg (>110) Lbs			10.0 mg	2.0 mL

For Children: Total weight (kg) x 0.2 mg = total mg dose of Midazolam, maximum dose of 10 mg

*Volume is based on the calculated dose PLUS 0.10 mL dead space in the device.

The total volume is then rounded off to the next highest 0.1 mL. In some children a higher dose may be needed (0.3 mg/kg)

Midazolam (Versed): 0.2mg/kg IM

(Max single dose: 5mg)

Midazolam (Versed): 0.1mg/kg IV/IO

(Max single dose: 2.5 mg)

over 1 minute for seizure activity.

MEMORIAL EMS SYSTEM
PREHOSPITAL RESOURCE GUIDES

Pediatric Cyanokit dosing

COLOR	DOSE	WEIGHT
GREY	14 ml _____ (350mg)	5 KG
PINK	20 ml _____ (490mg)	7 KG
RED	25 ml _____ (630mg)	9 KG
PURPLE	31 ml _____ (770mg)	11 KG
YELLOW	39 ml _____ (980mg)	14 KG
WHITE	50 ml _____ (1260mg)	18 KG
BLUE	62 ml _____ (1540mg)	22 KG
ORANGE	78 ml _____ (1960mg)	28 KG
GREEN	100 ml _____ (2520mg)	36 KG

!!MUST USE A SYRINGE TO PUSH OVER 15 MINUTES!!

ADULT DOSE IS 200ml over 15mins IV (5000mg)



Post ROSC Cardiac Arrest Checklist

- ASSESS C02 (should be >20 with good waveform).
- FINGER on pulse maintain, for 5 minutes. DO NOT TRANSPORT; prepare for transport during the 5-minute waiting period.
- Continuous visualization of cardiac monitor rhythm.
- Check O2 supply and pulse Ox to TITRATE to SaO2 94-99%.
- Do not try to obtain a “normal” ETCO2 by increasing respiratory rate.
- Obtain 12 lead EKG, send for consult or STAT STEMI if possible, concern for STEMI on EKG, expedite CONTROLLED movement for transport; prepare for transport during the 5-minute waiting period.
- Assess for & TREAT bradycardias < 60 bpm.
- IVF set-up on pressure bag in preparation for hypotension.
- Prepare (spike) Dopamine in preparation for hypotension.
- Obtain B/P -- Dopamine indicated for SBP < 90mmHg or MAP < 65mmHg.
- Evaluate for post-resuscitative airway placement (e.g., ETT).
- If available place mechanical CPR device on patient before movement, in anticipation of possible re-arrest during transport.
- When patient is moved, perform CONTINUOUS PULSE CHECK and MONITORING of cardiac rhythm – pads **must** be on patient before any movement.
- Mask is available for BVM in case advanced airway fails.
- Once in the ambulance, confirm pulse, breath sounds, SpO2, EtCO2, and cardiac rhythm.
- Appropriate personnel and number of personnel for transport in case of re-arrest.

MEMORIAL EMS SYSTEM
PREHOSPITAL RESOURCE GUIDES

Oxygen Consumption Calculator

In EMS, Oxygen consumption and the time it takes to deplete an Oxygen tank are dependent on multiple factors, including tank size, tank pressure, percentage of Oxygen being administered (in some cases), and rate of consumption (LPM). This appendix will help the EMS professional in determining the Oxygen consumption for the safe transport of a patient requiring Oxygen therapy. **Please note:** To safely transport a patient, the EMS crew must **factor 150% of transport time**. This will allow for adverse weather conditions, traffic issues, and any other potential delays a crew could encounter.

Tank Size

From 2,000PSI to safe residual pressure of 200PSI

	D About 1.5ft tall	E About 2ft tall	F About 3.5ft tall	G About 4ft tall	K About 4.5ft tall
2 Liters/Min	2 hours 50 minutes	5 hours, 5 minutes	10 hours 10 minutes	25 hours 30 minutes	53 hours 15 minutes
6 Liters/Min	51 minutes	1 hour 40 minutes	3 hours 20 minutes	8 hours 30 minutes	17 hours 45 minutes
8 Liters/Min	38 minutes	1 hour 15 minutes	2 hours 30 minutes	6 hours 20 minutes	13 hours 15 minutes
10 Liters/Min	30 minutes	1 hour	2 hours	5 hours 5 minutes	10 hours 35 minutes
15 Liters/Min	20 minutes	40 minutes	1 hour 20 minutes	3 hours 20 minutes	7 hours 5 minutes

All time values are approximate

Oxygen Cylinder Duration Calculator



Protocol Study Guide

This is an aid to study for the protocol test only, these are not the test answers. You must read and study the actual protocols to pass the test.

Complete your level of licensure and all levels of care below your level of licensure

POLICY REVIEW—FOR ALL LEVELS OF PROVIDERS

Section 3

1. How long does a provider have to notify the EMS office of an adverse event?

2. What percentage of continuing education must be done through classes taught or sponsored by the EMS office?

3. What score must a provider obtain on a System Protocol Test?

4. What certifications are required for your level of provider?

5. At minimum, how many days prior to licensure expirations should you submit for recertification?

Section 4

6. Name some reasons why telemetry should be used in the prehospital setting? (Name 4)

7. Name some conditions that are considered “High-Risk Refusals.” (Name 4)

8. What is considered a “Low-Risk Refusal?” (Name 2)

9. Who can obtain a “Low-Risk Refusal” and who can obtain a “High-Risk Refusal?”

10. Name all the conditions that require an EMS Alert Report.

Protocol Study Guide

This is an aid to study for the protocol test only, these are not the test answers. You must read and study the actual protocols to pass the test.

11. Does a patient need a copy of a refusal from EMS?
12. Name some reasons why an incident report should be filled out. (Name 4)

Section 5

13. Early term OB patients should be directed to what hospitals?
14. What facilities are appropriate for a patient with a suspected STEMI?
15. If a patient has a positive fast greater than 4.5 hours and less than 24 hours, what facilities are most appropriate for that patient?
16. What facilities are most appropriate for a pediatric trauma?
17. Which situation(s) would allow you to transport the patient to the closest emergency department?
18. What situation does the distance (time) to a hospital differ from all other in the EMS Triage Destination Plan?
19. When is a BLS unit able to disregard/cancel an ALS unit that is enroute?
20. When can a patient be transported by a lower level of care unit after ALS has established patient contact?
21. What are the Four Categories of School Bus Incidents? What are the differences between the four categories?

Protocol Study Guide

This is an aid to study for the protocol test only, these are not the test answers. You must read and study the actual protocols to pass the test.

22. When can a Multiple Casualty Release form be used?

23. What must a provider do if a patient has concealed carry weapon on them while under EMS care?

24. Which criteria is needed for a patient to be flown by helicopter? (Name 4)

Section 6

25. What must a provider do if exposed to a possible infectious disease?

MEDICAL AND TRAUMA REVIEW (LEVEL SPECIFIC)

Section 11

- BLS- 1. What are some ways you can provide oxygen? (Name 3).

- BLS- 2. What are the steps to give an IM injection?

- BLS- 3. What are three contraindications of intranasal medication administration?

- ILS- 4. How many IV's can be attempted on scene during a routine call?

- ILS- 5. What are indications and contraindications for an EZ-IO? List two (2) of each.

- ILS- 6. What locations are approved for the EZ-IO?

- ILS- 7. How much Lidocaine can be given for IO discomfort in a pediatric patient?

Protocol Study Guide

This is an aid to study for the protocol test only, these are not the test answers. You must read and study the actual protocols to pass the test.

- ILS- 8. What is the minimum weight for an EZ-IO to be used?
- ILS- 9. How much Lidocaine can be given for the discomfort from the EZ-IO insertion in a conscious adult patient?
- ALS- 10. How many External Jugular Vein (EJV) can you attempt in the field?
- ALS- 11. What medications can be given IN?
- ALS- 12. What is the maximum single dose of Fentanyl? (IM? IV?)

Section 12

- BLS- 1. What are some contraindications of aspirin? (Name 2)
- BLS- 2. How often can Nitroglycerin be repeated?
- BLS- 3. When must you contact Med Control prior to administering Nitro?
- BLS- 4. Explain the key concepts of Pit Crew CPR?
- BLS- 5. How frequently should you ventilate a patient in Pit Crew CPR?
- BLS- 6. What are the jobs of the first two responders on scene of a cardiac arrest?
- ILS- 7. What is the minimum BP (systolic) for any provider to give Nitro?

Protocol Study Guide

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- ILS- 8. What two steps are required to activate a prehospital STEMI?
- ILS- 9. Who should receive a 12-lead EKG?
- ILS- 10. What alternate anti-arrhythmic medication should an ILS provider give instead of Amiodarone?
- ILS- 11. What is the initial dose and follow-up dose for the medication in the previous question?
- ILS- 12. When does an ILS provider need orders for Atropine?
- ILS- 13. What is the maximum dose for Atropine?
- ILS- 14. In what situation should Adenosine be given?
- ALS- 15. What is the correct initial infusion rate for Dopamine for use as in hypotension?
- ALS- 16. What anti-arrhythmics can be given in a cardiac arrest?
- ALS- 17. What is the initial dose and repeat dose for the medication(s) in question 16?
- ALS- 18. What medications are given for PEA?
- ALS- 19. What are some reasons a heart rate might be bradycardic? (Name 3)

Protocol Study Guide

This is an aid to study for the protocol test only, these are not the test answers. You must read and study the actual protocols to pass the test.

- ALS- 20. What is the target rate for pacing?
- BLS- 1. What are some contraindications for insertion of a Supraglottic Airway?
(Name 4)
- BLS- 2. What is the dose of Albuterol?
- BLS- 3. How often can you repeat Albuterol at the BLS level?
- ILS- 4. How many intubation attempts is a provider allowed before switching to a Supraglottic Airway?
- ILS- 5. Do you need orders at the ILS level to repeat Albuterol?
- ILS- 6. What are contraindications for CPAP? (Name 3)
- ALS- 7. How many attempts are allowed for intubation?
- ALS- 8. What is the dose of Ketamine in a medicine-assisted intubation?
- ALS- 9. What is the dose of Fentanyl following a successful MAI?
- ALS- 10. How often can you give Ketamine when performing MAI?
- ALS- 11. What is suction set at when using an orogastric (OG) tube?

Protocol Study Guide

This is an aid to study for the protocol test only, these are not the test answers. You must read and study the actual protocols to pass the test.

ALS- 12. When should capnography be used? Name three (3) situations.

Section 14

BLS- 1. What is the dose of Narcan?

BLS- 2. When should you give Oral Glucose?

BLS- 3. What is the dose and route of Glucagon?

BLS- 4. What is the Los Angeles Motor Scale?

BLS- 5. What is the maximum time you should stay on scene with a suspected stroke patient?

BLS- 6. What is the dose of Zofran ODT?

BLS- 7. What are some common Benzodiazepines drugs that patients may have used?

BLS- 8. What are the three pieces to the Miami Sepsis Score?

BLS- 9. What is considered a hypertensive crisis?

BLS- 10. What is the Shock Index?

BLS- 11. When should you call a potential Sepsis Alert?

Protocol Study Guide

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- ILS- 12. How do you treat a person with a low blood sugar at the ILS level?
- ILS- 13. Can Versed be given IN to an adult?
- ILS- 14. What medication should NOT be given in Anaphylaxis?
- ILS- 15. What is the dose for Versed IM?
- ALS- 16. When are you able to give pain medications for a patient with acute abdominal pain?
- ALS- 17. What is the dose for Benadryl IM?
- ALS- 18. What are some common Tricyclic Antidepressants (TCA's)? (Name 3)
- ALS- 19. What situations would allow you to use a central line?

Section 15

- BLS- 1. When and where should a patient be decontaminated?
- BLS- 2. How do you treat electrical burns?
- BLS- 3. What are the differences between heat cramps, heat exhaustion and heat stroke?
- BLS- 4. What does the acronym "SLUDGE" mean?

Protocol Study Guide

This is an aid to study for the protocol test only, these are not the test answers. You must read and study the actual protocols to pass the test.

ILS/ALS- 5. What medications would you consider for Organophosphate poisoning?

ILS/ALS- 6. What is the maximum temperature a warmed saline bag can be kept at?

ILS/ALS- 7. How long can IV fluids be stored on a commercial warming device?

Section 16

BLS- 1. How long is a scene time for a “load & go” trauma patient?

BLS- 2. What is the lowest score you can obtain on a Glasgow Coma Scale?

BLS- 3. What are the pieces of the Revised Trauma Score?

BLS- 4. What ages are you allowed to utilize the Spinal Motion Restriction Decision Tree?

BLS- 5. How do you treat an amputated part?

BLS- 6. When can you use a pelvic sling?

BLS- 7. What are the steps to applying a tourniquet?

BLS- 8. What basic point of care testing should be done on all confused patients with a traumatic head injury?

BLS- 9. Where should a pelvic sling be placed on a patient?

Protocol Study Guide

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- BLS- 10. When and how should wound packing be done?
- BLS- 11. When can a tourniquet be removed?
- ILS- 12. What is the target systolic B/P for a trauma patient?
- ILS- 13. How many attempts at intubation should be made in a traumatic arrest patient?
- ALS- 14. What is the location of a needle decompression?
- ALS- 15. What medication is appropriate for a patient with spinal trauma who is hypotensive?

Section 17

- BLS- 1. What are some key questions to ask a pregnant patient?
- BLS- 2. How often should you take an APGAR score?
- BLS- 3. How fast should you ventilate a newborn?
- BLS- 4. How do you treat a prolapsed cord?
- BLS- 5. What is para and gravida?
- BLS- 6. What is the difference between eclampsia and preeclampsia?

Protocol Study Guide

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BLS- 7. Name some situations that are considered high-risk pregnancies? (Name 4)

BLS- 8. What is left uterine displacement?

BLS- 9. What is a major concern with Abruptio Placentae?

BLS- 10. Name four common “date rape” drugs.

ILS/ALS- 11. During childbirth, what is the initial fluid bolus for the mother?

Section 18

BLS- 1. Who can remove taser probes?

BLS- 2. What are some signs of obvious death? (Name 4)

BLS- 3. How do you treat a person sprayed with OC spray?

BLS- 4. What is a situation where a DNR would not be valid?

BLS- 5. If a patient must be handcuffed for security reasons, where should those be placed?

BLS- 6. What must be documented after restraining a patient?

ALS- 7. A provider is unsure if a patient is capable of refusing care, what should they do?

Protocol Study Guide

This is an aid to study for the protocol test only, these are not the test answers. You must read and study the actual protocols to pass the test.

- ALS- 8. What medications can you use for a patient who is combative when you have exhausted all other attempts to calm the patient?

*******THE FOLLOWING SECTIONS ARE FOR PEDIATRIC PATIENTS*******

Section 20

- BLS- 1. What is the maximum age of person who we still consider a pediatric for treatment purposes?
- BLS- 2. Compared to an adult, a pediatric heart will be _____ (faster/slower), blood pressure will be _____ (higher/lower) and respiratory rate will be _____ (faster/slower)?
- BLS- 3. What are the pieces of the Pediatric Assessment Triage?
- ILS/ALS- 4. How much fluid do you give a pediatric for a fluid bolus?
- ILS/ALS- 5. How many IV attempts should be done on a pediatric patient on scene?

Section 21

- BLS- 1. How do you clear an airway obstruction of a conscious pediatric patient?
- BLS- 2. What are some ways a BLS provider can secure a pediatric patient's airway?
- ILS/ALS- 3. What are the size of pediatric Supraglottic airways and their associated weights?
- ILS/ALS- 4. How many intubation attempts does one have for a pediatric patient?

Protocol Study Guide

This is an aid to study for the protocol test only, these are not the test answers. You must read and study the actual protocols to pass the test.

Section 22

ILS/ALS- 1. What is the minimum weight for a pediatric patient when using a EZ-IO?

ILS/ALS- 2. What are some indications for the use of an EZ-IO? (Name 3)

ILS/ALS- 3. What is the dose of Lidocaine for a pediatric patient for pain from a EZ- IO?

ALS- 4. When should a Jamshidi IO needle be used?

Section 23

BLS- 1. What is the minimum age that a person can receive Zofran ODT?

ILS- 2. What is the IN dose for Versed in a pediatric patient?

ALS- 3. What is the correct dose of morphine for a pediatric patient?

ALS- 4. In what situations can pain medications be given to a pediatric patient?

ALS- 5. What is the dose for Fentanyl given to a pediatric patient?

Section 24

BLS- 1. What is a situation where you start chest compressions, even if the patient has a pulse?

BLS- 2. What is the minimum age to receive Albuterol?

Protocol Study Guide

This is an aid to study for the protocol test only, these are not the test answers. You must read and study the actual protocols to pass the test.

- BLS- 3. What is the dose of Albuterol for a pediatric patient?
- ILS/ALS- 4. How many joules per kilogram is the pediatric patient defibrillated with in the initial defib?
- ILS/ALS- 5. What is the minimum amount of Epi 1:10,000 that a pediatric patient should get in a cardiac arrest?
- ILS/ALS- 6. What is the correct dose of Epi for a pediatric patient in cardiac arrest?
- ALS- 7. What is the proper procedure for pacing a pediatric patient?
- ALS- 8. Do you need medical control orders to perform a needle decompression on a pediatric patient?

Section 25

- BLS- 1. What is the dose of Epi for a pediatric patient with anaphylaxis?

- ILS- 2. How does an ILS provider treat a hypoglycemic pediatric patient?

- ILS- 3. What is the pediatric dose for Narcan at the ILS Level?

- ALS- 4. What is the Atropine dosing for children presenting with S/S of Organophosphate poisoning?

- ILS/ALS- 5. What is the pediatric IM dose of Versed for active seizures?

Protocol Study Guide

This is an aid to study for the protocol test only, these are not the test answers. You must read and study the actual protocols to pass the test.

ILS/ALS- 6. How does an ILS provider treat hypoglycemia in a pediatric patient?

ALS- 7. What is the dose of Narcan for a pediatric patient at the ILS level?

ALS- 8. What is the dose of Sodium Bicarb for a pediatric patient?

ALS- 9. What is the dose for Benadryl for a pediatric patient?

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MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

*Memorial Medical Center
EMS System*



*Expanded Scope Protocol
For
Interfacility Transfer*

Developed June 2013

Updated April 2022

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

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MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

**Expanded Scope
QA/QI**

Agency: _____ Date: _____ MICU: _____

Paramedic: _____ Lic. No.: _____

Transport from: _____ Transport to: _____

- Vital signs documented at minimum every fifteen minutes.
 - Change in vitals
 - Documentation reveals change noted and care rendered accordingly
- Documentation reveals ongoing assessment to monitor for
 - Hypotension
 - Extreme bradycardia or tachycardia, dysrhythmia
 - Increasing chest pain
 - Altered mental status or change in neuro exam
 - Documentation of appropriate care rendered accordingly
- Any alterations in IV status documented
 - IV catheter unexpected discontinued
 - Rate adjustments of infusions
 - IV Medications within Advanced Scope Protocol
 - Documentation of appropriate care rendered accordingly
- Were ventilator settings changed during transport
 - Reason and response documented
- Was Medical Control or Ordering Physician contacted after EMS arrival
 - Reason and response documented
- Any unusual occurrences documented
 - Issues reported to EMS System Coordinator
- Chart reviewed by EMS System Coordinator
 - Any abnormalities in transport require EMS MD review
 - Follow up with transporting crew

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Thoracostomy Patient Transport

INDICATIONS:

1. Chest tube must be in place > 24 hours prior transport.
2. Must be either 8 years of age or older or 45 kg or more.
3. Patient transfer must be from licensed facility to another licensed facility.

CONTRAINDICATIONS:

1. Heimlich Valve

PROCEDURE:

1. Verify chest tube is securely attached to patient's chest prior to any patient movement by
 - a. Confirming sutures to the skin are intact.
 - b. Occlusive dressing attached to thoracostomy site, or secure taping of the chest tube to the chest skin.
 - c. Inspect tube for any possible occlusions.
2. Verify the device the tube is connected to for drainage.
 - a. Pleur-Evac.
3. For a patient on a Pleur-Evac
 - a. Suction will be maintained during transport as it was at the facility.
 - b. Note fluid and blood levels in the drainage and water seal compartments.
 - c. Pleur-Evac must be maintained at a level lower than the point of insertion on the patient.
4. Chest tubes should be inspected every 15 minutes during transport to insure proper working condition.
5. Consult current patient orders for best patient positioning.
6. If the chest tube is not functioning and a tension pneumothorax is suspected, perform a needle decompression of the affected side. (See *Needle Thoracentesis Procedure*.)

ADDITIONAL REQUIREMENTS:

This is an Advanced Scope of Practice Protocol. Only providers who have completed additional system training are authorized to perform. The protocol is only designed for patients who are being transferred from one medical facility to another.

A medical command physician must be contacted prior to the EMS crew taking transfer of care of the patient if any of the following conditions apply:

1. Patient in hypotensive at the time of transfer.
2. An acute deterioration or change in the patient's status is noted.
3. Medications ordered are outside of the concentrations or infusion rates that are permitted by the current prehospital treatment protocols.
4. The prehospital provider has any concern that the provider's experience or abilities, or the available equipment, may not meet the patient's anticipated needs during the transport.

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

**Ventilator Assisted
Transport of Patients**

INDICATIONS:

1. Advanced airway in place > 24 hours prior via endotracheal intubation or established tracheostomy.
2. Must be either 8 years of age or older or 45 kg or more.
3. Patient transfer must be from licensed facility to licensed facility.

CONTRAINDICATIONS:

1. Any acute airway case
2. Clinical signs of pneumothorax
3. Compromised cardiopulmonary status.

PROCEDURE:

1. Verify endotracheal tube placement.
 - a. If unable to verify via auscultation of equal breath sounds
 - i. Visualize endotracheal tube placement.
 - ii. Consider tension pneumothorax or hemothorax and treat accordingly.
 - iii. Notify ordering physician for review of patient case (ABG, CXR, etc) prior to transport.
2. Attach ventilator to gas source.
3. Set breaths per minute (BPM): Range is 8-26 BPM adjusted to achieve optimum total cycle time and maintain desired minute ventilation while maintaining plateau pressure ≤ 30 cm H2O and delta P ≤ 20 cm H2O.
4. Set Tidal Volume (Vt): 8 ml/Kg of ideal body weight (IBW), while maintaining above plateau pressures and delta.
5. Set I:E ratio: The I:E ratio should be optimized along with total cycle time (TCT) to provide optimum mean airway pressure, lung filling, and minimizing air-trapping (auto-PEEP).
6. Verify ventilator is delivering oxygen adequately (look, listen, and feel) to the device.
7. Attach ventilator tubing to patient.
8. Verify patient ventilatory status:
 - a. Rise and fall of chest
 - b. Equal breath sounds
 - c. Capnography waveform
 - d. Pulse oximetry
 - e. Updated vital signs
9. Ventilatory flow sheets must be completed and attached to medical record.
10. A Bag valve mask must be maintained with the patient at all times.

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

**Ventilator Assisted
Transport of Patients**

ADDITIONAL REQUIREMENTS:

This is an Advanced Scope of Practice Protocol. Only providers who have completed additional system training are authorized to perform. The protocol is only designed for patients who are being transferred from one medical facility to another.

A medical command physician must be contacted prior to the EMS crew taking transfer of care of the patient if any of the following conditions apply:

1. Patient in hypotensive at the time of transfer.
2. An acute deterioration or change in the patient's status is noted.
3. Medications ordered are outside of the concentrations or infusion rates that are permitted by the current prehospital treatment protocols.
4. The prehospital provider has any concern that the provider's experience or abilities, or the available equipment, may not meet the patient's anticipated needs during the transport.



MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

**Ventilator Assisted
Transport of Patients**

Patient's Name: _____ Date: _____

Diagnosis: _____

Sending Facility: _____

Receiving Facility: _____

Transporting Agency: _____ MICU# _____

Report Received From: _____

Paramedic: _____ Lic No. _____

Ventilator Settings

Mode: Control _____ Assist/Control (AC) _____ SIMV _____ PCV _____

Pressure Support _____ CPAP _____ Bi PAP _____

Other _____

Tidal Volume _____ Respiratory Rate _____ FIO₂ _____ I E Ratio _____

Was a sedative agent used prior to transport? Yes _____ No _____

If yes, list agent _____

Was a paralytic agent used prior to transport? Yes _____ No _____

If yes, list agent _____

Copies of this form and the MICU form must be sent to EMS office within 24 hours.

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Heparin Sodium

CLASS:

- Anticoagulant

ACTION(S):

- Functions as an anticoagulant by accelerating neutralization of activated clotting factors, hence inhibiting the clotting of blood and the formation of fibrin clots.

INDICATIONS:

1. Concurrent usage with administration of TPA in the acute MI patient
2. Treatment of pulmonary embolism and a-fib with embolization
3. Treatment of peripheral arterial embolism
4. Treatment of venous thrombi and its extension
5. Prevention of re-thrombosis or re-occlusion during MI after thrombolytic therapy

CONTRAINdications:

Absolute:

1. Severe thrombocytopenia
2. Uncontrolled active bleeding (except when known to be from DIC [disseminated intravascular coagulation])
3. Sensitivity to Heparin

Relative:

1. Any disease where risk of hemorrhage may be increased
2. Aneurysm
3. Severe hypertension
4. Diverticulitis or ulcerative colitis
5. Severe hepatic disease or renal disease
6. Sub acute bacterial endocarditis
7. Following major surgery or lumbar puncture (spinal tap)

COMPLICATIONS/ADVERSE REACTIONS:

1. Local site irritation
2. Hypersensitivity
3. Anaphylactic reaction
4. Adrenal hemorrhage

PRECAUTIONS:

Use with caution in the following patients:

1. Pregnant patients
2. Alcoholics (due to decreased hepatic function)
3. Elderly (due to decreased hepatic & renal function and increased injury capability)
4. Avoid IM injections or other procedures that may cause bleeding.
5. Move patients gently to avoid bruising or bleeding

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Heparin Sodium

SIDE EFFECTS:

- Fever
- Bruising
- Oozing of blood

EQUIPMENT:

- Infusion Pump

HOW SUPPLIED:

- 25,000 units in 500 mL 0.45% NS (50u/mL)
- 25,000 units in 500mL D₅W (50u/mL)
- 25,000 units in 250mL D₅W (100u/mL)
- 1,000 units in 500mL NS (2u/mL)

DOSE:

- 5,000 units (loading dose)
- Maintenance infusion is based on PTT results but is usually around 1,000 units/hr (dose will be determined by transferring facility)

STANDING ORDERS:

1. *Routine ALS Care*
2. **Verify initial dose and infusion rate as well as total time at the transferring facility prior to departure.**
3. Verify lab values (platelet count, coagulation studies) prior to departure (if available).
4. **Monitor patient closely** en route.
5. If uncontrolled bleeding or allergic reaction develops, immediately discontinue the infusion, provide necessary treatment and **contact Medical Control**.
6. Any other change in rate/dosage of Heparin during interfacility transfer requires **Medical Control order**.
7. If perceived life threatening reaction, infusion may be stopped while contacting Medical Control.

ADDITIONAL REQUIREMENTS:

This is an Advanced Scope of Practice Protocol. Only providers who have completed additional system training are authorized to perform. The protocol is only designed for patients who are being transferred from one medical facility to another.

A medical command physician must be contacted prior to the EMS crew taking transfer of care of the patient if any of the following conditions apply:

1. Patient in hypotensive at the time of transfer.
2. An acute deterioration or change in the patient's status is noted.
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4. The prehospital provider has any concern that the provider's experience or abilities, or the available equipment, may not meet the patient's anticipated needs during the transport.

Nitroglycerin Infusion

CLASS:

- Nitrate

ADDITIONAL NAMES:

- Nitrostat

ACTION:

- Vasodilator and vascular smooth muscle relaxant
- Reduces myocardial oxygen consumption, preload & afterload
- Metabolized by the liver
- Excreted in urine
- Half-life of 1-4 minutes
- IV onset of action – immediate; duration – variable

INDICATIONS:

1. Unstable angina pectoris if hemodynamically stable
2. Congestive heart failure (CHF) in settings of acute MI that are hemodynamically stable
3. Hypertensive emergencies

CONTRAINDICATIONS:

1. Sensitivity to nitrates
2. Increased ICP (*e.g.* head trauma, hemorrhagic stroke or other cerebral hemorrhage)
3. Uncorrected hypovolemia
4. Use of *sildenafil citrate* (Viagra) within 48 hours

COMPLICATIONS/ADVERSE REACTIONS/SIDE EFFECTS:

1. Hypotension, especially postural (from vasodilation)
2. Dizziness/syncope (from hypotension)
3. Pallor/sweating (from hypotension)
4. Temporary pulsating headache (from vasodilation)
5. Nausea/vomiting
6. Tachycardia (in response to hypotension)
7. Paradoxical bradycardia (rare)
8. Rash or anaphylaxis

PRECAUTIONS:

Use with caution in the following patients:

1. Pregnant or lactating patients
2. Hepatic or renal disease
3. Pericarditis
4. Postural hypotension

EQUIPMENT:

- Infusion Pump

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Nitroglycerin Infusion

HOW SUPPLIED:

- 25mg in 250mL D₅W
- 50mg in 250mL D₅W

Note: Nitroglycerin infusions MUST be in a glass bottle with **Polyethylene tubing**.

DOSE:

- 5-50mcg/minute

STANDING ORDERS:

1. *Routine ALS Care*
2. **Verify concentration & dose, infusion rate as well as total time and vital sign parameters at the transferring facility prior to departure.**
3. Nitroglycerin infusion should have its own IV site. **No IV push drugs can be administered through this line.** If absolutely necessary, NTG is compatible with Heparin (and Lidocaine).
4. Monitor patient closely en route and repeat vital signs **every 15 minutes**.
5. Titrate NTG drip to effect (patient's pain relief) by increasing in 10mcg increments every 3-5 minutes until a response is noted.
6. **BE ALERT FOR DEVELOPING HYPOTENSION.** Titrate down in 10mcg increments for hypotension. Monitor vital signs every 3-5 minutes after an increase in dose.
7. **Notify Medical Control** in the following circumstances
 - a. Chest pain re-occurs en route
 - b. Vital signs deviate from the predetermined parameters set forth by the transferring hospital
 - c. Any titration of the NTG drip (up or down)
8. **Maximum infusion of NTG not to exceed 50mcg/minute**
9. If perceived life threatening reaction, infusion may be stopped while contacting Medical Control.

ADDITIONAL REQUIREMENTS:

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A medical command physical must be contacted prior to the EMS crew taking transfer of care of the patient if any of the following conditions apply:

1. Patient in hypotensive at the time of transfer.
2. An acute deterioration or change in the patient's status is noted.
3. Medications ordered are outside of the concentrations or infusion rates that are permitted by the current prehospital treatment protocols.
4. The prehospital provider has any concern that the provider's experience or abilities, or the available equipment, may not meet the patient's anticipated needs during the transport.

Dopamine Infusion

CLASS:

- Sympathomimetic

ACTION:

- Alpha- and beta-adrenergic agonist, resulting in increased cardiac contractility and myocardial workload as well as peripheral vasoconstriction (both venous & arterial)

INDICATIONS:

1. Correction of hemodynamic imbalance in hypoperfusion syndromes other than volume deficit
2. Cardiac dysfunction due to AMI
3. Cardiac dysfunction due to CHF
4. Poor perfusion due to sepsis
5. Neurologically induced vasodilation (neurogenic shock)
6. Renal failure

CONTRAINDICATIONS:

1. Uncontrolled tachycardia
2. Ventricular irritability
3. Hypertension
4. Hypoperfusion from volume deficit

COMPLICATIONS/ADVERSE REACTIONS/SIDE EFFECTS:

1. Tachycardia
2. Hypertension
3. Ventricular irritability
4. Angina
5. Anxiety
6. Decreased peripheral perfusion
7. Tissue necrosis with infiltration of IV line

PRECAUTIONS:

Use with caution in the following patients:

1. Children
2. Patients with occlusive vascular disease (or other types of peripheral vascular insufficiency)

EQUIPMENT:

- Infusion Pump

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Dopamine Infusion

HOW SUPPLIED:

- 400mg in 250mL D₅W
- 800mg in 250 mL D₅W

DOSE:

- *Dopaminergic (renal) dose:* 2-5mcg/kg/min
- *Beta agonist (cardiac) dose:* 5-15mcg/kg/min
- *Alpha agonist (vasopressor) dose:* >15mcg/kg/min

STANDING ORDERS:

1. *Routine ALS Care*
2. Verify patient's **weight (in kilograms)**
3. **Verify concentration & dose, infusion rate as well as total time and vital sign parameters at the transferring facility prior to departure.**
4. Incompatible with Sodium Bicarb. **No IV push drugs can be administered through this line.** Monitor patient closely for rhythm changes en route and repeat vitals signs **every 15 minutes.**
5. Monitor urine output (should be at least 25mL/hr)
6. **Notify Medical Control** if complications arise.
7. **Maximum infusion of Dopamine not to exceed 50mcg/kg/minute.**
8. If perceived life threatening reaction, infusion may be stopped while contacting Medical Control.

ADDITIONAL REQUIREMENTS:

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A medical command physician must be contacted prior to the EMS crew taking transfer of care of the patient if any of the following conditions apply:

1. Patient in hypotensive at the time of transfer.
2. An acute deterioration or change in the patient's status is noted.
3. Medications ordered are outside of the concentrations or infusion rates that are permitted by the current prehospital treatment protocols.
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MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

**IV Fluids with Potassium
Chloride (KCl) Added**

CLASS:

- Electrolyte

ACTION:

- Participates in several physiological processes in the body including the transmission of nerve impulses, the maintenance of normal renal function & intracellular toxicity and the contraction of skeletal, cardiac & smooth muscle.

INDICATION:

- Hypokalemia

CONTRAINDICATION:

- Hyperkalemia

COMPLICATIONS/ADVERSE REACTIONS:

1. Burning along the vein of infusion
2. Local site irritation
3. Lower extremity weakness

PRECAUTIONS:

1. Alkalosis/acidosis (serum potassium levels may not represent total body potassium)
2. Acidosis (risk of hyperkalemia)
3. Burn patients (risk of hyperkalemia due to extensive tissue breakdown)
4. Concomitant use of ACE inhibitors (inhibits aldosterone production resulting in potassium retention)
5. Concomitant use of potassium-sparing diuretics (risk of hyperkalemia)
6. Acute dehydration (risk of hyperkalemia)
7. Chronic renal failure (risk of hyperkalemia)
8. Patients taking Digoxin or suspected of having Digoxin toxicity.

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

IV Fluids with Potassium Chloride (KCl) Added

SIDE EFFECTS:

1. Abdominal pain
2. Nausea/vomiting
3. EKG changes associated with hyperkalemia:
 - Tall, tented (peaked) T waves
 - Depressed ST segments
 - Prolonged PR intervals
 - Flattened P waves
 - Prolonged QRS & QT intervals
 - Heart block
 - Bigeminy
 - V-fib/cardiac arrest

EQUIPMENT:

- Infusion Pump

HOW SUPPLIED:

- Potassium chloride (KCl) should be diluted in a 500 mL bag of Normal Saline (NS)
- **KCl concentrations may not exceed 40 mEq in 500 mL NS**

DOSE:

- Maximum dose of 10 mEq/hr
- **KCl infusion must be initiated at the transferring hospital and can be run through either a central or peripheral line.**

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

**IV Fluids with Potassium
Chloride (KCl) Added**

STANDING ORDERS:

1. *Routine ALS Care*
2. **Verify initial dose, infusion rate and concentration as well as total time at the transferring facility prior to departure.**
3. Verify lab values (serum electrolytes, BUN & creatinine) prior to departure (if available).
4. Incompatible with Phenergan (promethazine), Sodium Bicarbonate, Sodium Nitroprusside and Atropine.
5. Assess IV insertion site for any redness, swelling or tenderness. If any one of these is present, stop the infusion, discontinue IV. Establish a new IV site and restart infusion. Notify the receiving hospital of the area of the previous IV site and reason for discontinuing the original IV.
6. **Monitor patient closely** en route. If signs & symptoms of hyperkalemia occur, stop the infusion and **contact Medical Control**.
7. **Monitor urinary output** (long-distance transports) and **contact Medical Control** if urinary output is < 30mL/hr for two (2) consecutive hours.
8. Any change in rate/dosage of KCl during Interfacility transfer requires **Medical Control Order**.

ADDITIONAL REQUIREMENTS:

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MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Amiodarone IV Infusion

CLASS:

- Class III antiarrhythmic

ADDITIONAL NAMES:

- Cardone

ACTION:

- Prolongs the duration of action potential and effective refractory period. Noncompetitive alphas and Beta adrenergic inhibition. It increases the PR and QT intervals and decreases sinus rate. Also effective for atrial arrhythmias in patients with impaired left ventricular function when digoxin has proven ineffective.

INDICATION:

1. Treatment and prophylaxis of frequently recurring ventricular fibrillation and hemodynamically unstable ventricular tachycardia.

CONTRAINDICATION:

- Known hypersensitivity.
- Cardiogenic shock.
- Marked Sinus Bradycardia and 2nd and 3rd heart block without functioning pacemaker.
- Severe liver disease.
- Hypotension.

COMPLICATIONS/ADVERSE REACTIONS:

Cardiovascular

1. Vasodilation and hypotension
2. Torsades de Pointes
3. Sinus arrest
4. Bradycardia
5. CHF
6. Prolonged QT interval
7. Negative inotropic effects

Pulmonary

1. Pulmonary toxicity
2. Progressive dyspnea
3. Fatigue
4. Cough
5. Pleuritic pain
6. Fever
7. Pulmonary edema

**MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL**

Amiodarone IV Infusion

PRECAUTIONS:

- 1. Use with caution in renal failure patients
- 2. Incompatible with Heparin Sodium

EQUIPMENT:

- Infusion pump

HOW SUPPLIED:

- 150mg/ 3 mL
- 150mg/ 100 mL D5W
- 360 mg/ 100 mL D5W

DOSE:

- Loading dose of 150 mg or 300 mg infusion to be completed at transferring facility.
- Slow infusion of 360 mg over 6 hours at 1 mg/ min.
- Maintenance infusion of 540 mg over 18 hours at 0.5 mg/ min.

STANDING ORDERS:

1. *Routine ALS Care.*
2. **Verify initial dose completion and infusion rate as well as total time at the transferring facility prior to departure.**
3. Verify Potassium, Magnesium and liver function labs, if available.
4. Monitor patient closely enroute.
5. Notify Medical Control if heart rate less than 60 or B/P less than 90.
6. Consider IV bolus if hypotension occurs.
7. Any change in rate/dosage of Amiodarone during Interfacility transfer requires **Medical Control Order**.
8. If perceived life threatening reaction, infusion may be stopped while contacting Medical Control.

ADDITIONAL REQUIREMENTS:

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A medical command physician must be contacted prior to the EMS crew taking transfer of care of the patient if any of the following conditions apply:

1. Patient in hypotensive at the time of transfer.
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MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Cardizem IV Infusion

CLASS:

- Calcium Channel Blocker

ADDITIONAL NAMES:

- Diltiazem

ACTION:

- Inhibits calcium ion influx across the cell membrane in cardiac and vascular smooth muscle. Produces relaxation of coronary vascular smooth muscle and dilates coronary arteries. Slows SA/AV node conduction and dilates peripheral arteries.

INDICATION:

1. Atrial fibrillation with rapid ventricular response
2. Atrial Flutter
3. PSVT
4. Chronic unstable angina pectoris

CONTRAINDICATION:

- 2nd or 3rd heart block
- Cardiogenic shock
- Sick Sinus Syndrome
- Hypotension of 90mmHg Systolic
- Wolff-Parkinson-White Syndrome

COMPLICATIONS/ADVERSE REACTIONS:

Cardiovascular

1. Hypotension
2. CHF
3. Ventricular or atrial arrhythmias
4. Chest pain
5. Junctional or AV dissociation
6. Facial Flushing

Central Nervous System

1. Dizziness
2. Parasthesias
3. Headache
4. Weakness
5. Visual disturbance

Dermatologic

1. Injection site reaction (itching, burning)
2. Sweating

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Cardizem IV Infusion

SIDE EFFECTS:

- 1. Constipation
- 2. Nausea
- 3. Vomiting
- 4. Dry Mouth

EQUIPMENT:

- Infusion pump

HOW SUPPLIED:

- 25mg/ 5 mL
- 100mg/ 100mL NS
- 100mg/ 100mL D5W

DOSE:

- 0.25mg/kg IVP over 2 minutes with second dose (if no response after fifteen minutes) of 0.35 mg/kg over 2 minutes to be given at transferring facility.
- 5-15 mg/hr (dose will be determined by transferring facility)

STANDING ORDERS:

1. *Routine ALS Care.*
2. **Verify infusion rate as well as total time at the transferring facility prior to departure.**
3. Monitor patient closely enroute.
4. Notify Medical Control if heart rate greater than 150 or persistently less than 80 or B/P less than 90.
5. Consider IV bolus if hypotension occurs.
6. Any change in rate/dosage of Cardizem during Interfacility transfer requires **Medical Control Order.**
7. If perceived life threatening reaction, infusion may be stopped while contacting Medical Control.

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3. Medications ordered are outside of the concentrations or infusion rates that are permitted by the current prehospital treatment protocols.
4. The prehospital provider has any concern that the provider's experience or abilities, or the available equipment, may not meet the patient's anticipated needs during the transport.

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Antibiotic Infusions

CLASS:

- Antibiotic

ACTION:

- Treatment for known infection. Prophylactic measure for patient who may undergo surgical procedure or who has had recent exposure that indicates likelihood of resulting infection.

INDICATION:

1. Pre-existing, diagnosed infection or suspected infection.
2. Exposure that creates likelihood of resulting infection.

CONTRAINDICATION:

- Known allergy to the medication

COMPLICATIONS/ADVERSE REACTIONS:

1. Allergic reactions
2. Ototoxicity
3. Nephrotoxicity (aminoglycocides)

PRECAUTIONS:

1. Speed of infusion

SIDE EFFECTS:

1. Localized reaction to infusion: redness/ burning at site of infusion.

EQUIPMENT:

- Antibiotic infusions may be administered by pump or by gravity set rate.

HOW SUPPLIED:

- Varies by antibiotic

DOSE:

- Dependent on the specific antibiotic.

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Antibiotic Infusions

STANDING ORDERS:

1. *Routine ALS Care.*
2. Antibiotics need to be started 15 minutes or more before the start of the transport.
3. **Verify infusion rate as well as total time at the transferring facility prior to departure.**
4. Monitor patient closely enroute.
5. Notify Medical Control if signs and symptoms of shock or allergic reaction.
6. Follow *Anaphylaxis Protocol* if needed for signs of allergic reaction and/ or shock.
7. If infusion is completed during transport, antibiotics should be discontinued and line kept open by infusing .9% Normal Saline at TKO rate.
8. Consider IV bolus if hypotension occurs.
9. Any change in rate/dosage of antibiotics during Interfacility transfer requires **Medical Control Order**.
10. If perceived life threatening reaction, infusion may be stopped while contacting Medical Control.

ADDITIONAL REQUIREMENTS:

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A medical command physician must be contacted prior to the EMS crew taking transfer of care of the patient if any of the following conditions apply:

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MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

tPA Infusions

CLASS:

- Thrombolytic

ADDITIONAL NAMES:

- Activase
- Alteplase

ACTION:

- Dissolve clot in treatment of ischemic stroke.

INDICATION:

1. Ischemic stroke diagnosed by CT.

CONTRAINDICATION:

- Nasogastric Tube
- Evidence/ suspicion of cerebral hemorrhage
- Intracranial or intraspinal surgery, serious head trauma or previous stroke within last 3 months
- History of intracranial hemorrhage
- Uncontrolled hypertension (> 185mmHg Systolic, > 110 mmHg Diastolic)
- Seizure at the onset of stroke
- Active internal bleeding
- Intracranial neoplasm, arteriovenous malformation, or aneurysm
- History of Pradaxa use
- Known bleeding diathesis including but not limited to:
 - Current use of oral anticoagulants or an International Normalized Ratio (INR) >1.7 or a prothrombin time (PT) > 15 seconds
 - Administration of heparin or Low Molecular Weight Heparin (Lovenox) within 48 hours preceding the onset of stroke and have an elevated partial thromoplastin time (aPTT) at presentation
 - Platelet count <100,000mm³

COMPLICATIONS/ADVERSE REACTIONS:

1. Bleeding
2. Reperfusion arrhythmias
3. Elevated temp
4. Hypotension
5. Anaphylactic Reaction

PRECAUTIONS:

1. tPA must be started within 4.5 hours of onset of symptoms.
2. Do not take blood pressure in the arm tPA is infusing in.
3. Patient must be NPO for 24 hours and until swallow study is done.

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

tPA Infusions

SIDE EFFECTS:

- 1. Bleeding at venipuncture sites.
- 2. Hematuria

EQUIPMENT:

- Infusion Pump

HOW SUPPLIED:

- 100mg/100mL bedside premix for infusion

DOSE:

- Loading dose of 10% of total infusion given over 1 minute to be completed at transferring facility.
- Infusion of 0.9mg/kg to be infused over 60 minutes.

STANDING ORDERS:

1. *Routine ALS Care.*
2. **Verify infusion rate as well as total time at the transferring facility prior to departure.**
3. Monitor patient closely enroute for signs of hypertension and bleeding.
4. If infusion is completed during transport, tPA should be discontinued and line kept open by infusing .9% Normal Saline at TKO rate.
5. Consider IV bolus if hypotension occurs.
6. Any change in rate/dosage of tPA during Interfacility transfer requires **Medical Control Order.**
7. If perceived life threatening reaction, infusion may be stopped while contacting Medical Control.

ADDITIONAL REQUIREMENTS:

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A medical command physician must be contacted prior to the EMS crew taking transfer of care of the patient if any of the following conditions apply:

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MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Levophed

CLASS:

- Sympathomimetic

ADDITIONAL NAMES:

- Norepinepherine

ACTION:

- Alpha adrenergic and some Beta adrenergic agonist to cause peripheral vasoconstriction, increase blood pressure and increase heart rate to lesser degree

INDICATION:

1. Neurogenic shock
2. Septic shock
3. Hypotension refractory to other sympathomimetics

CONTRAINDICATION:

- Hypotension from hypovolemia

COMPLICATIONS/ADVERSE REACTIONS:

1. Headache

PRECAUTIONS:

1. Alkaline solutions can deactivate.
2. Requires constant monitoring of blood pressure.
3. Extravasation can cause tissue necrosis.

SIDE EFFECTS:

1. Anxiety
2. Palpitations
3. Hypertension

EQUIPMENT:

- Infusion pump

HOW SUPPLIED:

- 4 mg/ 250 mL (typical)
- 8 mg/ 250 mL (double strength)

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Levophed

DOSE:

- 0.5-40 mcg/ minute. Typical starting dose is 5 mcg/min. Max 40 mcg/min.
- 4 mg in 250 ml of D5W, giving a concentration of 15 mcg/mL (Typical)
- MEMS does **not** use weight based dosing. If EMS responds for an inter-facility transport and finds dosing or concentrations other than as noted above, **Contact Medical Control** for orders.

STANDING ORDERS:

1. *Routine ALS Care.*
2. **Verify infusion rate as well as total time at the transferring facility prior to departure.**
3. Monitor patient closely enroute.
4. Consider an IV fluid bolus if hypotension develops.
5. **Contact Medical Control** if the heart rate is greater than 150 bpm or persistently less than 60 bpm or a SBP less than 90 for 2 consecutive readings 5 minutes apart.
6. Any change in rate/dosage of Levophed during inter-facility transfer requires **Medical Control Order**. Typical titration orders would be increasing 2.5-5mcg/min every 5 minutes to maintain SBP>90mmHg.
7. If perceived life threatening reaction, infusion may be stopped while contacting Medical Control.

ADDITIONAL REQUIREMENTS:

This is an Advanced Scope of Practice Protocol. Only providers who have completed additional system training are authorized to perform. The protocol is only designed for patients who are being transferred from one medical facility to another.

A medical command physician must be contacted prior to the EMS crew taking transfer of care of the patient if any of the following conditions apply:

1. Patient is hypotensive at the time of transfer.
2. An acute deterioration or change in the patient's status is noted.
3. Medications ordered are outside of the concentrations or infusion rates that are permitted by the current prehospital treatment protocols.
4. The prehospital provider has any concern that the provider's experience or abilities, or the available equipment, may not meet the patient's anticipated needs during the transport.

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Protonix

CLASS:

- Proton Pump Inhibitor

ADDITIONAL NAMES:

- Pantoprazole

ACTION:

- Decreases secretion of gastric acid and chronic reflux

INDICATION:

1. Patients with Upper GI Bleed

CONTRAINDICATION:

- Allergy to drug or drug class

COMPLICATIONS/ADVERSE REACTIONS:

1. Jaundice
2. GI upset
3. CNS Symptoms in elderly

PRECAUTIONS:

- Hypersensitivity to Proton Pump Inhibitor drug class.

SIDE EFFECTS:

1. Anaphylaxis
2. Rash

EQUIPMENT:

- Infusion Pump

HOW SUPPLIED:

- 40 mg/50 mL
- 80 mg/ 100 mL

DOSE:

- Bolus of 80 mg over 5 minutes given prior to infusion.
- IV Infusion of 8 mg/ hour.

STANDING ORDERS:

1. *Routine ALS Care.*
2. **Verify infusion rate as well as total time at the transferring facility prior to departure.**
3. Monitor patient closely enroute.

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Protonix

4. Notify Medical Control if heart rate greater than 150 or persistently less than 80 or B/P less than 90.
5. Consider IV bolus if hypotension occurs.
6. Any change in rate/dosage of Protonix during Interfacility transfer requires **Medical Control Order**.
7. If perceived life threatening reaction, infusion may be stopped while contacting Medical Control.

ADDITIONAL REQUIREMENTS:

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A medical command physician must be contacted prior to the EMS crew taking transfer of care of the patient if any of the following conditions apply:

1. Patient in hypotensive at the time of transfer.
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MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Narcan

CLASS:

- Narcotic Antagonist

ADDITIONAL NAMES:

- Naloxone

ACTION:

- Reverses the effects of narcotics

INDICATION:

1. Narcotic overdoses from
 - a. Codeine
 - b. Demerol
 - c. Dilaudid
 - d. Fentanyl
 - e. Heroin
 - f. Lortab
 - g. Methadone
 - h. Morphine
 - i. Paregoric
 - j. Percodan
 - k. Tylox
 - l. Vicodin
2. To rule out possible overdose of unknown origin

CONTRAINDICATION:

- None

COMPLICATIONS/ADVERSE REACTIONS:

1. Use with caution for patients with long term drug use and/ or prescription opioid use.

PRECAUTIONS:

1. Be alert for patient reaction to medication.

SIDE EFFECTS:

1. Allergic reaction
2. Anaphylaxis

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Narcan

EQUIPMENT:

- Infusion Pump

HOW SUPPLIED:

- 2mg/500mL
- 4mg/250mL

DOSE:

- Typical infusion of 0.5mg/hour.

STANDING ORDERS:

1. *Routine ALS Care.*
2. **Verify infusion rate as well as total time at the transferring facility prior to departure.**
3. Monitor patient closely enroute.
4. Notify Medical Control if heart rate greater than 150 or persistently less than 80 or B/P less than 90.
5. Consider IV bolus if hypotension occurs.
6. Any change in rate/dosage of Narcan during Interfacility transfer requires **Medical Control Order.**
7. If perceived life threatening reaction, infusion may be stopped while contacting Medical Control.

ADDITIONAL REQUIREMENTS:

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A medical command physician must be contacted prior to the EMS crew taking transfer of care of the patient if any of the following conditions apply:

1. Patient in hypotensive at the time of transfer.
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MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Dobutamine

CLASS:

- Sympathomimetic

ADDITIONAL NAMES:

- Dobutex

ACTION:

- Increases cardiac contractility
- Some chronotropic activity

INDICATION:

1. Short term management of CHF
2. Decreased cardiac output
3. Cardiogenic shock

CONTRAINDICATION:

- Should only be used on patients with adequate heart rate
- Tachydysrhythmias
- Hypertrophic subaortic stenosis

COMPLICATIONS/ADVERSE REACTIONS:

1. Infusion site reaction

PRECAUTIONS:

1. Ventricular irritability
2. Use with caution in myocardial infarction
3. Can be deactivated by alkaline solutions

SIDE EFFECTS:

1. Increased heart rate
2. Palpitations
3. Dyspnea
4. Hypokalemia

EQUIPMENT:

- Infusion Pump

HOW SUPPLIED:

- 250 mg/ 250 mL

DOSE:

- 2.5-20 mcg/kg/min
- Reduce doses by 5mcg/kg/min in the event of tachydysrhythmias

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Dobutamine

STANDING ORDERS:

1. *Routine ALS Care.*
2. Verify infusion rate as well as total time at the transferring facility prior to departure.
3. Monitor patient closely enroute.
4. Notify Medical Control if heart rate greater than 150 or persistently less than 80 or B/P less than 90.
5. Consider IV bolus if hypotension occurs.
6. Any change in rate/dosage of Dobutamine during Interfacility transfer requires **Medical Control Order**.
7. If perceived life threatening reaction, infusion may be stopped while contacting Medical Control.

ADDITIONAL REQUIREMENTS:

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A medical command physician must be contacted prior to the EMS crew taking transfer of care of the patient if any of the following conditions apply:

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3. Medications ordered are outside of the concentrations or infusion rates that are permitted by the current prehospital treatment protocols.
4. The prehospital provider has any concern that the provider's experience or abilities, or the available equipment, may not meet the patient's anticipated needs during the transport.

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

N-Acetylcysteine

CLASS:

- Antidote

ADDITIONAL NAMES:

- NAC
- Acetadote
- Acetylcysteine 20%

ACTION:

- Protects the liver by maintaining or restoring glutathione levels or by acting as an alternate substrate for conjunction with, and therefore detoxification of, the acetaminophen reactive metabolite

INDICATION:

1. Acetaminophen toxicity
2. Acute liver failure

CONTRAINDICATION:

- Sensitivity to acetylcysteine

COMPLICATIONS/ADVERSE REACTIONS:

1. Anaphylaxis
2. Bronchospasm
3. Rash
4. Nausea
5. Vomiting

PRECAUTIONS:

1. Use with caution in asthma patients

SIDE EFFECTS:

1. Tachycardia
2. Hypotension
3. Vomiting

EQUIPMENT:

- Infusion Pump

HOW SUPPLIED:

- 30 mL vials
- Given as infusion in D5W

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

N-Acetylcysteine

DOSE:

- Loading dose: 150 mg/kg in 200 mL over 60 minutes (200 mL/hr)
- Maintenance doses: 50 mg/kg in 500 mL over 4 hours (125 mL/hr), followed by 100mg/kg in 1,000 mL over 16 hours (62.5 mL/hr)

STANDING ORDERS:

1. *Routine ALS Care.*
2. **Verify infusion rate as well as total time at the transferring facility prior to departure.**
3. Monitor patient closely enroute.
4. Notify Medical Control if heart rate greater than 150 or persistently less than 80 or B/P less than 90.
5. Consider IV bolus if hypotension occurs.
6. Any change in rate/dosage of N-Acetylcysteine during Interfacility transfer requires **Medical Control Order.**
7. If perceived life threatening reaction, infusion may be stopped while contacting Medical Control.

ADDITIONAL REQUIREMENTS:

This is an Advanced Scope of Practice Protocol. Only providers who have completed additional system training are authorized to perform. The protocol is only designed for patients who are being transferred from one medical facility to another.

A medical command physician must be contacted prior to the EMS crew taking transfer of care of the patient if any of the following conditions apply:

1. Patient in hypotensive at the time of transfer.
2. An acute deterioration or change in the patient's status is noted.
3. Medications ordered are outside of the concentrations or infusion rates that are permitted by the current prehospital treatment protocols.
4. The prehospital provider has any concern that the provider's experience or abilities, or the available equipment, may not meet the patient's anticipated needs during the transport.

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Blood Products

CLASS:

- Blood Components

ADDITIONAL NAMES:

- FFP
- PRBCs

ACTION:

- Replace cells (fresh frozen plasma or packed red blood cells) needed by the body

INDICATION:

1. Hemorrhagic shock
2. Anticoagulant reversal
3. Symptomatic anemia

CONTRAINDICATION:

- Patient refusal

COMPLICATIONS/ADVERSE REACTIONS:

1. Transfusion reaction. Severe reactions will usually manifest during initial 50cc or less of infusion.
2. ABO incompatibility

PRECAUTIONS:

1. Too fast of infusion can produce volume overloaded state.

SIDE EFFECTS:

1. Transfusion reaction

EQUIPMENT:

- Infusion Pump

HOW SUPPLIED:

- 250-300 mL per unit infusion

DOSE:

- 1 unit
- Rate based on situation

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Blood Products

STANDING ORDERS:

1. Blood infusions must be started at least 15 minutes before the transport AND at least 50 CC must be infused before the transport can begin.
2. *Routine ALS Care.*
3. Verify infusion rate as well as total time at the transferring facility prior to departure.
4. Monitor patient closely enroute.
5. Temperature must be take every 15 minutes.
6. Notify Medical Control if heart rate greater than 150 or persistently less than 80 or B/P less than 90.
7. Consider IV bolus if hypotension occurs.
8. Any change in rate/dosage of blood products during Interfacility transfer requires **Medical Control Order.**
9. If perceived life threatening reaction, infusion may be stopped while contacting Medical Control.
10. Tubing must be changed every 2 units or after every 4 hours of use. Tubing must be discarded immediately following completion of transfusion.
11. If signs of transfusion reaction, infusion should be stopped and tubing should be removed. Tubing and remaining blood should be transported to destination facility for evaluation.
 - a. Signs of a transfusion reaction include:
 - i. Temperature
 - ii. Hypertension/ Hypotension
 - iii. Dyspnea
 - iv. Rash
 - v. Itching
 - vi. Hives
 - b. Treat symptoms based on appropriate protocol which may include
 - i. Benadryl 25-50 mg IV
 - ii. IV Fluids
 - iii. Epinephrine 0.15-0.3 mg IM

ADDITIONAL REQUIREMENTS:

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A medical command physician must be contacted prior to the EMS crew taking transfer of care of the patient if any of the following conditions apply:

1. Patient in hypotensive at the time of transfer.
2. An acute deterioration or change in the patient's status is noted.

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Blood Products

3. Medications ordered are outside of the concentrations or infusion rates that are permitted by the current prehospital treatment protocols.
4. The prehospital provider has any concern that the provider's experience or abilities, or the available equipment, may not meet the patient's anticipated needs during the transport.



MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Multivitamin Banana Bag

CLASS:

- Vitamin

OTHER NAMES:

Rally Packs

ACTION(S):

Replenishes vitamins/ minerals and fluids lost in acute alcohol consumption.

INDICATIONS:

1. Vitamin and electrolyte deficiencies in chronic alcohol consumption

CONTRAINdications:

Absolute:

1. True allergy to any component of the preparation

COMPLICATIONS/ADVERSE REACTIONS:

None

PRECAUTIONS:

Use with caution in the following patients:

1. May not provide sufficient quantities of Thiamine for patient with Wernicke's Encephalopathy

SIDE EFFECTS:

- None

EQUIPMENT:

- May run to gravity

HOW SUPPLIED:

- 1 L 0.9 Normal Saline
 - 1 amp multivitamin
 - 1 mg Folate
 - 100 mg Thiamine
 - In some situations Magnesium is added
 - Dose may vary, typically 3g
 - If Magnesium is added, must be run by IV pump

DOSE:

- 1 L over 2 or more hours

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Multivitamin Banana Bag

STANDING ORDERS:

1. *Routine ALS Care*
2. **Verify initial dose and infusion rate as well as total time at the transferring facility prior to departure.**
3. Verify lab values (platelet count, coagulation studies) prior to departure (if available).
4. **Monitor patient closely** en route.
5. If uncontrolled bleeding or allergic reaction develops, immediately discontinue the infusion, provide necessary treatment and **contact Medical Control**.
6. Any other change in rate/dosage of Multivitamin Banana Bag during interfacility transfer requires **Medical Control order**.
7. If perceived life threatening reaction, infusion may be stopped while contacting Medical Control.

ADDITIONAL REQUIREMENTS:

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A medical command physician must be contacted prior to the EMS crew taking transfer of care of the patient if any of the following conditions apply:

1. Patient in hypotensive at the time of transfer.
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MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Octreotide

CLASS:

- Synthetic hormone
- Antidiarrheal Somatostatin Analog

Additional Names

Sandostatin
Sandostatin LAR

ACTION(S):

Long Acting octopeptide with pharmacologic actions mimicking those of the natural hormone somatostatin

INDICATIONS:

1. GI Bleed
2. Refractory hypoglycemia in combination with Dextrose

CONTRAINDICATIONS:

Absolute:

1. Known allergy to Octreotide
2. Patients with known Bradycardia or ECG changes and arrhythmias
3. Dialysis

Relative:

1. Dosage may be reduced for renal failure/ dialysis patients
2. Patients with known bradycardia or ECG changes/ arrhythmias

COMPLICATIONS/ADVERSE REACTIONS:

1. May affect insulin dosing

PRECAUTIONS:

Use with caution in the following patients:

1. May enhance toxicity of QTc prolonging agents
2. Multiple drug incompatibilities

SIDE EFFECTS:

- Abdominal or stomach pain
- Blurred vision
- Dizziness
- Dry mouth
- Fainting
- Fast, slow, or irregular heartbeat
- Flushed, dry skin

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Octreotide

Side Effects (continued)

- Muscle cramps and stiffness
- Nausea
- Severe stomach pain with nausea and vomiting
- Sweating
- Hyperglycemia

EQUIPMENT:

- IV infusion pump

HOW SUPPLIED:

- 500 mcg/100 mL

DOSE:

- 25-100 mcg/hr

STANDING ORDERS:

1. *Routine ALS Care*
2. **Verify initial dose and infusion rate as well as total time at the transferring facility prior to departure.**
3. Verify lab values (platelet count, coagulation studies) prior to departure (if available).
4. **Monitor patient closely** en route.
5. If uncontrolled bleeding or allergic reaction develops, immediately discontinue the infusion, provide necessary treatment and **contact Medical Control**.
6. Any other change in rate/dosage of Octreotide during interfacility transfer requires **Medical Control order**.
7. If perceived life threatening reaction, infusion may be stopped while contacting Medical Control.

ADDITIONAL REQUIREMENTS:

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A medical command physician must be contacted prior to the EMS crew taking transfer of care of the patient if any of the following conditions apply:

1. Patient in hypotensive at the time of transfer.
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MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

Insulin

CLASS:

- Hormone
- Hypoglycemic agent

ADDITIONAL NAMES

- Humulin

ACTION:

- Causes uptake of glucose by the cells
- Decreases blood glucose level
- Promotes glucose storage

INDICATION:

1. Elevated blood glucose
2. Diabetic ketoacidosis

CONTRAINDICATION:

- Avoid overcompensation of blood glucose level
 - Ongoing monitoring needed to ensure controlled decrease in blood glucose level.

COMPLICATIONS/ADVERSE REACTIONS:

1. Hypoglycemia (can include S/S of tachycardia, diaphoresis, mental status changes, seizures)
2. Allergic Reaction

PRECAUTIONS:

1. Administration of excessive dose may induce hypoglycemia
2. Glucose should always be readily available. D10 infusion should be readily available to be started.
3. Typically Insulin is injected subcutaneously and is slower acting and longer lasting. An Insulin infusion is faster acting, but still has the ability to cause hypoglycemia after the infusion has been stopped (IV Insulin $\frac{1}{2}$ life is about 15 minutes).

SIDE EFFECTS:

1. Few in emergency situations

EQUIPMENT:

- Infusion Pump

HOW SUPPLIED:

- 100 units/ 100 mL

**MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL**

Insulin

DOSE:

- Initial dose of regular insulin IV may be given at the transferring facility.
- 0.1units/kg/hr maximum rate of infusion. Typical dose 3-8 units/hour.

STANDING ORDERS:

1. *Routine ALS Care.*
2. Blood sugar must be checked at time of transfer and every 30 minutes during transport. Contact **Medical Control** if blood sugar <250.
3. Verify infusion rate as well as total time at the transferring facility prior to departure.
 - a. Enough medication to last 1.5 times the length of transfer should be available.
 - b. If concerns about enough medication a new infusion should be started prior to departure from the transferring facility to ensure adequate supply for the transport, handoff and any additional delays.
4. Monitor patient closely enroute for signs of hypoglycemia.
 - a. If altered level of consciousness or other reason to suspect hypoglycemia, immediately check blood glucose level.
 - b. If level less than 100
 - i. Stop Insulin infusion. Note amount infused and time of suspension.
 - ii. Begin D10 infusion until LOC increases to norm, or 250 cc administered.
 - iii. Continue to monitor blood glucose every 10 minutes for remainder of transport.
5. The only change in rate/dose of Insulin during inter-facility transfer would be to suspend or discontinue the Insulin. Either action requires **Medical Control** notification after ensuring patient care.
6. If perceived life threatening reaction, infusion may be stopped while contacting Medical Control

ADDITIONAL REQUIREMENTS:

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A medical command physician must be contacted prior to the EMS crew taking transfer of care of the patient if any of the following conditions apply:

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MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

BPAP

INDICATION:

1. Congestive heart failure (CHF), asthma, chronic obstructive pulmonary disease (COPD), pulmonary edema, pneumonia
2. Patient transfer must be from licensed facility to licensed facility
3. Transfer alternative for patient on Opti-Flow not needing intubation based on clinical stability
4. Bi-Level ventilation in place 15 minutes prior to EMS assuming patient care with maximum oxygen setting of 70% and maximum IPAP/EPAP settings of 13/8
 - a. Any expected patient needs greater than 13/8 exceed the scope of this protocol and would require hospital staff to accompany or critical care transport.

CONTRAINDICATION:

- Patients in severe respiratory failure without spontaneous respiratory drive
- Patient unable to protect their own airway
 - Altered level of consciousness or unresponsiveness
 - Unable to clear secretions/patient is vomiting
 - Unable to maintain anatomical airway patency (weakness, CVA, etc)
- Patient does not tolerate BPAP equipment/mask
- Recent esophageal/facial surgery
- Head/facial trauma or burns

PROCEDURE:

1. Check Label size on face mask/harness and select the appropriate size.
2. Place ETCO₂ cannula on patient and attach it to cardiac monitor. (if applicable)
3. Set the regulator on the oxygen tank to 8 liters/minute which should deliver approximately 5 centimeters of water, or a CPAP of 5.
4. Connect the oxygen tubing to the Flow Safe II+ device.
5. Place Flow Safe II+ device into the mask.
6. Place mask onto patient and adjust the mask to fit.
7. Check mask for proper seal by viewing the manometer, listening for air escaping, or feeling for air movement at the seal of the mask.
8. Ensure the manometer does not read 0 when the patient inhales (Over-breathing). If the manometer reads 0 when the patient inhales, increase the flow of oxygen until it reads above 0.
9. Increase the CPAP to 10 centimeters of water, or 10 on the manometer by increasing the flow of oxygen.
10. Adjust the switch on the end of the Flow Safe II+ from CPAP to Bi-Level.

MEMORIAL EMS SYSTEM
EXPANDED SCOPE MANUAL

BPAP

11. The IPAP is set to 10, as accomplished in step 9 and can be adjusted if needed.
12. EPAP is set at 5 as its factory setting.
13. To adjust EPAP, adjust the dial on the Flow Safe II+ labelled EPAP to desired setting, consistent with what the transferring facility set on their device (within 13 IPAP/8 EPAP).

EQUIPMENT:

- Mercury Medical Flow-Safe II+ Mask
- Sufficient oxygen supply for the entirety of transport

ADDITIONAL REQUIREMENTS:

This is an Advanced Scope of Practice Protocol. Only providers who have completed additional system training are authorized to perform. The protocol is only designed for patients who are being transferred from one medical facility to another.

- Patients with a high risk for aspiration can be more susceptible to aspiration with Bi-Level ventilation and should be closely monitored.
- Patients with known/suspected/susceptibility to pneumothorax or pneumomediastinum should be closely monitored.
- Mercury Medical estimates that the Flow Safe II+ will deliver between 70%-75% FiO₂, depending on the patient.
- Monitor patient for over-breathing the Flow Safe II+
 - Over-breathing – when the patient is demanding more volume from the system than it can supply at its current setting. This needs to be fixed quickly (by increasing the oxygen supply at the regulator), as it can increase work of breathing and anxiety in the patient as well as affecting the oxygen percentage the(FiO₂) the patient is receiving. The anti-asphyxia technology on the Flow Safe II+ will prevent the patient from asphyxiating.

Pearls

- Bi-Level ventilation is referred to as BPAP instead of BiPAP by MEMS because BiPAP is a registered trademark for the Resironics BiLevel device.



Using the Atrium Oasis Closed Chest Drainage System

Expanded Scope Protocol for Inter-facility Transfer
Thoracostomy Patient Transport

Using the Atrium Oasis Closed Chest Drain

Objectives:

- Able to identify the MMC EMS Expanded Scope of Practice regarding the care of thoracostomy patients
- Able to identify parts of Atrium Oasis Closed Chest Drain and their function
- Able to identify procedure for changing over suction
- Able to identify proper functioning of drainage unit
- Able to identify problems with the drainage unit and troubleshoot

Memorial EMS – Expanded Scope of Practice

INDICATIONS:

1. Chest tube must be in place for greater than 24 hours prior to transport
2. Must be either 8 years of age or older or 45kg in weight or more.
3. Patient transfer must be from a licensed facility to another licensed facility.

CONTRAINDICATIONS:

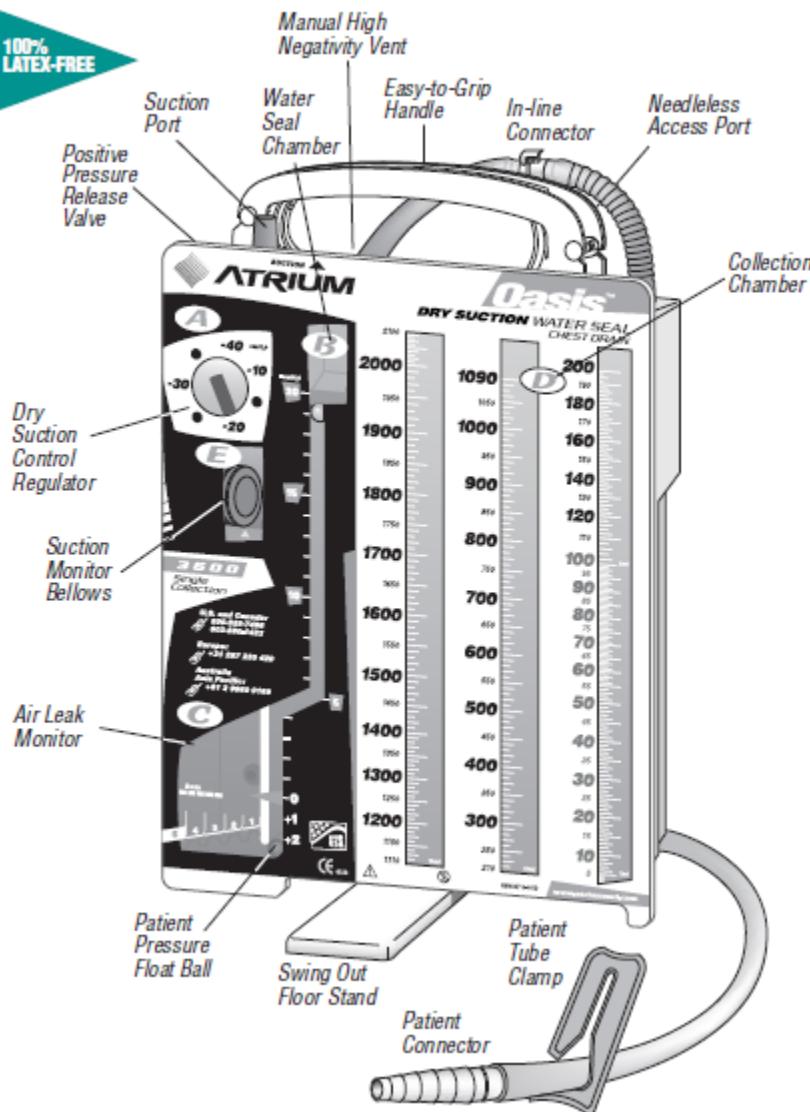
- Heimlich valve

Atrium Oasis Closed Chest Drainage System



Using the Atrium Oasis Closed Chest Drain

100%
LATEX-FREE



Oasis™

**DRY SUCTION WATER SEAL
CHEST DRAIN**

■ Set Up

Step 1. Fill Water Seal (B) to 2cm Line - Add 45ml of sterile water or sterile saline via the blue suction port located on top of the drain. For models available with sterile fluid, twist top off bottle and insert tip into blue suction port. Squeeze contents into water seal until fluid reaches 2cm fill line.

Step 2. Connect Patient Tube to Patient - Connect chest drain to patient prior to initiating suction.

Step 3. Connect Suction to Chest Drain - Attach suction line to blue suction port on top of chest drain.

Step 4. Turn Suction Source On - Increase suction source vacuum to 80mmHg or higher. Suction regulator is preset to -20cmH₂O. Adjust as required.

**Have a question or need help in a hurry?
Call Atrium toll free at 1-800-528-7486.**

Receiving the Patient with a Chest Drain

- Before any movement, always verify that sutures and/or occlusive dressing are secured at thoracostomy site.
- The chest drain tubing will be clamped while changing over to another suction source to avoid backflow.
- Consult current patient orders for best patient positioning.



Receiving the Patient with a Chest Drain

- After the unit is secured, unclamp the tubing.
- Patient tubing should only be clamped during transfer of suction source.
- Clamping is to avoid flow of air into the chest cavity or backflow of fluid in case of accidental disconnection or tipping during movement.



Receiving the Patient with a Chest Drain

- Secure the unit below the level of chest tube/ chest drain insertion.
- Keep the unit in an upright position.
- Two hanging hooks will fold out of the carry handle of the unit. The hooks will secure the unit to the stretcher.
 - ✓ For a low stretcher, the bottom of the drain has a stand that swivels open. If using the stand, tape the unit to the floor. Be cautious not to knock the unit over.
- Arrange the patient tubing to minimize dependent looping and tension on the tubing. Keep tubing below level of insertion.



Applying Vacuum Pressure

- Applying your suction:
 - Connect suction tubing firmly to blue suction port.
 - Turn up suction to full vacuum.
 - The chest drain requires -80mmHg vacuum pressure to function.
 - Turning up the suction at the source will “turn on” the drain.
 - Actual suction pressure is controlled on the chest drain itself at the dial labeled “A”.
 - Suction pressure on the unit is preset at -20cmH₂O. The pressure should already be set per MD order.



Applying Vacuum Pressure

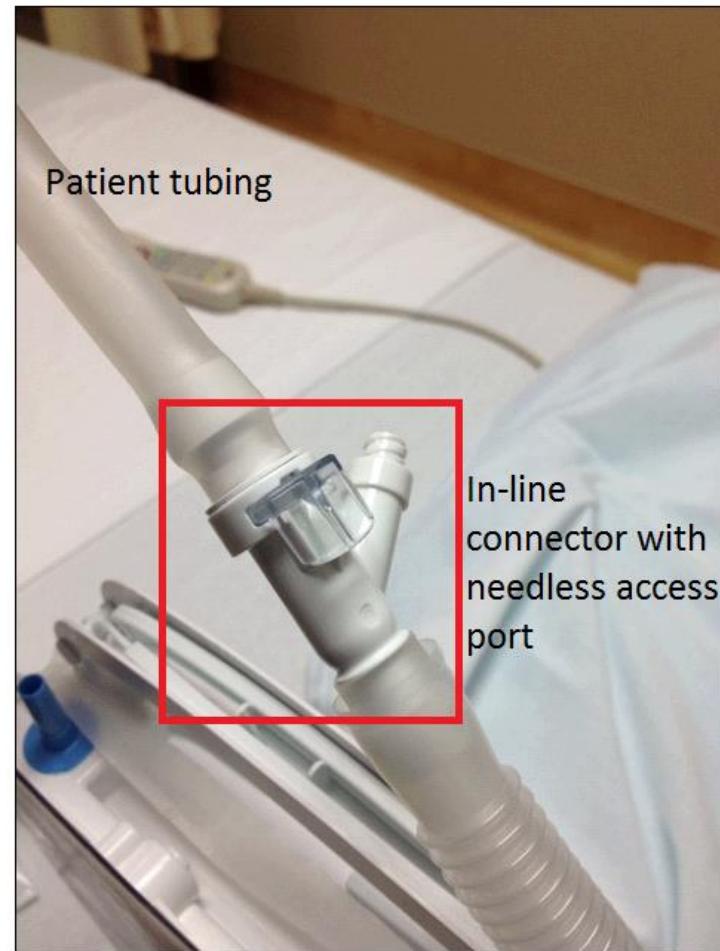
- The red bellows located at “E” will expand out to the arrow.
- This tells you that the suction is connected and functioning, indicating that the unit is “on” and operating.
- If the bellows does not expand, turn up the suction.
- NOTE: If unit suction pressure is set to -10cmH₂O or less, the bellows may not expand to the arrow. For suction pressure set this low, any expansion of the bellows will indicate that the unit is functioning.



Applying Vacuum Pressure

Check all connections to ensure that they are tight:

1. Blue suction port to suction tubing
2. Tubing connecting to the in-line connector with access port (PICTURED RIGHT) to patient tubing
3. Patient tubing to chest tube connector should be firmly spiral taped and sealed.
 - Reinforce spiral taping with silk tape as needed.
 - Never remove the original tape/ seal.
4. Occlusive dressing at chest tube site should be well-adhered and intact



Draining to Gravity

- Some patients will have orders to drain to gravity.
- Keep in mind- if you do not apply vacuum pressure, the bellows will not be expanded.



Maintaining the Chest Drain

How do I know the chest drain unit is functioning?

1. Check the patient. Assess for changes in respiratory status.
2. The bellows at point "E" is expanded.
3. The water seal chamber "C" is already filled to the 2cm mark with initial set-up of the chest drain unit.

The water flow and float ball should tidal up and down in the water seal chamber labeled "B" with the patient's breathing pattern. This is normal.



Maintaining/ Troubleshooting the Chest Drain

How do I know the chest drain unit is functioning?

4. Assess the air leak monitor “C” on the water seal for bubbling.

Occasional intermittent bubbling can be normal for a slowly resolving pneumothorax, but continuous bubbling is NOT NORMAL.

Any bubbling in the air leak monitor “C” in which the bubbles move from right to left indicates a leak.

If there is continuous bubbling and/or a leak is suspected:

- Check all connections on the unit and to the patient, including the insertion site.
- If the unit continues to leak, call Med Control.

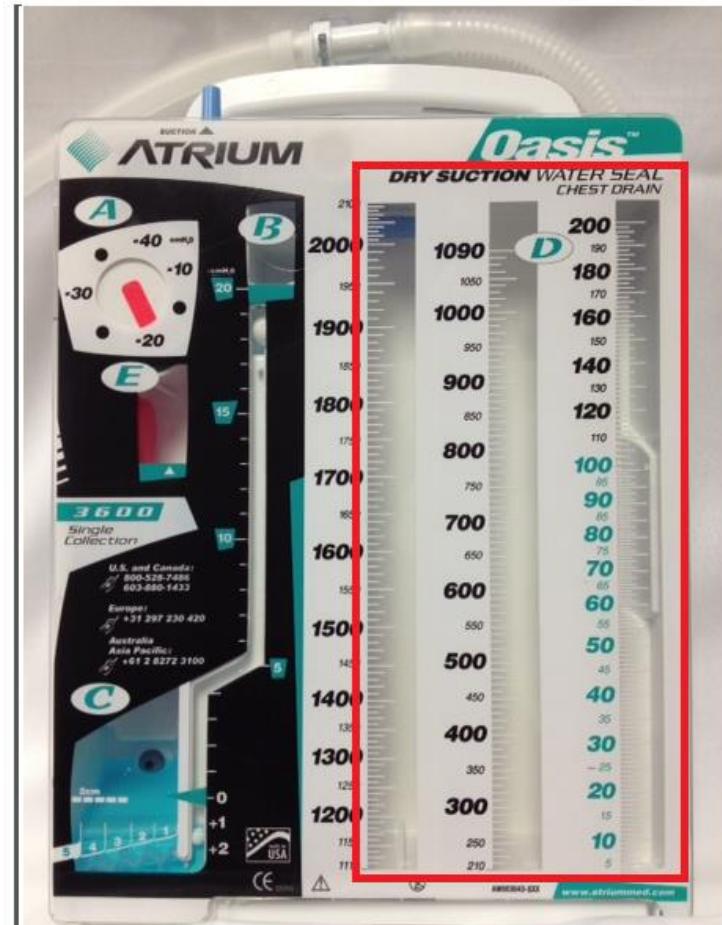


Maintaining the Chest Drain

How do I know the chest drain unit is functioning?

5. Check the drainage chambers "D" for drainage. Output should be measured on the unit every hour. Mark directly on the unit with a marker at the level of drainage and note date, time, initials. If unable to mark on the unit, note details of hourly output and inform receiving RN.

6. Inspect patient tubing for occlusions. Adjust tubing to prevent consolidation of drainage in the tubing.



Maintaining/ Troubleshooting the Chest Drain

Things to remember:

- The chest tube and drainage system should be visually inspected every 15 minutes during transport.
- Keep the drain below the level of the chest tube/drain insertion site.
- If drainage output of greater than 200ml/hr x4 hours or greater than 150ml/hr x3 hours in elderly, call Med Control as this will require immediate intervention.
- If the chest tube is not functioning and a tension pneumothorax is suspected, perform a needle decompression of the affected side per protocol.

Maintaining the Chest Drain

Things to remember:

- The Atrium Oasis Closed Chest Drain System is a dry suction water seal chest drain. It operates similarly to other closed chest drain systems, such as Pleur-Evac, but there are some important differences. Be sure to ask if you have questions about a chest drain that you've never used before.



Using the Sigma Spectrum Infusion Pump

Expanded Scope Protocol for Interfacility Transfer
Intravenous Infusion Pump Use During Interfacility
Transfers

Using the Sigma Spectrum Infusion Pump

Objectives:

- Able to identify the MMC EMS Expanded Scope of Practice regarding the use of IV pumps
- Able to verbalize/demonstrate loading and unloading of IV tubing set
- Able to verbalize/demonstrate programming and initiating medication infusions
- Able to titrate an infusion
- Able to stop an infusion
- Able to identify alarms and troubleshoot problems with the pump

Memorial EMS – Expanded Scope of Practice

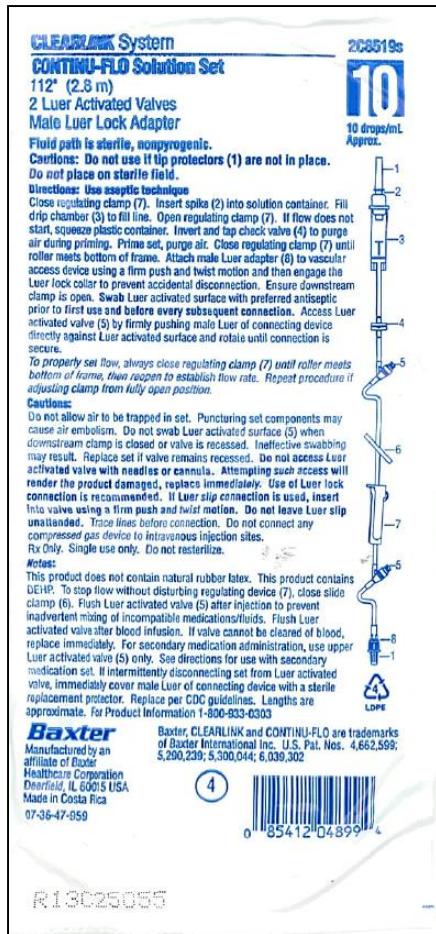
- Permits intravenous infusions during facility-to-facility transfers of critically ill patients.
- Under the expanded scope, medics can maintain the infusion of the following medications:
 - ✓ Heparin Sodium
 - ✓ Nitroglycerin
 - ✓ Dopamine
 - ✓ IV Fluids with Potassium Chloride (KCl) added
 - ✓ Amiodarone
 - ✓ Cardizem
 - ✓ Antibiotics
 - ✓ tPA
 - ✓ Levophed
 - ✓ Protonix
 - ✓ Dobutamine
 - ✓ N-Acetylcysteine
 - ✓ Blood Products
 - ✓ Multivitamin Banana Bag
 - ✓ Octreotide
- Dopamine and nitroglycerin can be titrated en route.
- Any drip can be stopped at any time.

Using the Sigma Spectrum Infusion Pump



- Loading and unloading the IV tubing set
- Programming/ initiating a medication infusion
- Titrating an infusion
- Stopping an infusion
- Pump alarms/ troubleshooting

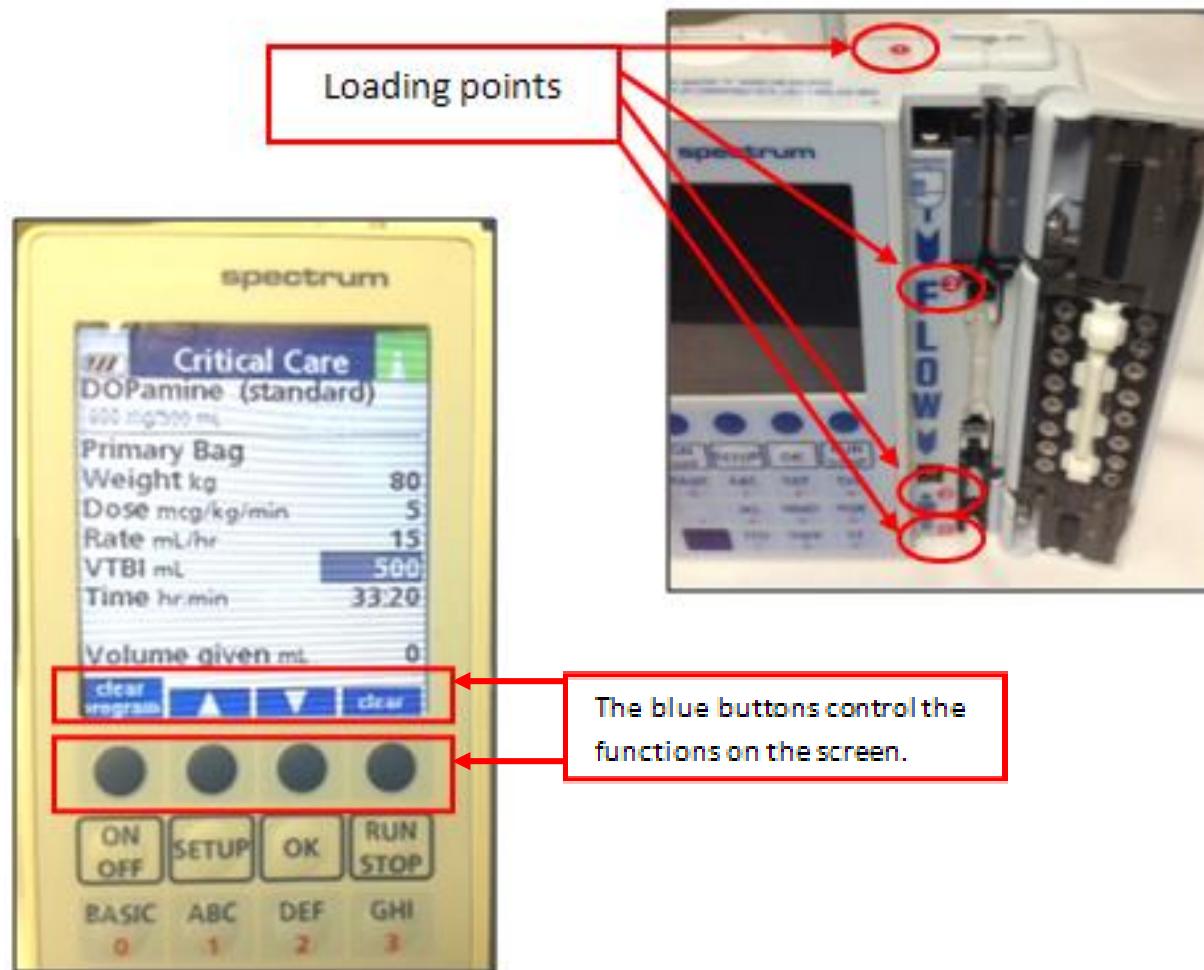
Sigma Infusion Pump Tubing



COMPATIBLE TUBING:

- Baxter Clearlink System Continu-FLO Solution Set
- 10 gtt/mL

The Sigma Spectrum Infusion Pump



Loading the Sigma Spectrum Infusion Pump

- The MMC EMS Expanded Scope of Practice does not cover the initiation of medication infusions.
- Medications should already be spiked and primed.

Before loading the tubing into the pump, the medication should be:



- Stopped
- Clamped via the roller clamp **and** slide clamp
- Disconnected from the patient

Loading the Sigma Spectrum Infusion Pump

Loading tubing into the IV pump:

After ensuring that the tubing is fully primed, hanging, and ready to continue infusion:

1. Insert the blue slide clamp into the keyhole (**loading point 1**).

The slide clamp looks like an arrow pointing downward as you insert it into the keyhole. It will only fit one way.



Loading the Sigma Spectrum Infusion Pump

As you insert the clamp, the door will open to load the tubing and the pump will automatically turn on.

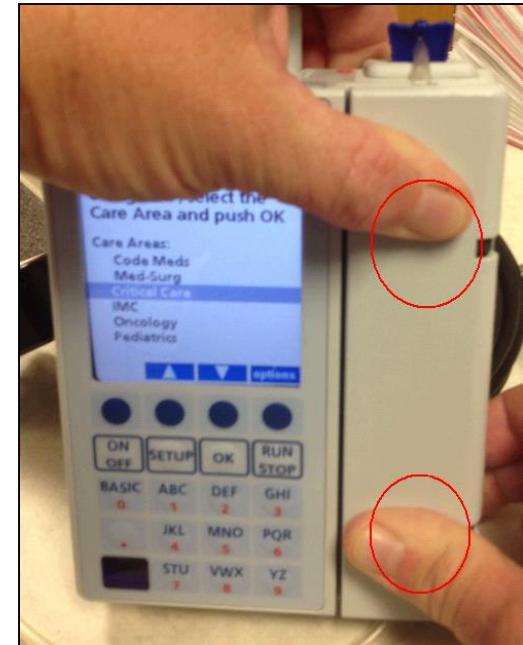
2. Pull the tubing down into the tubing channel.
3. Press the tubing into the channel at **loading points 2, 3 & 4**.

The pump will prompt you to press the tubing in at specific points if not inserted properly.



Loading the Sigma Spectrum Infusion Pump

- When all **loading points** are green checked, close the door.
 - Using two thumbs is the easiest way to close the door.
- Pull the blue slide clamp up.
 - If you don't pull the clamp out, the pump will prompt you to pull it out.
 - To remove or reposition tubing, reinsert the blue slide clamp into Point 1. The door will open.



Programming the Sigma Spectrum Infusion Pump

1

New Patient?

Is this a new patient?

Press 'yes' to clear current program.

yes

no

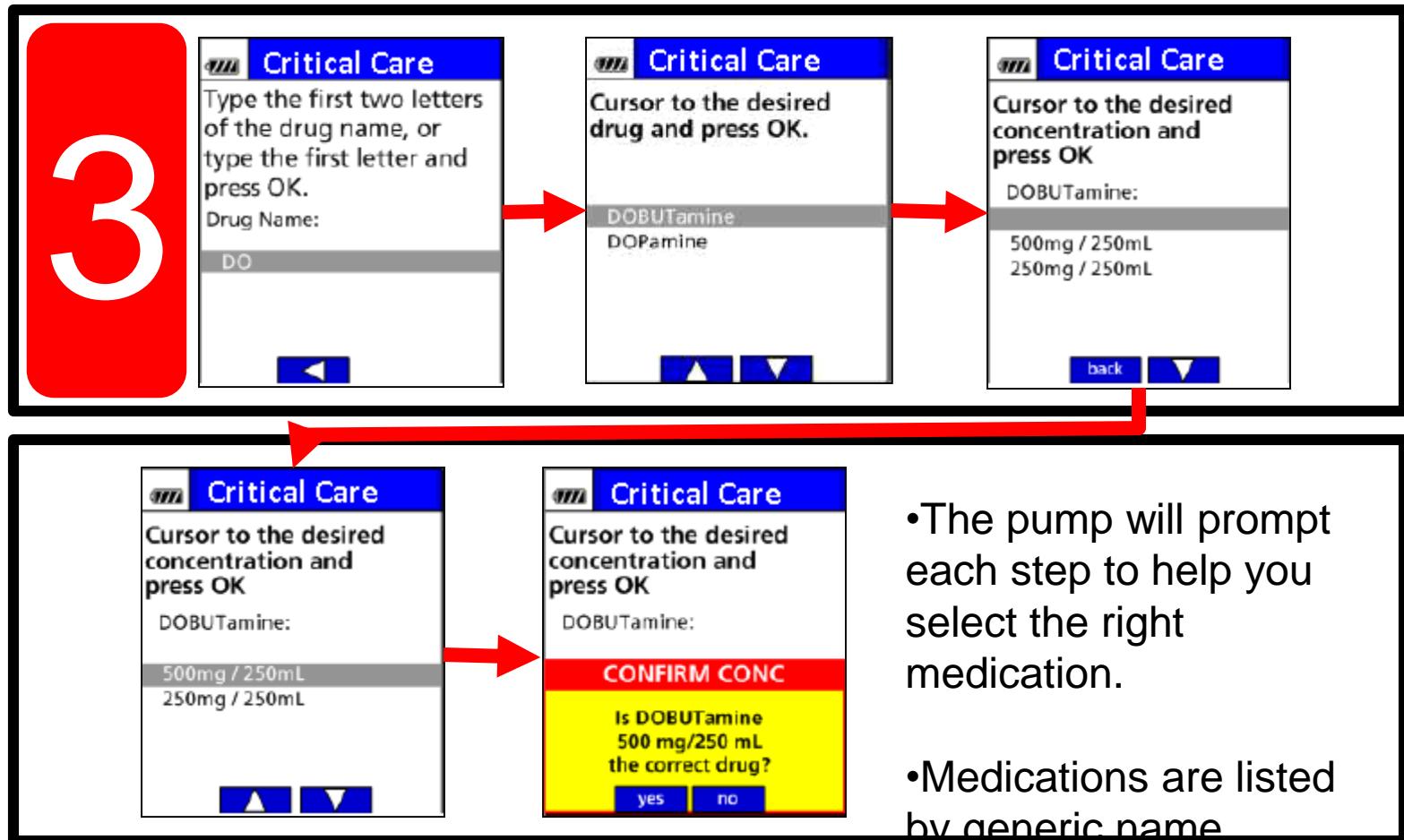
- Select “yes” to program a new infusion.
 - Selecting “no” will take you to the previously programmed medication.
 - Pre-programming medications before the IV set is loaded
 - Resuming paused infusions

2

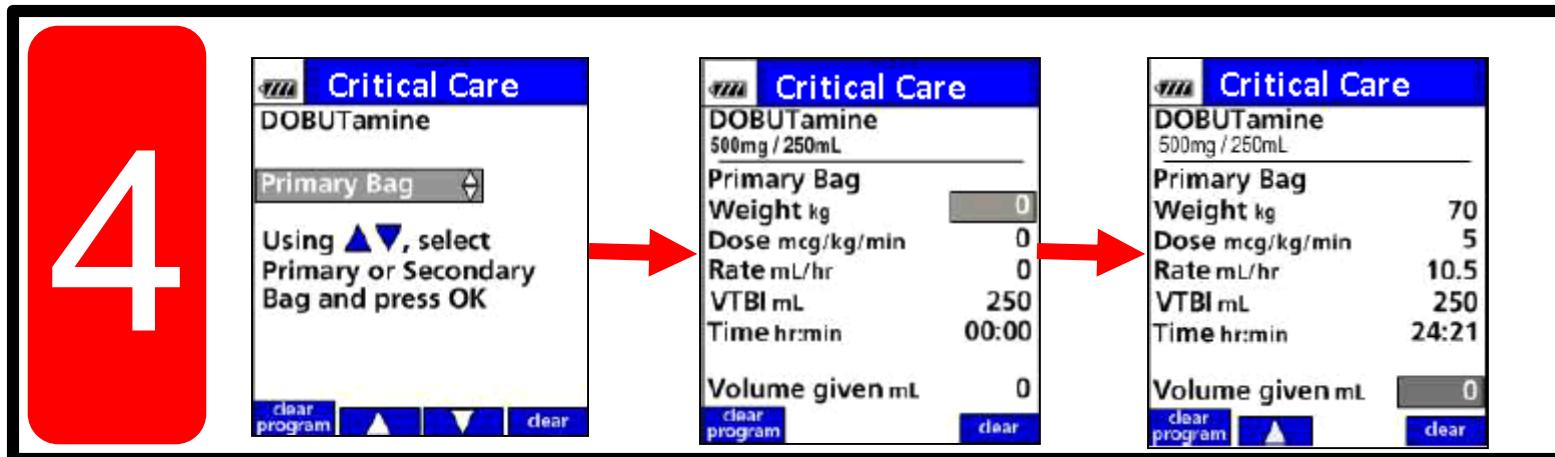


- Use the blue buttons as labeled by the screen. These labels will change with each new screen.
- Select the “Critical Care” care area.

Programming the Sigma Spectrum Infusion Pump



Programming the Sigma Spectrum Infusion Pump



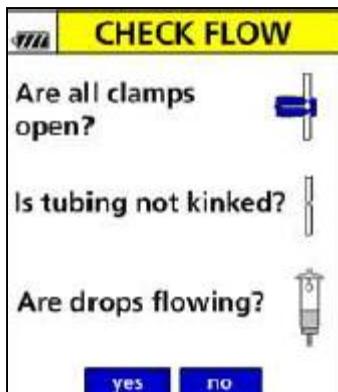
- The pump has some pre-programmed “hard stop” upper limits for medication rates.
- The pump will not allow you to exceed these limits.

Initiating the infusion

5

- Connect the tubing to the patient.
- Unclamp the roller tubing.
- Press  to initiate the infusion.

6



*Observe the
drip chamber
for flow.*

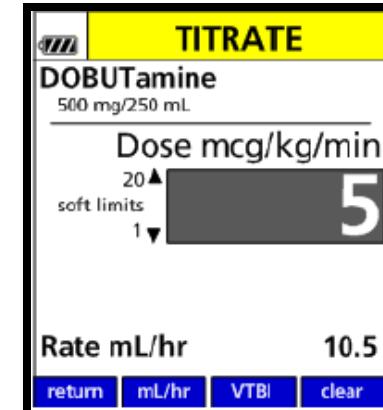


Titrating Infusions on the Sigma Pump

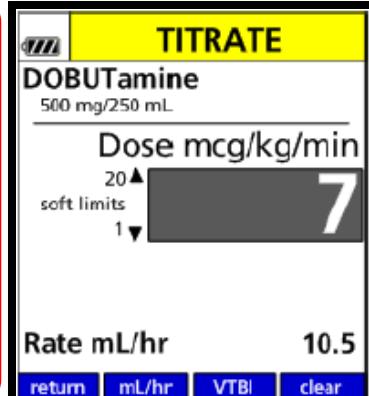
1



- Select “titrate”
- The current dose will appear in a grey box. Dosage limits appear at the left of the box.



2

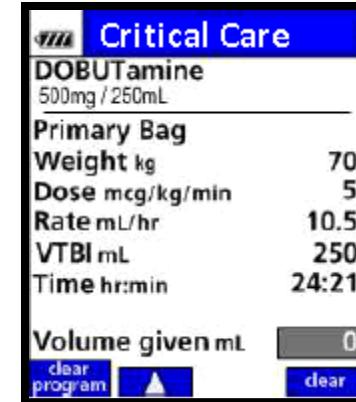


- Use the number pad to select a new dose.
- Press “OK” to accept.
- If your selection exceeds soft limits, an alert will prompt you to accept the new value or return to the prior value.
- The pump will not allow you to exceed hard limits.

Additional Functions on the Sigma Pump



- Select “Review” to review:
 - current dose
 - rate
 - volume left to be infused
 - time left for infusion
 - volume given

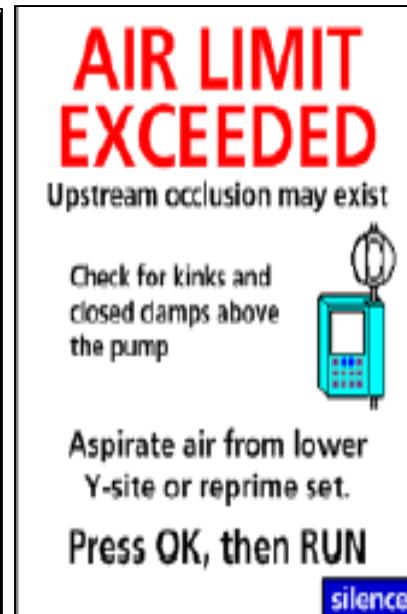
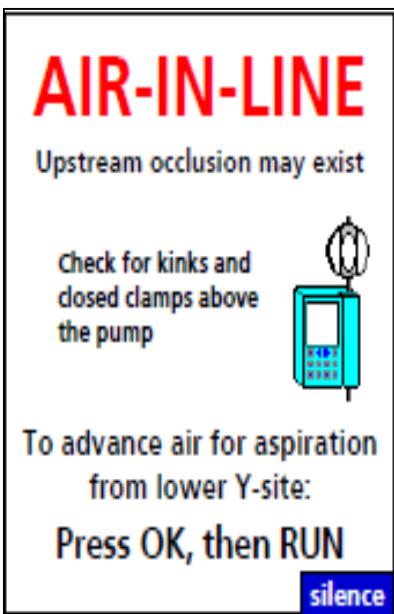


- Selecting “options” will open the settings for alarm volume and display.
- The default settings should be kept for consistency.

Stopping an Infusion

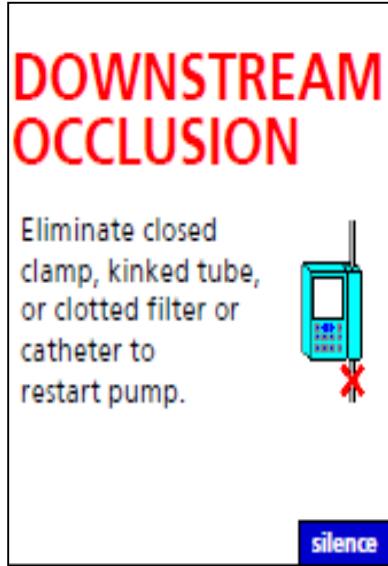
- You can stop an infusion at any time by simply pressing “RUN/STOP”.
- If you need to stop an infusion to change to obtain additional IV access or for longer than two minutes:
 - Press “RUN/STOP”
 - Then shut off the pump by pressing “ON/OFF”
 - When you turn the pump back on, the pump will ask if this is a new patient.
 - Select “No” to resume the current programmed infusion.

Alarms on the Sigma Pump



Each alarm will tell you what the problem is and how to fix it.

Alarms on the Sigma Pump

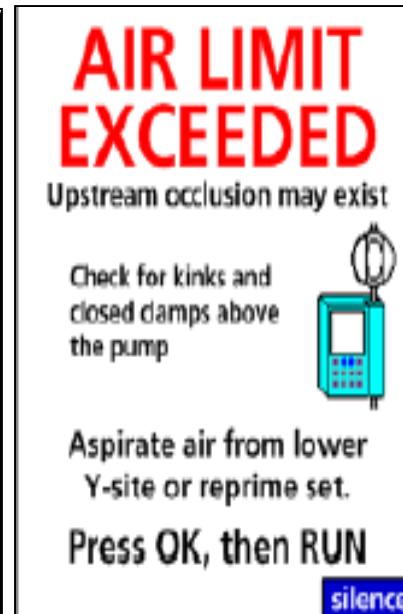
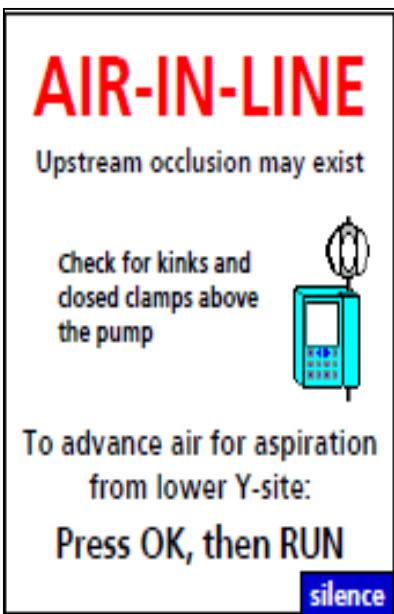


"DOWNSTREAM OCCLUSION"
Additional causes:

- Antecubital IV line with arm bent
- Positional IV
- Will not alarm if IV is infiltrating!**



Alarms on the Sigma Pump



Each alarm will tell you what the problem is and how to fix it.

Tips for Using the Smart Pump

- Always plug-in the pump when an outlet is available.
 - The battery takes a long time to recharge with enough power to hold during a transfer.
- Always select pre-programmed medications. Avoid basic mode.
 - Basic mode leads to greater risk of human error.
- Keep the roller clamp closed until you are ready to start your infusion.
 - When adjusting the tubing/pump, an open roller clamp can lead to an unintentional bolus.

CCT Protocols 2021 Updates

3.C.1

Advanced Airway

Take out fentanyl and lidocaine

Add: Make sure to sedate following intubation according to sedation of intubated patient protocol.

2.E.1

Patient Sedation protocol

Add: If paralytic is needed in addition to sedation (**On Call Critical Care Medical Control must be contacted before paralytic is used**)

Rocuronium: 1 mg/kg or 100 mg (one time push) Onset 1-2 minutes.

3.C.2

Changed: **Rocuronium:** 1mg/kg or 100 mg IVP (one time push)

3.C.2 & 3.C.5

Take out King Airway and Add Igel

3.C.5 & 3.C.6

Added the I-Gel Protocol

4.B.1

Changed wording to: For hypertensive states associated with cocaine, methamphetamine or other stimulants **DO NOT USE BETA-BLOCKERS**. Instead treat with:

4.C.1, 4.B.2, 4.D.1

Fixed typo: Nitroglycerin 10mcg/min. Max 200mcg/min

4.G.2

Resuscitation Of PEA

Take out Transcutaneous Pacing

5.D.1

Changed: 2. Establish blood glucose level before leaving facility. 3. Repeat blood sugar every 45 min

For the "Pearls" box in this section changed the first bullet point to "Treatment of DKA requires insulin to close Anion gap. Supplemental D5NS may be given while infusing insulin. Insulin infusion should only be stopped if patient becomes hypoglycemic refractory to supplemental dextrose."

1.F.1.

Procainamide added to tier 3 drugs

4.I.1.

Changed Cardizem titration wording: Begin **Diltiazem infusion** at 5 mg/hr and increase by 5mg/hr every 15 minutes to control heart rate to max dose of 15 mg/hr

4.I.2, 5.N.1

Changed: Esmolol max 300 mcg/kg/min

4.K.1

Epi out of the Tier III section and changed the levophen max dose to 40.

Reworded number 5 to say: Vasoactive medications should be initiated via central access device, or through a peripheral IV (20ga or bigger) if unable to obtain central access, continuous close monitoring of IV site required.

MEMORIAL EMS SYSTEM
CRITICAL CARE MANUAL

Memorial Medical Center
EMS System



Critical Care Manual

Updated Edition August 2021

MEMORIAL EMS SYSTEM CRITICAL CARE MANUAL

Log of Additions and Revisions

MEMORIAL EMS SYSTEM
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A. Administrative Expectations



MEMORIAL EMS SYSTEM
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Statement of Purpose, Policy and Applicability

In 2014, Memorial EMS took a great step forward to address the needs of our patients and our communities. To do this, we began the process of building a ground Critical Care Transport program in Central Illinois. This Critical Care Transport program is designed to meet the needs of hospitals whose critically ill and injured patients require treatment at a facility with greater capabilities. With the increased volume of these patient transfers occurring, a safe, consistent, and quality transport program was especially needed in the greater community of Critical Access Hospitals. To transport patients of this level of acuity was no simple lift in capabilities, but a focused mission developed by several providers of the Memorial EMS System. To meet this need, Memorial EMS Critical Care Transport now provides care at Tier I, Tier II and Tier III as outlined by the Illinois Department of Public Health. Tier I will continue to sit as a stand alone manual for all transport providers. Tier II and Tier III protocols are outlined in this manual.

The Memorial EMS *Prehospital Care Manuals* serve as a resource for information, treatment guidelines, and points of attention for the Prehospital Care Provider. They are designed to begin with basic assessment and treatment and build up to more advanced care for specific illnesses or injuries. The *Patient Care Manuals* can continue to serve as a resource for the Critical Care Transport (CCT) provider in such situations as the initial assessment and/ or treatment needs to be completed or re-evaluated.

The Memorial EMS *Critical Care Manual* expects that treatment will be assumed from a caregiver of a certain level and continues that care through the capacities of the CCT team. The enclosed treatment policies and protocols are intended for the care of a patient from one hospital facility to another hospital facility. Furthermore, the Memorial EMS *Critical Care Manual* is written specifically to address the needs of the adult patient (age 16 or greater). Patients under age sixteen may meet criteria for this program and are addressed in specifics within this manual.

The Memorial EMS system will continue to strive for the highest quality care we can give our patients, the best education we can give our providers, and protocols which help us best care for those who call in a time of need. Quality improvement review are performed on patient care, Prehospital provider education, and system wide protocols regularly to ensure our policies, procedures, and providers remain the highest quality that we can provide. As healthcare continues to improve and evolve, we continue to raise the expectation of care for our providers, specifically at the Critical Care level. Providing care at such an advanced level is both a responsibility and a privilege. As we work to address the needs of this growing patient need, I ask that you become advocates, both for your patient and for the advancement of your profession.

Sincerely,



Matthew Johnston, MD

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Scope of Practice CCT Tier II and Tier III

In order to better meet the needs of our patients, our transferring facilities and our Critical Care Transports providers, an additional level of care has been added to these protocols. With this addition, providers must be ever more attentive to the needs of the patient at the time of request so to ensure that the crew responding for the transport is capable and qualified to address all expected needs of the patient during the time of care and transport.

In order to outline the capabilities of Tier II and Tier III, protocols were rewritten in 2018. Included in this rewrite is clarification as to what protocols meet the capabilities of Tier II and where Tier III is needed. Crews at the Tier II level need to critically assess the situation they are asked to respond to and their ability to meet that patient's needs. Crews must have the ability to defer the request based on concerns about their ability to meet the needs of the patient.

As providers review this manual, sub headings for Tier II and Tier III have been added. Additionally, a red line will be noticed at the point where the patients care exceeds the ability of the Tier II provider and requires a Tier III crew, or hospital staffed equivalent. Questions about the ability to take a transport request can continue to be assisted by the EMS Office and Medical Control at Memorial Medical Center.



MEMORIAL EMS SYSTEM
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Pediatric Transfer Requests

Tier III

The adult population equates to a greater than equal proportion of critically ill and injured patients who seek treatment in the healthcare system. The adult population, due to their longer time to develop medical conditions, greater range of activities and work environments, are significantly more likely to suffer from complex and compounding medical conditions. As such, adult medical and trauma patients will be the most common patient that the CCT team will be called upon to transport.

In regards to pediatric patients, often the decreased frequency of such patients, leads to a need to transfer the pediatric patient. Such requests should be triaged for the most appropriate receiving facility as well as the most appropriate transport method. At this point pediatric transports will be categorized into two groups: ages 13-15 and under age 13.

Transport requests for patients ages 13-15 can be conditionally accepted by the CCT team. Included in the information received at initial contact, must be patient history, interventions, current status, transport orders and distance of transport. The CCT team must then contact **Medical Control** for review and approval of the transport. The CCT team shall contact the requesting facility within ten minutes of the request to confirm or deny their ability to accept the request.

Transport requests for patients under age 13 can be conditionally accepted by the CCT team based on the status of the patient. Included in the information received at initial contact, must be patient history, interventions, current status, transport orders and distance of transport. Patients under age 13 must be considered stable at discharge from the transfer facility. Interventions must be limited to monitoring of cardiac rhythm, previously initiated intravenous medications, and non-invasive respiratory support. The CCT team must then contact **Medical Control** for review and approval of the transport. The CCT team shall contact the requesting facility within ten minutes of the request to confirm or deny their ability to accept the request.

Of note, many of these transfers may not seem to meet CCT level of care, but will require the full complement of CCT providers in order to meet the level of care expectations of the transferring facility.

MEMORIAL EMS SYSTEM CRITICAL CARE MANUAL

Provider Responsibilities

Listed below are the requirements for agencies to function at the Critical Care Level under the Memorial EMS System. This list is based on the System manuals and IDPH rules and regulations. The requirements are grouped in four categories (Operational Requirements, Notification Requirements, System Certification Requirements and Reporting Requirements.)

Operational Requirements

1. A provider agency must comply with minimum staffing requirements for the Tier III Critical Transport Ambulance. Staffing patterns must be in accordance with the provider's approved system plan and in compliance with Section 515.830(f). Staffing requirements for Tier II will be required to exceed the minimum outlined in Section 515.830(f).
 - a. Tier III requires a Critical Care credentialed paramedic, a Registered Nurse meeting EMS System requirements and an EMT who assists on scene, but has responsibility for transportation to ensure the patient care team always includes the CCT paramedic and Registered Nurse.
 - b. Tier II requires a Critical Care credentialed paramedic, an Expanded Scope (Tier I) paramedic and an EMT who assists on scene, but has responsibility for transportation to ensure the patient care team always includes the CCT paramedic and the Expanded Scope paramedic.
2. No agency shall employ or permit any member or employee to perform services for which he or she is not licensed, certified or otherwise authorized to perform (Section 515.170).
3. A provider agency must comply with the requirements for the Patient Care Report as outlined in the Patient Treatment Overview.
4. Agencies with must abide by all provisions of the Controlled Substance Policy including: *maintaining a security log, maintaining a Controlled Substance Usage Form and reporting any discrepancies to the EMS Office.*
5. Notify the EMS Office of any incident or unusual occurrence which could or did adversely affect the patient, co-worker or the System **within 24 hours** via incident report form.

Agencies functioning at the Critical Care Transport level, must meet the Quality Assurance requirements set forth by the EMS System Office. Every report is to be reviewed at the agency level. Reports are to be forwarded to the EMS Office weekly for the first year and then may be allowed to report less frequently (at minimum quarterly.)

MEMORIAL EMS SYSTEM
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Provider Responsibilities (continued)

Notification Requirements

An agency participating as an EMS provider in the Memorial EMS System must notify the Resource Hospital, (Memorial Medical Center), of the following:

1. Notify the System in **any** instance when the agency lacks the appropriately licensed and System-certified personnel to provide 24-hour coverage. Transporting agencies must apply for an ambulance staffing waiver if the agency is aware a staffing shortage is interfering with the ability to provide such coverage.
2. **Notify the System of agency personnel changes and updates within 10 days.** This includes addition of new personnel and resignations of existing personnel.

Rosters must include: *Name/level of provider, license number, expiration date, current address, phone number, date of birth, and all certification documents.*

3. Notify the System anytime an agency is not able to respond to a call due to lack of staffing. The report should also include the name of the agency that was called for mutual aid and responded to the call.
4. Notify the System of **any** incident, via incident report within 24 hours, which could or did adversely affect the patient, co-worker or the System.
5. Notify the System of any changes in medical equipment or supplies.
6. Notify the System of any changes in vehicles. **Vehicles must be inspected by the System and the appropriate paperwork must be completed prior to the vehicle being placed into service.**

MEMORIAL EMS SYSTEM
CRITICAL CARE MANUAL

Provider Responsibilities (continued)

Certification Requirements

The ability to work in the field of Critical Care Transport is a privilege and responsibility that should not be taken lightly. Providers functioning at this level must meet and maintain specific requirements in order to function within a Critical Care Transport vehicle or vehicles.

1. A System applicant must hold a State of Illinois license for a minimum of two years.
2. A System applicant must have two years or more experience in the capacity in which they are applying for.
3. A *Pre-Certification Application* must be completed and submitted to the EMS Office.
4. The System applicant must also submit copies of the following:
 - IDPH license (Paramedic or PHRN) or IDPFR license (RN)
 - National Registry certification (if applicable)
 - ACLS
 - PHTLS, ITLS, TNCC, TNS or BTLS
 - PEPP, PALS or ENPC
 - CPR {AHA Healthcare Provider OR American Red Cross}
 - Letter of reference from current EMS Medical Director
 - Resume' (education and employment history)
 - CCEMTP, CCP-C, FP-C (Paramedics or PHRN)
 - Additional certifications will be reviewed on a case by case basis
 - CCEMTP, CEN, CCRN, CFRN or CTRN (RN)
5. All providers functioning at the Critical Care Transport level must be approved to function by the EMS Medical Director, Critical Care Coordinator or EMS System Coordinator.
6. The System applicant must pass the Memorial EMS System CCT Protocol Exam with a score of **70% or higher**. The applicant may retake the exam with the approval of the EMS Medical Director. A maximum of two (2) retakes are permitted. Updated competencies are required annually in compliance with Section 515.830.
7. Successfully complete any practical skills evaluations required by the EMS Medical Director.

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Provider Responsibilities (continued)

8. Satisfactory completion of a **90-day** probationary period is required once System-certification is granted. If the provider completes fewer than ten (10) transports in the 90-day probationary period, the time will be extended to 180-days.
9. The EMS Medical Director reserves the right to deny System provider status or to place internship & field skill evaluation requirements on any candidate requesting System certification at any level.

Maintaining System Certification

**Critical Care EMT-Paramedic
(EMT-P)/Prehospital RN (PHRN)**

- *Current AHA Healthcare Provider or ARC Professional Rescuer or ARC Professional Rescuer CPR card*
- PHTLS, ITLS, TNCC, TNS or BTLS
- ACLS
- PEPP, PALS or ENPC
- CCEMTP, FP-C, CCP-C, or other approved coursework
- Active member of Memorial EMS System agency
- Successfully complete annual System protocol testing and skills evaluation

Registered Nurse (RN)

- *Current AHA Healthcare Provider or ARC Professional Rescuer or ARC Professional Rescuer CPR card*
- PHTLS, ITLS, TNCC, TNS or BTLS
- ACLS
- PEPP, PALS or ENPC
- CCEMTP, CEN, CCRN, CFRN or CTRN
- Active member of Memorial EMS System agency
- Successfully complete annual System protocol testing and skills evaluation

MEMORIAL EMS SYSTEM
CRITICAL CARE MANUAL

Provider Responsibilities (continued)

**Expanded Scope EMT-Paramedic
(EMT-P)/Prehospital RN (PHRN)**

- *Current AHA Healthcare Provider or ARC Professional Rescuer or ARC Professional Rescuer CPR card*
- PHTLS, ITLS, TNCC, TNS or BTLS
- ACLS
- PEPP, PALS or ENPC
- Active member of Memorial EMS System agency
- Successfully complete annual System protocol testing and skills evaluation at the Expanded Scope level
- Minimum 2 years experience
- *Current AHA Healthcare Provider or ARC Professional Rescuer or ARC Professional Rescuer CPR card*

EMT (B, I or P)/Prehospital RN (PHRN)

Maintaining of current certifications and tracking of expiration dates is ultimately the responsibility of the individual provider. Agency training officers will be *assisting* with monitoring these certifications and reporting to the EMS Office. However, these officers are not *responsible* for any certifications other than their own.

Failure to maintain *current* certification in CPR, ACLS, ITLS/PHTLS/TNCC/ TNS/ BTLS, PEPP/PALS/ ENPC, and CCEMTP/ FP-C/ CCP-C (paramedic or PHRN) or CEN/CCRN/CFRN/CTRN (RN) or any other System certification may result in **suspension** of the individual in violation. Suspended individuals will remain on suspension until proof of current certification is presented to the EMS Office.

Summary of Re-licensure Requirements

**Critical Care EMT-Paramedic (EMT-P)
Prehospital RN (PHRN)
Registered Nurse (RN)**

- The initial credentialed requirements are required to be maintained without lapse during the period of service in the Critical Care Role, additionally
- License/ certification requirements may vary based on licensing/ certifying body. At minimum, twelve (12) hours continuing education, seminars, and workshops addressing adult and pediatric critical care must be completed annually in order to be on track for renewal.

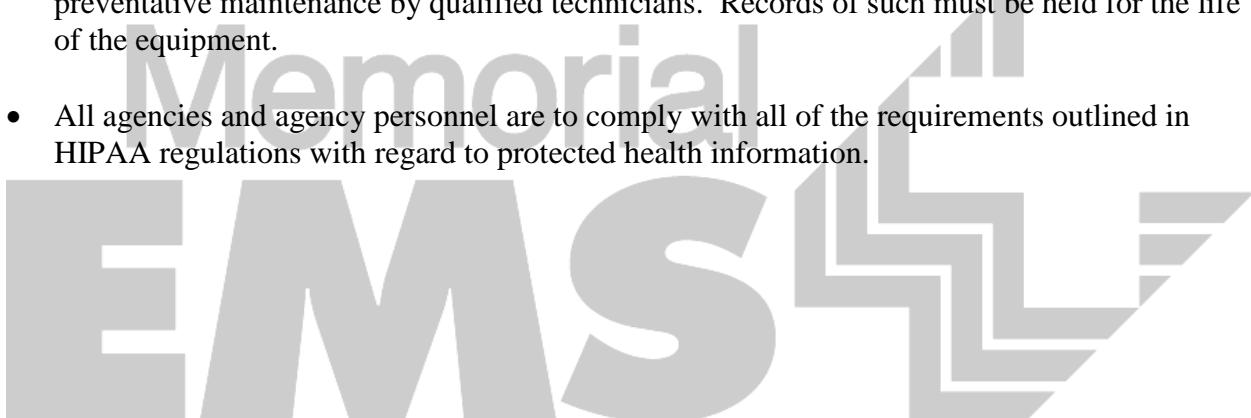
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MEMORIAL EMS SYSTEM
CRITICAL CARE MANUAL

Provider Responsibilities (continued)

Reporting Responsibilities and Maintenance

- Comply with Memorial EMS System Quality Assurance Plan, including agency self-review, timely submission of incident reports, timely submission of patient care reports, maintain controlled substance security logs and usage tracking forms. Logs must be made available upon request of EMS Office personnel.
- Maintain glucometer logs. Testing should be done a minimum of once per week, any time a new bottle of strips is put into service and any time the glucometer is dropped. Glucometer logs should be kept in the ambulance (or other vehicle) and must be made available upon request of EMS Office personnel.
- All electronic equipment used for patient care must be maintained based on manufacturer's recommendations. Equipment needs to be evaluated through regularly scheduled preventative maintenance by qualified technicians. Records of such must be held for the life of the equipment.
- All agencies and agency personnel are to comply with all of the requirements outlined in HIPAA regulations with regard to protected health information.



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**MEMORIAL EMS SYSTEM
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Substance Abuse Policy

The Memorial EMS System considers substance abuse (drug and/or alcohol dependency) to be a health problem and will assist any System provider who becomes dependent on drugs and/or alcohol. The System, and ultimately our patients, will suffer the adverse effects of having a CCT care provider whose work performance and attendance are below acceptable standards. Any employee whose substance abuse problems jeopardize the safety of patients, co-workers or bystanders shall be deemed "unfit to work". Any CCT care provider involved in the Memorial EMS System who voluntarily requests assistance with a personal substance abuse problem will be referred to the EMS Medical Director for assessment and referral for treatment when necessary.

Testing for Drugs & Alcohol

The Memorial EMS System does not require employees to submit to blood and/or urine testing for drugs and/or alcohol as a routine part of their employment. However, individual agencies may require testing as part of the application process.

Any CCT team member or associated healthcare provider may contact the EMS Medical Director (or designee) if he/she has reasonable cause to suspect that a co-worker is under the influence of drugs and/or alcohol while on duty. The EMS Medical Director may choose to require the System provider to submit to a blood/ breathe alcohol test and/or blood/urine toxicology screening. The cost of this testing procedure may be billed to the provider's agency, or in the case of a student, the requesting agency. Disputes related to billing of drug testing should not delay the procedure(s).

1. If a System provider who is required to submit to testing for drugs and/or alcohol refuses to cooperate, he/she will be subject to disciplinary action for insubordination (up to and including termination from the System).
2. Anyone caught tampering with, or attempting to tamper with his/her test specimen (or the specimen of any other Prehospital care provider) will be subject to immediate termination from the System.
3. If any of the test results are positive, the EMS Medical Director will interview the provider. The EMS Medical Director will consult with the provider's agency to determine if referral to an assistance program shall occur.
4. **The CCT team member's privilege of serving in the CCT capacity will be suspended for a minimum of 6 months for the first offense. Any subsequent positive test will result in immediate termination from the System.**

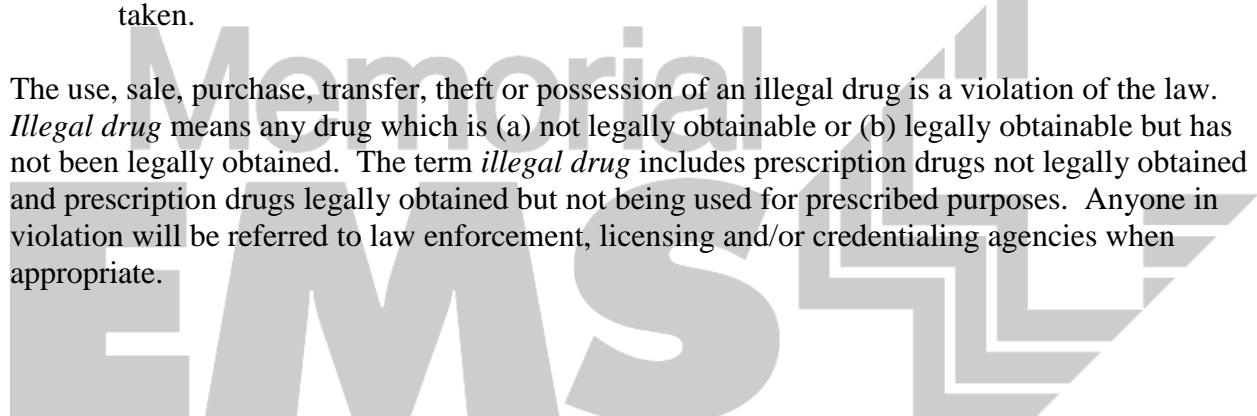
MEMORIAL EMS SYSTEM
CRITICAL CARE MANUAL

Substance Abuse Policy (continued)

Testing for Drugs & Alcohol (continued)

- The progress of employees with substance abuse problems who have been referred to an assistance program will be closely monitored by their agency/employer and the EMS Medical Director. The provider must successfully complete the entire required rehabilitative program and maintain the preventative course of conduct prescribed by the assistance program. He/she must attend the appropriate after-care program(s) and provide verification of compliance with the program requirements, including additional drug testing as determined by the EMS Medical Director and the agency/employer.
5. If the test results are negative, a conference with the EMS Medical Director and the provider's agency/employer will be held to determine what future action, if any, will be taken.

The use, sale, purchase, transfer, theft or possession of an illegal drug is a violation of the law. *Illegal drug* means any drug which is (a) not legally obtainable or (b) legally obtainable but has not been legally obtained. The term *illegal drug* includes prescription drugs not legally obtained and prescription drugs legally obtained but not being used for prescribed purposes. Anyone in violation will be referred to law enforcement, licensing and/or credentialing agencies when appropriate.



MEMORIAL EMS SYSTEM
CRITICAL CARE MANUAL

Complex Patient Management

In order to appropriately meet the needs of that patients at each level of the Critical Care Transport program, the providers, especially at the Tier II level, must be very diligent in their assessment of the situation and the likely and potential deterioration of the patient's condition when determining if transporting the patient is within their capabilities. While the scope of Tier II and Tier III are very similar, the complexity of the patient with more than one critical care intervention is when a Tier II crew must defer to a Tier III crew.

A Tier II crew can transport any patient meeting Tier II criteria in these protocols as long as **there is no more than one (1) intervention needed at the Tier II level**. If there are two or more interventions needed at or above the Tier I (Expanded Scope) level or any Tier III criteria, then that patient requires a Tier III crew for transport.

For example, if a patient has both a new chest tube and was just intubated then the patient has two critical care interventions. That specific patient would require a Tier III Crew.

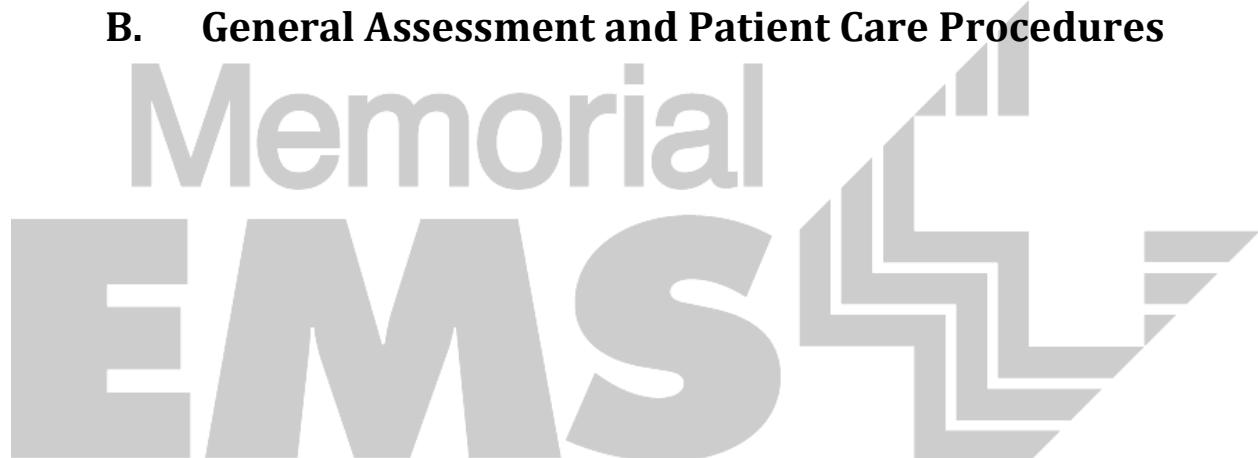
If there are any questions if a patient can be transported Tier II contact the EMS Medical Director, EMS System Manager or EMS Coordinator.

The following medications are only allowed at the Tier III level.

- Nitroprusside
- Milrinone
- Isoproterenol
- Mannitol
- Phenylephrine
- Vasopressin (infusion)
- Procainamide

MEMORIAL EMS SYSTEM
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B. General Assessment and Patient Care Procedures



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**MEMORIAL EMS SYSTEM
CRITICAL CARE MANUAL**

Patient Care Overview

Tier II & Tier III

The goal of Critical Care Transport under the Memorial EMS System is to provide safe, appropriate transportation for critically ill or injured patients who have been evaluated in a hospital facility and their condition deems transfer to a higher level of care is necessary for continued treatment. The following Critical Care Manual is to provide a guideline for standard of care when online Medical Control is not required. Medical Control is always available during the initial patient assessment and transport phases of care.

Assessment

The Critical Care Team will be comprised of either a Registered Nurse, EMT-Paramedic/Pre-Hospital Registered Nurse (each with additional training/ certifications) and an EMT of any level at the Tier III level or an EMT-Paramedic/Pre-Hospital Registered Nurse (each with additional training/ certifications), an Expanded Scope Paramedic with a minimum 2 years' experience and an EMT of any level. While providing Critical Care treatment, the team should always work as a team and maintain a constant path of communication. In most scenarios the members of the team will handle specific responsibilities based on their licensure, experience and the needs of the patient. While a significant degree of overlap exists between the roles of the Registered Nurse and the EMT-Paramedic/PHRN, certain procedures will be required of only the Registered Nurse or only the EMT-Paramedic/PHRN.

Treatment and Interventions

1. Standard Precautions and PPE will be utilized at all times during patient care. Enhanced PPE may be deemed necessary while caring for certain patient conditions or while performing certain patient interventions.
2. Prior to any intervention by the Critical Care Team a basic assessment of the patient must occur. This assessment must include
 - a. Assessing the patency of the airway or airway adjunct.
 - b. Assessing the effort of breathing including lung sounds, respiratory rate, SaO₂ or ETCO₂.
 - c. Assessing circulation including pulse rate and quality, blood pressure and any interventions that affect circulation.
 - d. Assessing the patient for any injuries or deficits. This includes a head to toe assessment of focused physical exam.
3. Report should be received from the transferring RN/LPN/MD/ Midlevel provider including any transfer orders, accepting physician and accepting facility. If preliminary room assignment is given, that should be verified during transport when an update on patient condition and ETA are given fifteen minutes prior to arrival at destination.

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Patient Care Overview (continued)

4. Prior to or immediately after the patient is moved to the CCT stretcher the following interventions must be started or transitioned to the CCT equipment
 - a. Supplemental Oxygen
 - b. Cardiac monitor, blood pressure and oxygen saturation monitoring equipment. These should be documented every fifteen minutes or less and include respiratory rate. Monitoring strips and waveform capnography graph should be printed at the beginning and end of transport, at minimum.
 - c. Non-Invasive Blood Pressure Monitoring (NIBP) is required on all patients unless Invasive Blood Pressure Monitoring (IBP) is utilized.
 - d. ETCO₂ is required for patients who have a I-Gel, endotracheal tube, or cricothyrotomy/ quick trach in place or who are receiving CPAP or BiPAP. Additional protocols will also require ETCO₂.
5. Prior to and following every patient movement all advanced airway adjuncts must be assessed for correct tube placement by at least two methods and included in the PCR. Continuous waveform capnography is required for any patient with an endotracheal tube.
6. Intubated patients should be ventilated with a transport ventilator unless the patient condition does not allow toleration of the ventilator.
7. Patients at risk of vomiting and/or aspiration should be assessed for placement of a gastric tube.
8. IV access is mandatory unless specific condition protocol identifies otherwise.
9. Patency of each IV site should be verified prior to transport and prior to any medication administration.
10. Fluid/ Medication administration should be verified and maintained in accordance with patient condition.
11. Fluid/ Medication administration should be done through the use of a Baxter Sigma Smart Pump. All medications should be moved to the CCT equipment and total amount infused prior to move documented by transferring facility.
 - a. The only exception would be fluid and/ or blood administration in the adult patient where rapid infusion is required.
12. Patients at risk for hemodynamic instability should have two large bore IV lines.
13. If IV lines are not possible, or the time to obtain is delaying critical interventions intraosseous access should be obtained. A maximum of two attempts are allowed.
14. Invasive lines should be assessed for accuracy and continuously monitored.
15. Patients should be assessed for comfort prior to and after every move. This includes
 - a. Pain assessment and management per protocol.
 - b. Positioning and warmth/coolness.
 - c. Patients should be reassessed after every intervention so to recognize changes and trends in the patient condition.
16. If transporting patients under the age of 16
 - a. Contact with **Medical Control** is required.
 - b. Weight must be verified by Broslow Tape for patients under 10 years of age.
 - c. Temperature and blood glucose must be assessed.

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Patient Care Overview (continued)

17. The CCT team is responsible for ensuring

- a. Patient family has had the opportunity to see the patient prior to transport.
- b. Information regarding transport destination has been provided to on-site family.
- c. Patient information and privacy is respected and maintained.
- d. All documentation for the transferring facility is taken with the patient. Ideally this would include digital copies of radiology procedures.
- e. Providing complete report to the receiving nurse/team.
- f. Completing of the Patient Care Report following every transport.
- g. A copy should be provided to the receiving facility.
- h. The PCR shall include copies of all strips printed during care of the patient.
Strips should be labeled with name and date of birth clearly noted.



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**MEMORIAL EMS SYSTEM
CRITICAL CARE MANUAL**

Medical Control Authority

Tier II & Tier III

The transport of patients from facility to facility creates unique challenges for a transport provider. Traditional EMS providers function based on written protocols with the ability and situations where they are required to contact **Medical Control**. Any care that is given prior to their arrival is either basic first aid or by providers functioning under the same or similar Prehospital Care Protocols.

When arriving at a hospital facility to transport to another hospital facility, the patient may be at any point within the treatment algorithm/protocol based on the transferring facility's capabilities and other situations at the time of transfer. The CCT team should always function within their respective scopes of practice. The following *Critical Care Manual* should serve as a guide of care.

Orders for Transport

When arriving at the transferring facility, the CCT team should review all patient records and the results of any diagnostic tests. Additionally the CCT team should perform their own assessment of the patient.

The facility transferring the patient should provide to the Memorial EMS CCT team the orders for treatment that is to occur during transport. This is to be continued through transport unless a change is detected in patient condition. These orders are to be written down and signed by the transferring physician. The orders should be reviewed for clarity prior to the CCT team assuming care of the patient.

If at any time the Memorial EMS CCT team feels that the orders are inappropriate or outside their scope of practice they are to contact **Medical Control** at Memorial Medical Center Emergency Department immediately. The only situation that would supersede immediate contact with **Medical Control** would be the need for life saving intervention. Any deviation from written orders shall be reviewed by the agency QA officer as well as forwarded, in writing, to the Memorial EMS Critical Care Transport Coordinator within twenty-four (24) hours.

Direct Medical Control

There are specific procedures in this manual which require direct **Medical Control**. These procedures/ mediations have a notation identifying that Medical Control is required. Medical Control is to be contacted prior to the initiation of such procedures/ medications. Any time such a procedure is completed without prior Medical Control authorization the situation shall be reviewed by the agency QA officer as well as forwarded, in writing, to the Memorial EMS Critical Care Transport Coordinator within twenty-four (24) hours.

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Medical Control Authority (continued)

Potentially Unstable Transports

It is the expectation that the transferring facility will do everything within their capacity to stabilize the patient prior to transport. If, in the opinion of the Memorial EMS CCT team, the patient could be further stabilized by interventions within their scope of practice, the delay versus the benefit must be weighed by the transferring physician, Memorial EMS CCT team, accepting physician and, if needed, Medical Control.



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**MEMORIAL EMS SYSTEM
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Previously Initiated Medications

Tier II & Tier III

It is the expectation that the transferring facility will do everything within their capacity to stabilize the patient prior to transport. However, the capabilities of a facility has some bearing on their ability to rapidly stabilize the patient. Unless contraindicated, treatment with previously initiated medications should be continued by the CCT team. If additional medications are warranted, the CCT team should consult their protocols, Medical Control, transferring physician and/ or receiving physician regarding those additional interventions.

Assessment

In addition to general patient assessment, all medications should be assessed by the CCT team to validate that

1. Medications being administered and reason for it's particular use
2. Concentration of medication,
3. Rate of infusion and validate this is within limits of transport orders,
4. Total medication that has already been infused.

Treatment and Interventions

1. All medication infusions will be administered by IV pump. The only allowable exception to this is IV fluids and blood products that are being given for rapid infusion.
2. The information from the transferring facility pump must be entered into the CCT pump.
 - a. The infusion must be stopped.
 - b. The infusion tubing should be completely removed from the patient.
 - c. The infusion must be removed from the transferring facility pump.
 - d. The infusion tubing should be removed and the Baxter Sigma Smart pump 10 gtt/p tubing applied.
 - e. The Baxter Sigma Smart pump 10 gtt/p tubing should be primed and loaded into the CCT pump.
 - f. The IV site should be flushed prior to the new line being connected.
 - g. The CCT line should be attached to the patient.
 - h. The CCT pump should be started.
 - i. The RN at the transferring facility will validate that the information has been transferred from the original pump to the CCT pump.
3. Only medications listed on a Drug Compatibility Chart (to be stored in medication bag) are allowed to be hung as a primary and secondary infusion or through the same IV site.
4. The process in #2 should be followed for every medication infusion.
5. If any inconsistency or potential error in the labeling of a previously mixed medication, the CCT crew is to remix the medication and hang the new infusion.

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Previously Initiated Medications (continued)

6. The Memorial EMS CCT protocols should be utilized to validate the ranges of previously established medications.
7. All Infusions should be secured; special attention needs to be paid to infusions in glass bottles to secure them during movements.
8. The CCT team should calculate to ensure that they have enough medication for the entire transport and patient transition time prior to departure from transferring facility.
9. Memorial EMS CCT can continue narcotic or sedation infusions if started by transferring facility if approved by protocol or direct **Medical Control**. If additional medication is needed and infusion completes, IVP medications should be utilized.

Pearls

- Every medication has the potential to cause allergic reactions.
- Many medications are incompatible with other medications. Because of this potential, additional medications should be given through separate IV lines. If this cannot be accomplished, the infusion must be stopped, tubing flushed, injection given, and tubing flushed again.



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Pain Control Protocol

Tier II & Tier III

Pain, and the lack of relief from the pain, is the most common complaint among patients. Pain control can reduce the patient's anxiety and discomfort, making patient care easier. The patient's severity of pain must be properly assessed in order to provide appropriate relief. Managing pain clinically in the inter facility setting will provide greater patient care. Special attention must be paid to this as the patient is being taken from the controlled environment of the transferring facility to the mobile environment involving multiple moves and transport.

Assessment

1. Assess level of pain using the Pain Assessment Scale (0-10) or the Wong-Baker Faces Pain Rating Scale.
2. Place patient in a position of comfort if at all possible.
3. Reassure the patient.

Treatment and Interventions

1. Consider ice or splinting.
2. Reassess level of pain using the approved pain scale.
3. Care should also focus on the pharmaceutical management of pain.
4. Pain medication can be given in situations where the patient still requires additional doses and the systolic BP > 90mmHg.
5. IVP medications can include
 - a) **Morphine Sulfate:** 2-5mg IV every **5 minutes** to reduce the patient's anxiety and severity of pain. If unable to establish IV access, may administer Morphine 2-5mg IM every **15 minutes**.
 - b) **Ondansetron (Zofran):** 4mg IV over **2 minutes** or IM for nausea and/or vomiting. May repeat in 15 minutes with additional 4 mg IV.
 - c) **If the patient is allergic to Morphine or if Morphine is not effective:**
 - d) **Fentanyl:** 50mcg IV over **2 minutes** for pain. Fentanyl 50mcg IV may be repeated one time in **5 minutes** to a total of 100mcg. If unable to establish IV access, may administer Fentanyl 50 mcg IM. May be repeated one time in **15 minutes** to a total of 100mcg.
 - e) **Hydromorphone:** 0.5mg-1mg IV. This may be repeated only once total.
 - f) **Ketamine:** 30 mg IV (patients over age 15 only) after initial Opioid administration. May repeat in **15 minutes**.
9. Narcan 2.0 mg IV/ IN should be available at all times.
10. Contact Medical Control if prolonged transport and have maxed out narcotic dose on protocol.

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Pain Control Protocol (continued)

Wong-Baker Faces Pain Rating Scale



Pearls

- Monitor the patient for respiratory depression when administering narcotics.
- Blood pressure should be monitored closely – check 5 minutes after narcotic administration (and prior to administering repeat doses).
- Verify that the patient is not allergic to the pharmaceutical agent prior to administration.
- Patients with a head injury / ALOC or patients with unstable vital signs should not receive pain medications without direct order from Medical Control.
- **In patients with known renal failure, the Fentanyl dose must be reduced to 25mcg. The dose may be repeated one time to a maximum dose of 50mcg.**
- **Lidocaine:** 30mg IO (slowly) to reduce discomfort from infusion may be given IO to conscious patients experiencing discomfort from IO infusion.

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Patient Sedation Protocol

Tier II & Tier III

Situations will exist where safe management and transportation of the patient will require sedation of the patient. This could be to prevent the patient from further injuring themselves during transport or to support the sedation needed for airway maintenance.

Assessment

1. Assess for any causes of anxiety, confusion or other conditions that can be corrected.
2. Attempt verbal reassurance to calm patient.
3. Ensure that the patient can be safely transported by the CCT.
 - a. If uncertain the CCT can safely transport the patient, seek restraint order for transport.

Treatment and Interventions- Sedation

1. **Midazolam:** 2.5-5mg IV/IN/IM to reduce the patient's anxiety. May repeat in 5 minutes if needed. If giving IV, give slowly over 2 minutes. Watch respiratory status and have bag valve mask ready.
2. **Lorazepam:** 1-4 mg IV. May repeat every 15 minutes.
3. **Diazepam:** 2-10 mg IV/IM. May repeat every 10 minutes.

Treatment and Interventions- Sedation of the Intubated Patient

1. **Propofol:** Continue IV infusion established at transferring facility. Infusion can be increased by 5-10 mcg/kg/min every 5-10 minutes until desired sedation is achieved. Infusion rate parameters are 5-55mcg/kg/min.
2. **Midazolam:** 2.5-5mg IV/IN/IM to reduce the patient's anxiety. May repeat in 5 minutes if needed. If giving IV, give slowly over 2 minutes.
3. **If paralytic is needed in addition to sedation (On Call Critical Care Medical Control must be contacted before paralytic is used)**
 - a. **Rocuronium:** 1 mg/kg or 100 mg (one time push) Onset 1-2 minutes.

Treatment and Interventions- Excited Delirium

1. Use extreme caution to provide for crew safety.
2. Have restraints ready. Ensure you have enough providers to complete restraint procedure.
3. **Ketamine:** 1mg/kg IVP or 2 mg/kg IM. May repeat X 1 if necessary.
4. Prepare to provide airway and ventilatory support.

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Use of Advanced Access

Tier II & Tier III

Patient's with certain ongoing medical problems may have an Implanted Subcutaneous Port (ISP). If the port is accessed via steril technique by the transferring facility and no signs or infection or infiltration exist, the CCT crew can continue to use the port. If any concerns the crew should move to obtaining intraosseous access utilizing pain medications as needed.

Tier III

In certain situations the CCT team may be called to transport a patient who the transferring physician has inserted a central line. The transferring facility may or may not have accessed the line for medication/ fluid administration prior to arrival of the CCT team.

Accessing Central Venous Catheters

1. Special attention should be paid to maintaining aseptic technique.
2. Wear clean gloves.
3. Scrub the injection cap (e.g., needleless connector) with an appropriate antiseptic (e.g., chlorhexidine, povidone iodine, or 70% alcohol), and allow to dry (if povidone iodine is used, it should dry for at least 2 minutes).
4. Access the injection cap with the syringe or IV tubing (opening the clamp, if necessary).

Flushing Technique

1. Single-use flushing systems (e.g., single-dose vials, prefilled syringes) should be used.
2. Access the catheter as outlined above, maintaining aseptic technique.
3. Use a syring with size 10 mL or greater.
4. Flush the catheter vigorously using pulsating technique and maintain pressure at the end of the flush to prevent reflux.
5. Positive pressure technique (may not apply to neutral-displacement or positive-displacement needleless connectors):
 - a. Flush the catheter, continue to hold the plunger of the syringe while closing the clamp on the catheter and then disconnect the syringe.
 - b. For catheters without a clamp, withdraw the syringe as the last 0.5-1 mL of fluid is flushed.

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Blood Administration

Tier II & Tier III

Severely ill or injured patients will greatly benefit from the administration of blood products as soon as they can be administered. Ideally, this would be started at the outlying hospital and continued by the CCT team. In some situations the blood products may not be available prior to the CCT team arrival. In such instance, initiation by the CCT team would be of great benefit to the patient.

Assessment

Patients who are candidates for blood product administration include

1. Adults who are, or suspected to have acute blood loss.
2. Are still considered unstable after administration of 2 liters Normal Saline.
3. SBP less the 90mmHg or other clinical signs of shock (AMS, tachycardia, pallor, delayed capillary refill, etc.)
4. Who have had 2 boluses of 20mL/kg without stabilizing of condition.
5. Other clinical signs of shock (AMS, tachycardia, pallor, delayed capillary refill, etc.)

Prior to administration, and every 15 minutes afterward, the patient should be assessed for

1. Complete set of vital signs, including temperature
2. Skin condition
3. Lung sounds
4. Previous transfusion history
5. Current fluid resuscitation status
6. IV site
7. Adults 18ga or larger (20ga if not infusing PRBCs)
8. IV site patency
9. IV site dedication as only being used for blood product administration
10. Include in the documentation any blood typing information obtained at the transferring facility.
11. If any blood products are being taken with patient, maintain products in cooler on ice for transport. Document time units were accessed from Blood Bank. If unused during transport, these should be turned in at receiving facility Blood Bank.

Treatment and Interventions

1. Appropriate PPE should be worn by the CCT team member performing the intervention. Prior to any intervention, if patient condition allows, the procedure should be explained to the patient.

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Blood Administration (continued)

2. Remove blood products from cooler. Verify temperature of 2-8 degrees Celcius. Once removed from 2-8 degree Celcius enviroment, products must be administered or discarded within four hours.
3. The following information must be confirmed by at least two health care providers
 - a. Patient's name (this could be a john or jane doe assignment)
 - b. Patient's blood type
 - c. Type of blood products
 - d. ABO type of blood products
 - e. Unit number and expiration
4. The two health care providers who verified should sign all appropriate documentation. This should also include the time the infusion began.
5. Infusion rates vary
6. Begin at slower rate and closely monitor for signs of reaction.
7. Infusion can be sped up after no signs of reaction are seen
8. Blood products can be infused with the assistance of a pressure bag so long as the pressure in the bag does not exceed 300mmHg for adults.
9. If reaction is noted
 - a. Immediately stop the transfusion
 - b. Remove all tubing associated with the infusion from the patient
 - c. Reassess patient.
 - d. Treat any complaints of patient.
 - e. Deliver all blood and delivery devices to receiving facility.
10. Blood products should be administered with
 - a. 10 gttP Baxter Sigma Smart Pump tubing
 - b. Leukocyte reduction filter
 - c. Piggyback 1000 mL Normal Saline
 - d. Rate based on transfer orders.
 - e. Rate can be increased to wide open and pressure bag utilized if patient condition necessitates.
11. When infusion is complete, flush IV site with Normal Saline.
12. Document in the PCR
 - a. Type of blood product
 - b. Unit number
 - c. Time transfusion was started and ended
 - d. Total volume and rate infused
 - e. Signs or lack of signs of reaction
 - f. Complete vital signs at completion of transfusion

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Blood Administration (continued)

13. Consider

- a. **Diphenhydramine:** 25-50 mg IV/IM if signs of allergic reaction noted.
- b. **Furosemide:** 20 mg IV/IO after each unit for adult patients demonstrating any signs of CHF.
 - i. If patient with penetrating trauma < 3 hours since injury, and signs of hypovolemic shock see *TXA Protocol*.



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Temperature Monitoring

Tier II & Tier III

Both medical and trauma patients can experience decreases and elevations in temperature that can be detrimental to patient care and patient outcome. Additionally, on some occasions, treatment includes controlling the patient's temperature at a lower than normal value. Therefore, the ability to monitor patient temperature during transport becomes a necessary component of the CCT team's assessment resources.

Assessment

Temperature monitoring should be considered on any patient. Temperature monitoring is required on

1. Patients suffering from hypo- or hyperthermia.
2. Patient where induced hypothermia has been instituted post cardiac arrest.
3. Any patient with a GCS < 8.

Temperature monitoring can be accomplished with

- Esophageal tubes
- Skin probes
- Urinary catheters

Treatment and Interventions

1. To utilize **Skin Probe**
 - a. Determine baseline temperature from transferring facility
 - b. Connect temp cable to monitor and connect disposable skin temp probe to cable.
 - c. Identify desired location.
 - i. Central body core
 - ii. Not over a bony prominence
 - d. Clean site with alcohol skin prep
 - e. Remove adhesive backing from probe
 - f. Ensure probe adherence and monitoring.
2. Alternate method for monitoring skin temperature
 - a. Utilize disposable forehead monitor
 - b. Adjust to determine core temperature is not adjust by device
3. To utilize **Esophagel Probe**
 - a. Patient must have endotracheal tube or I-Gel in place.
 - b. Determine baseline temperature from transferring facility.
 - c. Connect temp cable to monitor and connect disposable esophageal temp probe to cable.
 - d. Pediatric size probe will be used on all patients unless copious amounts of vomitus have been experienced.

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Temperature Monitoring (continued)

- e. Lubricate tip of probe with surgical lubricant.
 - f. Insert the probe through mouth and advance to desired depth.
 - g. Optimal placement is in the lower 25% of the esophagus. (Measuring to manubrium instead of Xiphoid Process.)
 - h. Laryngoscope blade can be used to assist placement.
4. To utilize **Urinary Catheter**
- a. No changing of urinary catheter is allowed.
 - b. If transferring facility has placed a urinary catheter compatible with CCT team monitoring equipment monitoring of temperature via urinary catheter is allowed.
 - c. If urinary catheter has not been placed by transferring facility, a urinary catheter with temperature monitoring capabilities can be placed by the CCT team.
 - i. Sterile technique must be strictly adhered to.
 - d. Determine baseline temperature from transferring facility
 - e. Connect temp cable to monitor and connect disposable urinary catheter temp probe to cable.



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C. Patient Care Procedures-Respiratory



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Bronchospasm

Tier II & Tier III

Asthma, emphysema and chronic obstruction pulmonary disease (COPD) are all medical conditions that significantly reduce the patient's ability to properly exchange air. While each disease impacts a particular area of the respiratory system, treatment for these diseases tends to overlap.

Asthma is a restrictive pulmonary disorder that is often exacerbated by irritants, secretions, airway edema or exertion. Key to the treatment of the asthma patient is the ability to dilate the narrowed airways to improve air exchange.

Emphysema is a more chronic disease where damage has occurred to the alveoli structure, reducing their ability to adequately exchange air. Of importance in treatment is allowing for the full expiration of each breath to occur after each inspiration.

COPD (also referred to as Chronic Bronchitis) is a disease that affects the bronchi. Increased secretions interfere with the air flow into the alveoli. As a result the alveoli receive less than optimal volume of air to exchange leading to hypoxia and hypercarbia.

Assessment

Assessment of all respiratory distress patients should include focus on

- The events leading up to current status
- Comparison to previous attacks
- Associated symptoms
- Compensation methods being utilized, and success of those methods
- Questioning what has worked most successfully in the past for the patient
- Has the patient ever improved through the use of CPAP or BiPAP?
- Has the patient ever required intubation?

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Place patient in semi-Fowlers position or higher if patient can tolerate.
3. Administer 100% Oxygen via NRB. If unable to tolerate NRB, reduce to cannula.
4. Secure advanced airway as needed based on *Advanced Airway/RSI Protocol*.
5. Be alert to changes in patient condition that will require securing advanced airway.
 - a. If advanced airway is needed PEEP 5-15 cmH₂O.
6. If SBP>90 mmHg initiate CPAP or BiPAP based on *Non-Invasive Positive Pressure Ventilation Protocol*.
7. Pain management per *Pain Control Protocol*.
8. **Albuterol:** 2.5 mg in 3 mL via nebulizer. May repeat as necessary. Can be given as in-line neb.

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Bronchospasm (continued)

9. **Ipratropium:** 0.5 mg in 2.5 mL via nebulizer. Can be given as Duo-Neb. May repeat to a maximum of 4 doses.
10. Consider the use of steroids
 - a. **Prednisone:** 60 mg PO.
 - b. **Methylprednisolone Sodium Succinate:** 125 mg IV.
 - c. **Dexamethasone:** 10 mg IV
11. **Racemic Epinephrine 2.25%:** Max single dose 0.5 mL. May repeat every 20 minutes.
12. **Magnesium Sulfate:** 2g IV over 20 minutes for severe asthma exacerbation.
13. **Epinephrine 1:1,000:** 0.3 mg IM. **Medical Control** needed for patients over 50 years of age or with known cardiovascular disease.
14. **Terbutaline:** 0.25 mg SQ/IM.



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Capnography Monitoring

Tier II & Tier III

Capnography is one of several tools/ techniques that can be used to verify endotracheal tube or I-Gel airway placement as well as validate the patient's respiratory status. During transport, capnography is a more reliable and easily assessable tool for verification of airway patency and effects of respiratory support.

All patients with advanced airways under the care of Memorial EMS CCT will be monitored based on their quantitative (waveform) capnography.

Assessment

Prior to connection of CCT capnography equipment, attention should be given to the trends of the patient prior to CCT team arrival. If capnography has already been utilized, a good wave form pattern should be established by the transferring facility. This can be used as a comparison after the patient has been transferred to the CCT monitor and ventilator.

Treatment and Interventions

1. Assemble all equipment prior to utilization. If utilizing capnography as a part of rapid sequence intubation, all equipment should be prepped prior to administration of paralytics and/or sedation.
 - a. If required by unit model, zero the unit.
2. Apply ETCO₂ adapter.
 - a. If utilizing for monitoring of conscious patient, nasal cannula can be applied.
 - b. If utilizing with ETT, placement location in circuit should be based on manufacturer recommendations.
3. Resume ventilations (continue spontaneous ventilations).
4. Observe monitor for numeric value and waveform.
 - a. Obtain documentation strip prior to and after each patient move.
 - b. If absent or low numeric value and/or absent or inappropriate waveform
 - i. Immediately verify placement of advanced airway via
 - Colormetric device
 - Direct laryngoscopy
 - ii. Assess circulation for possible cause of low/ absent/ inappropriate readings
 - c. If low/ absent/ inappropriate readings occur prior to departure of transferring facility
 - i. Return patient to original equipment to work to verify tube placement and reason for error.

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Capnography Monitoring (continued)

5. Unless directed otherwise by specific treatment protocol, seek to maintain ETCO₂ range of 35-45 mmHg.

Pearls

If adjustment in ventilator rate (VR) is needed to improve ETCO₂

Current ETCO₂ x Current VR = Desired VR to achieve desired C_O2
Desired ETCO₂



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Advanced Airway/ Rapid Sequence Intubation

Tier II & Tier III

The decision to provide an advanced airway in a patient who still has respiratory effort is not a decision to be made without consideration of all possible options and outcomes of actions. All necessary equipment should be readied before any action beyond BLS ventilation occurs. Additionally, an alternative airway adjunct must be at the patient's bedside prior to initiation of the intervention.

Assessment

Assessment of the potential advanced airway patient must include

1. Assessment of current airway, adjuncts, and respiratory status
 - a. Look for and address possible causes of airway obstruction.
 - b. For patient with some respiratory effort, rule out other methods to improve respirations. Consider
 - i. Pharmacological agents that could quickly address cause of respiratory difficulty.
 - ii. Positional adjustments that can improve patient's respiratory effort.
 - iii. Patient's emotional state as a contributing factor to respiratory distress.
2. Compare current state to patient's normal based on patient and family ability to provide history.
3. Consider patient's ability and possible likelihood to deteriorate during transport.
4. If airway placement will be needed, strongly consider initiation prior to departure from transferring facility.

Treatment and Interventions

1. Prior to initiation of any advanced airway intervention
 - a. All needed equipment must be gathered and inspected.
 - b. Back-up airway option must be identified by the CCT team.
 - c. All medications must be checked by both the RN and EMT-P/ PHRN.
2. When CCT team is ready to proceed with airway procedure, medications are to be given. All medications should be identified and drawn up prior to any RSI intervention
3. Sedation to be given second. Only **ONE** should be given
 - a. **Etomidate:** 20 mg IVP
 - b. **Midazolam:** 5 mg IVP. May cause hypotension

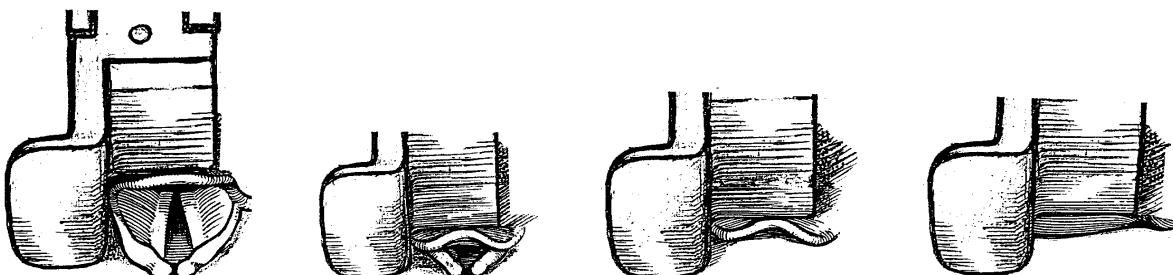
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Advanced Airway/ Rapid Sequence Intubation (continued)

4. Paralytic to be given third. Only **ONE** should be given
 - a. **Rocuronium:** 1mg/kg or 100 mg IVP (one time push)
 - b. **Succinylcholine:** 100 mg IVP
 - i. Consider contraindications for Succinylcholine
5. After paralytic is given the CCT team should be ready to provide ventilatory support. This should be provided by a CCT member other than the one preparing to place the advanced airway.
6. Await paralytic to take effect.
7. Make sure to sedate following intubation according to sedation of intubated patient protocol in 2.E.1

For Endotracheal Intubation

1. Implement basic airway measures.
2. Pre-oxygenate the patient with high concentration oxygen prior to intubation attempt.
3. Conduct a pre-intubation assessment using the *Cormack-Lehane* scale:



GRADE 1

GRADE 2

GRADE 3

GRADE 4

- If the pre-intubation assessment is GRADE 3 or GRADE 4, consider I-Gel as the first-line device.
- An airway bougie may also be considered for a GRADE 2-4 airways

4. Select the proper tube size (based on patient size) and attach a 10mL syringe. Inflate the cuff to be sure it does not leak (the cuff must be deflated prior to insertion).
5. Insert stylet and bend to the approximate configuration of the pharynx.
6. Lubricate the ETT with a water-soluble lubricant.
7. Have suction, BVM, stethoscope, colorimetric end-tidal CO₂ detector/capnography and commercial ETT holder readily available.
8. Suction the pharynx as needed.
9. Insert the laryngoscope blade into the mouth on the right side, moving the tongue to the left. Follow the natural contour of the pharynx, lifting the tongue (not prying) until you can see the glottic opening.

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Advanced Airway/ Rapid Sequence Intubation (continued)

- a. If you are using a **straight blade** (Miller), insert it until you can see the epiglottis. With the tip of the blade, lift up on the epiglottis so that you can visualize the vocal cords and glottic opening. If needed, have someone gently press down on the cricoid cartilage (Sellick Maneuver) and/or utilize the BURP procedure to aid in visualization of the vocal chords and to help compress the esophagus.
 - b. If you are using a **curved blade** (Macintosh), insert the tip into the vallecula and lift up. This will lift the epiglottis and expose the vocal cords and glottic opening. If needed, have someone gently press down on the cricoid cartilage (Sellick Maneuver) so that you can see the cords well.
10. After visualizing the glottic opening, grasp the ETT with your right hand and advance the tube from the right corner of the mouth. Insert the tube into the glottic opening between the vocal cords, just far enough to pass the cuff of the tube past the opening.

If spinal injury is considered a possibility

1. Any type of cervical spine manipulation may be dangerous during airway control of the suspected spinal injury patient. Maintain in-line stabilization while attempting airway control. Consider utilizing the I-Gel Airway *in lieu of traditional intubation*.
2. A minimum of two (2) trained rescuers is needed to assure special attention to spinal precautions.
3. One rescuer will apply manual in-line stabilization by placing the rescuers hands about the patient's ears with the little fingers under the occipital skull and the thumbs on the face over the maxillary sinuses.
4. The rescuer performing airway placement should be at the head.

Placement Verification

1. Verify proper position by ventilating the patient through the tube with a bag-valve device while listening to each side of the chest with a stethoscope to be sure air is entering both lungs.
 - a. Check for inadvertent esophageal intubation by listening for air movement in the epigastric area during ventilations.
2. Utilize a colorimetric end-tidal CO₂ (ETCO₂) detector or waveform capnography as one confirmation method.
3. If breath sounds are heard on both sides of the chest, no epigastric sounds are heard, colorimetric ETCO₂ detector/capnography indicate proper placement, inflate the cuff with 10mL of air and secure the tube with a commercial ETT holder.
4. If you have inserted the ETT too far, it will usually go into the right main stem bronchus. Therefore, if you hear breath sounds only on the right, you should pull the tube back $\frac{1}{2}$ inch at a time until you hear bilateral breath sounds. Inflate the cuff with 10mL of air and secure the ETT with a commercial holder.

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Advanced Airway/ Rapid Sequence Intubation (continued)

5. If you hear no breath sounds, you are in the esophagus and must remove the ETT immediately. Repeat above steps.
 - a. If no breaths sounds on second attempt ventilate patient and proceed to I-Gel Airway insertion or continue basic airway control measures.
6. Frequently reassess breath sounds to be sure that the ETT is still in place.
7. Ventilate the patient at a rate of 12 times per minute until ventilator settings can be established.
8. Treat based on *Patient Sedation Protocol* as needed to maintain sedation during transport.

Use of the Endotracheal Tube Introducer (AKA “Bougie”)

1. The endotracheal tube introducer, AKA “Bougie” is a useful tool to help facilitate difficult intubation. Unlike a stylet, a bougie is inserted independent of the ET tube and is used as a guide, over which an ET Tube may be placed into the trachea. It is used where a difficult intubation is anticipated, or a poor view of the glottis opening has been confirmed on laryngoscopy (*Cormack-Lehane II, IV*).
2. Prepare the endotracheal tube introducer for use: Curve the bougie and ensure the distal tip is formed into a J (coudé) shape.
3. Utilize the laryngoscope as you would do during intubation to obtain the best possible view of the glottis opening. You should always be able to view the tip of the epiglottis and, ideally, the arytenoid cartilages.
4. Advance the bougie, continually observing its distal tip, with the concavity facing anteriorly.
5. Visualize the tip of the bougie passing posteriorly to the epiglottis and (where possible) anterior to the arytenoid cartilages.
6. Once the tip of the bougie has passed the epiglottis, continue to advance it in the mid-line so that it passes behind the epiglottis but in an anterior direction.
7. As the tip of the bougie enters the glottis opening you may feel “clicks” as it passes over the tracheal rings or the tip may stop against the wall of the airways. This suggests correct insertion, although this cannot be relied upon to indicate correct positioning.
8. Hold the bougie firmly in place and pass the endotracheal tube over the proximal end of the bougie.
9. As the proximal tip of the bougie is re-exposed, carefully grasp it, assuming control of the bougie.
10. The ET tube should then be carefully advanced along the bougie and hence through the glottic opening, taking care to avoid movement of the bougie.
11. Once the ET tube is fully in place hold it securely as you slowly withdraw the bougie.

Advanced Airway/ Rapid Sequence Intubation (continued)

i-Gel

- The i-Gel is an airway device designed for emergency or difficult airway management in the apneic or unresponsive patient without a gag reflex.
- It is the primary airway of choice for adult and pediatric cardiac arrest patients.
- It is the back-up airway in cases of an unsuccessful intubation attempt.

Contraindication

- Active gag reflex
- Ingestion of a caustic substance (e.g. gasoline, drain cleaner, etc.)
- Use caution in pregnant females
- Morbid obesity
- Tracheostomy (it will be ineffective)
- Patient less than 30kg (BLS provider restriction only)
- Known or suspected esophageal disease (e.g. esophageal varices)

i-gel size	Patient size	Patient weight guidance (kg)
3	Small adult	30-60
4	Medium adult	50-90
5	Large adult+	90+

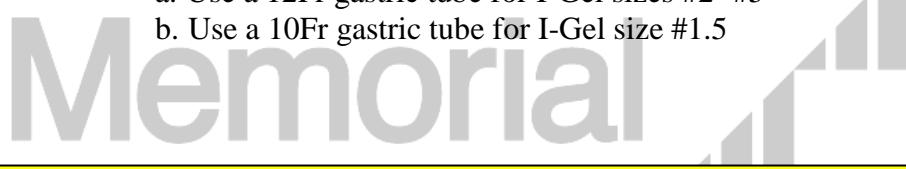
i-Gel Airway Insertion

1. Don appropriate PPE
2. Pre-Oxygenate the patient with 100% Oxygen.
3. Select the appropriate i-Gel size from the chart above.
4. Remove the device from the packaging and check for signs of damage.
5. Place water-soluble jelly in the middle of the cradle packaging.
6. Lubricate the back, sides, and tip of the i-Gel's non-inflatable cuff. Ensure no lubricant is inside the cuff.
7. Grasp along the integral bite block and face the cuff towards the patients' chin.
8. Insert the i-Gel into the mouth in the direction of the hard palate.
9. Glide the device down and back along the hard palate with continuous, gentle pressure until resistance is met.

Advanced Airway/ Rapid Sequence Intubation (continued)

i-Gel Airway Insertion Procedure

10. Tape the device Maxilla to Maxilla or use a commercial i-Gel 02 holder for **gentle downward pressure**.
11. Connect the i-Gel to the BVM.
12. Confirm i-Gel placement with ETCO₂ detector or waveform capnography (preferred), auscultation of bilateral breath sounds, and visualizing equal chest rise/fall.
13. Continuously monitor the patient with pulse oximetry, capnography, and cardiac monitor.
14. (**ALS only**) Insert appropriately sized gastric tube if time permits.
 - a. Use a 12Fr gastric tube for I-Gel sizes #2- #5
 - b. Use a 10Fr gastric tube for I-Gel size #1.5



Critical Thinking

- If unsuccessful in placing a Supraglottic Airway, remove the airway and a **second attempt** with the device following the same insertion procedures may be made. If this attempt is unsuccessful, immediately revert to *Basic Airway Control Procedures*.
- Sizes for the i-Gel are based on ideal body weight for the size of the patient.
- A proficient provider can insert an i-Gel in 5 seconds or less.
- Do NOT administer medications via any Supraglottic Airway Device. It is designed as an airway adjunct only and cannot be utilized as a medication route.
- **Warning:** *In order to avoid the possibility of the device moving up out of position prior to being secured in place, it is essential that as soon as insertion has been successfully completed, the i-Gel is held in the correct position until being secured.*
- **Warning:** *Do not apply excessive force on the device during insertion.*
- It is not necessary to insert fingers or thumbs into the patients' mouth during the i-Gel insertion process.
- Supraglottic Airways do not prevent the aspiration of gastric contents.

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Advanced Airway/ Rapid Sequence Intubation (continued)

If changing from a defective Endotracheal Tube to new Endotracheal Tube

1. Prepare all needed equipment in advance.
2. Hyperoxygenate patient prior to procedure.
3. Remove BVM or ventilator circuit from Endotracheal Tube.
4. Insert lubricated Bougie Tube into ventilation port of Endotracheal Tube (approximately 30 cm.)
5. Deflate bulb on Endotracheal Tube.
6. Remove Endotracheal Tube while maintaining position/ location of Bougie tube.
7. Replace with Endotracheal Tube as outlined above.
8. Confirm placement and secure tube.



Pneumothorax Management

Tier II & Tier III

A pneumothorax/ hemopneumothorax is a life-threatening condition that requires prompt identification and treatment to prevent compromise of ventilation and circulation. While the pneumothorax/ hemopneumothorax is more likely to develop shortly after the injury occurs or after airway interventions, it can develop at any time. The CCT team must work quickly to identify the condition, intervene and look for possible causes to prevent further compromise.

Assessment

Patients suffering from a pneumothorax/ hemopneumothorax will typically present with several of the following signs and symptoms. If readily available, review radiographic images to verify patient condition as well as placement of any interventions.

Signs and symptoms of tension pneumothorax / hemopneumothorax include:

- Restlessness and agitation
- Severe respiratory distress
- Increased airway resistance with ventilations
- JVD
- Tracheal deviation
- Subcutaneous emphysema
- Unequal breath sounds
- Absent lung sounds on the affected side
- Hyper resonance to percussion on the affected side
- Hypotension
- Cyanosis
- Respiratory arrest
- Traumatic cardiac arrest

Treatment and Interventions

If a tension pneumothorax is identified while the patient is in the care of the CCT team:

1. Locate the 5th intercostal space in the mid-axillary line on the side of the pneumothorax.
2. Cleanse the site with providone-iodine preps and maintain as much of a sterile field as possible.
3. Attach a 10-20mL syringe to a 2 inch, 14g IV catheter.
4. Puncture the skin perpendicularly, just superior to the 6th rib (in the 5th intercostal space). Direct the needle just over the 6th rib and into the thoracic cavity. A “pop” should be felt as well as a “rush of air” as with the plunger of the syringe moves outward.
5. Advance the catheter while removing the needle and syringe.
6. Attach extension tubing, gate valve and one way valve device from pneumothorax kit.
7. Secure the catheter in the chest wall with a dressing and tape.
8. Monitor the patient **closely** and continue to reassess.

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Pneumothorax Management (continued)

If the patient has a closed chest drainage system already in place:

1. Address the immediate needs of the patient. This may include performing a needle decompression, or repeated needle decompressions, on the patient.
2. Work to trouble shoot potential problems with the entire thoracostomy. Verify chest tube is securely attached to patient's chest prior to any patient movement by
 - a. Confirming sutures to the skin are intact.
 - b. Occlusive dressing attached to thoracostomy site, or secure taping of the chest tube to the chest skin.
 - c. Inspect tube for any possible occlusions.
3. Verify the device and tubing is connected to suction for proper drainage.
 - a. Add additional tape as needed.
 - b. Water flow and float ball should tidal with patient's respiratory cycle.
 - c. Continuous bubbling indicates an air leak within the system.
4. Ongoing treatment for closed chest drain system
 - a. Suction will be maintained during transport as it was at the facility.
 - i. Drainage tubes must be clamped while transitioning from suction systems.
 - ii. Verify suction pressure as ordered by transferring physician.
 - b. Note fluid and blood levels in the drainage and water seal compartments.
 - i. Per orders, note the drainage at required increments on the drain and in the PCR.
 - ii. If drainage output of greater than 200ml/hr x4 hours or greater than 150ml/hr x3 hours in elderly, contact **Medical Control** as this may require immediate intervention.
 - c. Closed chest drain system must be maintained at a level lower than the point of insertion on the patient.
5. Chest tubes and closed chest drain systems should be inspected every 15 minutes during transport to insure proper working condition.
6. Consult current patient orders for best patient positioning.

Critical Thinking Elements

- Nerve bundles and blood vessels are located under the ribs and puncturing them could cause nerve damage and extensive bleeding. Ensure that the puncture is being made over the top of the 3rd rib midclavicular or the 6th rib mid axillary.

Quick Trach/ Emergency Cricothyrotomy

Tier II & Tier III

Rare situations produce the potential for extreme airway emergencies. Such situations are typically the result of traumatic injuries (including burns), anaphylactic reactions and or extreme, co-morbid medical conditions. While these cases are exceedingly rare with the airway equipment available to emergency medical providers, the potential exists for a situation where an emergent surgical airway (Quick Trach/ Emergency Cricothyrotomy) is needed. Such situations will require quick decision making as well as consensus among onsite medical providers that the emergent airway is the only option.

Due to the possibility of deterioration in respiratory status, it is imperative that the transferring facility clarify the patient's wishes regarding intubation prior to transport. In accordance with the patient's wishes, the transferring physician, receiving physician and the CCT team need to determine the safest way to maintain the patient's airway during transport.

Assessment

Utilization of transtracheal ventilation should **ONLY** be utilized if

1. Signs and symptoms of complete airway obstruction/ occlusion.
 - a. This would be indicated also by inability to provide any ventilation via BVM.
 - b. Basic and Advanced Life Support maneuvers to remove obstruction should be attempted prior to movement to emergency airway.
2. Inability to establish an advanced airway (endotracheal tube or I-Gel Airway) after primary and secondary attempts.

Treatment and Interventions

1. Prep the site by vigorously scrubbing with alcohol or iodine preps.
2. Place the patient in a supine position. If no concerns about cervical spine injury, hyperextend the neck.
3. With gloved hand, maintain constant pressure on the larynx laterally between the thumb and forefinger of non-dominant hand. Releasing this pressure will make landmarks difficult to relocate.
4. Secure the larynx laterally between the thumb and forefinger. Find the cricothyroid membrane (in the midline between the thyroid cartilage and the cricoid cartilage). This is puncture site.
5. Firmly hold device and puncture cricothyroid membrane at a 90-degree angle.

Quick Trach/ Emergency Cricothyrotomy (continued)

6. After puncturing the cricothyroid membrane, check the entry of the needle into the trachea by aspirating air through the syringe.
 - a. If air is present, needle is within trachea, change the angle of insertion to 60 degrees (from the head) and advance the device forward into the trachea to the level of the stopper. The stopper reduces the risk of inserting the needle too deeply and causing damage to the rear wall of the trachea.
 - b. Should no aspiration of air be possible because of an extremely thick neck, it is possible to remove the stopper and carefully insert the needle further until entrance into the trachea is made.
7. Remove the stopper. After the stopper is removed, be careful not to advance the device further with the needle still attached.
8. Hold the needle and syringe firmly and slide only the plastic cannula along the needle into the trachea until the flange rests on the neck. Carefully remove the needle and syringe.
9. Secure the cannula with the neck strap
10. Apply the connecting tube to the 15 mm connection and connect the other end to the bag-valve-mask with supplemental oxygen.
11. Continue ventilation with 100 percent oxygen and continuously assess the airway and respiratory status.

Potential Problems/ Complications

- The severity of the medical situation will add to the complexity of the procedure.
- Subcutaneous emphysema will result after ventilations are applied to an improperly placed airway (too shallow or too deep).
- Bleeding is very common due to the large quantity of superficial vessels in the neck.
- Too deep of insertion can lead to perforation of the posterior trachea and even the esophagus. Excessive bleeding will result. Placement stopper should always be utilized.

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Mechanical Ventilation

Tier II & Tier III

Certain situations exist where mechanical ventilation of the patient is most advantageous to the patient and the treatment/recovery process. As such mechanical ventilation via a transport ventilator is the preferred mechanism over BVM use. Only in rare situations should the BVM be used for ventilation beyond than transitions in bed location or caregiver once the patient has been placed on the transport ventilator.

Assessment

Assessment of the patient requiring mechanical ventilation should include history of the situation that led to the placement of an advanced airway as well as history of ventilator use prior to this incidence.

Pre and Post Move to a Ventilator

1. Assessment of patient should include and be documented in PCR
 - a. Lung sounds in a minimum of 4 lung fields,
 - b. Absence of sounds over the epigastria,
2. Assessment of diagnostic equipment should include and be documented in PCR,
 - a. Current waveform capnography and ETCO₂ values,
3. Secondary ventilator should be set to identical settings as the primary ventilator,
 - a. If identical settings are not possible, consult with transferring physician and/ or respiratory therapist for orders as close as possible.
4. Waveform capnography and ETCO₂ should be moved to transport monitor,
5. Ensure readings match previous readings prior to moving patient to secondary ventilator. If unable to match settings, return to primary waveform capnography and ETCO₂ and troubleshoot prior to ventilator move.
6. Move patient to secondary ventilator.
 - a. Assess patient for compliance. Return to primary ventilator if any issues noted until they can be corrected.

Pre and Post Move of Any Patient on a Ventilator

1. Equipment required always at patient's bedside
 - a. BVM
 - b. 10 mL syringe
2. Assessment of patient should include and be documented in PCR
 - a. Lung sounds in a minimum of 4 lung fields,
 - b. Absence of sounds over the epigastria,
3. Assessment of diagnostic equipment should include and be documented in PCR,
 - a. Current waveform capnography and ETCO₂ values.

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Mechanical Ventilation (continued)

If Transferring a Patient from a Ventilator at a Transferring Facility

1. Prepare ventilator prior to patient application
 - a. Perform ventilator self test per manufacturer specs.
2. Verify all filters are clean, disposable filters should be new.
3. Attach disposable vent circuit(s).
4. Attach appropriate O2 source.
5. Check circuit for leaks.
6. Ventilator settings should be set to match all settings established at transferring facility.
7. If unable to set identical settings
 - a. Consult transferring physician/ respiratory therapist for alternate settings
 - b. If any question regarding ventilator settings, contact **Medical Control**.

If Placing a Patient on Transport Ventilator as Initial Ventilator

1. Prepare ventilator prior to patient application
 - a. Perform ventilator self test per manufacturer specs.
2. Verify all filters are clean, disposable filters should be new.
3. Attach disposable vent circuit(s).
4. Attach appropriate O2 source.
5. Check circuit for leaks.
6. If no specific orders are written, initial setting should be based upon the following with the goal of maintaining achieving optimum cycle time and desired minute ventilation.

	Tidal Volume	RR	I/E Ratio	PEEP	FIO2
No Medical History	6 mL/kg**	10-12	1:2	4	1.0
Asthma/ COPD	6mL/kg**	8-10	1:4	4	1.0
ARDS	6mL/kg**	10-12	1:2	4-15	1.0
Hypovolemia	6mL/kg**	10-12	1:2	4	1.0
Closed Head Injury	6 mL/kg**	10-12	1:2	4	1.0
Burn Injury Inhalation	6mL/kg**	10-12	1:2	4-15	1.0

** Must use Ideal Body Weight, not the actual patient's weight. Should not exceed 650-700 mL.
Ideal Body Weight Formula

- Men= 50 kg + 2.3 kg for every inch over 5 feet tall.
- Women= 45.5 kg + 2.3 kg for every inch over 5 foot tall.

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Mechanical Ventilation (continued)

For all intubated patients

1. Maintain sedation based on Patient Sedation Protocol.
2. Consider placement of gastric tube.
3. Utilize soft wrist restraints to protect against self extubation.
4. Refer to Complex Patients protocol for exclusion criteria for Tier II providers

Pearls

- Patient should never be off the ventilator > 15 seconds. If troubleshooting of ventilator is needed, BVM should be initiated immediately.
- Limits interactions with patient that will cause increased difficulty for patient who has difficulty tolerating vent.
- If patient has home ventilator and home ventilator is being requested for use, transferring physician, receiving physician and CCT Team must agree that home vent use is best in this patient situation.



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Non-Invasive Positive Pressure Ventilation

Tier II & Tier III

Patients suffering from hypoxia due to obstructive disorders and pulmonary edema face a more expedited recovery in current distress can be corrected by the use of non-invasive positive pressure ventilation (CPAP and/ or BiPAP) before the need for advanced airway develops. The use of an advanced airway in such chronic respiratory patients, leads to a significant difficulty in reversing the patient's dependency on the ventilator.

Assessment

Patient who may benefit from the use of CPAP or BiPAP typically present with a known history of

- Congestive Heart Failure
- Chronic Obstructive Pulmonary Disease
- Asthma
- Airway structure damage from injury
- Acute situations such as
 - Flash Pulmonary Edema
 - Respiratory distress where the patient is refusing intubation

Clinical presentation of

- Hypoxia despite supplemental O₂
- Rales/ Rhonchi in lung fields
- Pitting edema in dependent extremities and/ or inability to lie flat
- Hypercarbia or inability to tolerate CPAP pressure- utilize BiPAP

Contraindications

- SBP < 90 mmHg
- Facial, airway or penetrating chest trauma
- Inability to maintain own airway
- Inability to secure good seal to patient's face
- Hemodynamic instability requiring RSI
- Vomiting

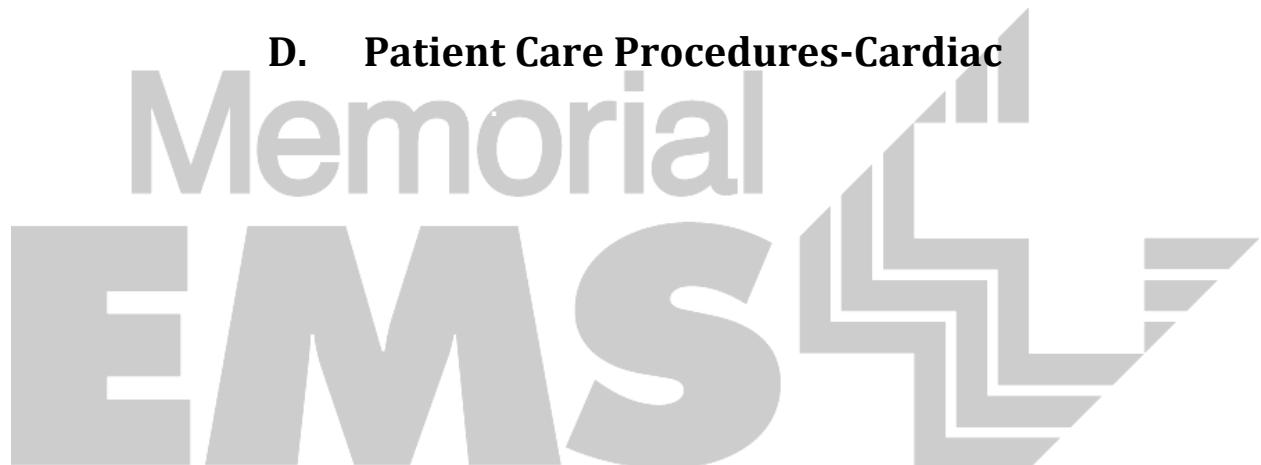
Non-Invasive Positive Pressure Ventilation (continued)

Treatment and Interventions

1. Ensure patent airway and patient ability to maintain that airway. If patient is not able to maintain airway for transport, take steps to ensure patent airway, up to and including *Advanced Airway/ RSI Protocol*.
2. Initiate appropriate settings for patient condition
 - a. Refer to transferring physician and receiving physician for initial orders.
 - b. Standard is 10 Pressure Support/ 5 cm H₂O PEEP. FIO₂ at 100%. Can be increased in 2.5 increments to 18 Pressure Support/ 8 cm H₂O PEEP.
 - c. Check to ensure patient volumes of ventilator at 500-800mL (approximately 5-8 mL/kg TV). Higher volumes are permitted if patient is chronically on higher volumes at home or has a valid Do Not Intubate order.
3. Connect ventilator to O₂ source.
 - a. Source should have >1500 PSI
4. Treat also based on *Bronchospasm Protocol* as needed.
5. If patient has had CPAP or BiPAP mask on for > 1-2 hours
 - a. Remove mask and check to insure no pressure sores are being created for seal.
 - b. Assess oropharynx to see if secretions have led to a need for suctioning in airway.
6. Constant monitoring of the patient is needed to ensure
 - a. Consistent waveform capnography at or better than levels established by transferring facility.
 - b. No decrease in level of consciousness.
 - c. No contraindications have developed.
7. Patients must have appropriately trending ABG or VBG and a stable and non-deteriorating level of consciousness for 1 hour prior to accepting patient for transport. These contraindications need not apply to a patient with a valid Do Not Intubate order.

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D. Patient Care Procedures-Cardiac



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12 Lead EKG

Tier II & Tier III

The 12 and 15 Lead EKG have become the definitive test for timely diagnosis of STEMI. A 12 Lead EKG should be completed on every patient complaining of chest pain/ discomfort, possible referred pain to the neck, shoulders, arm, back or epigastric area or difficulty breathing of suspected cardiac etiology. ST segment elevation may not be seen in EKGs that are obtained early in the onset of symptoms. In such cases a second 12 Lead, 15 Lead or right-sided 12 Lead may be indicated.

Assessment

If 12 Lead EKG has been completed at the transferring facility, the CCT team should review the findings and evaluate the need for repeated/additional EKG. If patient has diagnosed STEMI note the areas of elevation and reciprocal depression.

Any patient complaining of chest pain/discomfort, difficulty breathing or who has experienced trauma to the chest should have a 12 Lead EKG completed as soon as possible to identify possible cardiac etiology.

Treatment and Interventions

Appropriate PPE should be worn by the CCT team member performing the intervention. Prior to any intervention, if patient condition allows, the procedure should be explained to the patient.

1. Clean and prep skin. Shave as needed.
2. Apply the limb leads first
 - a. Arm leads should be placed between the shoulder and elbow, not over a bony prominence or large muscles.
 - b. Leg leads should be placed between the hip and ankle, but not over a bony prominence or large muscles.
3. Place the Precordial Leads
 - a. V1 at the 4th intercostal space to the right of the sternum.
 - b. V2 at the 4th intercostal space to the left of the sternum.
 - c. V3 directly between V2 and V4.
 - d. V4 at the 5th intercostal space at the left midclavicular line.
 - e. V5 directly across from V4 at the left anterior axillary line.
 - f. V6 directly across from V4 and V5 at the mid axillary line.
4. Be attentive of patient privacy as much as medically possible. Never use the nipple line as a landmark. Leads should be placed under the breast on the patient chest wall.
5. Encourage patient to lie still, relaxing all muscles and breathing easily.
6. Acquire and print 12 Lead. If assistance in interpretation is needed, forward by telemetry to Medical Control.
7. A copy of the 12 Lead is to be labeled and included in the PCR. Any changes in lead placement should be noted on the EKG and communicated to Medical Control.

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12 Lead EKG (continued)

Suspected Inferior MI

If CCT team suspects Inferior MI a right-sided EKG may be completed.

1. Precordial Lead placement will change to
 - a. V1 at the 4th intercostal space to the left of the sternum.
 - b. V2 at the 4th intercostal space to the right of the sternum.
 - c. V3 directly between V2 and V4.
 - d. V4 at the 5th intercostal space at the right midclavicular line.
 - e. V5 directly across from V4 at the right anterior axillary line.
 - f. V6 directly across from V4 and V5 at the mid axillary line.
2. A copy of the 12 Lead is to be labeled and included in the PCR. Any changes in lead placement should be noted on the EKG. Included in the labeling should be which version is right-sided chest versus left-sided chest.

15 Lead EKG

If the CCT team suspects an Inferior wall MI, posterior or right ventricle involvement, a 15 Lead EKG should be done.

1. Precordial Lead placement will change to
 - a. V4 moved to V4R and is placed at the 5th intercostal space, midclavicular line on the right chest.
 - b. V5 moved to V8 and is placed at the 5th intercostal space mid scapular.
 - c. V6 moved to V9 and is placed at the 5th intercostal space between V8 and spine.
2. A copy of the 12 Lead is to be labeled and included in the PCR. Any changes in lead placement should be noted on the EKG. Included in the labeling should be which version is left sided chest traditional and which is the 15 Lead.

Lead Name & Standard Color

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

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Hypertensive Emergency

Tier II & Tier III

A hypertensive emergency exists when blood pressure is elevated to a point where central nervous system, cardiac or renal system dysfunction results. Multiple organ systems can play a role in creating the cause of this crisis. As the body attempts to compensate and return to its own homeostasis, it actually worsens the situation for itself.

Assessment

Good patient assessment and history will be of great value in assessing the patient suffering from a hypertensive crisis. The patient may have a single complaint, seemingly unrelated to the ultimate cause of the medical emergency. Assessment should include any history that the transferring facility may have available, as well as a detailed physical exam.

For patient with blood pressure of >200/130 regardless of symptoms or >180/110 with

- Acute change in mental status
- New focal neurological deficit
- Acute ischemic EKG changes
- Acute LV dysfunction
- Renal failure (increased serum creatinine)
- Hematuria

Question all female patients age 15-50 if possibility of postpartum hypertension. (Six or fewer weeks post delivery.) If yes

- Verify destination appropriate for treatment of postpartum hypertension patient
- Verify transport orders were reviewed by receiving physician.

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Verify manual blood pressures in both arms.
3. Identify and correct possible causes of hypertension. (Pain, medication induced, etc.)
4. Continuously work to identify cause
5. For hypertensive states associated with cocaine, methamphetamine or other stimulants
DO NOT USE BETA-BLOCKERS. Instead treat with:
 - a. **Midazolam:** 2.5mg-5mg IV/IM. May repeat in 3-5 minutes.
 - b. **Lorazepam:** 1-4 mg IV. May repeat in 15 minutes as necessary.
 - c. **Diazepam:** 2-10 mg IV/IM May repeat in 10 minutes as necessary.

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Hypertensive Emergency (continued)

6. If blood pressure of >200/130 regardless of symptoms or >180/110 and complaints of tachycardia, headache, nausea/vomiting or confusion
 - a. **Labetalol:** 10-20 mg IV over 2 minutes. May double the previous dose and repeat PRN. Max total dose 300 mg.
 - i. Labetalol should be used with caution in the bradycardic patient.
 - b. **Hydralazine:** 10 mg slow IV push. May repeat in 20 minutes up to a maximum dose of 40 mg.
 - c. Consider **Nicardipine (Cardene):** Start infusion at 5 mg/hr. Increase by 2.5 mg/hr every 15 minutes to a max of 15 mg/hr.
 - d. Consider **Esmolol (Brevibloc):** Bolus 500 mcg/kg over 1 minute. Then infuse at 50 mcg/kg/min. May increase by 50 mcg/kg/min every 5-10 minutes to a max of 200 mcg/kg/min.
 - i. Esmolol is to be used with caution in the bradycardic patient.
7. Consider **Nitroglycerin infusion:** 10-200 mcg/min. Titrate to SBP and symptoms by 10 mcg/kg/min every 5-10 minutes. Maximum dose 200 mcg/min. **Nitroglycerin is contraindicated in patients who have taken erectile dysfunction medication within the last 72 hours.**
8. Rapid reduction of hypertension is only indicated for AMI, hypertensive encephalopathy and subarachnoid hemorrhage.
9. All other hypertensive cases, BP should be lowered approximately 10% per hour Treatment should continue to be titrated until symptoms are relieved or 20% MAP is achieved. The target is NOT a normal blood pressure.
10. If hypotension results, discontinue anti-hypertensive, elevate patient's feet, and administer 250 mL bolus of **0.9% Normal Saline**. Repeat as needed to achieve MAP \geq 65 mmHg.

Tier III

11. If blood pressure of >200/130 regardless of symptoms or >180/110 and complaints of tachycardia, headache, nausea/vomiting or confusion despite above medication treatments
 - a. Consider **Nitroprusside (Nipride):** Start infusion at 0.3 mcg/kg/min. May increase by 0.5 mcg/kg/min every 5 minutes to a max of 3 mcg/kg/min. May increase up to 10 mcg/kg/min for a total of ten minutes and then must reduce.

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Pulmonary Edema/ CHF

Tier II & Tier III

Flash pulmonary edema is consistent with a significant increase in respiratory difficulty regardless of physical activity. Unfortunately, the left heart damage that already exists is unable to respond to increased need. In attempting to do so, it increases its own oxygen need thereby making the situation an ever worsening cycle. Prompt recognition of the situation and intervention will have significant impact on the long term recovery of the patient. The heart's inability to pump effectively results in an accumulation of fluid, particularly, in the lungs. The fluid accumulation leads to alveolar flooding and a reduced ability to exchange gases at the alveolar level.

Assessment

Any patient exhibiting signs of heart failure should also be assessed for

- Myocardial Infarction
- Sepsis
- Valve failure/ papillary muscle rupture

Be particularly attentive to

- Respiratory assessment
 - Rales/ wheezes on auscultation
 - Accessory muscle use
 - Respiratory secretions
- JVD even when upright
- Peripheral edema
- Labs
 - Decreased Cardiac Output
 - Increased PA, PCWP, CVP, SVR
- Heart tones may reveal S3 gallop

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Place patient in semi-Fowlers position or higher if patient can tolerate.
3. If SBP>90 mmHg initiate CPAP or BiPAP based on *Non-Invasive Positive Pressure Ventilation Protocol*.
4. Be alert to changes in patient condition that will require securing advanced airway.
 - a. If advanced airway is needed PEEP 5-15 cmH₂O.
5. Pain management per *Pain Control Protocol*.
6. For suspected PE
 - a. Sending physician may initiate anti-coagulation. Anti-coagulation therapy may be continued based on sending physician orders.

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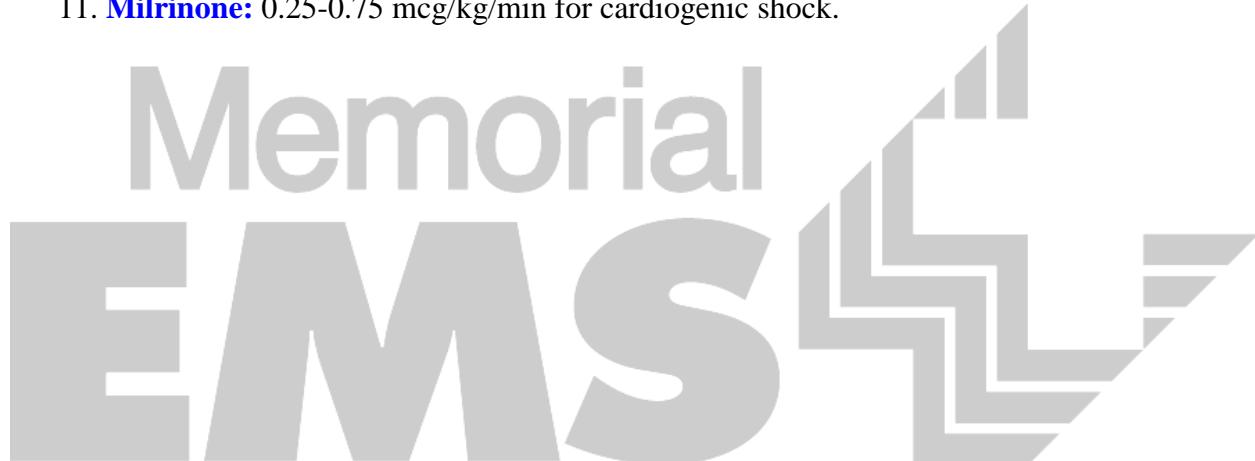
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Pulmonary Edema/ CHF (continued)

7. **Nitroglycerin:** 0.4 mg SL every 3-5 minutes if SBP remains >90mmHg.
 - a. **Nitroglycerin is contraindicated in patients who have taken erectile disfunction medication within the last 72 hours.**
8. **Nitroglycerin Infusion:** 10-200 mcg/min. Titrate to SBP and symptoms by 10 mcg/kg/min every 5-10 minutes. Maximum dose 200 mcg/min.
 - a. **Nitroglycerin is contraindicated in patients who have taken erectile disfunction medication within the last 72 hours.**
9. **Furosemide:** 40 mg, or 1 mg/kg, or current daily PO dose given IV.
10. **Enalapril:** 1.25 mg IV **ONLY IF NO EKG** changes that indicate inferior wall damage.

Tier III

11. **Milrinone:** 0.25-0.75 mcg/kg/min for cardiogenic shock.



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ACS/ STEMI

Tier II & Tier III

While mortality from Acute Coronary Syndrome is steadily declining, morbidity and mortality from ACS/STEMI should serve as constant reminders of the medical emergency that exists. Rapid treatment and transport to definitive care should be of the upmost priority.

Assessment

Assessment should focus on identifying the patient's condition as stable and being transported for continued cardiac evaluation or unstable who is being transported for an acute event that is still ongoing.

Important additional information can be gained in questioning labs obtained prior to transport and significant family history.

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Obtain, review or repeat 12 Lead EKG. Consider need for 15 Lead or Right-Sided 12 Lead.
3. Place defibrillation patches on patient.
4. Aspirin: 324 mg PO. If given prior to CCT team arrival, note previous administration in PCR.
5. **Nitroglycerin:** 0.4 mg SL every 3-5 minutes if SBP remains >90mmHg.
 - a. Nitroglycerin is contraindicated in patients who have taken erectile dysfunction medication within the last 72 hours.
 - b. **Nitroglycerin Infusion:** 10-200 mcg/min. Titrate to SBP and symptoms by 10 mcg/kg/min every 5-10 minutes. Maximum dose 200 mcg/min. **Nitroglycerin is contraindicated in patients who have taken erectile dysfunction medication within the last 72 hours.**
6. Pain management per *Pain Control Protocol*.
7. Heparin: 60 units/kg IV (max dose 4,000 units).
8. **Heparin Infusion:** 12 units/ kg/ hr (max dose of 1000 units/hr.)
9. Ranitidine (Zantac): 150 mg PO, as needed.
10. Metoprolol: 5 mg IVP every 5 minutes. Max total dose 15mg.
11. Ticagrelor (Brilinta): 180 mg PO **OR** Plavix 300 mg PO

If glycoprotein IIb/IIIa Inhibitors

1. Sending physician may initiated glycoprotein inhibitors. Glycoprotein inhibitor therapy may be continued based on sending physician orders.

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ACS/ STEMI (continued)

If thrombolytic Therapy

1. Sending physician may initiate thrombolytic therapy. Thrombolytic therapy may be continued based on sending physician orders.
2. Inclusion criteria
 - a. Less than 75 years of age
 - b. Onset of symptoms \leq 12 hours
 - c. LBBB
 - d. ST elevation > 1mm in 2 consecutive leads
3. Exclusion criteria- relative
 - a. Diagnosed bleeding disorder
 - b. Uncontrolled hypertension
 - c. SBP > 200 mmHg or DPB > 120 mmHg
 - d. Pregnancy
 - e. CPR for greater than 10 minutes during this admission
 - f. Coumadin therapy with INR > 2
 - g. Ischemic Stroke > 6 months
 - h. Hemorrhagic Ophthalmic conditions
 - i. Recent access of non-compressible blood vessel
 - j. Trauma or major surgery > 2 weeks ago, < 2 months ago
4. Exclusion criteria- absolute
 - a. Allergy to thrombolytic agent
 - b. Internal bleeding within last 10 days
 - c. Ischemic stroke within last 6 months
 - d. Hemorrhagic stroke at any time
 - e. Intracranial or spinal trauma \leq 2 months
 - f. Traumatic injury or surgery to non-compressible site < 10 days
 - g. Suspected Aortic Dissection or Pericarditis

Transport of STEMI Patients

1. Time is of the essence. Report information can be gained by the CCT team by contacting the receiving facility while enroute.
 - a. Medications that will be utilized during transport can be prepped prior to arrival at patient bedside.
 - b. A rapid assessment of the patient should occur at bedside.
 - i. Other than required forms for consent and transfer, no delay in transport should be allowed to wait for additional documentation.
 - c. Antiarrhythmics and pressors must be continued at all times.
 - d. Additional infusions such as anti-coagulants may be stopped until the patient is loaded into the ambulance and infusions restarted during transport.
 - e. Note infusion information from transferring facility prior to move.
 - f. Consider use of bolus medications in place of infusions.

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Induced Hypothermia

Tier II & Tier III

Improved, neurologically intact survival (morbidity and mortality) from cardiac arrest has been associated with the use of post resuscitation induced hypothermia. Clinically induced hypothermia is an evidence based strategy that may improve patient outcome. Reducing the patient's body temperature to 33° Celsius has the potential to improve neurological outcome by reducing the oxygen free radical production.

Assessment

For a patient to meet criteria for induced hypothermia, **ALL** of the following criteria must be met:

1. Cardiac arrest with return of spontaneous circulation within 60 minutes of arrest.
2. Adult patient age 18 or older.
3. Women with negative HCG.
4. SBP > 90 (with or without pressors).
5. No uncontrolled dysrhythmias
6. Mechanically ventilated.
7. Initial temperature > 30° Celsius.
8. Persistent comatose state secondary to post arrest (GCS <10).

For a patient to be excluded as a candidate for induced hypothermia, any of the following would negate the ability to treat with induced hypothermia

1. History of terminal illness or pre-existing comatose state.
2. Improving neurological status.
3. Primary intracranial event (CVA, trauma, seizure- status epileptic).

The following exclusion criteria require **Medical Control** approval to proceed with induced hypothermia.

1. Active bleeding or coagulopathies
2. Surgery within last 14 days
3. Documented sepsis
4. Non-cardiac causes of coma (drug overdose, CNS infections, encephalic causes)
5. Persistent hypoxia
6. Continued hemodynamic instability despite vasopressor and fluid resuscitation.
7. Pregnancy

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Induced Hypothermia (continued)

Additional assessment and documentation

1. Pupillary response
 - a. Size and reactivity
2. Eye opening
3. Corneal reflex
4. Spontaneous respirations over ventilator
5. Oculocephalic response (doll's eye movement) but contraindicated if suspected C-Spine injury
6. Complete CGS assessment

Treatment and Interventions

The target of induced hypothermia is to reduce the patients temperature to 32°-34° Celcius within 3 hours of cardiac arrest. When the temperature reaches 33° the cooling efforts should be moved to maintaining a temperature of 33° for 24 hours.

1. Initiate patient care based on the *Patient Care Overview*.
2. Patient is to remain intubated, chemically paralyzed if necessary.
3. Remove all clothing and cover with light sheet for privacy.
4. Ice packs should be applied to the groin and axilla.
5. Reduce temperature of patient care area to the lowest possible setting.
6. Avoid use of electrical humidifier on ventilator.
 - a. Place gastric tube based on *Gastric Tube Protocol*.
7. Temperature monitoring should occur via NG/OG tube, foley or other approved method, but initial temperatures can be assessed with rectal probe of portable thermometer.
8. Administer chilled **0.9% Normal Saline** 30mL/kg over 1 hour. Maximum dose of 2 liters.
 - a. This can be accomplished by placing disposable ice packs in exterior pouch of pressure bag.
 - b. Fluid administration is contraindicated in patients with pulmonary edema or those who are dialysis dependent.
9. Place continuous temperature monitoring probe via nasogastric or orogastric tube.
10. Sedate patient as needed based on *Patient Sedation Protocol*.
11. Elevate head of bed 30°.
12. Maintain MAP >65, target reading of 70-80.
13. Utilize *Vasopressor/Hypotension Protocol* if pressor support needed.
14. The patient is to remain intubated and chemically sedated.
15. Refer to Complex Patient protocol for exclusion criteria for Tier II providers.

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Cardiac Arrest

Tier II & Tier III

While a variety of causes can lead to sudden cardiac arrest, the primary focus of the CCT team should be to immediately assist circulation and treat the cardiac abnormalities that present through a systematic approach. The primary factor for successful defibrillation and resuscitation is decreasing the time interval from onset of cardiac arrest to effective CPR, defibrillation and advanced life support. Additional focus should then look to reversible causes and working to correct those causes.

Treatment and Interventions

Initiate patient care based on the *Patient Care Overview*.

Confirm unresponsiveness.

Initiate high quality CPR immediately upon recognition of arrest.

1. Pulse checks should be limited to 10 seconds or less.
2. Ventilations should be assisted at 12 breaths/min using **oxygen at 15 L/min via BVM**.
3. Defibrillation, if indicated should be initiated after 2 minutes of CPR or immediately after witnessing cardiac arrest. Defibrillate per manufacturer's recommendations for biphasic defibrillation.
4. Proceed to treatment protocol based on specific cardiac rhythm encountered.
5. Secure Advanced Airway based on *Advanced Airway/ RSI Protocol*.

Pearls

- **If the cardiac arrest is witnessed by EMS personnel, start CPR and defibrillate immediately after Fast Patches or Quick Combos are placed.**
- Patients with implanted pacemakers or implanted defibrillators (AICDs) are treated the same way as any other patient; however do not place the electrodes, Quick Combo pads or Fast Patches over the top of the pacemaker or AICD site.
- Treat the patient – not the monitor. A rhythm present on the monitor screen should NOT be used to determine pulse. If the monitor shows a rhythm and the patient has no pulse, begin CPR (the patient is in PEA).
- Trauma patients in cardiac arrest should be evaluated for viability. When changing to CCT monitoring equipment, attach defibrillation cables prior to disconnecting the AED.
- Resuscitation and treatment decisions are based on the duration of the arrest, physical exam and the patient's medical history. Consider cease-effort orders if indicated.
- Consider underlying etiologies and treat according to appropriate protocols.

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Resuscitation of Pulseless Rhythms

Tier II & Tier III

The successful resuscitation of patients in cardiac arrest is dependent on a systematic approach to resuscitation. ACLS medications are an important factor in successful resuscitation of the pulseless patient when the initial rhythm is not ventricular fibrillation (V-fib) or in cases where defibrillation has been unsuccessful.

Ventricular Fibrillation (V-Fib) or Pulseless Ventricular Tachycardia (V-Tach)

1. Initiate *Cardiac Arrest Protocol*.
2. **Epinephrine 1:10,000:** 1mg IV/IO or 2mg ETT if patient is pulseless and repeat every **3-5 minutes** as needed.
3. If pulseless V-Fib/V-Tach persists: Continue 2 minute cycles of CPR with pulse check and defibrillation as indicated.
4. **Amiodarone:** 300 mg IV/ IO for recurrent V-Fib/ V-Tach.
5. **Lidocaine:** 1.5mg/kg IV/IO. Repeat bolus: 1.5mg/kg IV in **3-5 minutes** to a total of 3mg/kg if patient remains in V-fib or V-Tach.
6. **Magnesium Sulfate:** 2 g IV over 2 minutes for Torsades de Pointes, digoxin toxicity, or known hypomagnesemic state.
7. If vagal-induced cardiac arrest, consider **Atropine** 1 mg IV/IO. Repeat every 3-5 minutes to a max of 0.04 mg/kg.
8. If conversion to perfusing rhythm initiate maintenance drip of effective anti-arrhythmic.
 - a. **Amiodarone:** 60 mg/hr for 6 hours. Reduce to 30 mg/hr for 18 hours.
 - b. **Lidocaine:** 2-4 mg/min.
 - i. If given IVP once set drip at 2 mg/min.
 - ii. If given IVP twice set drip at 3 mg/min.
 - iii. If given IVP three times, set drip at 3 mg/min.

Pulseless Electrical Activity

1. Initiate *Cardiac Arrest Protocol*.
2. **Epinephrine 1:10,000:** 1mg IV/IO or 2mg ETT if patient is pulseless and repeat every **3-5 minutes** as needed.
3. If PEA persists: Continue 2 minute cycles of CPR with pulse check and defibrillation as indicated.
4. Search for reversible causes and treat based on applicable protocol.

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Resuscitation of Pulseless Rhythms (continued)

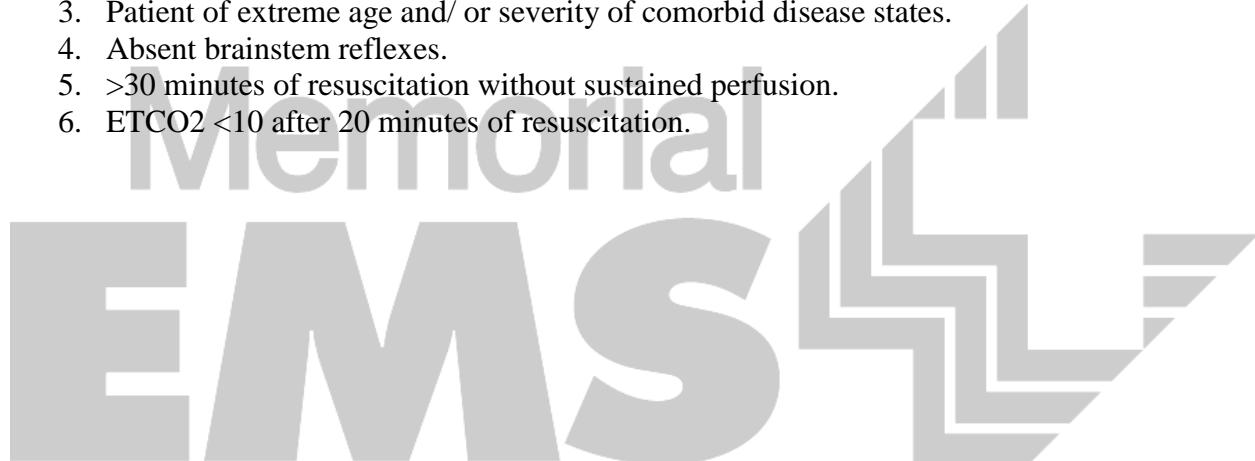
Asystole

1. Initiate *Cardiac Arrest Protocol*.
2. **Epinephrine 1:10,000:** 1mg IV/IO or 2mg ETT every **3-5 minutes**.
3. Consider Termination of Resuscitation order.

Termination of Resuscitation

Termination of Resuscitation must meet at least two of the following criteria

1. Asystole in 2 or more leads.
2. Prolonged interval between estimated time of arrest and initiation of resuscitation.
3. Patient of extreme age and/ or severity of comorbid disease states.
4. Absent brainstem reflexes.
5. >30 minutes of resuscitation without sustained perfusion.
6. ETCO₂ <10 after 20 minutes of resuscitation.



Unstable Bradycardia

Tier II & Tier III

Bradycardia is defined as a heart rate less than sixty beats per minute (< 60 bpm). Determining the stability of the patient with bradycardia is an important factor in patient care decisions. The assessment of the patient with bradycardia includes evaluation for signs and symptoms of hypoperfusion.

Assessment

The patient is considered **stable** if the patient is asymptomatic (i.e. alert and oriented with warm, dry skin and a systolic BP > 100mmHg).

The patient is considered **unstable** if he/she presents with:

- An altered level of consciousness (ALOC).
- Diaphoresis.
- Dizziness.
- Chest pain or discomfort.
- Ventricular ectopy.
- Hypotension (systolic BP < 100mmHg).

Treatment and Interventions

Initiate patient care based on the *Patient Care Overview*.

1. Evaluate and /or repeat 12-Lead EKG to confirm cardiac rhythm.
2. **IV Fluid Therapy:** 500mL 0.9% Normal Saline fluid bolus for systolic BP less than 100mmHg.
3. Initiate **Transcutaneous Pacing**: based on *Transcutaneous Pacing Protocol*
4. **Atropine:** 0.5mg IV if the patient's perfusion does not improve after the fluid bolus, if the patient is hemodynamically unstable or if the cardiac rhythm is an AV block (other than a 3rd degree block). May repeat 0.5mg IV every **5 minutes** up to a total of 0.4 mg/kg.
5. Initiate Vasopressor based on *Vasopressor/ Hypotensive Emergency Protocol*
 - a. **Dopamine:** 2-10 mcg/kg/min
 - b. **Levophed:** 1mcg/min. Titrate to desired affect with 2 mcg/min increases every 5 minutes. Max dose of 40 mcg/min.
 - c. **Epinephrine:** 2-10 mcg/min
6. If Beta or Calcium Channel Blocker overdose is suspected give **Glucagon** 3 mg IVP and infuse at 3 mg/hr.

Unstable Bradycardia (continued)

Tier III

7. Additional Vassopressor option(s) base on Vassopressor/ Hypotensive Emergency Protocol
 - a. **Isoproterenol:** 2-10 mcg/min

Pearls

- Treat the patient – not the monitor. Bradycardia does not necessarily mean that the patient is unstable or requires intervention.
- Treat underlying etiologies according to protocol.
- Atropine is NOT to be given if the patient's blood pressure is normal or elevated.
- *Bradycardia may be present due to increased intracranial pressure from a stroke or head injury.*
- Factors to consider during the assessment of the patient who presents with bradycardia include: patient health & physical condition (e.g. an athlete), current medications (e.g. beta blockers), trauma or injury related to the event (e.g. a head trauma patient exhibiting signs of herniation or *Cushing's response*), and other medical history.
- Assess for underlying causes (e.g. hypoxia, hypovolemic shock, cardiogenic shock, or overdose).
- Fluid bolus should not delay Atropine administration or TCP if the patient is unstable.
- If the patient's presenting rhythm is a 3rd degree block, immediately prepare to pace. If the patient is symptomatic, pacing should be started without delay.

Narrow Complex Tachycardia

Tier II & Tier III

Tachycardia is defined as a heart rate > 100 bpm. Once the heart rate reaches 150 bpm, the patient is at risk for hypoperfusion. A narrow QRS complex indicates that the rhythm may be originating in the atrium. Determining the stability of the patient with tachycardia is an important factor in patient care decisions. The assessment of the patient with tachycardia includes evaluation for signs and symptoms of hypoperfusion.

Assessment

The patient is considered **stable** if the patient is alert and oriented with warm & dry skin and has a systolic BP > 100 mmHg.

The patient is considered **unstable** if the patient has an altered level of consciousness, diaphoresis, dizziness, chest pain or discomfort, ventricular ectopy and/or is hypotensive.

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Place defibrillation patches on patient in addition to monitoring capability.
3. Evaluate and /or repeat 12-Lead EKG to confirm cardiac rhythm.
 - a. *If Wolff Parkinson White syndrome immediately contact Medical Control for patient specific orders. Adenosine and Diltiazem are contraindicated and Adenosine cold make symptoms worse.*
4. Attempt vagal maneuvers.
5. **Adenosine (Adenocard):** 6mg IV {rapid IV push} if the patient is alert and oriented, has a systolic BP greater than 100mmHg, has a HR greater than 150bpm and is *obviously* not in atrial fib or atrial flutter. If no response after **2 minutes**, administer 12mg IV {rapid IV push}.
6. **Diltiazem:** 0.1 -0.25 mg/kg IV bolus over 2 minutes. May repeat at 0.35 mg/kg at 15 minute interval. Max dose of 25 mg.
 - a. Begin **Diltiazem infusion** at 5 mg/hr and increase by 5mg/hr every 15 minutes to control heart rate to max dose of 15 mg/hr
7. **Amiodarone:** 150 mg infusion over 10 minutes. 0.22 mL filter must be used in infusion.
 - a. **Amiodarone Maintenance infusion:** 1 mg/ min for 6 hours, then 0.5 mg/ min for 18 hours. Document times of rate changes and notify receiving RN.
8. **Metoprolol:** 5mg over 10 minutes. May repeat X2 to maximum dose of 15 mg.
 - b. Contraindicated for patients in CHF, heart blocks, valvular failure, cocaine or methamphetamine use, or HR < 50 or SBP < 90 mmHg.

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Narrow Complex Tachycardia (continued)

9. **Esmolol:** 500 mcg/kg bolus x1, start infusion at 50 mcg/kg/min and may increase by 50mcg/kg/min q 5 min to max of 300 mcg/kg/min
10. If rhythm is unresponsive to drug therapy or patient condition does not allow for the time needed to attempt drug therapy initiate **Synchronized Cardioversion** based on the *Synchronized Cardioversion Protocol*.

A-Fib/ A-Flutter

1. **Diltiazem:** 0.25 mg/kg IV bolus over 2 minutes. May repeat at 0.35 mg/kg at 15 minute interval. Max dose of 25 mg.
 - a. Begin **Diltiazem infusion** at 5 mg/hr and increase by 5mg/hr every 15 minutes to control heart rate to max dose of 15 mg/hr
2. **Metoprolol:** 5mg over 10 minutes. May repeat X2 to maximum dose of 15 mg.
 - a. Contraindicated for patients in CHF, heart blocks, valvular failure, cocaine or methamphetamine use or HR < 50 or SBP < 90 mmHg.
3. **Amiodarone:** 150 mg infusion over 10 minutes. 0.22 mL filter must be used in infusion.
 - a. **Amiodarone Maintenance infusion:** 1 mg/ min for 6 hours, then 0.5 mg/ min for 18 hours. Document times of rate changes and notify receiving RN.
4. **Esmolol:** 500 mcg/kg bolus x1, start infusion at 50 mcg/kg/min and may increase by 50mcg/kg/min q 5 min to max of 200 mcg/kg/min
5. If rhythm is unresponsive to drug therapy or patient condition does not allow for the time needed to attempt drug therapy initiate **Synchronized Cardioversion** based on the *Synchronized Cardioversion Protocol*.

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Wide Complex Tachycardia

Tier II & Tier III

Tachycardia is defined as a heart rate > 100 bpm. Once the heart rate reaches 150 bpm, the patient is at risk for shock. A wide-complex QRS indicates the rhythm may be of ventricular origin. Determining the stability of the patient with tachycardia is an important factor in patient care decisions. The assessment of the patient with tachycardia includes evaluation for signs and symptoms of hypoperfusion.

Assessment

The patient is considered **stable** if the patient is alert & oriented with warm & dry skin and a systolic BP > 100 mmHg.

The patient is considered **unstable** if the patient has an altered level of consciousness, diaphoresis, dizziness, chest pain or discomfort, ventricular ectopy and/or hypotension.

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Evaluate and /or repeat 12-Lead EKG to confirm cardiac rhythm.
3. If stable, **Amiodarone**: 150 mg IV infusion over 10 minutes. 0.22 mL filter must be used in infusion.
4. If rhythm is unresponsive to drug therapy or patient condition does not allow for the time needed to attempt drug therapy initiate **Synchronized Cardioversion** based on the *Synchronized Cardioversion Protocol*.
5. If rhythm persists, **Lidocaine**: 1.5mg/kg IV/IO. May repeat every 5 minutes to max dose of 3 mg/kg.
6. If Torsades de Pointes or suspected hypomagnesemic state, give **Magnesium Sulfate** 2g IV over 5 minutes.

Tier III

7. **Procainamide**: 2-4 mg/min

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Vassopressor/ Hypotensive Emergency

Tier II & Tier III

Inadequate tissue perfusion, regardless of cause, is an immediate life threat and should be treated as such. While searching for possible reversible causes, the CCT team must also address the symptoms so to improve circulation and therefore organ and tissue perfusion.

Assessment

Identification of the hypotensive patient is complicated by the often non-specific complaints, such as weakness/ malaise that the patient may present with. Focused history may help identify more information about the incident as well as a history of similar events.

- Signs and symptoms to be alert for include:
- SBP < 90 mmHg with
- Poor skin turgor
- Altered level of consciousness
- Delayed cap refill
- Weakness/ dizziness

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Treatment should include working to obtain a target MAP of 65.
3. If no signs of volume overload/ CHF (JVD, edema, pulmonary edema) give 500 mL fluid bolus of 0.9% Normal Saline.
4. Repeat boluses of 20 mL/kg as needed if no signs of fluid overload/ CHF are present
5. Vasoactive medications should be initiated via central access device, or through a peripheral IV (20ga or bigger) if unable to obtain central access, continuous close monitoring of IV site required.
6. **Dopamine:** 2-20 mcg/kg/min titrating to achieve target pressure.
7. **Levophed:** 2-10 mcg/min. Maintenance infusion of 2-40 mcg/min to obtain target pressure.
 - a. First choice for septic shock.
8. **Dobutamine:** 2-20 mcg/kg/min titrating to achieve target pressure.
 - a. Typically used with Levophed in patients with cardiogenic shock needing inotropic support after target pressure is achieved.
9. **Epinephrine:** 2-10 mcg/kg/min
 - a. First choice if anaphylactic shock.

Tier III

10. **Isoproterenol:** 2-10 mcg/min
11. Consider **Phenylephrine:** 100 to 180 mcg/min titrating to achieve target pressure
 - a. First choice for neurogenic (spinal) shock.
12. **Vasopressin:** 0.04 units/min titrating to achieve target pressure.
 - a. Second choice for septic shock refractory to Levophed.

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Transcutaneous Pacing

Tier II & Tier III

Transcutaneous pacing (TCP) is used to deliver an electrical stimulus to the heart that acts as a substitute for the heart's conduction system and is intended to result in cardiac depolarization and myocardial contraction.

TCP should be utilized for patients with symptomatic bradycardia, namely Type II 2nd Degree AV Block and 3rd Degree AV Block (Complete Heart Block). Pacing may also be utilized early in the treatment of Asystole.

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Evaluate and /or repeat 12-Lead EKG to confirm cardiac rhythm.
3. Apply the pacing pads to the patient using anterior-posterior placement. Place the negative electrode on the anterior chest between the sternum and left nipple (the upper edge of the pad should be below the nipple line). Place the positive electrode on the left posterior to the left of the spine beneath the scapula. Avoid placement over AICD or implanted pacemaker.
4. Activate the pacer mode and observe a marker on each QRS wave. If the marker is not present, adjust the EKG size.
5. Set the target rate at **70 bpm**.
6. Set the current at **minimum** to start.
7. Activate the pacer and observe pacer spikes.
8. Increase the current slowly until there is evidence of electrical and mechanical capture.
9. Palpate patient's pulse and check BP to verify conduction.
10. Provide pain control medication as needed based on the *Patient Sedation Protocol*.

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Synchronized Cardioversion

Tier II & Tier III

Electrical cardioversion is the therapy of choice for hemodynamically unstable ventricular or supraventricular tachydysrhythmias with a pulse. Synchronized cardioversion may also be successful in treatment of the patient suffering from A-Fib with RVR and A-Flutter with RVR. Synchronization of the delivered energy reduces the potential for induction of V-Fib that can occur when electrical energy impinges on the relative refractory period of the cardiac cycle.

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Evaluate and /or repeat 12-Lead EKG to confirm cardiac rhythm.
3. Provide pain control medications as needed based on *Patient Sedation Protocol*.
4. Apply Quick Combo pads or Fast Patches according to protocol and apply regular limb leads.
5. Push the synchronize sensor button on the defibrillator.
6. Confirm that the monitor is sensing “R” waves on the monitor screen (this is denoted by the darker mark on the screen with each complex).
7. Select the appropriate energy setting based on manufacturer’s biphasic recommendations.
8. Press the charge button.
9. Depress the discharge buttons simultaneously and wait for the shock to be delivered.
10. Note the rhythm and treat according to the appropriate protocol.
11. If the patient becomes pulseless at any time, turn off the synchronizer circuit and refer to the *Resuscitation of Pulseless Rhythms Protocol*.
12. If additional attempts at Synchronized Cardioversion are needed, ensure the cardiac monitor is in synchronizing mode.

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Ventricular Assist Devices

Tier III

As healthcare advances increasingly develop greater technology, the ability of a patient to function, outside of the hospital, despite a significant heart failure diagnosis, for greater amounts of time is becoming a reality in our communities. Current technology has even moved to the point where patients whose cardiac function is dependent upon a ventricular assist device (VAD) can live almost indefinitely with the VAD and survive years without transplant.

A left ventricular assist device (LVAD) is a mechanical device with connections surgically implanted in the heart. The LVAD assists the failing heart in pumping blood to the rest of the body. Blood is taken from the compromised left ventricle and moved, via an implanted pump and tubing that pushed blood to the aorta. The pump is driven by drive line that is connected to the external power source and controller that the patient must wear at all times. The external power source is specific to the LVAD manufacturer but devices are now being utilized that allow for separate power source to be used rather than continuous reliance of the batteries.

LVAD use is divided into three categories. *Destination Therapy*, now becoming very common, is a situation where the LVAD is able to provide a level of functioning and quality of life that allows the patient to function outside of the hospital without plans for a heart transport. *Bridge to Transplant* refers to the situation in which the LVAD has been placed in a patient who is awaiting a heart transplant. The patient could be utilizing the LVAD for an extended time while he/she awaits transplant. *Bridge to Recovery* is a situation occasionally seen where an LVAD is being placed as a temporary method in order to address heart failure that is seen as temporary. In these rare situations the heart is able to recover after the resting period and resume pumping responsibilities at some later time.

Assessment

Assessment of the patient who is reliant on an LVAD is very unique as compared to typical patients. The patient most likely will **not** have a pulse or blood pressure. In order to assess patient condition assess heart tones by use of a stethoscope. A constant or repeating humming sound indicated the device is functioning. Mental status, skin temperature/ color and machine alarms are the indicators that will provide continuous monitoring of patient status. A Mean Arterial Pressure can be assessed using a Doppler to assess a manual blood pressure.

Attention should always include ensuring that all connections to the external device are secure. The pump should not be covered by any bedding. The tubing should not be flexed.

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Ventricular Assist Devices (continued)

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Obtain orders specific to the patient from the transferring/receiving physician as to how a potential cardiac arrest should be handled. If patient still has some ventricular function on his/her own ventricular arrhythmias should be treated based on the appropriate *Cardiac Arrest Protocol*.
3. Obtain as much history from patient/ family and VAD coordinator regarding patient specifics as possible.
4. Perfusion can be assessed based on patient signs and symptoms as well as a dopplered MAP.
5. Pump components
 - a. Continuous flow pump
 - b. Console and monitor with battery
 - c. Flow probe
 - d. Back up console with additional battery
 - e. Power Conditioning Unit (CPU)- plug in unless moving patient
6. Adjusting pump flow
 - a. Adjust flow slowly and only under direct order of **Medical Control** or VAD Coordinator.
 - b. Adjust based on specific instructions from VAD Coordinator.
7. Normal operation settings.
 - a. Pump flow: 4-5 LPM
 - b. Pump speed: 3000-4000 RPM
 - c. MAP: 65 mmHg
8. Alarms
 - a. Pump not functioning alarms
 - b. Battery below minimum charge- switch to backup console/ monitor. Plug in to AC Power.
 - c. Pump not inserted- reconnect and restart.
 - d. Power test fail- switch to back up console or AC power.
 - e. Motor drive fail- switch to back up console
 - f. Motor fail- switch to back up console and motor
 - g. Motor disconnected- reconnect and start
 - h. System fault- switch to back up console

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Ventricular Assist Devices (continued)

- i. Pump functioning but with alarm
- j. Low battery- plug in to AC power
- k. Battery maintenance-ensure continuous power. Service battery as soon as possible.
- l. Battery charge failure- switch to secondary battery/ console/ monitor
- m. Motor over temp-switch to secondary battery/ console/monitor
- n. Flow above maximum- reduce pump speed as outlined in #6. Seek cause for alarm.
- o. Flow below minimum – increase pump speed as outlined in #6. Seek cause for alarm.
- p. Probe disconnected- reconnect probe
- q. Pump speed not reached- adjust pump speed as outlined in #6.
- r. Self-test fail- switch to back up probe.

Pearls

Be sure to gather the patient ‘go bag’ with charging cables and any extra batteries. Look at all connections, controller and lights. Correct any issues found.

Listen to the humming of the pump. If the green light is on, then the problem is a thrombosis.

Feel the box. If it is hot, suspect thrombosis, lead dislodgement, or aortic dissection.

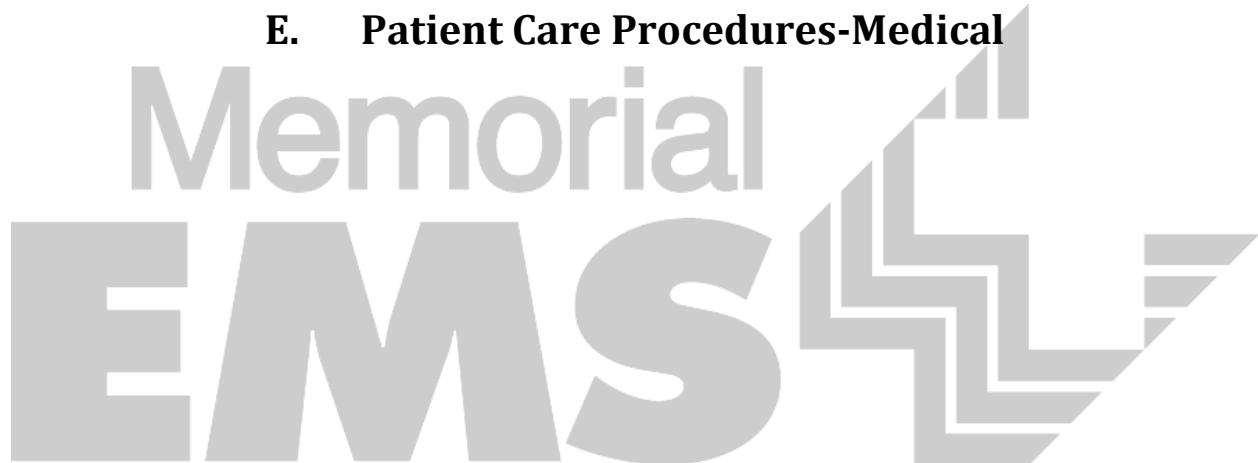
Chest compressions are the last resort. While compressions could dislodge the pump, if the pump is not working compressions are the only way to keep the patient from dying. Aggressively resuscitate and include pressers to assist in resuscitation.

Patients with LVADs are very volume dependent and may need IVF boluses to improve status.

When transporting a patient with an LVAD always have the number of the LVAD Coordinator available. Always know where your closest hospital is during transport in case redirect is needed.

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E. Patient Care Procedures-Medical



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Nausea and Vomiting/Acute Bowel Obstruction

Tier II & Tier III

In addition to the problems that nausea and vomiting can create regarding patient comfort, such complaints can aggravate the management of more serious medical conditions. Additionally nausea and vomiting have the potential to create airway obstructions and/ or allow for the aspiration of vomitus.

Assessment

Prior to every transport the patient should be questioned about their past history of motion sickness. The CCT team should anticipate motion sickness could occur with any patient but maintain a higher index of suspicion for a patient who has had previous issues. A negative patient response to this question, should allow time for the patient to also qualify their answer as many people have managed this difficulty with interventions such as always sitting in the front seat, or always being the driver.

Suction should be available at all times. The CCT team should also be alert to the need to move patient onto their side to facilitate vomiting and how that will impact and/or be limited by ongoing interventions and treatments.

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Suction airway as needed to assist in airway maintenance.
3. Consider placement of an oral/ nasal gastric tube.
4. **Ondansetron:** 4 mg IV/IM/IN. May repeat in 10 minutes, as needed.
5. **Promethazine:** 12.5-25 mg slow IV/IM.
6. **Metoclopramide:** 10 mg IV.

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GI Bleeding

Tier II & Tier III

Gastrointestinal bleeding can create multiple problems that can interfere with patient care. In addition to the concerns of airway maintenance the severity of the illness can lead to life-threatening problems because of the acuity and/or time the problems have been ongoing.

Assessment

Assessment should focus on identifying the history of the present complaint, including time and volume of blood loss. Special attention should be given to airway assessment and management.

Suction should be available at all times. The CCT team should also be alert to the possibility of moving patient onto their side to facilitate vomiting.

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Suction airway as needed to assist in airway maintenance.
3. Consider placement of an oral/ nasal gastric tube.
 - a. Contraindicated in a patient with history of esophageal varices.
4. If patient is hypotensive, treat based on *Vasopressor/ Hypotensive Protocol*.
5. If patient has vomiting, treat based on *Nausea and Vomiting/ ABO Protocol*.
6. **Protonix:** 80 mg IV infusion over 5 minutes.
 - a. **Protonix:** 8 mg/hour IV infusion.
7. **Octreotide:** 50 mg IVP for suspected Upper GI Bleed.
 - a. **Octreotide:** 50 mcg/hr IV infusion
8. If balloon tamponade has been utilized, advanced airway via endotracheal tube should be secured.
9. **Ranitidine:** 50 mg IV over 5 minutes.
10. **Famodidine:** 20 mg IV.
11. **Blood Products:** 1-2 units PRBCs or platelets based on *Blood Administration Protocol*.

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Hypoglycemia

Tier II & Tier III

Hypoglycemia exists when the body does not have enough sugar carried in the blood supply. As a result tissue, organs and organ systems must function with less energy. This state continues until the systems cannot function as normal and then reduce the capabilities based on the loss of sugar while toxins are produced as a result of alternate metabolic processes. Of particular concern is the effect the decreased energy supply can do to damage the brain and vital organ systems.

Assessment

The assessment of any patient with an altered level of consciousness should include assessment of blood glucose levels and patient history. Patients diagnosed with Type I diabetes are a significant population that is seeing a rapid increase in diagnosis. Many patients with Type II Diabetes are on Insulin or other drugs used to lower blood sugar.

Physical exam should also include looking for an insulin pump or other causes for event, or recurring event.

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Establish blood glucose level on approved device.
3. Stop or remove Insulin pump.
4. If history of alcohol abuse or malnutrition **Thiamine:** 100 mg IVP.
5. For patient with blood glucose < 50 mg/dL and signs and symptoms consistent with hypoglycemia
 - a. **D10W:** 250mL/ 15 minutes, titrated to blood glucose ≥ 60 mg/dL
 - b. **Glucagon:** 1 mg IM/IN/IV
 - c. Repeat blood glucose level every 15 minutes
6. If blood glucose > 50 mg/dL but still symptomatic
 - a. **D10W:** 125mL/ 15 mintues, titrated until symptoms resolve.
 - b. **Glucagon:** 0.5 mg IM/IN/IV
 - c. Repeat blood glucose level every 15 minutes

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Hyperglycemia/ DKA

Tier II & Tier III

Hyperglycemia, and ultimately Diabetic Ketoacidosis, should be recognized as extreme detriments to metabolic perfusion that results in an acidotic state affecting multiple organ systems. The impact on affected organ systems can create hypovolemia, electrolyte imbalances, renal overload and metabolic acidosis.

Assessment

Assessment should focus on the signs and symptoms over a longer time frame than current evaluation. DKA typically requires multiple days of symptoms to manifest with symptoms starting very minimally. Consult family for several days of history.

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Establish blood glucose level before leaving facility, on approved device.
3. Subsequent repeats every 45 minutes throughout transport.
4. Stop or remove Insulin pump.
5. If blood glucose <400 mg/dL
 - a. **0.9% Normal Saline:** IV Fluids (including fluids given at transferring facility)
 - i. 1000 mL/hour for first hour
 - ii. 500 mL/hour for 4 additional hours
6. If blood glucose ≥400 mg/dL
 - a. **0.9% Normal Saline:** IV Fluids (including fluids given at transferring facility)
 - i. 2000 mL/hour for first hour (may run to gravity if no concern of overload)
 - ii. 500 mL/hour for 4 additional hours
7. Change to **D5NS** 250 mL/hr when blood sugar reaches 250 mg/dL or less.
8. **Insulin Infusion:** 100 units/100 mL 0.9% Normal Saline at 0.1 units/kg/hour
 - a. If transferring a patient with Insulin Infusion and orders of unit/hr, ensure dose does not exceed 0.1 units/kg/hour.

Pearls

- Treatment of DKA requires insulin to close Anion gap. Supplemental D5NS may be given while infusing insulin. Insulin infusion should only be stopped if patient becomes hypoglycemic refractory to supplemental dextrose.
- Do NOT give Insulin Bolus to a patient who is already receiving an insulin infusion.
- Always have D10W available to administer to a patient who is receiving Insulin should patient become hypoglycemic.

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Seizures

Tier II & Tier III

The assessment of any patient displaying seizure activity should include assessment of blood glucose levels, patient history, and a detailed physical exam to identify possible causes of the seizure. Seizure activity can range from full body tonic-clonic activity to subtle activity such as isolated, localized twitching or eye movement. Regardless of the level of activity, searching for a cause and treating the observed symptoms are critical to limiting neurological damage from the seizure.

Assessment

Assessment should focus on the signs and symptoms of the event with a keen interest in searching for causes of the current event. While non-compliance with medication can be an easy to identify cause, it may not be the only cause. Consult family/ witnesses for events leading up to the seizure and history of recent activities.

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Work to ensure a safe surrounding for the patient, even after initial seizure had been stopped.
3. Establish blood glucose level on approved device.
4. If blood glucose is below 60 mg/dL treat based on *Hypoglycemia Protocol*.
5. If blood glucose is above 400 mg/dL treat based on *Hyperglycemia/ DKA Protocol*.
6. If patient condition requires sedation for airway management, short duration neuromuscular blockers should be used. Treat based on *Advanced Airway/ RSI Protocol*.
7. **Thiamine:** 100mg IV over 2 minutes if chronic alcohol abuse is suspected.
8. If patient is actively seizing
 - a. **Lorazepam:** 2mg IV; Can repeat every 2-5 minutes up to 10mg.
 - b. **Midazolam:** 2 mg IV or 5 mg IM or 10 mg IN. Can repeat every 2-5 minutes up to 15 mg.
 - c. **Diazepam:** 5-10 IV. Can repeat every 10-15 minutes up to 30 mg.
9. If more than one dose of Benzos needed
 - a. **Fosphenytoin:** 15-20 mg/kg in 100 mL of 0.9% Normal Saline over 30 minutes. Infusion rate should not exceed 150 mg/min. Watch for cardiac dysrhythmias.
 - b. **Phenobarbital:** 10-20mg/kg every 20 minutes (not to exceed 60 mg/min) until seizure activity is stopped. Max dose of 30 mg/kg.

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Seizures (continued)

Tier III

10. If Advanced Airway was required and seizures continue, consider **Propofol** infusion at 10-20 mcg/kg/min slow infusion. Maintenance infusion of 5-55 mcg/kg/min. Propofol has been shown to effectively suppress seizure activity.



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Altered Mental Status

Tier II & Tier III

The patient suffering from an altered mental status/ altered level of consciousness (ALOC) can present with a condition ranging from very obvious distress to very subtle symptoms. Careful assessment and interview of the patient and any available family members can be key to recognizing the more subtle differences in mental status. Regardless of the severity of the AMS, attention should focus on aggressively treating the condition and preventing possible long term effects of the situation.

Assessment

Assessment of the patient suffering from an altered mental status should focus on identifying the cause of the AMS while treating the resulting symptoms. Additionally, the patient care situation should be continuously monitored to ensure patient and provider safety. Include family members and/or witness to the patient condition to provide details as to the depth of the AMS as well as identify a time when the change occurred, a Last Known Well.

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Establish blood glucose level on approved device.
3. If blood glucose is below 60 mg/dL treat based on *Hypoglycemia Protocol*.
4. If blood glucose is above 400 mg/dL treat based on *Hyperglycemia/ DKA Protocol*.
5. Be attentive to patient's ability to maintain airway. Initiate Advance Airway based on *Advanced Airway/ RSI Protocol* as needed.
6. If CVA/ TIA is suspected, treat based on *Stroke Protocol*.
7. **Thiamine:** 100 mg IV or IM if chronic alcohol abuse is suspected.
8. **Narcan:** 2 mg IM/IN if drug abuse is suspected and patient has signs of narcotic intoxication.

Pearls

- **Do NOT use Flumazenil for patient's with Benzo overdose or who chronically take Benzos. Flumazenil may cause intractable seizures.**
- **Do NOT use Flumazenil for patient's on Selective Serotonin Reuptake Inhibitors (SSRI). Flumazenil may cause intractable seizures.**

MEMORIAL EMS SYSTEM
CRITICAL CARE MANUAL

Stroke

Tier II & Tier III

A Cerebral Vascular Accident (Stroke) is patient condition that is gaining recognition as an emergency condition equivalent to the AMI. As medical treatment continues to advance, patients suffering from a stroke now have multiple treatment modalities that can help to stop the damage and end the causing medical condition. While aggressive physical therapy continues to be the method of addressing the damage after it has occurred, current focus places the impetus on stopping the cause of the damage rather than working to reverse damage.

Assessment

Patient assessment should focus on rapidly identifying symptoms and ruling out possible other causes of the those symptoms for the patient with symptoms consistent for a stroke. In the care of a stroke patient, time is brain and urgency should be given to identifying the cause of the patient's condition and time when the patient was last symptom free (Last Known Well).

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Identify possible causes of condition and treat based on *Altered Mental Status Protocol*.
3. Be attentive to patient's ability to maintain airway. Initiate Advance Airway based on *Advanced Airway/ RSI Protocol* as needed
4. Complete Fast Exam
 - a. **Face:** When the patient smiles, with teeth, is any asymmetry noted?
 - b. **Arm:** Is the patient able to hold both arms straight out in front and hold that position for 10 seconds with eyes closed? Is there a drift of one arm?
 - c. **Speech:** Is the patient able to recite 'The sky is blue in Cincinnati'? If family present, compare speech to normal speaking ability.
 - d. **Time:** When was the last know well? If a specific time has not been established, rather a 'minutes/hours ago' work to identify the specific time.
5. Attention should be focused on treatment of the patient in the time frame of less than 6 hours to receive definitive care.
6. If CAT Scan has been completed and results verified by radiology treat based upon the diagnosis.
7. If CAT Scan has not been completed, immediately initiate transport to appropriate facility.
8. If last known well is within the 4.5-6 hour window, transport needs to be made to a Comprehensive Stroke Center or Primary Stroke Center with Endovascular Capabilities.
9. If transfer has not been coordinated to facility best able to treat the patients condition, immediately consult with transferring physician and patient to coordinate appropriate receiving facility. If patient is not being transferred to appropriate facility, include in Patient Care Report witnesses to the patient's informed decision to not seek treatment at most appropriate facility.

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Stroke (continued)

If Transischemia Accident

1. If the transferring diagnosis is transischemic accident, treatment will focus on monitoring and supportive care.

If Ischemic Stroke

1. Transport patient in position of comfort with head elevated 30° and with head in inline/neutral position.
2. Maintain SBP based on transferring and receiving facility orders.
3. Minimize IV sticks to patient as much as possible.
4. Complete neurological exams and BP checks every 15 minutes at minimum.
5. Thrombolytic Therapy:
 - a. **Alteplase:** 0.9 mg/kg (maximum dose 100 mg)
 - i. 10% of dose given as IV bolus
 - ii. Remaining 90% given as IV infusion over 60 minutes.
6. If hypertensive, SBP > 180 or DBP > 110 during or after Alteplase
 - a. **Labetalol:** 20 mg slow IVP. Can repeat every 10 minutes with additional doses at 40 mg and then 80 mg for all repeated doses. Maximum total administration of 300 mg.
 - i. *Use with caution if heart rate < 60.*
 - b. **Nicardipine:** 5 mg/hr IV infusion. Increase infusion by 2.5 mg/hr every 5-15 minutes until target SBP is achieved. Maximum dose 15 mg/hr.

If Hemorrhagic Stroke

1. Transport patient in position of comfort with head elevated 30° and with head in inline/neutral position.
2. Maintain SBP between 160-180 mmHg if no ICP Monitor.
3. **Nicardipine:** 5 mg/hr IV infusion. Increase infusion 2.5 mg/hr every 5-15 minutes until target SBP is achieved. Maximum dose 15 mg/hr.
4. **Labetalol:** 10-20 mg slow IVP. Can repeat every 10 minutes with additional doses at 40 mg and then 80 mg for all repeated doses. Maximum total administration of 300 mg.
5. If ICP in place maintain CPP at 70-100 mmHg.
6. If suspected cerebral herniation immediately contact **Medical Control**.
7. If patient is intubated refer to transfer order or maintain ETCO2 at 30-35 mmHg.
8. If Mannitol infusion completed prior to request, Tier II can assume care.
9. Notify receiving facility of acute change in patient condition as soon as possible to confirm appropriate bed assignment.

Tier III

10. **Mannitol:** 0.5-1.0 g/kg IV over 5-10 minutes with **Medical Control**. Filter must be used.

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Stroke (continued)

If Subarachnoid Hemorrhage

1. Transport patient in position of comfort with head elevated 30° and with head in inline/neutral position.
2. Maintain SBP <140 mmHg if no ICP Monitor.
3. If SBP reduction is needed
 - a. **Nicardipine:** 5 mg/hr IV infusion. Increase infusion 2.5 mg/hr every 5-15 minutes until target SBP is achieved. Maximum dose 15 mg/hr. Once target SBP is achieved, reduce dose by 3 mg/hr.
 - b. **Labetalol:** 10-20 mg slow IVP. Can repeat every 10 minutes with additional doses at 40 mg and then 80 mg for all repeated doses. Maximum total administration of 300 mg.
4. If ICP in place maintain CPP at 70-100 mmHg.
5. If patient is intubated refer to transfer order or maintain ETCO₂ at 30-35 mmHg.
6. If hypotensive, aggressively treat based on *Hypotension/ Vasopressor Protocol* to a SBP > 90.
7. Provide pain medication as needed based on *Pain Control Protocol*.
8. If Mannitol infusion completed prior to request, Tier II can assume care.
9. Notify receiving facility of acute change in patient condition as soon as possible to confirm appropriate bed assignment.

Tier III

10. **Mannitol:** 0.5-1.0 g/kg IV over 5-10 minutes with **Medical Control**. Filter must be used.

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Toxin Exposure

Tier II & Tier III

An innumerable quantity of toxins exist. The CCT team will encounter a specific few most frequently. For those toxic exposures for which a specific protocol does not exist, good patient assessment and treatment based upon corresponding guideline as well as coordination between Medical Control and hospital physicians will allow for the best plan of action for patient care.

Assessment

Assessment of a patient suffering from any type of toxin exposure must first focus on the safety of the CCT team. The second priority must then focus on ensuring patient safety by ensuring that the exposure is over and will not reoccur. Acute assessment skills may be needed to determine the likely cause of the exposure as well as any factors that are likely to increase morbidity and mortality due to patient risk factors.

Treatment and Interventions

1. Ensure Scene Safety for the CCT team prior to establishing any patient contact.
2. Obtain as much information about the patient exposure prior to arrival on scene.
3. Contact **Medical Control** if any concerns about the safety of the CCT team responding to the patient location and transporting patient to another facility.
4. Initiate patient care based on the *Patient Care Overview*.
5. Work to identify the cause of the exposure and treat based on the appropriate protocol.
6. If unable to identify source, but safety can be ensured, treat based upon symptomatology with the appropriate corresponding protocol.

If exposure to Airway/ Inhalation Injury

1. Initiate Advance Airway based on *Advanced Airway/ RSI Protocol*.
2. If unable to obtain Advanced Airway with 2 attempts and airway compromise (particularly upper airway) is present, secure emergent airway based on the *QuickTrach / Emergency Cricotomy Protocol*.

If exposure to Benzos

1. **If overdose is the result of anesthesia, Flumazenil:** 0.3 mg over 30 minutes. May repeat to a maximum of 1.0 mg.
2. Avoid Flumazenil on all other Benzo and SSRI overdoses due to potential for seizures.
3. Use Narcan with extreme caution in opioid dependent patients due to the severe withdrawal it can cause, resulting in patient management issues.

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Toxin Exposure (continued)

If exposure to Beta Blockers

1. Closely monitor for changes in patient condition.
2. 500 mL fluid bolus as needed for pressure support. Repeat as needed, up to 2 L.
3. **Glucagon:** 3-10 mg IV.

If exposure to Caustics

1. Avoid attempts to neutralize the substance due to the additional damage that can occur.
2. If exposure to the airway, initiate Advance Airway based on *Advanced Airway/ RSI Protocol* as needed.
3. If unable to obtain Advanced Airway with 2 attempts and airway compromise (particularly upper airway) is present, secure emergent airway based on the *QuickTrach / Emergency Cricotomy Protocol*.
 - a. If exposure is so extreme that airway cannot be established, consult with transferring and receiving facilities as well as **Medical Control** regarding the benefits of transport and consider Termination of Resuscitation order prior to initiating transport.

If exposure to Calcium Channel Blocker/ Magnesium Sulfate

1. **Calcium Gluconate 10%:** 1,000 mg over 5-10 minutes. May repeat once in 5-10 minutes.
 - a. Calcium is contraindicated if possible Digoxin toxicity.
2. **Glucagon:** 3-10 mg IV.

If exposure to Carbon Monoxide

1. Ensure that patient has been removed from the environment that caused the exposure. Document the time since the patient was moved to an environment with safe CO levels, even if this was an initial move to an outdoor location.
2. Document the estimated length of the exposure. If available, also document the CO reading that was obtained by fire department or other response agency.
3. Do not rely on SpO₂ reading.
4. Administer 100% oxygen by NRB.
5. Initiate Advance Airway based on *Advanced Airway/ RSI Protocol*.
 - a. If intubated work to maintain ETCO₂ between 35-40 mmHg.
6. Continue **Cyanokit**, if started by transferring facility, based on package insert directions if hydrogen cyanide exposure is considered.
7. Consult with **Medical Control** if the patient destination is the most appropriate or if recommendation to a facility with hyperbaric oxygen therapy would be more prudent.

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Toxin Exposure (continued)

If Cocaine/ Methamphetamine Overdose

1. Be attentive to patient's ability to maintain airway. Initiate Advance Airway based on *Advanced Airway/ RSI Protocol* as needed.
2. Avoid Beta Blocker use in supportive protocols.
3. **Lorazepam:** 1 mg IV/ IM.
4. **Haloperidol:** 5 mg IV/ IM.
5. **Versed:** 2 mg IV, or 5 mg IM or 10 mg IN. May repeat in 10 minutes to a maximum of 2 doses.

If digoxin overdose

1. **Digibind:** Number of vials to be given= dig level (mg/dL) * wt/ 100
 - a. Digibind must be initiate by transferring facility. CCT team will not carry.
2. Be alert for hyperkalemia. Calcium Gluconate is contraindicated for hyperkalemia in patients who are dig-toxic.

If exposure to eyes

1. Irrigated with a minimum of 1,000 mL 0.9% Normal Saline or Sterile Irrigation solution via Morgan Lens.
2. If bandaging of effected eye is needed, both eyes should be secured.
3. **Tetracaine:** 1-2 drops per eye. May repeat every 10-15 minutes as needed, if pain medication needed for eyes

If Narcotic overdose

1. Be attentive to patient's ability to maintain airway. Initiate Advance Airway based on *Advanced Airway/ RSI Protocol* as needed.
2. **Naloxone:** 2 mg IV/ IN. May repeat every 3-4 minutes.
3. **Narcan Infusion:** 1.5 mg/ hr.

If exposure to Organophosphates/ Cholinergic Poisoning

1. Ensure that patient has been removed from the environment that caused the exposure. This includes ensuring that all contaminated clothing has been removed. Do not transport patient clothing. Document the time since the patient was removed from the exposure, even if this was an initial move to an outdoor location.
2. Document the estimated length of the exposure.
3. **Atropine:** 1-2mg IV. Repeat every 5-10 minutes until SLUDGE symptoms resolve.

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Toxin Exposure (continued)

If overdose of Tricyclic Antidepressants

Closely monitor patient's cardiac rhythm. Widening QT Interval or QRS complex are ominous signs of impending cardiac dysrhythmias and seizures.

1. **Sodium Bicarbonate:** 50 mEq IV May repeat X2 every 5 minutes for widened QRS or dysrhythmias.
2. **0.9% Normal Saline:** 500-1,000 mL bolus.
3. If seizures, treat based on *Seizure Protocol*.
4. If Hypotension, contact **Medical Control** for orders.
5. If non-cardiac arrest arrhythmias contact **Medical Control** for orders.
 - a. If cardiac arrest, **Magnesium Sulfate** 1-2 g over 1-2 minutes. May repeat in 5-10 minutes without contacting Medical Control.
6. Refer to Complex Patients Protocol for exclusion criteria for Tier II providers.



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Sepsis

Tier II & Tier III

Sepsis is a life-threatening illness that affects a large number of hospital patients. Mortality and morbidity from sepsis continue to be among the largest to affect patient outcomes. The complex way in which the septic infection effects the body creates multiple other potential problems for the patient. Exposure to microorganisms of any origin can lead to a Systemic Infection. Most Sepsis is commonly caused by gram negative organisms. Gram positive sepsis causes have been noted to be increasing. Patients who are receiving ongoing care, and often those who require the use of foley catheters, are among the most likely patients to suffer from sepsis.

Assessment

While fever is the most common indicator that a patient is suffering from an infection, fever in the septic patient may present late and in some cases not at all. Additionally, some septic patients suffer from hypothermic body temperatures. An in-depth history of recent events will be helpful in identifying possible septic patients.

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. If febrile and it has not already been given, **Acetaminophen** 10-15 mg/kg PO/PR. Max 1 mg.
3. Antimicrobial treatment should be started by transferring facility prior to CCT arrival. If not, CCT should work with transferring and receiving physicians to establish orders and initiate treatment prior to transport for continuation of treatment during transport.
4. **0.9% Normal Saline:** 30mL/kg IV Bolus. Use pressure bags to assist with infusion.
Repeat as needed to maintain MAP > 65 mmHg.
 - a. The most important interventions in treating Septic patients is early broad spectrum antibiotics and adequate volume resuscitation
 - b. Be alert to not fluid overload patient. Reduce infusion rate and seek pressor support as needed.
5. If advanced airway is needed, secure based on *Advanced Airway/ RSI Protocol*.
6. If MAP<65 mmHg after fluid bolus, initiate *Hypotension/ Vassopressor Protocol*.
 - a. If Levophed and Epinephrine and are unsuccessful

Tier III

- b. The next drug of choice would be Vasopressin.

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Potassium Imbalance

Tier II & Tier III

As one of the major ions of the body, Potassium is essential to the Renal System, cardiac and skeletal muscles, nerve connectivity, and maintaining of the cellular membranes. A slight change in Potassium can lead to multiple organ system difficulty if not recognized and treated.

Assessment

A Potassium imbalance does not develop quickly. The signs and symptoms are often so subtle that the patient may have been in a state of Potassium imbalance for several days before the symptoms became debilitating enough to notice and seek treatment. An in-depth history of the past several days can help to key in on the likely causes of the patient's illness.

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Secure advanced airway as needed based on *Advanced Airway/ RSI Protocol*.
3. If Potassium 3.0-6.0 mEq/L provide supportive treatment.

For Hypokalemia

1. **Potassium Chloride:**
 - a. IV infusion up to a max of 10 mEq/ hr per peripheral IV. Maximum concentration of 10 mEq/100 mL.
2. Consider **Magnesium Sulfate** 2 GM over 1 hour if hypomagnesemic. Consult **Medical Control** for order.

For Hyperkalemia

1. If cardiac rhythm changes are noted or if Potassium > 7.0 mEq/L
 - a. **Calcium Gluconate:** 1 GM slow IVP over 5 minutes. May repeat every 10 minutes. May be given via peripheral IV.
 - i. If patient currently takes Digoxin, infuse Calcium Gluconate in 100 mL 0.9% Normal Saline over 30 minutes.
 - b. **Calcium Chloride 10%:** 1GM over 2 minutes. May repeat every 10 minutes.
 - i. If patient currently takes Digoxin, infuse Calcium Chloride in 100 mL 0.9% Normal Saline over 30 minutes.
 - ii. **Calcium Chloride can only be given via peripheral IV in arrest situation, otherwise central line administration must be utilized.**
2. **Sodium Bicarbonate:** 50 mEq IV.
3. As signs ans symptoms persist, steps # 4-5 can be repeated every 60 minutes.
4. **D10W:** 25 g IVP followed with Regular Insulin 10 units.
 - a. Check blood sugar on approved device every 30 minutes.
5. **Albuterol:** 10 mg in 3 mL NS, nebulized.

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Anaphylaxis

Tier II & Tier III

Anaphylaxis, or anaphylactic shock, is a life threatening emergency that the CCT team must always be prepared to recognize and treat. While the CCT team will most likely not be involved in the first minutes of the treatment of an environmentally caused anaphylactic reaction, they must always be alert for changes in the patient condition as a result of medications being given during transport that could lead to anaphylaxis.

Assessment

Identifying the patient suffering from anaphylaxis leads to patient care that is simultaneously treating the anaphylaxis while working to identify and stop the cause of the reaction. Causes typically fall into three categories: medication (including blood products and latex), envenomation, and food related.

The CCT team should maintain a high index of suspicion regarding anaphylaxis for any patient complaining of

- Urticaria
- Flushing
- Itching
- Facial Edema
- Sudden temperature increase
- Laryngospasm
- Hypotension

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Administer 100% Oxygen via NRB. Secure advanced airway as needed based on *Advanced Airway/RSI Protocol*.
3. **0.9% Normal Saline:** 250 mL IV infusion. Repeat as necessary
4. **Albuterol:** 2.5 mg in 3 mL nebulizer. Utilize inline nebulizer for intubated patients. May repeat as needed.
5. **Diphenhydramine:** 50 mg IV over 2 minutes. May repeat once.
6. **Epinephrine 1:1,000:** 0.3-0.5 mg IM every 15 minutes until symptoms decrease.
7. Treat hypotension based on *Vasopressor/Hypotension Protocol*. Epinephrine infusion should be first drug of choice.
8. **Methylprednisolone Sodium Succinate:** 125 mg IV.
9. **Ranitidine:** 50 mg IV diluted in 50 mL 0.9% Normal Saline over 5 minutes.
10. Refer to Complex Patient Protocol for exclusion criteria for Tier II providers.

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Temperature Related Illnesses

Tier II & Tier III

Temperature related illnesses can occur at any time of year. A slight change in body temperature can have great effects on the body's ability to maintain homeostasis and normal body functions. Prolonged exposure, and exposure for those who suffer from extremes of age or additional medical conditions, can dramatically decrease the body's ability to recover from the exposure.

Assessment

Patient assessment should focus on identifying the reason/ cause of the exposure and ensuring the exposure is not continuing. Additionally, the CCT team needs to be cognizant of the environment the patient has been placed in since the exposure. Attempts to rapidly correct temperature related illnesses by moving the patient to an environment with the opposite extreme ambient temperature should be avoided and a more gradual approach taken.

Treatment and Interventions

For Hyperthermia and Heatstroke (May apply to patients with Excited Delirium. See also *Patient Sedation Protocol*.)

1. Initiate patient care based on the *Patient Care Overview*.
2. Assess core temperature. Initiate continuous temperature monitoring.
3. Cover patient with light sheet to prevent shivering.
4. **0.9% Normal Saline:** 250 mL fluid bolus. Repeat as necessary.
5. Actively cool patient
 - a. Ensure removal to cooler environment.
 - b. Remove patient clothing.
 - c. Apply cold packs to groin, axilla, and back of neck.
 - d. Initiate evaporative cooling by applying cool water to patient's body in small amounts and increase air movement to maximize convection and conduction. Be cautious to not create fluid puddling under the patient.
6. If altered level of consciousness treat based on *Altered Mental Status Protocol*.

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Temperature Related Illnesses (continued)

For Hypothermia

1. Initiate patient care based on the *Patient Care Overview*.
2. Assess core temperature. Initiate continuous temperature monitoring.
3. Handle patient very carefully and gently.
4. If patient is in cardiac arrest, treat based on appropriate *Cardiac Arrest Protocol*. The patient resuscitation cannot be stopped unless the patient's core temperature has returned to 35° C.
5. Actively rewarm the patient
 - a. Move patient to warm environment and ensure second exposure cannot occur.
 - b. If any clothing is wet or frozen, remove and move away from the patient.
Remove any constrictive jewelry.
 - c. Cover all but face of patient unless interventions are being completed. Be sure to wrap head with blanket.
 - d. **0.9% Normal Saline:** 250 mL fluid bolus, then reduced to 100 mL/ hr. IV fluids should be warmed to 42°C.
 - e. Apply warm packs to the groin, axilla and back of neck.
 - f. Keep patient care area as warm as possible.
6. If altered level of consciousness treat based on *Altered Mental Status Protocol*.

For Frostbite

1. Initiate patient care based on the *Patient Care Overview*.
2. Assess core temperature. Initiate continuous temperature monitoring. If core temperature < 35°C treat for hypothermia.
3. Handle patient very gently and carefully.
4. Work to ensure warm environment for the patient, ensure that no blankets are creating pressure on the affected area. Ensure that second exposure to cold cannot occur.
5. **0.9% Normal Saline:** 250 mL fluid bolus, then reduced to 100 mL / hr. IV fluids should be warmed to 42°C.
6. Care for affected area should include
 - a. Protect from any unnecessary pressure, friction, trauma. Do not rub. Do not allow blisters to be broken.
 - b. Remove patient clothing. Remove any restrictive jewelry from affected extremity.
 - c. Do not allow patient to use effect area or extremity.
 - d. Loosely wrap affected area with sterile bandages. Ensure no skin remains in contact with another area of skin.
7. If altered level of consciousness treat based on *Altered Mental Status Protocol*.
8. Treat for pain based on *Pain Control Protocol*.

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Pulmonary Embolism

Tier II & Tier III

A pulmonary embolism can begin anywhere in the body, but most commonly occurs when a thrombi develops deep within the venous system. The pulmonary embolism is most frequently seen in patients who recently experienced an extended period of inactivity (such a transcontinental flight), or in combination with the decreased activity of a patient recovering from a recent surgery or medical procedure. The thrombi travels through the circulatory system until becoming lodged in the lung and preventing appropriate respiration from occurring.

Assessment

Assessment should focus on obtaining a good patient history, including activities over the past several days. In-depth assessment of the potential respiratory or cardiac patient can also help to pinpoint symptoms more inline with the pulmonary embolism.

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Administer 100% Oxygen via NRB. Secure advanced airway as needed based on *Advanced Airway/ RSI Protocol*.
3. Provide pain management based on *Pain Control Protocol*.
4. Anticoagulation therapy can be continued based on transfer orders.
5. Thrombolytic therapy can be continued based on transfer orders.
 - a. **Heparin:** Initial bolus 80 units/ kg IV. Maximum of 7500 units. Infusion 18 units/ kg/ hour. Maximum of 1800 units/ hr.
 - b. **Alteplase:** 100 mg IVPB over 2 hours.

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Aortic Aneurysm/ Aortic Dissection

Tier II & Tier III

An aortic aneurysm and/or dissection is a situation where the CCT team is in a race against the clock on a lethal condition. Survival rates from both are greatly dependent on the timely recognition, appropriate stabilization and seamless communication with hospital surgical team to ensure the receiving facility is ready to receive the patient upon arrival and immediately begin the repair.

Assessment

Assessment of the patient with an aortic aneurysm or aortic dissection must focus on the known history as well as sequence of events leading up to the patient's call for assistance. Rapid physical exam may be of some use in identifying the potential aortic disruption by assessing the quality of circulation in both upper and lower extremities. A very late, ominous finding is Grey Turner sign identifying retroperitoneal hemorrhage.

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Ensure copies of all radiography studies have been forwarded to receiving facility. If at all possible take a copy with patient.
 - a. It is of greater time benefit that all radiographic studies be completed at transferring facility and electronically forwarded to receiving facility so that receiving facility can be fully prepared to intervene upon patient arrival.
3. Administer 100% Oxygen via NRB. Secure advanced airway as needed based on *Advanced Airway/ RSI Protocol*.
4. Initiate 2 large bore IV sites, limit fluid resuscitation of **0.9% Normal Saline** to TKO unless patient is hypotensive.
5. Provide pain medication based on *Pain ControlProtocol* so long as SBP allows.
6. Seek to maintain SBP of 80-100. A permissive hypotensive strategy should be utilized to improve survival of these complex illness patients. MAP goal should be lowered to 60.
7. If patient is hypertensive as compared to goal SBP and has HR> 60
 - a. **Esmolol:** 500 mcg/kg bolus x1, start infusion at 50 mcg/kg/min and may increase by 50mcg/kg/min q 5 min to max of 300 mcg/kg/min
 - b. **Labetalol:** 10-40 mg IV over 2 minutes. Can repeat every 10 minutes with additional doses at 40 mg and then 80 mg until
 - i. SBP \geq 100 mmHg.
 - ii. Maximum of 300 mg has been given.
 - c. **Metoprolol:** 5 mg IV every 5 minutes to a maximum of 3 doses.

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Aortic Aneurysm/ Aortic Dissection (continued)

8. If patient remains SBP ≥ 120
 - a. **Nicardepine:** 2.5 mg/hr. Increase every 15 minutes to a maximum of 15 mg/hr.
9. If patient is hypotensive, Target SBP 80-100 mmHg
 - a. Treat based on *Hypotensive/ Pressor Protocol* based on orders from accepting vascular surgeon.
 - b. Initiate circulatory volume replacement based on *Blood Productions Administration Protocol*.
10. Update receiving facility of changes in patient condition so that appropriate changes to treatment plan can be made prior to patient arrival.

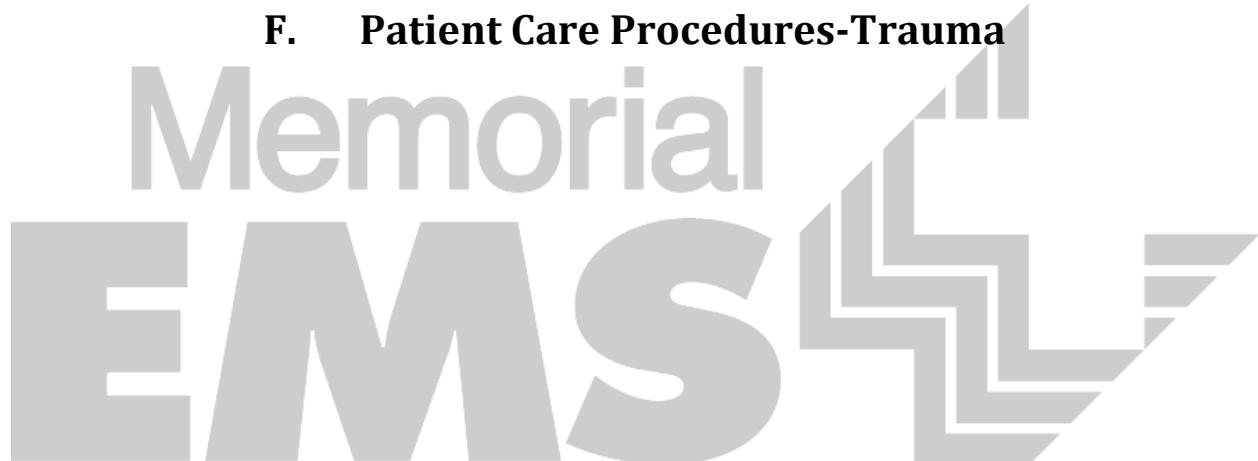
Tier III

11. If patient remains SBP ≥ 120 despite above medication treatments
 - a. **Nitroprusside infusion:** 50 mg in 250 mL D5W. Start at 0.5 mcg/kg/min. Titrate every 5 minutes by 0.5-1.0 mcg/kg/min. Maximum dose of 10mcg/kg/min.



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F. Patient Care Procedures-Trauma



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Trauma Care Overview

Tier II & Tier III

Trauma continues to be the largest cause of morbidity and mortality among many age groups, especially those in the younger categories. Rapid stabilization and transport to a Trauma Center is of the upmost importance in order to provide the patient the best opportunity for survival and recovery. Recent changes in trauma criteria by the American College of Surgeons have moved to include injuries such as burns so to combine the specialty expertise of a Burn Center with the resources of a Trauma Center as an example of how combining expert services can improve patient outcomes.

Assessment

As traumatic injuries result from a multitude of potential forces that could impact the body, safety of the CCT team must always be of priority to all members of the team. In addition to continual scene assessment for the purposes of scene safety, the CCT team should also be evaluating the scene for clues about the situation that caused the injury (Mechanism of Injury).

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview*.
2. Maintain cervical spine restriction.
 - a. Region 3 trauma protocols allow for patients to be transported with spinal precautions (as opposed to spinal restrictions) if all of the following agree that doing so does not present an increased likelihood of difficulties during transport.
 - i. Transferring physician
 - ii. Receiving physician
 - iii. CCT team
3. Perform head to toe rapid trauma exam. Treat any life threats as found.
4. Ensure copies of all radiography studies have been forwarded to receiving facility. If at all possible take a copy with patient.
5. Administer 100% Oxygen via NRB. Secure advanced airway as needed based on *Advanced Airway/ RSI Protocol*.
6. Initiate 2 large bore IV sites,
 - a. If unable to establish two IV access points, the CCT team should consider the need for IO access.
 - b. **0.9% Normal Saline:** 500 mL IV infusion.
 - c. Seek to maintain SBP \geq 90 mmHg.
 - d. Limit fluid resuscitation of **0.9% Normal Saline** to TKO unless patient is hypotensive.
7. In significant hemorrhage is suspected (internal or external), administer blood products based on *Blood Product Administration Protocol*.

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Trauma Care Overview (continued)

8. If vital signs indicate for inclusion criteria, treat based on *Tranexamic Acid/ TXA Protocol*.
9. Provide pain medication based on *Pain Management Protocol* so long as SBP allows.
10. Perform secondary assessment during transport. Continue to search for potential life threats and treat as found.
11. Refer to Complex Patient Protocol for exclusion criteria for Tier II providers.



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Tranexamic Acid/ TXA

Tier II & Tier III

Traumatic injuries continue to be the leading cause of death in patients under forty years of age. Even in this otherwise healthy subset of the population, the devastating effects of traumatic injuries are emphasized by the morbidity and mortality of trauma. Research has come to understand what has been termed the cascade of events that greatly decreases the patient's ability to survive the injury. Noted events in this cascade include coagulopathy and acidosis leading to multisystem organ failure. Some studies have shown Tranexamic Acid to improve clotting ability while reducing the magnitude of the inflammatory response by the body. However, it has shown to have a minimally increased effect on the likelihood that the patient will develop a DVT/PE. Recent evidence shows it may increase mortality in certain populations of trauma patients.

Assessment

When considering the appropriateness of Tranexamic Acid therapy, all of the following inclusion criteria must be considered.

Inclusion criteria

All of the following criteria must be met for the administration of Tranexamic Acid.

1. Patient age of 18 years or older.
2. Penetrating trauma to chest, abdomen or pelvis with S/S of hemorrhagic shock.
 - a. Likely to need massive transfusion.
 - b. Sustained tachycardia HR >110.
 - c. Sustained hypotension SBP < 90 mmHg.
3. Signs of peripheral vasoconstriction
 - a. Cool, pale skin.
 - b. Delayed cap refill.
4. **Injury occurred \leq 3 hours prior to TXA administration.**
5. Consult **Medical Control** for orders prior to TXA administration.

Absolute exclusion criteria

1. Head injury
2. Time of injury $>$ 3 hours or unknown.
3. Patients who antifibrinolytic therapy is contraindicated.
 - a. A history of DVT/PE or procoagulant disorder (i.e. protein c, protein s or Anithrombin III disorder)
4. Age less than 18

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Tranexamic Acid/ TXA (continued)

Treatment and Interventions

14. Initiate patient care based on the *Patient Care Overview* and *Trauma Care Overview*.
15. **Tranexamic Acid:** 1 g in 100 mL 0.9% Normal Saline over 10 minutes IV infusion.
16. **Tranexamic Acid:** 1 g in 500 mL 0.9% Normal Saline over 8 hours IV infusion.



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Musculoskeletal Trauma

Tier II & Tier III

Musculoskeletal Trauma is the most frequent trauma that EMS is called to treat. While the mortality of such injuries is less than other forms of trauma, the morbidity of such injuries can be lifelong. While assessment and treatment of life threatening injuries is the priority of treatment, proper management of musculoskeletal injuries can lead to dramatically better patient recovery from the traumatic event.

Assessment

During the head to toe rapid physical exam the CCT team should look for any observable injury that could compromise circulation. Such injuries should be addressed when found. During the secondary assessment a more comprehensive assessment should be completed. All injuries should be assessed and treated.

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview* and *Trauma Care Overview*.
2. If uncontrolled hemorrhage is noted/ develops
 - a. Apply direct pressure.
 - b. Elevate extremity as possible.
 - c. Use pressure points to reduce blood flow.
 - d. Consider the use of cold packs without direct contact to skin.
 - e. Apply Combat Application Tourniquet.
3. If soft tissue injuries are noted/ develops
 - a. Control bleeding.
 - b. Dress with sterile bandage/ dressing.
4. If fracture noted/ develops
 - a. Assess PMS. Include in PCR. If intact proceed to #c. Use Doppler as needed to assess circulation.
 - b. If circulation compromised, provide manual traction to realign injury. Reassess PMS after manipulation.
 - c. Splint effected extremity. Include joint/ long bone above and below injury.
5. If S/S of pelvic injury
 - a. Apply SAM Pelvic sling.
6. If amputated part
 - a. Wrap affected part in sterile saline soaked dressing.
 - b. Secure affected part in watertight container.
 - c. Immerse container in ice filled secondary container.
 - d. Dress extremity stump with sterile saline dressing. Control bleeding as needed.

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Facial Trauma

Tier II & Tier III

A large variety of forces can lead to facial trauma. Patients with facial trauma present significant concerns due to the potential disruption of respiration. Additionally, the concentration of blood vessels in the face and head increase the difficulty that bleeding can create. Special attention must be paid to accessing the patient in the position found and monitoring airway status during and after any movement of the patient due to the positional nature of airway difficulties.

Assessment

The primary assessment must focus on identifying and treating life threats. Primarily this will focus on the patency and maintenance of the airway. The secondary assessment should include a detailed exam of face and head addressing all injuries that are found.

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview* and *Trauma Care Overview*.
2. Closely assess patient's ability to maintain their own airway. If concerns regarding airway compromise, initiate *Advanced Airway/RSI Protocol*.
3. If unable to provide adequate respiration immediately proceed to *QuickTrach / Emergency Cricotomy Protocol*.
4. Maintain full spinal restrictions.
5. If gastric tube is required orogastric placement should be used unless isolated external injury is confirmed.
6. If CSF is present in nasal or ear draining
 - a. Collect draining, but do not pack wound or apply pressure.
 - b. Antimicrobial treatment should be started by transferring facility prior to CCT arrival. If not, CCT should work with transferring and receiving facility to establish orders and initiate treatment for continuation during transport.
7. If eye injury
 - a. Treat eye exposure to chemicals based on *Toxic Exposure Protocol*.
 - b. If injury to globe, protect with rigid structure over affected eye. Cover unaffected eye with patch or dressing to reduce movement of affected eye.
8. If penetrating object
 - a. Stabilize in place unless object prevents airway maintenance.
 - b. If unable to provide adequate respiration immediately proceed to *QuickTrach / Emergency Cricotomy Protocol*.
 - c. If time permits, consult Medical Control regarding best mechanism to stabilize penetrating object.

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Thoracic Abdominal Trauma

Tier II & Tier III

Given the close proximity to major vessels, organs and organ systems, trauma to the chest and abdomen have great potential to interrupt circulation. Attention must be focused on identifying chest trauma as well as working to correct the effects of that trauma on perfusion.

Assessment

Assessment of the chest, respiration and circulation are included in every patient assessment. For the patient suspected of suffering from chest trauma, additional, continued attention is required to identify and correct potential threats to circulation. Additional, regular assessment of JVD, tracheal positioning, lung sounds and heart tones should be included in the continued assessment.

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview* and *Trauma Care Overview*.
2. Closely assess patient's ability to maintain their own airway. If concerns regarding airway compromise, initiate *Advanced Airway/ RSI Protocol*.
3. If unable to provide adequate respiration immediately proceed to *QuickTrach / Emergency Cricotomy Protocol*.
4. Maintain full spinal restrictions.
5. Stabilize any penetrating/ impaled objects.
6. If open wound to chest or abdomen cover with occlusive dressing on at least 3 sides.
 - a. Be alert for the development of pneumothorax.
7. If open wound to abdomen with evisceration
 - a. Cover organs with saline sterile dressing.
 - b. Cover initial dressing with occlusive dressing.
8. If S/S of pneumothorax or tension pneumothorax treat immediately based on *Needle Thoracostomy Protocol*.
 - a. If chest tube has been placed by transferring facility, assess chest tube and drain system. If pneumothorax re-develops treat with additional needle thoracostomy.
9. If flail segment or suspected aortic injury watch for increasing intrathoracic pressure intubation could create.

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Spinal Trauma/Cord Injury

Tier II & Tier III

Survival post spinal trauma/ cord injury is one of the most difficult injuries for the patient to recover from. Even when full recovery is not possible, extensive treatment, rehabilitation, and modification is required for the patient to return to their pre-injury capabilities. Potential spine/ cord injuries should be treated with great caution and preventative care.

Assessment

Assessment of the potential spinal trauma/ cord injury should be included in the assessment of all trauma patients. Special attention should be focused on assessing PMS as well areas of pain. Mechanism of injury should also be considered when assessing a patient for potential spine and or cord injury.

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview* and *Trauma Care Overview*.
2. Maintain full spinal restrictions.
3. Closely assess patient's ability to maintain their own airway. If concerns regarding airway compromise, initiate *Advanced Airway/ RSI Protocol*. For high spinal injuries, consider placement of advanced airway prior to departure from transferring facility.
4. If unable to provide adequate respiration immediately proceed to *QuickTrach / Emergency Cricotomy Protocol*.
5. Document any areas of gross neurological deficits in PCR as well as the time the deficits were noted. Incomplete injuries can create a range of losses that can lead the patient to be even more confused and concerned.
6. Consider pre-treatment for nausea/ vomiting based on *Nausea and Vomiting/ Acute Bowel Obstruction Protocol*.
7. Treat pain based on *Pain Control Protocol*.
8. Treat for neurogenic shock based on *Hypotension/ Pressor Protocol*.
9. If steroid treatment has been initiated based on the request of the transferring or receiving facility, they can be continued with written order. No additional administration by CCT team shall occur.

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Traumatic Brain Injury

Tier II & Tier III

Traumatic Brain Injury is a life threatening condition, that even when survived can lead to lifelong changes in the patient's ability to function and interact as compared to their pre-injury status. Airway maintenance and appropriate cerebral perfusion are of the upmost importance. Consistent monitoring of GCS is vital to note changes in the patient's condition.

Assessment

Assessment should focus on the aggressive search for signs and symptoms of injury and noting and changing in those signs and symptoms throughout transport. The CCT team should be attentive to the severity of TBI:

GCS	15-13	12-9	8-3
TBI Severity	Mild	Moderate	Severe

Herniation and increased ICP are among the biggest concerns for patients with severe TBI. The CCT team should be alert for signs of increased ICP

- Behavior changes (GCS changes on 2 points or more from patient's best score)
- Decreased consciousness
- Headache
- Lethargy
- Neurological symptoms, including weakness, numbness, eye movement problems, and double vision
- Seizures
- Vomiting

The increased ICP, if not addressed, can lead to herniation. The CCT team should be monitoring for signs such as

- Decreased LOC
- Posturing
- Unequal pupils
- Cushing's Reflex
 - Bradycardia
 - Hypertension
 - Irregular Respirations

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Traumatic Brain Injury (continued)

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview* and *Trauma Care Overview*.
2. Closely assess patient's ability to maintain their own airway. If concerns regarding airway compromise, initiate *Advanced Airway/ RSI Protocol*. For high spinal injuries, consider placement of advanced airway prior to departure from transferring facility.
3. Frequently assess GCS and include in PCR.
4. Maintain patient positioning based on orders or transferring and receiving physicians.
5. If patient is intubated refer to transfer order or maintain ETCO₂ at 35-40 mmHg.
6. **0.9% Normal Saline:** TKO unless SBP< 90 mmHg.
7. Work to decreased ICP
 - a. PEEP < 5 unless needed to maintain SPO₂
 - b. Removal of any possible constrictive devices and clothing on head, face and neck.
 - c. Treat nausea based on *Nausea and Vomiting/ Acute Bowel Obstruction Protocol*.
 - d. Treat seizures based on *Seizure Protocol*.
 - e. Treat pain based on *Pain Control Protocol*.
 - f. Treat anxiety based on *Patient Sedation Protocol*.

Tier III

8. **Mannitol:** 0.5-1.0 g/kg IV over 5-10 minutes with **Medical Control**. Filter must be used.

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Crush Injuries

Tier II & Tier III

While typically an isolated extremity injury, crush injuries, and ultimately, crush syndrome, can lead to a state of decreased circulation that can compromise that affected areas ability to survive. In significant cases, the resulting toxin build up in the affected area, can impact vital organ and organ systems throughout the body. The most concerning results can include rhabdomyolysis, metabolic acidosis and acute renal failure.

Assessment

Assessment, as well as treatment, focus on two separate time frames: pre and post extrication. In rare cases the CCT team will be on scene and begin treatment of the patient pre-extrication. In this situation the CCT team should assess the degree of injury and begin prophylactic treatment against the toxic buildup that is occurring.

Identification of injury capable of producing Crush Syndrome

- Any injury where the patient's lower extremity (or extremities) buttocks, upper thoracic region, or arms are compressed for a prolonged period or with significant injury to muscles and/ or circulation.
-

Treatment and Interventions

Initiate patient care based on the *Patient Care Overview* and *Trauma Care Overview*.

1. Closely assess patient's ability to maintain their own airway. If concerns regarding airway compromise, initiate *Advanced Airway/ RSI Protocol*. For high spinal injuries, consider placement of advanced airway prior to departure from transferring facility.
2. Frequently assess GCS and include in PCR.
3. If initiating patient treatment by CCT team pre-extrication
 - a. **0.9% Normal Saline:** 1,000 mL wide open. Use pressure bags as needed. Additional fluid to maintain MAP 65.
 - i. **Avoid Potassium containing fluids, including Lactated Ringers.**
 - b. **Sodium Bicarbonate:** 50 mEq IVP
 - c. **Sodium Bicarbonate:** 50 mEq in 1 L 0.9% Normal Saline at 1,000 mL/ hr
 - d. **Sodium Bicarbonate:** 50 mEq IVP immediately before final steps of extrication when circulation is restored.
4. If extreme prolonged extrication, consult Medical Control for additional considerations.
5. Treat pain based on *Pain Control Protocol*.
6. Treat anxiety based on *Patient Sedation Protocol*.

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Crush Injuries (continued)

7. If hyperkalemia suspected, treat based on *Potassium Imbalance Protocol*.
8. Immobilize effected areas.
 - a. Do not elevate.
 - b. Apply cold therapy.
 - c. If fasciotomy done at transferring facility, cover with loose, sterile dressing.



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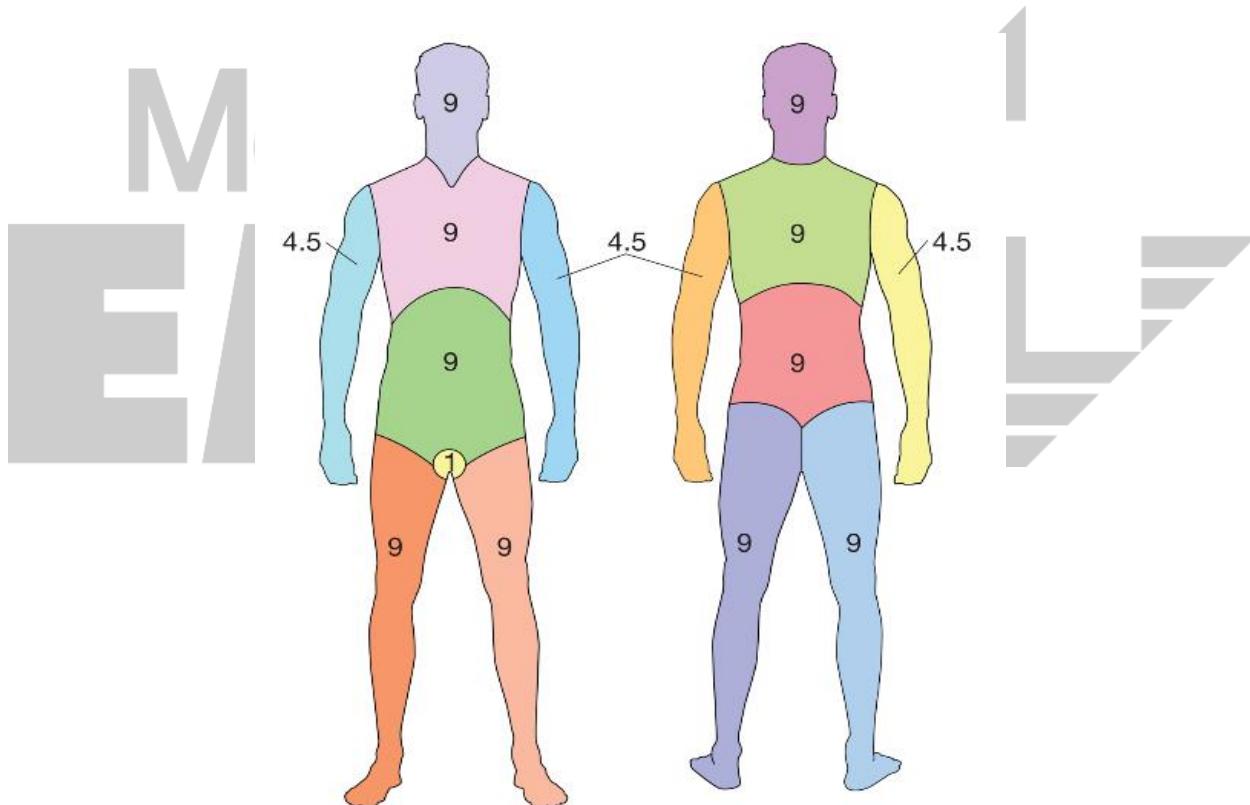
Burn Trauma

Tier II & Tier III

As most patients and their families are aware of the devastating nature of burn injuries, treatment of the burn patient includes medical and well as psychological care of the patient. Of the upmost importance is to ensure the burning process has been stopped and seeking to maintain a patent airway. Resuscitation should then focus on fluid resuscitation and treatment of developing acidosis.

Assessment

After ensuring the safety of the CCT team and patient, the CCT team should begin the first of regular airway assessments. The burn should be identified as electrical, chemical or thermal. The CCT team should work to assess the Total Burn Surface Area.



Treatment and Interventions

1. Ensure Scene Safety for the CCT team prior to establishing any patient contact.
2. Initiate patient care based on the *Patient Care Overview* and *Trauma Care Overview*.

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Burn Trauma (continued)

3. Closely assess patient's ability to maintain their own airway. If concerns regarding airway compromise, initiate *Advanced Airway/ RSI Protocol*.
4. If unable to provide adequate respiration immediately proceed to *QuickTrach / Emergency Cricotomy Protocol*.
5. If possible, allow family to have a few moments with patient prior to departure.
6. If patient is not being transferred to a Burn Center, work with the transferring and receiving physicians as well as Medical Control to discuss best destination for patient.
7. Remove any restrictive jewelry or clothing.
8. Insert foley catheter with urometer if > 20% TBSA.
9. Dress burns will dry, sterile dressings. Cover patient to conserve body heat.
10. Treat pain based on *Pain Control Protocol*.
11. Treat anxiety based on *Patient Sedation Protocol*.
12. If hyperkalemia suspected, treat based on *Potassium Imbalance Protocol*.
13. If escharotomy is performed at transferring facility, cover with loose, sterile dressing.
14. **Lactated Ringers:** 2mL/ kg/ TBSA IV infusion.
 - a. 50% of fluids to be infused over first 8 hours.
 - b. 50% of fluids to be infused overnext 16 hours.
15. If electrical burn
 - a. Fully immobilize the patient due to forces of electrical current and possible trauma.
 - b. Assess for entry and exit wounds. No cooling or flushing is necessary due to the type of burn.
 - c. Cover the burn with dry, sterile dressings.
 - d. Closely monitor cardiac rhythm of the patient.
14. If chemical burn
 - a. Consider possible scene and patient contamination and follow agency safety procedures.
 - b. Note which chemical agent caused the burn and obtain the MSDS for that chemical (if possible).
 - c. The patient's clothing should be completely removed to prevent continued exposure and the patient decontaminated **prior to** being placed in the ambulance for transport.
 - d. Dry chemical powder should be brushed off before applying water.
 - e. Irrigate the patient with sterile water and if the MSDS indicates use of water will not cause an adverse reaction. Body parts should be flushed for at least 1-2 minutes. Do not use sterile saline on chemical burns.
 - f. Irrigate burns to the eye with sterile water utilizing Murphy Lens for at least 20 minutes. Alkaline burns should receive continuous irrigation throughout transport.

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Near Drowning

Tier II & Tier III

Drowning continues to be a significant cause of death among certain population groups. Near Drowning is the clinical diagnosis that is given for a patient who suffered a water exposure/submersion event but who was able to be resuscitated. The most critical timeframe for this patient is the first twenty-four hours where fluid aspiration and asphyxiation can lead to death. This timeframe is therefore identified as near drowning. Beyond the timeframe of the first twenty-four, Secondary Drowning is the diagnosis of the patient who survived the initial submersion event, but succumbed to resulting hypoperfusion and resulting hypoxia from lung injury.

Assessment

Assessment at the drowning event must first ensure scene safety for the CCT team. Rescue must be handled by trained and equipped rescue teams. Coordinate with those teams regarding care that can be given prior to CCT team access.

Include in the assessment a review of the situation that resulted in the drowning. Typically, trauma, toxins, and/or other medical conditions are seen as factors that helped lead to the drowning event.

Treatment and Interventions

1. Initiate patient care based on the *Patient Care Overview* and *Trauma Care Overview*.
2. Maintain full spinal restrictions.
3. Closely assess patient's ability to maintain their own airway. If concerns regarding airway compromise, initiate *Advanced Airway/ RSI Protocol*.
 - a. **Albuterol:** 2.5 mg nebulizer or inline nebulize if signs of airway constriction noted. May repeat every 15 minutes.
 - b. If intubated is required, utilize PEEP starting at 5 cm water pressure and monitor Oxygen saturations.
4. If patient is intubated refer to transfer order or maintain ETCO₂ at 35-40 mmHg.
5. If unable to provide adequate respiration immediately proceed to *QuickTrach / Emergency Cricotomy Protocol*.
6. Consider pre-treatment for nausea/ vomiting based on *Nausea/ Vomiting Protocol*.
 - a. If any decrease in level of consciousness, place gastric tube based on *Gastric Tube Protocol*.
7. Work to prevent heat loss. Initiate temperature monitoring based on *Temperature Monitoring Protocol*.
8. Suspect hypothermia and treat based on *Heat Related Illnesses Protocol*.
9. Resuscitate based on appropriate protocol(s)

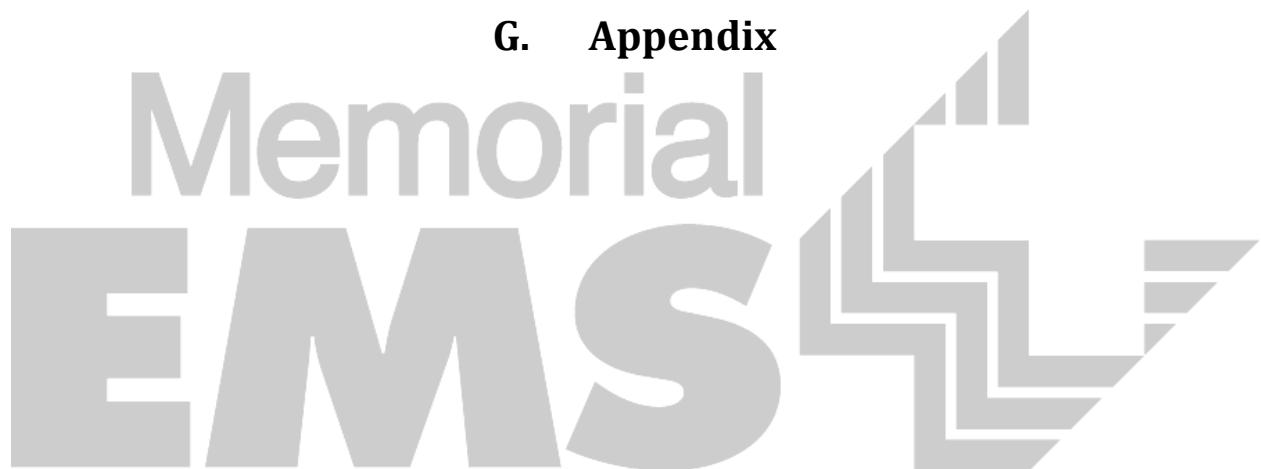
Tier III

10. Status Post Arrest care based on necessary protocols.

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G. Appendix



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MEMORIAL EMS SYSTEM
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Equipment Listing

Administrative Supplies

- Memorial EMS ALS Ambulance supplies
- Drug Compatibility Chart
- 10 Transfer order Forms
- 10 Patient Care Log Forms
- 1 Hard Copy Memorial CCT Protocols

Equipment

- Cardiac monitor
- Cardiac monitor holder for stretcher
- Capnography
- IV pole
- Fluid cooler/ Medication refrigerator
- Fluid warmer
- Thermometer (Tympanic)
- 2 Baxter Six Sigma Smart Pumps

Drug Bag CCT

- CCT Medication Bag
- CCT Controlled Substances Bag- Refrigerated Bag
- Secured location for Controlled Substances Bag with only paramedic & RN access

IV Supplies

- 10 IV Pump tubing sets
- 4 Vented IV pump tubing sets- Properly identified
- 5 Secondary IV Pump tubing sets, with drop loop- Properly identified
- 3 Blood Tubing
- 3 1000 mL Lactated Ringers
- 2 100 mL D5W
- 2 250 mL D5W
- 2 250 mL D10W
- 1 500 mL D5NS
- 3 SQ40S filter
- 3 Dial- a-Flow

Airway Bag

- 1 Quicktrach kit
- 2 Decompression kits
- 3 Vent Circuits
- 1 Transport vent

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