Emergency Medical Services & Injury Prevention System Branch

State of Hawaii Department of Health
Emergency Medical Services Advisory Committee
(EMSAC) Meeting

NOTICE OF MEETING

DATE:	Friday, April 17, 2026
TIME:	9:30 A.M. Hawaii Standard Time (HST)
PLACE:	State of Hawaii Department of Health, Kinau Hale, 1st Floor Boardroom 1250 Punchbowl St. Honolulu HI 96813 & Online via Teams

TEAMS LINK:
https://teams.microsoft.com/meet/28196372327518?p=fHPPtcuklwYGef5CLT

Microsoft Teams

Join the Meeting (Click Here)

Meeting ID: 281 963 723 275 18

Passcode: 8Ff6q534

This meeting will be recorded.

This meeting will be held using interactive conference technology under section 92-3.7, Haw. Rev. Stat. (HRS). Committee members, staff, testifiers, and the public can choose to participate in person or online via Teams.

Public Testimony

Written Testimony – To ensure the public, as well as EMSAC members, receive testimony in a timely manner, the Committee requests written testimony be submitted two business days prior to the scheduled meeting date and time (Wednesday, April 15, 2026, at 9:30 AM HST). Any written testimony submitted after such time will be distributed at the meeting. Please note any written public testimony submitted to the Committee will be a public record and any contact information will be available for public inspection and copying. Written testimony may be submitted via:

1. e-mail to DOH.emsac@doh.hawaii.gov;

2. US Postal Service addressed to Hawaii Department of Health, Emergency Medical Services and Injury Prevention System Branch (EMSIPSB), 3675 Kilauea Avenue, Trotter Building, Honolulu, HI 96816; or

3. by facsimile to: (808) 733-9216.

Oral Testimony – The Committee will also consider public testimony given at the meeting on any item relevant to this agenda. Individuals may submit oral testimony during the meeting by sending an email request to DOH.emsac@doh.hawaii.gov by Wednesday, April 15, 2026, at 9:30 AM HST, or by simply announcing/identifying themselves and the item they want to testify about during the public testimony portion of the meeting. Individuals may also provide audiovisual oral testimony by using the "Raise Hand" feature in Teams, clicking the "Unmute" icon to talk, and clicking the "Start Video" icon to turn camera on. The Committee's agenda and meeting materials are available for inspection at EMSIPSB's office and on the Committee's website at https://health.hawaii.gov/ems/home/emergency-medical-services-advisory-committee/.

If you need an auxiliary aid/service or other accommodation due to a disability, contact the EMSIPSB office at (808) 733-9210 or email DOH.emsac@doh.hawaii.gov as soon possible. Requests made as early as possible have a greater likelihood of being fulfilled.

Upon request, this notice is available in alternate formats.

NOTE: Agenda items may be taken out of order.

AGENDA

I. Call to Order/Roll Call – Marilyn Matsunaga, EMSAC Chair

II. Approval of January 2026 Meeting Minutes ***(Voting Item)***

III. New Business

A. Guest Speakers

1) John C. (Jack) Lewin, MD - Administrator State Health Planning and Development Agency (SHPDA) – Senior Healthcare Advisory to Governor Josh Green MD
    a. Rural Health Transformation
    b. AHEAD Grant
    c. What's new for healthcare reimbursement

2) Rafael Sa'adah - Emergency Medical Services and Injury Prevention Systems Branch Volunteer; Deputy Fire Chief (Retired), District of Columbia Fire & EMS Department
    a. Opioid Peer Review Project, State of Hawaii Department of Health

B. Legislative Update
For the Bills Listed Below: Status Page Links and the Bill itself is attached to the agenda

1) HB2314 HD2 SD1 – Relating to Emergency Medical Systems of Care
2) HB1966 HD1 SD1 – Relating to EMS Special Fund
3) HB816 HD1 SD1 – Relating to Emergency Response (Buprenorphine)
4) SB2934 SD1 HD1 – Relating to Ambulances (Maui)
5) SB3203 HD1 – Relating to Air Medical Service

C. HB2314 HD2 SD1 – Relating to Emergency Systems of Care, Modernization and Committees

D. Planning for Next Strategic Conference – Trauma and EMS

E. Proclamation for EMS, Trauma, and Stroke Awareness Month/Week

IV. Old Business

A. Report on Status of Department of Health Medical Operations Coordination Center (MOCC)

B. Permitted Interaction Group (PIG) Reports

1) PIG - Overview Emergency Medical Technician (EMT) and Mobile Intensive Care Technician (MICT) Standing Order Tiers
(Voting Item)

2) PIG - Emergency Air Medical / Medevac Regulatory Standards, Protocols, Triage, and Licensing Requirements
(Voting Item)

V. Reports

A. Emergency Medical Services and Injury Prevention Systems Branch Report

B. Agency / Organization Dashboard, Reports, & Highlights

1) EMS - Hawaii County (Hawaii Island Fire)
2) EMS - C&C of Honolulu
3) EMS – Kauai County (AMR)
4) EMS – Maui County (AMR)
5) Federal Fire
6) EMS Air Ambulance (REACH)
7) Hawaii Life Flight
8) Optimum Air
9) Life Flight Network
10) Kapiolani Community College
11) Hawaii Community College
12) Trauma Centers

VI. Adjournment

Next Meeting – Tentative set for Friday, July 24, 2026, 9:30AM-11:30AM HST,
State of Hawaii, Department of Health, Kinau Hale, 1st Floor Boardroom
1250 Punchbowl St. Honolulu HI 96813 & Online via Teams

Tentative Schedule for the Remainder of 2026: July 24, 2026, and October 23, 2026

For brief descriptions of each bill, please visit the status page and review the measures attached to the meeting notice/agenda:

1) HB2314 HD2 SD1 – Relating to Emergency Medical Systems of Care
https://www.capitol.hawaii.gov/session/measure_indiv.aspx?billtype=HB&billnumber=2314&year=2026

2) HB1966 HD1 SD1 – Relating to EMS Special Fund
https://www.capitol.hawaii.gov/session/measure_indiv.aspx?billtype=HB&billnumber=1966&year=2026

3) HB816 HD1 SD1 – Relating to Emergency Response (Buprenorphine)
https://www.capitol.hawaii.gov/session/measure_indiv.aspx?billtype=HB&billnumber=816&year=2026

4) SB2934 SD1 HD1 – Relating to Ambulances (Maui)
https://www.capitol.hawaii.gov/session/measure_indiv.aspx?billtype=SB&billnumber=2934&year=2026

5) SB3203 HD1 – Relating to Air Medical Service
https://www.capitol.hawaii.gov/session/measure_indiv.aspx?billtype=SB&billnumber=3203&year=2026

HOUSE OF REPRESENTATIVES
THIRTY-THIRD LEGISLATURE, 2026
STATE OF HAWAII

H.B. NO. 2314 H.D. 2

A BILL FOR AN ACT

RELATING TO EMERGENCY MEDICAL SYSTEMS OF CARE.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The legislature finds that the State's current emergency medical services laws were designed for an earlier era and do not reflect the complexities of modern time-sensitive emergency medical systems of care. Recent emergency events across the State have exposed significant gaps in coordination, integration, and resource deployment across emergency medical services, acute care facilities, and the trauma system. These events underscored the vulnerability of Hawaii's geographically isolated rural communities and highlighted the urgent need for modernization.

The legislature further finds that contemporary models of emergency and acute care prioritize integrated systems that address time-sensitive emergencies, such as burns, heart attacks, strokes, sepsis, and trauma, with the same urgency and structure as traditional emergency response. By adopting a time-sensitive emergency medical systems of care model, Hawaii can improve patient survival, reduce long-term disability, and

strengthen statewide resilience in times of disaster or public health crisis.

Aligning Hawaii's emergency medical services laws with national best practices in systems integration will:

(1) Ensure coordinated, evidence-based care for time-sensitive emergencies across all islands;

(2) Modernize emergency medical services and trauma systems to meet current and future challenges;

(3) Improve patient outcomes through standardized, statewide protocols; and

(4) Enhance preparedness for future natural disasters, mass casualty incidents, and public health threats.

Accordingly, the purpose of this Act is to update Hawaii's emergency medical services laws to establish a comprehensive, time-sensitive emergency medical systems of care model that strengthens the State's capacity to respond effectively to emergencies and safeguard the health of the State's residents, living on all islands.

SECTION 2. Section 46-191, Hawaii Revised Statutes, is amended by amending the definition of "basic life support" to read as follows:

""Basic life support" means initiating noninvasive emergency patient care designed to optimize the patient's chances of surviving the emergency situation. The care rendered consists of all first aid procedures needed, but does not include invasive procedures that constitute the practice of medicine; provided that state-approved basic life support personnel may use fully automatic external defibrillators, initiate intravenous lines, place tourniquets, and perform manual external defibrillation under the direction and personal supervision of a [~~mobile intensive care technician.~~] state-licensed clinician and in accordance with rules adopted by the department of health."

SECTION 3. Section 46-196, Hawaii Revised Statutes, is amended to read as follows:

"**[~~[~~]§46-196[~~]~~] Emergency medical services; levels of service; contracts.** The county shall determine the levels of emergency medical services that shall be implemented throughout the county[~~.~~], unless otherwise determined by the department of health in consultation with the Hawaii emergency medical systems of care advisory council; provided that the county shall provide no fewer than twenty-one ground ambulance units. The county may

contract to provide emergency medical services, including emergency aeromedical services, or any necessary component of the county system."

SECTION 4. Section 321-221, Hawaii Revised Statutes, is amended to read as follows:

"**§321-221 Findings and purpose.** The legislature finds that the establishment of [~~a~~] state emergency medical [~~services system,~~] systems of care, including emergency medical services, emergency medical services for children, and trauma and critical care services, is a matter of compelling state interest and necessary to protect and preserve public health. [~~A system~~] The legislature further finds that state emergency medical systems of care designed to reduce medical emergency deaths, injuries, and permanent long-term disability through the implementation of a fully integrated, cohesive network of components[~~, the legislature further finds,~~] will best serve public health needs. Accordingly, the purpose of this part is to establish and maintain [~~a~~] state emergency medical [~~services system~~] systems of care in communities that can be most effectively served by the State[~~,~~] and [~~to~~] fix the responsibility for the administration of [~~this~~] state [~~system,~~] emergency medical

systems of care, which shall provide for the arrangement of personnel, facilities, and equipment for the effective and coordinated delivery of health care services under emergency conditions, whether occurring as the result of a patient's condition, from natural disasters, or from other causes. The [~~system~~] emergency medical systems of care shall provide for personnel, personnel training, communications, emergency transportation, facilities, coordination with emergency medical and critical care services, coordination and use of available public safety agencies, promotion of consumer participation, accessibility to care, mandatory standard medical recordkeeping, consumer information and education, independent review and evaluation, disaster linkage, mutual aid agreements, and other components necessary to meet the purposes of this part."

SECTION 5. Section 321-222, Hawaii Revised Statutes, is amended to read as follows:

"**§321-222 Definitions.** As used in this part, unless the context clearly requires otherwise:

"Advanced emergency medical technician" means a health care professional who holds a current certificate from the National Registry of Emergency Medical Technicians and is licensed

pursuant to section 453-34 as an advanced emergency medical technician to provide basic and limited advanced emergency medical care and transportation for critical and emergency patients to access the emergency medical systems of care.

"Advanced life support" means initiating all basic life support care as well as invasive patient care designed to stabilize and support a patient's condition due to sudden illness or injury. The care rendered, excluding basic life support, constitutes the practice of medicine.

"Advisory [~~committee"~~] council" means the Hawaii emergency medical [~~services~~] systems of care advisory [~~committee.~~] council.

"Air-medical services" means medical care and transport of patients by aircraft provided by a licensed air ambulance operator with qualified medical personnel and regulated as part of the state emergency medical systems of care.

"Basic life support" means initiating noninvasive emergency patient care designed to optimize the patient's chances of surviving the emergency situation. The care rendered consists of all first aid procedures needed, but does not include invasive procedures [~~which~~] that constitute the practice of

medicine; provided that state-approved basic life support personnel may use fully automatic external defibrillators, initiate intravenous lines, place tourniquets, and perform manual external defibrillation under the direction and personal supervision of a [~~mobile intensive care technician~~] state-licensed clinician and in accordance with rules adopted by the department.

"Department" means the department of health.

"Emergency [~~aeromedical~~] air-medical services" means a [~~secondary~~] response system that provides immediate critical care and transport [~~by rotary-wing aircraft~~] of a patient by aircraft to a facility that provides specialized medical care.

"Emergency medical responder" means a person certified by the National Registry of Emergency Medical Technicians.

"Emergency medical services for children" means emergency medical services, including preventive, pre-hospital, hospital, rehabilitative, and other post-hospital care for children.

"Emergency medical services personnel" means any [~~mobile intensive care technician or emergency medical technician~~] health care professional who is certified or licensed by the State[~~.~~] to provide emergency medical services.

"Emergency medical systems of care" means a fully integrated and cohesive statewide network of components that provide timely and effective care to individuals experiencing crisis situations. Components of an emergency medical systems of care include but are not limited to community-based services, pre-hospital care, emergency response, facility-based care, disaster response, and other post-hospital services that support stabilization, treatment, and transport.

"Emergency medical technician" means a person who holds a certificate from the National Registry of Emergency Medical Technicians, who is licensed pursuant to section 453-34, and whose primary focus is to provide immediate lifesaving care to patients while ensuring access to the emergency medical systems of care.

"First responder personnel" means a person who [~~has successfully completed a United States Department of Transportation approved First Responder Course of training in emergency basic life support.~~] provides initial assistance until emergency medical services personnel arrive.

"Medicom" means the emergency medical systems of care medical communications that monitor statewide resource

availability, emergency dispatch, hospital notifications, interfacility transfers, and disaster communications.

"Medicom center" means the centralized coordination place for medicom functions.

"Paramedic" means a mobile intensive care technician who is an allied health professional certified by the National Registry of Emergency Medical Technicians, who is licensed pursuant to section 453-34, and whose primary focus is to provide advanced emergency medical care for critical and emergent patients who access the emergency medical systems of care.

"Service area" means the State, excluding any county having a population of five hundred thousand or more.

"State system" means the state [~~pre-hospital~~] emergency medical [~~services system.~~] systems of care.

"Statewide" means all counties in the State."

SECTION 6. Section 321-224, Hawaii Revised Statutes, is amended by amending subsection (a) to read as follows:

"(a) In addition to other functions and duties assigned under this part, the department shall:

(1) Regulate ambulances and ambulance services statewide;

(2) Establish emergency medical services throughout the service area, including emergency [~~aeromedical~~] air-medical services, which shall meet the requirements of this part, subject to section 321-228;

(3) Review and approve the curricula and syllabi of training courses offered to emergency medical services personnel statewide who provide basic, intermediate, and advanced life support, consult and coordinate with the [~~University~~] university of Hawaii, or any other accredited community college, college, or university, or any professional organization that provides emergency medical services training, regarding the training for basic, intermediate, and advanced life support personnel, as provided in section 321-229;

(4) Collect and evaluate data for the continued evaluation of the statewide emergency medical [~~services system,~~] systems of care, subject to section 321-230;

(5) Coordinate, on a statewide basis, emergency medical resources and the allocation of emergency services and facilities in the event of mass casualties, natural disasters, national emergencies, and other

emergencies, ensuring linkage to local, state, and national disaster plans, and participation in exercises to test these plans;

(6) Establish, administer, and maintain a communication system [~~for the service area;~~] statewide, including interoperability with organizations essential to core operations of the state system;

(7) [~~Assist each county in the service area in the~~] Oversee the development and implementation of a statewide "911" emergency [~~telephone~~] dispatch system;

(8) Secure technical assistance and other assistance and consultation necessary for the implementation of this part, subject to section 321-230;

(9) Implement public information and education programs to inform the public of the statewide system and its use, and disseminate other emergency medical information, including appropriate methods of medical self-help and first-aid, and the availability of first-aid training programs statewide;

(10) Establish standards and provide training for dispatchers in the state system, and maintain a

program of quality assurance for dispatch equipment and operations; provided that individuals acting as dispatchers in the State as of July 1, 2022, shall obtain emergency medical dispatch certification by July 1, 2026, and shall maintain certification thereafter;

(11) Establish a program that will enable emergency [~~service~~] medical services personnel statewide to provide early defibrillation;

(12) Establish [~~within the department the~~] and maintain emergency medical [~~service system~~] services for children statewide;

(13) Consult with the advisory [~~committee~~] council on matters relating to the implementation of this part; and

(14) Establish and maintain statewide standards for emergency medical services course instructor qualifications and statewide requirements for emergency medical services training facilities."

SECTION 7. Section 321-225, Hawaii Revised Statutes, is amended to read as follows:

"§321-225 **The [~~state~~] Hawaii emergency medical [~~services~~] systems of care advisory [~~committee.~~] council.** (a) There is established within the department [~~of health~~] for administrative purposes only the [~~state~~] Hawaii emergency medical [~~services~~] systems of care advisory [~~committee,~~] council, which shall sit in an advisory capacity to the department [~~of health~~] on all matters relating to the state system. The advisory [~~committee~~] council may advise the department [~~of health~~] upon request of the department or upon its own initiative with regard to the state system. The advisory [~~committee~~] council shall:

(1) Monitor, review, and evaluate on an ongoing basis the operations, administration, and efficacy of the state system or any components thereof, to determine conformity with and maximum implementation of this part[~~.~~];

(2) Prepare and submit periodic assessments, reports, and other documents relating to the state system to ensure the implementation of this part, as deemed necessary or desirable in the discretion of the advisory [~~committee.~~] council;

(3) Seek the input of the public in relation to the state system to ensure adequate fulfillment of the emergency medical services, emergency medical services for children, and trauma and critical care services needs of the State consistent with this part[~~.~~];

(4) Participate in any planning or other policymaking with regard to the state system, and seek the participation of the public, including subarea health planning councils in its consideration of plans and policies relating to the state system[~~.~~];

(5) Perform other functions, and have other duties necessary to ensuring the fullest implementation and maintenance of the state system[~~.~~]; and

(6) Advise the department [~~of health~~] in formulating a master plan for emergency medical [~~services,~~] systems of care, including medicom, the "911" system, and other components necessary to meet the emergency medical needs of the people of the State, which shall be submitted to the legislature.

(b) The advisory [~~committee~~] council shall be composed of [~~twenty~~] twenty-three members: [~~three~~] four nonvoting ex-officio

members, who shall be the director of transportation, the [~~adjutant general,~~] administrator of emergency management, the executive director of the Hawaii 911 board, and the administrator of the state health planning and development agency, or the designated representatives thereof, and [~~seventeen~~] nineteen members representing all counties of the State who shall be appointed by the governor subject to section 26-34 as follows:

(1) Five members who shall be physicians experienced in the conduct and delivery of emergency medical services; provided that at least two shall be engaged in the practice of emergency medicine and be board-eligible or board-certified by the American Board of Emergency Medicine[~~, and~~]; provided further that at least one physician shall be engaged in the practice of pediatrics and be board-eligible or board-certified by the American Board of Pediatrics;

(2) Four members who shall be consumers of health care and who shall have no connection with or relationship to the health care system of the State and who shall be representative of all counties;

(3) Four members of allied health professions related to emergency medical services; [~~and~~]

(4) Four members, one from each county, who shall be mobile intensive care technicians or emergency medical technicians engaged in the practice of pre-hospital emergency medical [~~service.~~] services; and

(5) Two members who shall be surgeons or clinicians experienced in the conduct and delivery of trauma or acute care services.

(c) The members of the advisory [~~committee~~] council shall serve without compensation, but shall be reimbursed for necessary expenses incurred in the performance of their duties, including travel expenses. The chairperson of the advisory [~~committee~~] council shall be elected by the members from among their numbers. A majority of the members of the advisory [~~committee~~] council shall constitute a quorum for the conduct of business of the advisory [~~committee.~~] council. A majority vote of the members present at a meeting at which a quorum is established shall be necessary to validate any action of the [~~committee.~~] council.

[~~(c)~~] (d) The advisory [~~committee~~] council may adopt rules for its governance.

[~~(d)~~] (e) The department [~~of health~~] shall provide necessary staff and other support required by the advisory [~~committee~~] council for the performance of its duties."

SECTION 8. Section 321-228, Hawaii Revised Statutes, is amended to read as follows:

"**§321-228 Emergency medical services; counties.** The department shall determine, in consultation with the advisory [~~committee~~] council under section 321-225, the levels of emergency medical services that shall be implemented in each county within the service area. The department may contract to provide emergency medical services, including emergency [~~aeromedical~~] air-medical services, or any necessary component of the emergency [~~services system of~~] medical systems of care within a county within the service area in conformance with the state system. If any county within the service area [~~shall apply~~] applies to the department to operate state emergency medical ambulance services within the respective county, the department may contract with the county for the provision of those services. The department shall operate emergency medical

ambulance services or contract with a private agency in those counties within the service area that do not apply to it under this section. Any county or private agency contracting to provide emergency medical ambulance services under this section shall be required by the department to implement those services in a manner and at a level consistent with the levels determined under this section."

SECTION 9. Section 321-230, Hawaii Revised Statutes, is amended to read as follows:

"**§321-230 Technical assistance[~~,~~]; data collection[~~,~~]; evaluation.** (a) The department may contract for technical assistance and consultation, including categorization, data collection, and evaluation appropriate to the needs of the statewide emergency medical [~~services system.~~] systems of care. The collection and analysis of statewide emergency medical [~~services~~] systems of care data, including [~~pediatrics, trauma,~~] behavioral medical, burn, cardiac, medical, pediatrics, stroke, and [~~behavioral medical~~] trauma emergencies, shall be for the purpose of improving the quality of services provided.

The department may implement and maintain a trauma registry for the collection of information concerning the treatment of

critical trauma patients at state designated trauma centers, and carry out a system for the management of that information. The system may provide for the recording of information concerning treatment received before and after a trauma patient's admission to a hospital or medical center. All state designated trauma centers shall submit to the department periodic reports of each patient treated for trauma in the state system in the manner as the department shall specify.

For the purposes of this subsection, "categorization" means systematic identification of the readiness and capabilities of hospitals and their staffs to adequately, expeditiously, and efficiently receive and treat emergency patients.

(b) The department shall establish, administer, and maintain an [~~aeromedical~~] emergency [~~medical~~] air-medical services system designed to collect and analyze data to measure the efficiency and effectiveness of each phase of the statewide emergency [~~aeromedical~~] air-medical program.

The department shall monitor [~~aeromedical~~] air-medical emergency ambulance service flights statewide to include date of service, patient demographics, transport diagnosis, and medical outcomes. The department medicom center shall work with each

air-medical service provider and health care facility as the intermediary to arrange emergency transport of [~~bariatric~~] patients by licensed air-medical service providers, or by the United States Coast Guard, and maintain a registry of all emergency transports provided [~~by the United States Coast Guard~~]. All statewide [~~aeromedical~~] air-medical service providers shall submit their data to the department as specified and requested by the department.

The statewide [~~aeromedical~~] emergency [~~medical~~] air-medical services system shall serve the emergency health needs of the people of the State by identifying:

(1) The system's strengths and weaknesses;

(2) The allocation of resources; and

(3) The development of [~~rotary-wing~~] emergency [~~aeromedical~~] air-medical services standards;

provided that emergency helicopter use, including triage protocols, shall be based on national [~~aeromedical~~] air-medical triage and transport guidelines established by the Association of Air Medical Services, the American College of Surgeons, the National Association of Emergency Medical [~~Service~~] Services Physicians, or other department-approved national [~~aeromedical~~]

air-medical accreditation agency. The department, in the implementation of this subsection, shall plan, coordinate, and provide assistance to all entities and agencies, public and private, involved in the statewide system.

(c) The department shall use an emergency [~~aeromedical services~~] air-medical quality improvement committee comprised of representatives of trauma, emergency, and tertiary care physicians and providers to analyze information collected from the [~~aeromedical~~] air-medical quality improvement performance measures as established by the [~~American College of Surgeons,~~] department, and to recommend system standards and resources to maintain and improve [~~the~~] Hawaii emergency [~~aeromedical~~] air-medical services [~~system~~]."

SECTION 10. Section 321-231, Hawaii Revised Statutes, is amended to read as follows:

"**[~~†~~] §321-231 [~~†~~] Grants.** The state system may seek and accept any funds or property and other desirable support and assistance from any source whatsoever, whether gift, grant, services or any combination thereof, subject to applicable laws. In the event that any grant applications are made in relation to the state system, or any component thereof, the department shall

consult with the advisory [~~committee~~] council and provide technical assistance in the preparation, management, or administration of the application or the grant, or both."

SECTION 11. Sections 321-223, 321-224.4, and 321-532, Hawaii Revised Statutes, and the title of chapter 321, part XVIII, Hawaii Revised Statutes, are amended by substituting the term "systems of care" wherever the term "services system" appears, as the context requires.

SECTION 12. Sections 46-191, 46-193, 46-196, 46-198, and 321-235, Hawaii Revised Statutes, are amended by substituting the word "air-medicine" wherever the word "aeromedical" appears, as the context requires.

SECTION 13. Statutory material to be repealed is bracketed and stricken. New statutory material is underscored.

SECTION 14. This Act shall take effect on July 1, 3000.

H.B. NO. 2314 H.D. 2

Report Title:
Department of Health; State Emergency Medical Services System; Systems of Care

Description:
Modernizes Hawaii's emergency medical services laws to align with current best practices. Effective 7/1/3000. (HD2)

The summary description of legislation appearing on this page is for informational purposes only and is not legislation or evidence of legislative intent.

HOUSE OF REPRESENTATIVES
THIRTY-THIRD LEGISLATURE, 2026
STATE OF HAWAII

H.B. NO. 1966 H.D. 1 S.D. 1

A BILL FOR AN ACT

RELATING TO THE EMERGENCY MEDICAL SERVICES SPECIAL FUND.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

PART I

SECTION 1. The legislature finds that the emergency medical services special fund is a critical mechanism for supporting the delivery of timely, high-quality emergency medical services across the State. These services are essential to the health and safety of Hawaii's residents and visitors, particularly given the State's geographic isolation, rural communities, and reliance on coordinated emergency response systems of care.

The legislature further finds that the current statutory framework governing revenues deposited into the emergency medical services special fund does not adequately reflect modern emergency medical services operations, financing structures, or reimbursement models. Emergency medical services agencies today increasingly rely on billable revenue generated from the provision of medically necessary emergency care to sustain

staffing, equipment, training, data systems, and system readiness.

The legislature recognizes that the emergency medical services system generates an annual cash deposit of approximately $30,000,000 from health insurance reimbursement into the state general fund for services provided in the counties of Hawaii, Kauai, and Maui. Aligning the emergency medical services special fund with contemporary, billable revenue-based funding mechanisms will promote fiscal sustainability, transparency, and accountability, while ensuring that funds generated through emergency medical services activities are reinvested directly into the emergency medical systems of care. Updating the revenue structure will strengthen the State's ability to maintain consistent service levels, address workforce challenges, and support continuous system improvements.

Accordingly, the purpose of this Act is to modernize the emergency medical services special fund by:

(1) Authorizing revenues derived from billable emergency medical services to be deposited into the special fund;

(2) Amending the composition and allowable uses of the special fund;

(3) Establishing an annual cap on the expenditure from the special fund; and

(4) Discontinuing the allocation of cigarette tax revenues to the special fund, beginning January 1, 2027.

PART II

SECTION 2. Section 321-232, Hawaii Revised Statutes, is amended by amending subsections (a) and (b) to read as follows:

"(a) The department shall establish reasonable fees for services rendered to the public within the service area by the department, any county within the service area, or private agency under this part; provided that all revenues collected by the department and the respective counties pursuant to this section shall be deposited into the state general fund[~~,~~] and the emergency medical services special fund, except amounts necessary to provide for collection services for bad debt accounts. Fees required to be set by this section shall be established in accordance with chapter 91.

(b) No ambulance, community paramedicine, enhanced and expanded emergency medical services, or any other emergency

medical services available from or under the authority of this chapter shall be denied to any person on the basis of the ability of the person to pay therefor or because of the lack of prepaid health care coverage or proof of such ability or coverage."

SECTION 3. Section 321-234, Hawaii Revised Statutes, is amended to read as follows:

"§**321-234 Emergency medical services special fund.** (a) There is established within the state treasury a special fund to be known as the emergency medical services special fund to be administered and expended by the department.

(b) The moneys in the special fund shall be distributed as follows:

(1) Beginning with fiscal year 2021-2022, $3,500,000 shall be distributed each fiscal year to a county operating a county emergency medical services system pursuant to part XI of chapter 46 for the operation of that system; and

(2) The remainder shall be distributed to the department for [~~operating~~]:

(A) Operating the system established pursuant to this chapter, including enhanced and expanded services, and shall not be used to supplant funding for emergency medical services authorized prior to July 1, 2004[~~.~~]; and

(B) The purposes authorized by subsection (e).

(c) The special fund shall consist of:

(1) No less than fifty per cent of the emergency medical services revenues collected for services provided pursuant to section 321-232;

(2) Fees remitted pursuant to section 249-31[~~, cigarette tax revenues designated under section 245-15, interest~~];

(3) Interest and investment earnings attributable to the moneys in the special fund[~~, legislative~~];

(4) Legislative appropriations, [~~and grants,~~] including grants-in-aid; and

(5) Grants, donations, and contributions from private or public sources for the purposes of the fund[~~, shall be deposited into the special fund~~].

(d) All unencumbered and unexpended moneys in excess of $45,000,000 remaining on balance in the special fund at the close of June 30 of each year shall lapse to the credit of the general fund.

(e) The emergency medical services special fund shall be used:

(1) By the department to support the continuing development and operation of a comprehensive state emergency medical systems of care;

(2) To subsidize the documented costs for the comprehensive emergency medical services, including emergency ambulance services, emergency air medical services, equipment, supplies, training, education, dispatch, communications and data systems, and public education of 911 emergency medical services; and

(3) For necessary administrative expenses, not to exceed five per cent of the total amount collected in the special fund any given year.

(f) Expenditures from the emergency medical services special fund shall be exempt from chapters 103D and 103F.

[~~(d)~~] (g) The department shall submit an annual report to the legislature no later than twenty days prior to the convening of each regular session that outlines the receipts of, and expenditures from, the special fund.

(h) The department shall adopt rules pursuant to chapter 91 to effectuate the purposes of this section."

SECTION 4. Section 245-15, Hawaii Revised Statutes, is amended to read as follows:

"**§245-15 Disposition of revenues.** All moneys collected pursuant to this chapter shall be paid into the state treasury as state realizations to be kept and accounted for as provided by law; provided that, of the moneys collected under the tax imposed pursuant to:

(1) Section 245-3(a)(5), after September 30, 2006, and prior to October 1, 2007, 1.0 cent per cigarette shall be deposited to the credit of the Hawaii cancer research special fund, established pursuant to section 304A-2168, for research and operating expenses and for capital expenditures;

(2) Section 245-3(a)(6), after September 30, 2007, and before October 1, 2008:

(A) 1.5 cents per cigarette shall be deposited to the credit of the Hawaii cancer research special fund, established pursuant to section 304A-2168, for research and operating expenses and for capital expenditures;

(B) 0.25 cents per cigarette shall be deposited to the credit of the trauma system special fund established pursuant to section 321-22.5; and

(C) 0.25 cents per cigarette shall be deposited to the credit of the emergency medical services special fund established pursuant to section 321-234;

(3) Section 245-3(a)(7), after September 30, 2008, and before July 1, 2009:

(A) 2.0 cents per cigarette shall be deposited to the credit of the Hawaii cancer research special fund, established pursuant to section 304A-2168, for research and operating expenses and for capital expenditures;

(B) 0.5 cents per cigarette shall be deposited to the credit of the trauma system special fund established pursuant to section 321-22.5;

(C) 0.25 cents per cigarette shall be deposited to the credit of the community health centers special fund established pursuant to section 321-1.65; and

(D) 0.25 cents per cigarette shall be deposited to the credit of the emergency medical services special fund established pursuant to section 321-234;

(4) Section 245-3(a)(8), after June 30, 2009, and before July 1, 2013:

(A) 2.0 cents per cigarette shall be deposited to the credit of the Hawaii cancer research special fund, established pursuant to section 304A-2168, for research and operating expenses and for capital expenditures;

(B) 0.75 cents per cigarette shall be deposited to the credit of the trauma system special fund established pursuant to section 321-22.5;

(C) 0.75 cents per cigarette shall be deposited to the credit of the community health centers special fund established pursuant to section 321-1.65; and

(D) 0.5 cents per cigarette shall be deposited to the credit of the emergency medical services special fund established pursuant to section 321-234;

(5) Section 245-3(a)(11), after June 30, 2013, and before July 1, 2015:

(A) 2.0 cents per cigarette shall be deposited to the credit of the Hawaii cancer research special fund, established pursuant to section 304A-2168, for research and operating expenses and for capital expenditures;

(B) 1.5 cents per cigarette shall be deposited to the credit of the trauma system special fund established pursuant to section 321-22.5;

(C) 1.25 cents per cigarette shall be deposited to the credit of the community health centers special fund established pursuant to section 321-1.65; and

(D) 1.25 cents per cigarette shall be deposited to the credit of the emergency medical services special fund established pursuant to section 321-234;

(6) Section 245-3(a)(11), after June 30, 2015, and before January 1, 2026:

(A) 2.0 cents per cigarette shall be deposited to the credit of the Hawaii cancer research special fund, established pursuant to section 304A-2168, for research and operating expenses and for capital expenditures;

(B) 1.125 cents per cigarette, but not more than $7,400,000 in a fiscal year, shall be deposited to the credit of the trauma system special fund established pursuant to section 321-22.5;

(C) 1.25 cents per cigarette, but not more than $8,800,000 in a fiscal year, shall be deposited to the credit of the community health centers special fund established pursuant to section 321-1.65; and

(D) 1.25 cents per cigarette, but not more than $8,800,000 in a fiscal year, shall be deposited to the credit of the emergency medical services special fund established pursuant to section 321-234; and

(7) Section 245-3(a)(12), after December 31, 2025, and [~~thereafter:~~] before January 1, 2027:

(A) 4.0 cents per cigarette shall be deposited to the credit of the Hawaii cancer research special fund, established pursuant to section 304A-2168, for research and operating expenses and for capital expenditures; provided that, until June 30, 2030, of each amount deposited under this paragraph to the credit of the Hawaii cancer research special fund, 4.0 cents per cigarette shall be used exclusively for debt service of capital expenditures and building maintenance; provided further that beginning July 1, 2030, of each amount deposited under this paragraph to the credit of the Hawaii cancer research special fund, 2.0 cents per cigarette shall be used

exclusively for debt service of capital expenditures and building maintenance;

(B) 1.125 cents per cigarette, but no more than $7,400,000 in a fiscal year, shall be deposited to the credit of the trauma system special fund established pursuant to section 321-22.5;

(C) 1.25 cents per cigarette, but no more than $8,800,000 in a fiscal year, shall be deposited to the credit of the community health centers special fund established pursuant to section 321-1.65; and

(D) 1.25 cents per cigarette, but no more than $8,800,000 in a fiscal year, shall be deposited to the credit of the emergency medical services special fund established pursuant to section 321-234[~~.~~];

(8) Section 245-3(a)(12), after December 31, 2026, and thereafter:

(A) 4.0 cents per cigarette shall be deposited to the credit of the Hawaii cancer research special fund, established pursuant to section 304A-2168,

for research and operating expenses and for capital expenditures; provided that, until June 30, 2030, of each amount deposited under this paragraph to the credit of the Hawaii cancer research special fund, 4.0 cents per cigarette shall be used exclusively for debt service of capital expenditures and building maintenance; provided further that beginning July 1, 2030, of each amount deposited under this paragraph to the credit of the Hawaii cancer research special fund, 2.0 cents per cigarette shall be used exclusively for debt service of capital expenditures and building maintenance;

(B) 1.125 cents per cigarette, but no more than $7,400,000 in a fiscal year, shall be deposited to the credit of the trauma system special fund established pursuant to section 321-22.5; and

(C) 1.25 cents per cigarette, but no more than $8,800,000 in a fiscal year, shall be deposited to the credit of the community health centers

special fund established pursuant to section 321-1.65.

The department shall provide an annual accounting of these dispositions to the legislature."

PART IV

SECTION 5. Statutory material to be repealed is bracketed and stricken. New statutory material is underscored.

SECTION 6. This Act shall take effect on July 1, 3000; provided that sections 2 to 4 of this Act shall take effect on December 31, 2026.

H.B. NO. 1966 H.D. 1 S.D. 1

Report Title:
Emergency Medical Services Special Fund; Billable Emergency Medical Services; Allowable Uses

Description:
Amends the Emergency Medical Services Special Fund by authorizing the deposit of revenues from billable emergency medical services. Amends the composition and allowable uses of the special fund. Establishes a cap on the unencumbered and unexpended balance in the special fund. Exempts expenditures from the special fund from chapters 103D and 103F, HRS. Discontinues the allocation of cigarette tax revenues to the special fund beginning 1/1/2027. Effective 7/1/3000. (SD1)

The summary description of legislation appearing on this page is for informational purposes only and is not legislation or evidence of legislative intent.

HOUSE OF REPRESENTATIVES
THIRTY-THIRD LEGISLATURE, 2025
STATE OF HAWAII

H.B. NO. 816 H.D. 1 S.D. 1

A BILL FOR AN ACT

RELATING TO EMERGENCY RESPONSE.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The legislature finds that Hawaii continues to face a growing opioid crisis, with rising rates of overdose and opioid-related emergency department visits. Paramedics are often the first health care providers to encounter these patients, providing a critical opportunity to connect them to evidence-based treatment.

The legislature further finds that national data, including a 2023 study published in the Annals of Emergency Medicine, demonstrate that the administration of buprenorphine by trained emergency medical services personnel following naloxone can significantly reduce withdrawal symptoms and increase the likelihood of patients engaging in opioid use disorder treatment within thirty days.

The legislature recognizes the department of health's concern that it is essential to ensure that patients who receive buprenorphine in the field have access to follow-up treatment within twenty-four to forty-eight hours. The legislature

therefore intends to establish a two-year phased pilot program, limited initially to paramedics in one county with a population of one hundred thousand or less.

The purpose of this Act is to:

(1) Authorize paramedics, under department of health-approved protocols, to administer buprenorphine following naloxone in cases of suspected opioid overdose;

(2) Require the department of health to verify and designate treatment centers that can accept patients within twenty-four to forty-eight hours of an emergency medical services encounter;

(3) Implement the program as a phased pilot program beginning in one county with a population of one hundred thousand or less; and

(4) Require the department to evaluate the program and report outcomes to the legislature.

SECTION 2. Section 329E-3, Hawaii Revised Statutes, is amended to read as follows:

"**[~~[~~]§329E-3[~~]~~] Opioid antagonist administration; emergency personnel and first responders.** (a) Beginning on January 1,

2017, every emergency medical technician licensed and registered in [~~Hawaii~~] the State and all law enforcement officers, firefighters, and lifeguards shall be authorized to administer an opioid antagonist as clinically indicated.

(b) Beginning July 1, 2026, in a county with a population of one hundred thousand or less, paramedics licensed in the State may administer buprenorphine, under protocols established by the department of health and approved by the chief of the emergency medical services and injury prevention branch of the department of health, after administering an opioid antagonist to a patient experiencing an opioid-related overdose; provided that:

(1) The paramedic has completed training in opioid withdrawal assessment and buprenorphine administration approved by the department of health;

(2) The patient is alert, has regained decision-making capacity, and meets the clinical criteria for buprenorphine field initiation, as defined by the protocol;

(3) A same-day or next-day referral is made to a designated treatment provider authorized by the department of health; and

(4) Documentation of the administration, withdrawal assessment, and referral is submitted to the department of health for program evaluation.

(c) The department of health shall adopt rules pursuant to chapter 91 to:

(1) Establish clinical and operational protocols for administration of buprenorphine in the field by paramedics;

(2) Designate and maintain a list of treatment centers and providers capable of accepting referred patients within twenty-four to forty-eight hours; and

(3) Ensure coordination between emergency medical services, emergency departments, and substance use disorder treatment programs."

SECTION 3. The department of health shall:

(1) Implement a two-year phased pilot program to implement section 329E-3(b) and (c), Hawaii Revised Statutes, beginning in a county with a population of one hundred

thousand or less and may expand statewide as additional treatment resources become available;

(2) Provide or contract for the training of paramedics in the assessment, administration, and documentation of buprenorphine field initiation; and

(3) Submit a report to the legislature no later than twenty months after the pilot program's start date, which shall contain an evaluation of:

(A) The number of patients treated under the pilot program;

(B) Withdrawal symptom outcomes;

(C) Rates of engagement with follow-up treatment;

(D) Any operational challenges or recommendations for statewide expansion; and

(E) Any proposed legislation.

SECTION 4. There is appropriated out of the general revenues of the State of Hawaii the sum of $ or so much thereof as may be necessary for fiscal year 2026-2027 for the department of health to implement the pilot program pursuant to this Act.

The sum appropriated shall be expended by the department of health for the purposes of this Act.

SECTION 5. Statutory material to be repealed is bracketed and stricken. New statutory material is underscored.

SECTION 6. This Act shall take effect upon its approval; provided that section 4 shall take effect on July 1, 2026; provided further that on June 30, 2028, sections 2 and 3 of this Act shall be repealed and section 329E-3, Hawaii Revised Statutes, shall be reenacted in the form in which it read on the day prior to the effective date of this Act.

H.B. NO. 816 H.D. 1 S.D. 1

Report Title:
Hawaii State Association of Counties Package; DOH; Paramedics; Buprenorphine; Opioid Overdose; Pilot Program; Report; Appropriation

Description:
Authorizes licensed paramedics in a county with a population of 100,000 or less to administer buprenorphine after administration of an opioid antagonist in cases of opioid overdoses, under certain conditions. Requires the Department of Health to implement a two-year phased pilot program beginning in one county with a population of 100,000 or less and authorizes expansion of the program statewide as additional treatment resources become available. Requires a report to the Legislature evaluating program outcomes. Appropriates funds. Sunsets 6/30/2028. (SD1)

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THE SENATE
THIRTY-THIRD LEGISLATURE, 2026
STATE OF HAWAII

S.B. NO. 2934 S.D. 1 H.D. 1

A BILL FOR AN ACT

RELATING TO AMBULANCES.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The legislature finds that it is of critical importance to the State to ensure its residents have prompt access to primary health care. The legislature further finds that in the county of Maui, ambulance services are being provided through a private contract with American Medical Response with state funding, and that a total of nine ambulances are based at various state, county, and private facilities throughout the county--specifically, one unit each in east Maui, Kahului, and Wailuku, and two units each in south Maui, west Maui, and upcountry Maui.

The legislature also finds that because of the population growth in central Maui, residents in the area would greatly benefit from the addition of an advanced life support ambulance. The legislature further finds that an advanced life support ambulance will help reduce death and disability among residents and visitors to central Maui by providing timely responses to

911 calls, which is critical to increasing the likelihood of successful outcomes for injured or sick individuals.

The purpose of this Act is to appropriate funds to purchase one advanced life support ambulance and related equipment to be based in the central Maui area of the county of Maui and fund pay-related personnel costs for state-certified emergency medical services personnel.

SECTION 2. There is appropriated out of the general revenues of the State of Hawaii the sum of $ or so much thereof as may be necessary for fiscal year 2026-2027 for the purchase of one advanced life support ambulance and related equipment to be based in the central Maui area of the county of Maui, and to fund pay-related personnel costs for one state-certified emergency medical technician and one state-certified paramedic.

The sum appropriated shall be expended by the department of health for the purposes of this Act.

SECTION 3. This Act shall take effect on July 1, 3000.

S.B. NO. 2934 S.D. 1 H.D. 1

Report Title:
DOH; Emergency Medical Services; Advanced Life Support Ambulance; Central Maui; Appropriation

Description:
Appropriates funds to the Department of Health to purchase one advanced life support ambulance and related equipment to be based in Central Maui and fund pay-related personnel costs for state-certified emergency medical services personnel. Effective 7/1/3000. (HD1)

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THE SENATE
THIRTY-THIRD LEGISLATURE, 2026
STATE OF HAWAII

S.B. NO. 3203 H.D. 1

A BILL FOR AN ACT

RELATING TO AIR MEDICAL SERVICES.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The legislature finds that air medical services are an essential component of Hawaii's emergency medical systems of care, health care infrastructure, and all-hazards disaster preparedness. Hawaii's geographic isolation, multi-island structure, rural communities, and limited access to specialty and tertiary care on neighbor islands make timely air medical transport critical to providing equitable access to lifesaving care.

The legislature further finds that demand for emergency aeromedical and interfacility air medical transport services has increased substantially over the past decade, with annual flight volumes exceeding pre-2020 levels by more than one thousand transports. However, statutory authority, governance structures, and department of health staffing dedicated to air medical services have not kept pace, resulting in fragmented coordination, prolonged transport times, and inefficient systems.

The legislature recognizes that the emergency medical services and injury prevention systems branch of the department of health lacks permanent, dedicated air medical staffing to support statewide coordination, regulatory oversight, quality improvement, data governance, and disaster readiness.

The legislature further finds that statewide air medical performance data demonstrate persistent delays that exceed nationally recognized benchmarks for rural and remote emergency care, reflecting structural gaps in coordination and governance rather than performance issues with isolated providers.

The legislature acknowledges that nationally recognized best practices emphasize centralized governance, clinically driven coordination, continuous quality improvement, and integration with trauma, stroke, cardiac, acute care, emergency medical systems, and disaster response. In an island state, air medical services are a core public health, public safety, and emergency preparedness function.

Accordingly, the purpose of this Act is to establish a statewide air medical services program.

SECTION 2. Chapter 321, Hawaii Revised Statutes, is amended by adding a new section to part XVIII to be appropriately designated and to read as follows:

"**§321- Statewide air medical services program; staffing and authority.** (a) There is established within the department's emergency medical services and injury prevention system branch a statewide air medical services program to provide governance, coordination, oversight, quality improvement, and disaster readiness for the State's emergency aeromedical and interfacility air medical transport services.

(b) The department shall establish the following permanent positions, who shall be exempt from chapter 76, to carry out the purposes of this section:

(1) A state air medical director, who shall be a physician licensed in the State with experience in emergency medicine, trauma care, or critical care transport, who shall provide statewide clinical and medical oversight of air medical services;

(2) A state air medical program manager, who shall be responsible for program administration; policy development; system planning; interagency

coordination; and integration of air medical services with emergency medical services, trauma systems, and healthcare facilities; and

(3) An air medical coordinator, who shall support operational coordination, data oversight, compliance monitoring, performance improvement activities, and coordination with licensed air medical providers, county emergency medical services agencies, hospitals, and emergency management partners.

(c) The positions established pursuant to subsection (b) shall be permanent and recurring and shall not be contingent upon temporary programs, pilot projects, or time-limited funding.

(d) The statewide air medical services program, under the direction of the director of health, may:

(1) Provide statewide clinical governance and medical direction for emergency aeromedical and interfacility air medical services;

(2) Develop, adopt, and implement statewide air medical policies, procedures, and clinical protocols consistent with nationally recognized standards;

(3) Coordinate emergency air medical and interfacility air medical transport services across counties to improve timeliness, health equity, and access to care;

(4) Oversee the participation of licensed air medical providers in data-based quality improvement programs;

(5) Support statewide disaster preparedness, response, and recovery activities involving air medical transport, including multi-island and mass-casualty incidents; and

(6) Coordinate with county emergency medical services agencies, hospitals, trauma centers, stroke centers, acute care facilities, emergency management agencies, and other public and private partners.

(e) As a condition of licensure, all air medical providers operating within the State shall cooperate with and participate in statewide air medical coordination, data reporting, and quality improvement activities as required by the department.

(f) The statewide air medical services program shall coordinate with the state emergency medical services advisory committee and may establish advisory or quality improvement

committees as necessary to fulfill its statutory responsibilities.

(g) The department shall establish and assess annual air medical ambulance licensure and accreditation fees for all air medical providers operating within the State. The fees shall be reasonable, non-refundable, and sufficient to fully cover the costs associated with:

(1) Administration and oversight of the statewide air medical services program;

(2) Licensure, accreditation verification, compliance monitoring, and enforcement activities;

(3) Statewide air medical coordination and quality improvement initiatives;

(4) Data collection, analysis, and reporting requirements; and

(5) Coordination and integration with state and county emergency management, emergency medical services, and disaster preparedness partners.

The fees collected pursuant to this subsection shall be deposited into the emergency medical services special fund established pursuant to section 321-234 and shall be used solely

for the purposes of administering and supporting the statewide air medical services program and staff, and its emergency management coordination functions.

(h) The department may adopt rules pursuant to chapter 91 necessary to implement this section."

SECTION 3. Section 321-234, Hawaii Revised Statutes, is amended by amending subsection (b) to read as follows:

"(b) The moneys in the special fund shall be distributed as follows:

(1) Beginning with fiscal year 2021-2022, $3,500,000 shall be distributed each fiscal year to a county operating a county emergency medical services system pursuant to part XI of chapter 46 for the operation of that system; [~~and~~]

(2) Fees remitted pursuant to section 321- shall be used solely for the purposes of administering and supporting the statewide air medical services program and staff, and its emergency management coordination functions; and

[~~(2)~~] (3) The remainder shall be distributed to the department for operating the system established

pursuant to this chapter, including enhanced and expanded services, and shall not be used to supplant funding for emergency medical services authorized prior to July 1, 2004."

SECTION 4. Statutory material to be repealed is bracketed and stricken. New statutory material is underscored.

SECTION 5. This Act shall take effect on July 1, 3000.

S.B. NO. 3203 H.D. 1

Report Title:
DOH; State Emergency Medical Services System; Statewide Air Medical Services Program; Emergency Medical Services Special Fund

Description:
Establishes the Statewide Air Medical Services Program within Establishes the Statewide Air Medical Services Program within the Department of Health, Emergency Medical Services and Injury Prevention Systems Branch to coordinate and strengthen air medical services. Establishes an air medical director, an air medical program manager, and an air medical coordinator. Specifies that annual licensure and accreditation fees are to be deposited into the Emergency Medical Services Special Fund for costs of the program. Effective 7/1/3000. (HD1)

The summary description of legislation appearing on this page is for informational purposes only and is not legislation or evidence of legislative intent.

pursuant to this chapter, including enhanced and expanded services, and shall not be used to supplant funding for emergency medical services authorized prior to July 1, 2004."

SECTION 4. Statutory material to be repealed is bracketed and stricken. New statutory material is underscored.

SECTION 5. This Act shall take effect on July 1, 3000.

Emergency Medical Services Advisory Committee (EMSAC)

Permitted Interaction Group (PIG) Report for Overview Emergency Technician (EMT) and Mobile Intensive Care Technician Standing Order Tiers.

The group included the following:

EMSAC members were: Dr. Thinh Nguyen, Dr. Kyle Perry, CPT. Michael Lam and Ms. Maren Anka

Resource persons were: Chief Jeff Zuckernick (Honolulu EMS), Chief Korey Chock (Honolulu EMS), Chief Kilipaki Kanae (Hawaii County Fire), Dr. Terrence Jones (Hawaii Medical Director), Dr. Ronald Kuroda (Oahu Medical Director), Dr. Elizabeth Char (Maui Medical Director), CPT Aaron Mitchell (Hawaii County Fire), Dr. Eric Vaughan (Kauai Medical Director)

DOH-EMSIPB support: Mr. Douglas Asano (Program Specialist)

RECOMMENDATION:

Adoption of a tiered standing order system:

1. **EMT**
2. **EMT- Advanced/Intermediate**
3. **EMT- Paramedic**

See attachments regarding examples of this Tiered system.

1) **Massachusetts Office of Emergency Medical Services**
2) **Navy Emergency Medical Services Treatment Protocols**

MASSACHUSETTS
OFFICE OF EMERGENCY MEDICAL SERVICES
DEPARTMENT OF PUBLIC HEALTH

EMERGENCY MEDICAL SERVICES PRE-HOSPITAL STATEWIDE TREATMENT PROTOCOLS

OFFICIAL VERSION **2018.1**

Complete Version

January 29, 2018

MASSACHUSETTS
OFFICE OF EMERGENCY MEDICAL SERVICES
DEPARTMENT OF PUBLIC HEALTH

Commonwealth of Massachusetts Department of Public Health

Bureau of Healthcare Safety and Quality

Office of Emergency Medical Services

Statewide Treatment Protocols – Version 2018.1

Legend	Definition
FR	First Responder (FR)-- Found only in protocols 2.2A, 2.2P, 2.9, and 2.14
E	Emergency Medical Technician (EMT)
A	Advanced Emergency Medical Technician (AEMT)
P	Paramedic
	CAUTION – Red Flag topic
	Medical Control Orders
	Pediatric-specific protocol

Clinical notes boxes show important assessment or treatment considerations.

EMT level protocols are designated by colors (see above), and labels, and EMTs are responsible for providing Routine Care to all patients, and for their level of care, and those above on the protocol page.

These protocols are developed and approved by the Department of Public Health, based on the recommendations of Emergency Medical Care Advisory Board (EMCAB) and its Medical Services Committee (MSC). For the latest corrections or addenda, see the OEMS website at http://www.mass.gov/dph/oems

These are Massachusetts Statewide Treatment Protocols; they are the standard of EMS patient care in Massachusetts.

Questions and comments should be directed to:
Massachusetts Department of Public Health
Office of Emergency Medical Services
99 Chauncy St. 11th Floor
Boston, MA 02111

Massachusetts Pre-Hospital Statewide Treatment Protocols 2018.1

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SECTION 1:

GENERAL PATIENT CARE

Statewide Treatment Protocols
Version 2018.1

1.0 Routine Patient Care

NOTE: This protocol applies to <u>all</u> EMS calls.

<u>RESPOND TO SCENE IN A SAFE MANNER:</u>

- Review dispatch information.
- Use lights and sirens and/or pre-emptive devices when responding as appropriate per emergency medical dispatch information and local guidelines.

<u>SCENE ARRIVAL AND SIZE-UP:</u>

- Utilize Body Substance Isolation, as appropriate.
- Scene safety, bystander safety.
- Environmental hazards assessment.
- Number of patients.
- Determine need for additional resources.
- Utilize Mass Casualty Incident (MCI) and/or Incident Command System (ICS) procedures as necessary.
- Determine mechanism of injury/illness.

<u>PATIENT APPROACH:</u>

- The presumption is that patients requesting EMS services should not walk to the stretcher or ambulance, but should be moved using safe and proper lifts and devices. Specifically the condition of patients with cardiac, respiratory, or neurological conditions, and of patients with unstable vital signs, can be worsened by exertion, so patient effort in moving to the stretcher and ambulance should be minimized. Unique circumstances and deviations from these principles must be clearly described in the Patient Care Report (PCR) and the service must have an internal performance improvement (PI) mechanism to review each case.
- <u>DO NOT</u> allow sick or injured patients to walk or otherwise exert themselves. Use safe and proper lifts and carries and appropriate devices to extricate patients to the ambulance stretcher.
- Begin assessment and care at the side of the patient; avoid delay.
- Bring all necessary equipment to the patient in order to function at your level of certification and up to the level of the ambulance service license.
- Request and use available advanced life support (ALS) – paramedic resources in accordance with these protocols, initiate transport as soon as possible, with or without ALS.
- Activate air-medical transport early and if applicable to do so.
- Determine if a valid MOLST order or Comfort Care/DNR Verification form is in place, and act accordingly.

<u>ASSESSMENT AND TREATMENT PRIORITIES</u>

- Determine unresponsiveness, absence of breathing and pulselessness; Initiate high quality CPR with <u>minimal interruptions</u> in chest compressions for patients found to be in cardiac arrest and in the absence of a MOLST/CC/DNR.
- Determine patient's hemodynamic stability, symptoms, level of consciousness, ABCs, vital signs.
- Maintain an open airway and assist ventilations as needed.
- Apply the cardiac monitor and obtain a 12-lead ECG tracing as soon as possible when clinically appropriate and within your scope of practice.
- Administer supplemental oxygen using the appropriate delivery device, if indicated.
- Within your scope of practice, obtain peripheral access via intravenous (IV) or intraosseous (IO) on all patients exhibiting signs and symptoms consistent with shock or who are hemodynamically compromised, or have the potential to become compromised. For pediatric patients, a 20mL/kg fluid bolus if applicable.
- When obtaining IO access in patients able to perceive pain, in adults, administer **<u>Lidocaine</u>** 40mg over two minutes, followed by a 10mL fluid bolus over five seconds. In pediatrics, 1mg/kg to a maximum of 20mg.

Protocol Continues

Protocol Continues

ASSESSMENT AND TREATMENT PRIORITIES (CONTINUED)

- Patients who may be in need of medications for conditions such as but not limited to nausea or pain should also have IV access established if possible to do so.
- In a critical patient with no other vascular access, if trained to do so and with concurrent on-line medical control order, Paramedics may access a Peripherally Inserted Central Catheter (PICC) line (not any other central access) in order to administer medications.
- Consider the use of advanced airway interventions as appropriate and if trained to do so.
- Ventilation rates are to be titrated to goal ETCO2 recommendations.
- Use quantitative, recordable waveform capnography for all patients with advanced airway interventions and consider its use with all respiratory compromised conditions.
- The capnography waveform must be recorded on all intubated patients and clinically significant data attached to the patient care report for the receiving facility. In patients who are not in cardiac arrest, all efforts should be made to avoid end-tidal carbon dioxide levels that have been shown to be detrimental and to ensure quality ventilation and oxygenation. In general this means that capno-ETCO2 values should be kept between 35-40 mm Hg in these patients; specific exceptions should be discussed with online medical control.
- At a minimum, monitor and document vital signs every 15 minutes on stable patients and every 5 minutes for patients with critical conditions.
- Obtain a thorough assessment (O-P-Q-R-S-T) related to the event.
- Obtain a complete medical history (S-A-M-P-L-E).
- Obtain venous blood samples according to the receiving hospital policies.
- Obtain additional field diagnostic testing when clinically indicated, and if available; (not limited to) blood glucose, pulse oximetry, temperature, carbon monoxide, stroke scale.
- Administer medications in accordance with the specific patient condition and scope of practice.
- Contact on-line Medical Control for all procedures outside the provisions of standing orders, which may include repeat doses of medications within the standing orders.
- Follow service or regional policies for all radio or communication failures.
- If indicated, contact the receiving hospital to provide a clear and concise report on the patient's condition, all interventions, findings, and estimated time of arrival to the receiving department.
- Continually reassess all patients, especially after any interventions and/or medication administration.
- If no palpable, distal pulse is present following suspected extremity fracture, position injured extremity in correct anatomic position, and apply gentle traction along the axis of the extremity distal to the injury until the distal pulse is palpable and immobilize in place. Note: This does not apply to dislocations.
- EMS crews should not begin or administer interventions that would require medical assessment if a patient is being brought to an environment where formal medical assessment will not be provided; for example, giving IV narcotics to a patient who is about to be left at home.

Protocol Continues

Protocol Continues

AMBULANCE STRETCHER OPERATIONS

- Operate the ambulance stretcher in accordance with your service training and manufacturer's specifications at all times.
- When moving a patient on the ambulance stretcher, adjust the height of the ambulance stretcher from the "load position" to a safe position for travel.
- All EMTs moving the patient must keep both hands on the ambulance cot when elevated or in motion. Properly secure all patients using the required straps, including the over-the-shoulder harness, hip and leg restraining straps.
- If patient care requires the removal of any of the restraining straps, re-secure them as soon as practical to do so.
- Pediatric patients are to be transported in a properly secured child transport device/seat if spinal injury is not suspected (See 7.4 Pediatric Transport for more).

PATIENT CARE REPORTS AND DATA COLLECTION

- The EMS System regulations require an accurate, concise and properly documented patient care report to be completed at the time of the call or as soon as practicable afterwards for all patient encounters. Pertinent data must be left at the receiving hospital at the time of transport. The regulations also require that patient care reports include the minimum required data elements, as defined by the administrative requirement (A/R 5-403).
- Clinically relevant data must be conveyed to a nurse, physician assistant or physician before leaving the receiving facility.
- The patient care report(s) must include clinically relevant ECG tracings, 12-lead tracings and waveform capnography tracings when obtained.
- Additional data elements may be collected at the request of your Affiliate Hospital Medical Director. This data may pertain to, but is not limited to; trauma, cardiac arrest, stroke and infectious disease processes.

MEDICATION USE AND STORAGE

- The adult medication reference list includes all those medications that are utilized in both the Statewide Treatment Protocols.
- Medications may be administered in divided doses up to the maximum noted in protocol.
- The medication lists are to be considered a reference list only and may contain information and uses not intended for prehospital administration.
- Inclusion of this information does not imply approval of and use of that medication unless specifically stated in the applicable protocol.
- Securely maintain and store all medications and fluids at the appropriate temperatures as designated by manufacturer's recommendations and in accordance with all Drug Control Program regulations.
- Pharmaceutical shortages and supply chain issues have become more frequent. The Department will issue Advisories addressing these shortages and outlining alternative therapies when needed.
- All EMTs and service providers must adhere to all advisories, memos and administrative requirements issued by the Department regardless of the topic.
- Medications administered by nasal atomizer (IN) should be with no more than 1mL of volume per naris. If additional medication must be administered, wait one minute before repeating IN.
- Avoid hyperoxygenation, oxygen administration should be titrated to patient condition, and administered with evidence of hypoxemia, dyspnea, or an SpO2 <94%, especially in the presence of a suspected CVA/TIA or ACS.

Protocol Continues

Protocol Continues

MEDICATION USE AND STORAGE (CONTINUED)

- IV pumps are the preferred method of administering vasoactive medications. **Norepinephrine** must be administered via pump, **Dopamine** may be used until pump available. Those providers with the equipment and training may begin using pumps immediately.

EXCEPTION PRINCIPLE OF THE PROTOCOLS

- The Statewide Treatment Protocols represent the best efforts of the EMS physicians to pre-hospital providers of the Commonwealth and reflect the current state of out-of-hospital *emergency medical care*, and as such should serve as the basis for such treatment.
- On occasion, good medical practice and the needs of patient care may require deviations from these protocols, as no protocol can anticipate every clinical situation. In those circumstances, EMS personnel deviating from the protocols should only take such actions as allowed by their training **and** only in conjunction with their on-line medical control physician.
- Any such deviations must be reviewed by the appropriate local medical director, but for regulatory purposes are considered to be appropriate actions, and therefore within the scope of the protocols, unless determined otherwise on Department review by the State EMS Medical Director.

ADVANCED AIRWAY CONFIRMATION

- Advanced EMT and Paramedic treatment protocols require that EMTs provide advanced airway management when clinically indicated. Specific training and airway adjuncts are necessary and require training in accordance with scope of practice and service specific devices.
- Endotracheal tube insertion and supraglottic airway devices such as the King LT are commonly used in patients that require advanced airway management. Airway devices must be secured, with depth noted as appropriate.
- All EMT-Paramedics must be able to insert NGT / OGT for those unconscious post-intubation patients who need gastric decompression.
- The standard of care requires specific methods of verification to be used including capnography and at least two of the following;- auscultation, colorimetric readings, visualization of the chords, the presence of condensation, and other clinical signs that the advanced airway is positioned correctly.
- All patients with an advanced airway in place must have recordable waveform capnography documented.
- Documentation on the patient care report must include at least three evidence based methods of verification of tube placement (one being capnography) and must include at least three separate times in which verification was completed, including verification of tube placement at the time of arrival at the receiving department and staff.

Protocol Continues

Protocol Continues

TRANSPORT DECISION

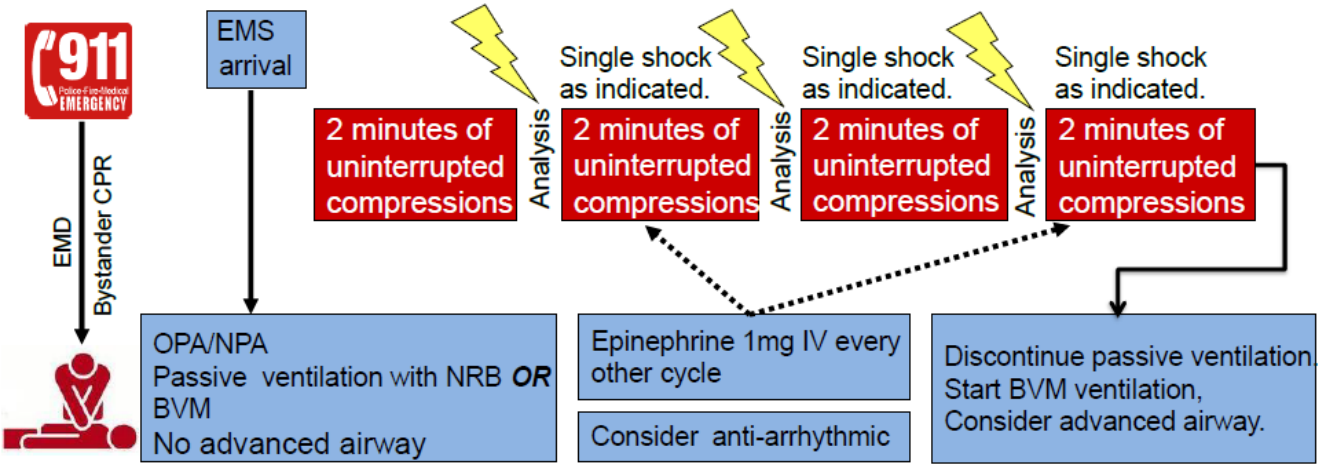
- Transport to the nearest appropriate treatment facility as defined in EMS regulations. In rare circumstances, delayed transport may occur when necessary treatment cannot be performed during transport.
- Request and use available Advanced Life Support (Paramedic) backup or intercept whenever clinically indicated and in accordance with these treatment protocols.
- EMS personnel shall make decisions about the destination hospital in accordance with the EMS System regulations and Department-approved point-of-entry (POE) plans.
- There are currently Department-approved condition-specific POE plans for trauma, stroke and STEMI, as well as a POE for a patient's other condition or need, not covered in the specific POE plans.
- Department-approved regional POE plans for trauma; stroke and STEMI identify specific hospitals to be used. The EMT must be aware of all these POE plans affecting his/her service when choosing the appropriate hospital destination.
- EMS personnel may call medical control if they have a question about POE.
- Notify receiving facility as early as possible.
- Use of lights and sirens should be justified by the need for immediate medical intervention that is beyond the capabilities of the ambulance crew using available supplies and equipment.

CONTINUOUS QUALITY IMPROVEMENT (CQI)

- The Department's Hospital Licensure regulations for medical control service (105 CMR 130.1501-1504) require that hospital physicians providing medical direction must be knowledgeable in the communication system and its usage and must know the Statewide Treatment Protocols for each level of EMT.
- Medical directors for ambulance services must take an active role in reviewing clinical performance and competency of its EMTs at all levels in the delivery of patient care and in overseeing and conducting the ambulance service's CQI process.
- Ambulance services with their medical directors must develop and implement a comprehensive and dynamic quality assurance program in accordance with the ambulance service's affiliation agreement.
- An ambulance service and medical director that uses certain optional diagnostic and treatment modalities must do so in accordance with Section 6: Medical Director Options and its program specific CQI requirements. The affiliate medical director is responsible for overseeing of such programs and ensuring the ambulance service meets the CQI requirements and the Department's data reporting requirements.

High Quality CPR - Adult 1.1

- Perform 2 minutes cycles of uninterrupted chest compressions
- Interrupt chest compressions only after each 2 minute cycle
- Ventilation / Oxygenation options:
  - For arrests of suspected cardiac etiology
    - Passive insufflation – apply high flow oxygen via NRB OR
    - BVM ventilation – 1 breath every 6 seconds/10 breaths per minute without interrupting chest compressions.
  - For arrest of non-cardiac etiology, including respiratory, trauma and suspected overdoses:
    - BVM ventilation – 1 breath every 6 seconds/10 breaths per minute without interrupting chest compressions.



EMT STANDING ORDERS

E

- 1.0 Routine Patient Care -with focus on HQCPR
- Immediate chest compressions at a rate of 100-120 per minute
- Use AED as soon as possible with minimal interruption of chest compressions
- Continue 2 minute cycles of uninterrupted chest compressions followed by AED analysis and shock for 4 cycles (8 minutes)
- Place an oral or nasal airway
- Ventilation / oxygenation options during 4 cycles (8 minutes):
  - Apply high flow oxygen via NRB, OR
  - BVM ventilation 1 breath every 6 seconds/10 breaths per minute during recoil and without interrupting compressions
- After 4 cycles (8 MINUTES):
  - Continue 2 minute cycles of uninterrupted chest compressions
  - If passive insufflation was used, switch to BVM ventilation.

Protocol Continues

1.1 High Quality CPR - Adult

Protocol Continues

ADVANCED EMT STANDING ORDERS

A

- Consider placement of a supraglottic airway device
- Place IV/IO without interrupting chest compressions

PARAMEDIC STANDING ORDERS

P

- If utilizing a BVM, monitor quantitative waveform capnography throughout resuscitation to assess CPR quality and to monitor for signs of return of spontaneous circulation (ROSC)
- Provide manual defibrillation as indicated after each 2 minute cycle
- After 4 cycles (8 minutes):
  - Consider endotracheal intubation or use an alternative airway without interrupting chest compressions

- If authorized and trained by AHMD, Paramedics may use mechanical ventilators in rate control mode with the following settings:
- Rate of 8-12 breaths per minute
- Tidal volume 300-500mL
- Start at FiO_2 1.0 (100%) then titrate to maintain SpO_2 > 94% (90% for COPD patients)
- Relief pressure 45-60 cmH_2O

Paramedics may utilize mechanical ventilator following the initiation of respiratory component at least 8 minutes after start of resuscitation even if ROSC has occurred.

PEARLS:

- It is expected, unless special circumstances are present, initial 8 minutes of resuscitation will be performed on scene.
- Early CPR and defibrillation are the most effective therapies for cardiac arrest care.
- Minimize interruptions in chest compression, as pauses rapidly return the blood pressure to zero and stop perfusion to the heart and brain.
- **Recognizing the goal of immediate uninterrupted chest compressions, consider delaying application of mechanical CPR devices until after the first four cycles (8 minutes). If applied during the first 4 cycles, the goal is to limit interruptions. Mechanical devices should only be used by services that are practiced and skilled at their application.**
- Switch compressors at least every two minutes to minimize fatigue.
- Perform chest compressions while defibrillator is charging and resume compressions immediately after the shock is delivered.

SECTION 2:

MEDICAL PROTOCOLS

Statewide Treatment Protocols
Version 2018.1

2.1 Adrenal Insufficiency/Adrenal Crisis Adult & Pediatric

Medical Protocol 2.1

EMT STANDING ORDERS – ADULT & PEDIATRIC

E

- 1.0 Routine Patient Care
- Identify and treat the underlying condition.
- Consider paramedic intercept.

ADVANCED EMT STANDING ORDERS - ADULT & PEDIATRIC

A

- Obtain vascular access, if appropriate.

PARAMEDIC STANDING ORDER – ADULT & PEDIATRIC

P

Stress Dose:

- Adult: History of adrenal insufficiency; administer **hydrocortisone** 100mg IV/IO/IM or **methylprednisolone** 125mg IV/IO/IM.
- Pediatric: History of adrenal insufficiency; administer **hydrocortisone** 2mg/kg, to a maximum of 100mg IV/IM/IO or **methylprednisolone** 2mg/kg to a maximum dose of 125mg IV/IM/IO.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications
- In patients who continue demonstrating the following signs and symptoms, consult medical control for repeat stress dose orders:
  - Nausea, vomiting, weakness, dizzy, abdominal pain, muscle pain, dehydration, hypotension, tachycardia, fever, mental status changes.
- Additional Considerations:
  - Aggressive volume replacement therapy.
  - Treat other conditions according to specific protocols.
  - Normalize body temperature.

Adrenal insufficiency results when the body does not produce the essential life-sustaining hormones cortisol and aldosterone, which are vital to maintaining blood pressure, cardiac contractility, water, and salt balance.

Chronic adrenal insufficiency can be caused by a number of conditions:

- Congenital or acquired disorders of the adrenal gland.
- Congenital or acquired disorders of the pituitary gland.
- Regular use of steroids (COPD, asthma, rheumatoid arthritis, and transplant patients).

Acute adrenal insufficiency can result in refractory shock or death in patients on a maintenance dose of hydrocortisone (SoluCortef)/prednisone who experience illness or trauma and are not given a stress dose and, as necessary, supplemental doses of hydrocortisone.

A "stress dose" of hydrocortisone should be given to patients with known chronic adrenal insufficiency who have the following illnesses/injuries:

- Shock (any cause).
- Fever >100.4°F and ill-appearing.
- Multi-system trauma.
- Drowning.
- Environmental hyperthermia or hypothermia.
- Multiple long-bone fractures.
- Vomiting/diarrhea accompanied by dehydration.
- Respiratory distress.
- 2nd or 3rd degree burns >5% BSA
- RSI (Etomidate may precipitate adrenal crisis).
- Hypoglycemia

Allergic Reaction/Anaphylaxis Adult

2.2A

FIRST RESPONDER/EMT STANDING ORDERS

FR/E

- 1.0 Routine Patient Care

MILD Distress

- Monitor for severe distress.

SEVERE Distress

- **Epinephrine** auto-injector 0.3mg or IM in accordance with Protocol 6.6 Check and Inject Epinephrine for BLS Providers.
- 2nd dose may be administered in 5 minutes if necessary
- FRs and EMTs must contact Medical Control if greater than 65 yrs.

ADVANCED EMT STANDING ORDERS

A

- **Albuterol** 2.5mg via nebulizer. Repeat every 5 minutes up to 4 doses.
- If approved, **epinephrine** 1:1,000 0.3mg IM-ONLY.
  - Must be administered in accordance with criteria listed in A1 Adult Medication Reference.

PARAMEDIC STANDING ORDERS

P

- **Hydrocortisone** 100 mg IV/IO/IM, or **methylprednisolone** 125 mg IV/IO/IM.
- Mild Distress:
  - **Diphenhydramine** 25-50 mg IV/IO/IM.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications.
- **Epinephrine 1:10,000**: 0.1 mg – 0.5 mg IV/IO.
- **Epinephrine Infusion –** 2-10 mcg/min IV/IO (for example: mix 1 mg of 1:1000 Epinephrine in 250 ml Normal Saline). (15 micro drops/minute = 1 mcg / min.).
- **Norepinephrine** infusion: 0.1 mcg/kg/min IV/IO, titrate to goal Systolic Blood Pressure of 90mmHg.
- **Dopamine infusion**: 2-20 mcg/kg/min IV/IO (Rate determined by physician).

CAUTION: Epinephrine for anaphylaxis must be administered by Auto-Injector or IM if trained and authorized to do so in accordance with Medical Director Option Protocol 6.6 Check and Inject Epinephrine for BLS Providers.

NOTE:
Mild Distress is defined by: itching, urticaria, nausea, and no respiratory distress.
Severe Distress is defined by: stridor, bronchospasm, severe abdominal pain, respiratory distress, tachycardia, shock, edema of lips, tongue or face.

2.2P Allergic Reaction/Anaphylaxis Pediatric

Medical Protocol 2.2P

FIRST RESPONDER/EMT STANDING ORDERS

FR/E

- 1.0 Routine Patient Care
- In anaphylaxis, if patient is over 6 months age and under 25kg, administer **epinephrine** 0.15mg via auto-injector or IM. If body weight is over 25 kg, administer **epinephrine** 0.3mg via auto-injector or IM. When administering IM, EMTs may do so in accordance with Protocol 6.6 Check and Inject Epinephrine for BLS Providers.
- **Contact Medical Control if second dose is required after 5 minutes.**

NOTE: FRs and EMTs must contact Medical Control prior to administration of epinephrine when patient is under 6 months of age.

ADVANCED EMT STANDING ORDERS

A

- In anaphylaxis, if patient is over 6 months age and under 25kg, administer **epinephrine** 0.15mg via auto-injector or IM. If body weight is over 25 kg, administer **epinephrine** 0.3mg via auto-injector or IM.
  - Must be administered in accordance with criteria listed in A1 Adult Medication Reference.
- **Contact Medical Control if second epinephrine dose required after 5 minutes.**

PARAMEDIC STANDING ORDERS

P

- Give **hydrocortisone** 2 mg/kg to max. 100 mg IV/IO/IM, or **methylprednisolone** 2 mg/kg to max. 125 mg IV/IO/IM
- **Diphenhydramine** 1 mg/kg up to max. single dose of 50 mg IV/IO/IM
- **Contact Medical Control if second epinephrine dose required after 5 minutes.**

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications.
- **Epinephrine infusion** 1:1,000 (1 mg/mL) 0.1-1 mcg/kg/min IV/IO
- For example, mix 1mg of Epinephrine 1:1000 in 250mL of Normal Saline, (15 micro drops/minute = 1 mcg / min.)
- **Albuterol** 0.5% (via nebulizer):
  - If age less than 2 years, 1.25 mg by nebulizer
  - If age 2 years or greater, 2.5-3 mg by nebulizer
- **Epinephrine** 1:10,000; 0.01mg/kg IV/IO to max. single dose 0.3 mg.

CAUTION: Epinephrine for anaphylaxis must be administered by Auto-Injector or IM if trained and authorized to do so in accordance with Medical Director Option Protocol 6.6 Check and Inject Epinephrine for BLS Providers.

Clinical Criteria for Anaphylaxis:

If **one** of these criteria is fulfilled, treat for anaphylaxis

1. Acute onset of skin or mucosal involvement with at least one of the following:
   a. Respiratory compromise
   b. Decreased SBP or evidence of end-organ hypoperfusion
2. Two or more of these occurring rapidly after exposure to a likely antigen:
   a. Skin or mucosal involvement
   b. Respiratory compromise
   c. Decreased SBP or evidence of end-organ hypoperfusion
   d. Persistent GI symptoms
3. Decreased BP after exposure to a known allergen for that patient

Altered Mental/Neurological Status/Diabetic Emergencies/Coma - Adult

2.3A

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care
- If patient is unconscious or seizing, transport on left side (recovery position).
- Glucose is indicated only for documented hypoglycemia. If authorized and trained to do so, obtain a blood sugar reading.
  - If glucose is known to be **less than 70** mg/dL and the patient is conscious and can speak and swallow, administer oral glucose or other sugar source as tolerated.
  - **Oral glucose.** One dose is one tube.
    - Other sugar sources are acceptable.
  - A second dose may be necessary after 10 minutes if patient remains symptomatic.

ADVANCED EMT/PARAMEDIC STANDING ORDERS

A/P

- For HYPOglycemic emergency:
  - **Dextrose** 12.5 g IV/IO. Recheck glucose 5 minutes after administration of **dextrose**.
    - May repeat **dextrose** up to 25 g IV/IO if glucose level is <70mg/dL with continued altered mental status.
  - **Glucagon** 1mg IV, IO/IM/IN/SC if unable to establish IV access
    - Recheck glucose 15 minutes after administration of glucagon.
    - May repeat **glucagon** 1mg IV/IO/IM/IN if glucose level is <70mg/dL with continued altered mental status.
- For HYPERglycemic emergency:
  - Administer 500mL fluid bolus, then 250ml/hr.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications.

CAUTION: If cerebrovascular accident is suspected, follow 2.18 Stroke Protocol and notify Medical Control.

***Hypoglycemic Emergency**:
- Glucose <70mg/dL with associated altered mental status.
- Causes of hypoglycemia include medication misuse or overdose, missed meal, infection, cardiovascular insults (e.g., myocardial infarction, arrhythmia), or changes in activity (e.g., exercise).
- Sulfonylureas (e.g., glyburide, glipizide) have long half-lives ranging from 12-60 hours. Patients with corrected hypoglycemia who are taking these agents are at particular risk for recurrent symptoms and frequently require hospital admission.

****Hyperglycemic Emergency**:
- Glucose > 300 mg/dL with associated altered mental status.

Dextrose may be administered in any concentration (D10, D25, D50), as long as the correct dose is given.

2.3P Altered Mental/Neurological Status/Diabetic Emergencies/Coma – Pediatric

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care
- If patient is unconscious or seizing, transport on left side (recovery position).
- Glucose is indicated only for documented hypoglycemia. If authorized and trained to do so, obtain a blood sugar reading.
  - If glucose is known to be **less than 70** mg/dL and the patient is conscious and can speak and swallow, administer oral glucose or other sugar source as tolerated.
  - **Oral glucose.** One dose is one tube.
    - Other sugar sources are acceptable.
- A second dose may be necessary after 10 minutes if patient remains symptomatic.

ADVANCED EMT STANDING ORDERS

A

- **Treatment for specific etiologies, or coma of unknown etiology:**
  - **Known HYPOglycemia (glucose <70 mg./dL):**
    - **Dextrose** 10% 0.5 gm/kg IV/IO
    - **Glucagon** 0.1 mg/kg IV/IO/IM/IN/SC up to max. of 1 mg.
  - **Known HYPERglycemia**
    - Administer 20mL/kg fluid bolus

PARAMEDIC STANDING ORDERS

P

- For patients with confirmed adrenal insufficiency, see 2.1 Adrenal Insufficiency Adult/Pediatric.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications.

E/A/P

1.0 Routine Patient Care, followed by:

1. One EMT should manage the patient while the other handles scene control, but no EMT or First Responder should be left alone with the patient.
2. Avoid areas/patients with potential weapons (e.g., kitchen, workshop), and avoid areas with only a single exit; do not allow patient to block exit.
3. Keep environment calm by reducing stimuli (may need to ask family/friends to leave room, ask patient to turn off music/TV). Transport in a non-emergent mode unless the patient's condition requires lights and sirens.
4. Respect the dignity and privacy of the patient.
5. Make eye contact when speaking to the patient.
6. Speak calmly and in a non-judgmental manner; do not make sudden movements.
7. Maintain non-threatening body language (hands in front of your body, below your chest, palms out and slightly to the sides).
8. Establish expectations for acceptable behavior, if necessary.
9. Ask permission to touch the patient before taking vital signs, and explain what you are doing.
10. Assess the patient to the extent that they allow without increasing agitation, maintain a safe distance from a violent patient.
11. Stop talking with patient if they demonstrate increased agitation; allow time for them to calm down before attempting to discuss options again.
12. Provide reassurance by acknowledging the crisis and validating the patient's feelings and concerns; use positive feedback, not minimization.
13. Determine risk to self and others ("Are you thinking about hurting/killing yourself or others?").
14. Encourage patient to cooperatively accept transport to the hospital for a psychiatric evaluation and treatment.
15. Consider asking friends/relatives on scene to encourage patient to accept transport, if needed; but only if they are not a source of agitation.
16. Ask law enforcement or Online Medical Control to complete a MDMH Section 12 application for uncooperative patients who acknowledge intent to self-harm or harm others, but do not delay transport in the absence of this document.
17. Use restraints in accordance with 2.5 Behavioral Emergencies: Restraint if de-escalation strategy fails and the patient is a danger to him/herself or others.

Acute risk factors for violence include:

- Male gender
- Homicidal or violent intent or plans
- Intoxication or recent substance use
- Actions taken on plans/threats
- Unconcerned with consequences
- No alternatives to violence seen
- Intense fear, anger, or aggressive speech/behavior
- Specified victim (consider proximity, likelihood of provocation)

Protocol Continues

2.4 Behavioral Emergencies Adult & Pediatric

Protocol Continued

Haloperidol should be administered by **INTRAMUSCULAR** injection ONLY.

PARAMEDIC STANDING ORDERS

P

- Initiate an IV of Normal Saline at a KVO rate.
- Apply cardiac monitor if clinically feasible, obtain 12 lead ECG-manage dysrhythmias per protocol.
- Position patient to ensure breathing is not impaired.
- If providing medication to patients >70 years of age, limit dose.

ADULT STANDING ORDERS

- **Haloperidol** 5 mg **IM**; and/or
- **Midazolam** 2-6 mg IV/IO/IM/IN
- **Ketamine** 4mg/kg IM only, to a maximum dose of 400mg IM only, as a single dose.
- NOTE: In patients >70 years of age, limit medication to half these doses.

PEDIATRIC STANDING ORDERS

- **Midazolam** 0.1mg/kg IV/IO/IM/IN

Medical Control may order additional doses of above medications

Haloperidol is preferable for psychotic patients; but do not administer to patients with a history of seizures or prolonged QT intervals.

Behavioral Emergencies: Restraint Adult & Pediatric

2.5

OVERVIEW

In accordance with M.G.L. c. 111C, §18, the following guidelines may be followed to restrain a patient only when the patient presents an immediate or serious threat of bodily harm to him/herself or others.

Adults (or emancipated minors as defined in A/R 5-610) who are competent with the functional capacity to understand the nature and effects of their actions and/or decisions have the right to refuse treatment and/or transport. Do not restrain these individuals.

Procedures:

1. Follow 2.4 Behavioral Emergencies.
2. Use the least restrictive method that assures the safety of the patient and others.
3. Use only soft restraints (leather restraints only if made with soft padding inside).
4. Remind law enforcement that for ambulance transport, patients who are handcuffed must have handcuffs in front (not behind) or to the stretcher and that the key must be readily available for removal; if needed.
5. Apply restraints in a way that allows for airway, breathing, and circulation assessment.
6. Never restrain a patient in a prone position or use equipment that forms a "sandwich" around the patient.
7. Have a minimum of four (4) trained personnel coordinate the restraint effort and consider involving parents if patient is a child.
8. Secure the patient so that major sets of muscle groups cannot be used together, restraining the lower extremities to the stretcher first around the ankles and across the thighs with soft restraints and stretcher straps.
9. Restrain the patient's torso and upper extremities with one arm up and one arm down with soft restraints and stretcher straps; do not impair circulation.
10. Consider cervical-spine immobilization to minimize violent head/body movements.
11. Pad under patient's head to prevent self-harm.
12. Secure backboard or scoop stretcher (if used) to ambulance stretcher.
13. Transport OB patients in a semi-reclining or left lateral position.
14. Monitor/record vital signs every 5 minutes, ensuring patient's airway remains clear.
15. Consider placing a non-rebreather mask (use only at 15 lpm) or a face mask (NOT a P100/N95) on the spitting patient's face.
16. Unless necessary for patient treatment, do not remove restraints until care is transferred at the receiving facility or condition has changes to necessitate removal.
17. Notify receiving facility and tell them that patient is restrained.
18. Document restraint use details in the patient care report, including:
    a. reason for restraint use
    b. time of application
    c. type(s) of restraints used, in addition to cot straps
    d. patient position
    e. neurovascular evaluation of extremities
    f. issues encountered during transport
    g. other treatment rendered
    h. police and/or other agency assistance

E/A/P

2.6A Bronchospasm/Respiratory Distress- Adult

Medical Protocol 2.6A

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care
- IF the patient has not taken the prescribed maximum dose of their own inhaler prior to the arrival of EMS, AND the inhaler is present:
  - Encourage and/or assist patient to self-administer their own prescribed inhaler medication if indicated.
  - If patient is unable to self-administer their prescribed inhaler, administer patient's prescribed inhaler.

NOTE: EMT-B and AEMT administration of an inhaler is CONTRAINDICATED, if:

- the maximum dose has been administered prior to the arrival of the EMT.
- the patient cannot physically use the device properly. (Patient cannot receive inhalation properly.)
- the device has not specifically been prescribed for the patient.

**If properly trained and authorized, use 6.1 BLS Assisted Albuterol.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications, if prescribed to patient or authorized, and if maximum dose has not been administered.

ADVANCED EMT STANDING ORDERS

A

- **Albuterol 2.5-3 mg** via nebulizer. **Ipratropium Bromide 0.5mg** may be combined with the **albuterol** treatment. Additional **albuterol** treatments may be administered as necessary with or without **ipratropium bromide.**

Note that a multi-dose inhaler may be used to give albuterol or ipratropium (instead of nebulizer) if infection control is an issue (e.g. influenza-like-illness).

- If approved, **epinephrine** 1:1,000 0.3mg IM-ONLY.
  - Must be administered in accordance with criteria listed in A1 Adult Medication Reference

PARAMEDIC STANDING ORDERS

P

- In a patient with a known diagnosis of asthma or COPD, who *does not have* history or findings concerning for congestive heart failure, consider **hydrocortisone** 100 mg. IV/IO/IM or **methylprednisolone** 125 mg. IV/IO/IM.
- In patients ≤40 years old, **epinephrine** 0.3 mg IM as a one time dose.
- Continuous positive airway pressure (CPAP) assistance, if not contraindicated, and if nebulizer therapy can be continued with the CPAP device.
- For Asthma only, consider **magnesium sulfate** 2-4 gm. IV/IO over 5 minutes.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications.
- **Epinephrine 1:10,000,** 0.1-0. 5 mg IV/IO very slowly

CAUTION: The use of Epinephrine in patients over the age of 40 or with known cardiac disease and patients who have already taken high dosage of inhalant bronchodilator medications may result in cardiac complications.

CAUTION: Epinephrine for bronchospasm must be administered by Auto-Injector ONLY, except by medical control order or department authorization.

Bronchospasm/Respiratory Distress- Pediatric

2.6P

EMT STANDING ORDERS

- 1.0 Routine Patient Care
- **MILD DISTRESS**: The following may be considered if the patient has not taken the prescribed maximum dose of their own inhaler prior to the arrival of EMS: and the inhaler is present:
  - Encourage and/or assist patient to self-administer their own prescribed inhaler medication if indicated or if not already done.
  - If patient is unable to self-administer their prescribed inhaler, administer patient's prescribed inhaler.
  - Reassess vital signs.

MEDICAL CONTROL MAY ORDER:

- Additional doses of above medications, if prescribed to patient or authorized, and if maximum dose has not been administered.

  NOTE: EMT-B, EMT-I and AEMT administration of an inhaler is CONTRAINDICATED, if:
- the maximum dose has been administered prior to the arrival of the EMT.
- the patient cannot physically use the device properly. (Patient cannot receive inhalation properly.)
- the device has not specifically been prescribed for the patient.

  **If properly trained and authorized, use 6.1 BLS/ILS Assisted Albuterol.
- **SEVERE DISTRESS**:
  - If patient is over 6 months age and under 25kg, administer **epinephrine** 0.15mg via auto-injector or IM. If body weight is over 25 kg, administer **epinephrine** 0.3mg via auto-injector or IM. When administering IM, EMTs may do so in accordance with Protocol 6.6 Check and Inject Epinephrine for BLS Providers.
    - **Contact Medical Control if second dose is required after 5 minutes.**

E

- Criteria for epinephrine administration:
  - age greater than or equal to 6 months
  - known history of asthma or reactive airway disease or bronchospasm or bronchodilators prescribed **AND**
  - patient in respiratory arrest or approaching respiratory arrest(requiring BVM)- include
  - diminished or absent breath sounds **AND**
  - oxygen saturation less than 91% despite supplemental oxygen or unmeasurable.

Protocol Continues

2.6P Bronchospasm/Respiratory Distress- Pediatric

Protocol Continued

ADVANCED EMT STANDING ORDERS

A

- If the condition is not improving with administration of supplemental oxygen, consider the following:
  - **Albuterol sulfate** 1.25 mg with **ipratropium bromide**, 250 mcg via nebulizer if less than 2 years of age.
  - **Albuterol sulfate** 2.5-3 mg with **ipratropium bromide**, 500 mcg via nebulizer if age 2 years or greater.
  - A second dose of **albuterol**, with or without **ipratropium bromide**, may be administered as necessary.

Note: a multi-dose inhaler may be used to give albuterol or ipratropium (instead of nebulizer) if infection control is an issue (e.g., influenza-like-illness).

PARAMEDIC STANDING ORDERS

P

- For a child age 2 years old or more who has a known diagnosis of asthma, consider: **hydrocortisone** 2 mg/kg to max. 100 mg IV/IO/IM; or **methylprednisolone** 2 mg/kg to max. 125 mg IV/IO/IM.
- Consider **magnesium sulfate** 25 mg/kg IV/IO over 10 min. (maximum dose 2 grams).

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications.

CAUTION: Epinephrine for anaphylaxis must be administered by Auto-Injector or IM if trained and authorized to do so in accordance with Medical Director Option Protocol 6.6 Check and Inject Epinephrine for BLS Providers.

Mild distress in children is evidenced by minor wheezing and good air entry.

Severe distress in children is evidenced by poor air entry, extreme use of accessory muscles, nasal flaring, grunting, cyanosis and/or altered mental status (weak cry, somnolence, poor responsiveness). **REMEMBER:** Severe bronchospasm may present without wheezes, if there is minimal air movement.

Respiratory Distress is defined as inadequate breathing in terms of rate, rhythm, quality and/or depth of breathing. Children who are breathing too fast or slow, or in an abnormal pattern or manner, may not be receiving enough oxygen to support bodily functions and may allow an increase in carbon dioxide to dangerous levels. Cyanosis is usually a late sign and requires immediate treatment.

Hyperthermia (Environmental) Adult & Pediatric

2.7

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care
- Provide rapid cooling as soon as possible.

CAUTION: Do not over-chill patient, observe for shivering. If shivering occurs, discontinue active cooling procedures.

- Remove patient to cool area and place patient in a supine position.
- Loosen or remove all unnecessary clothing, while protecting privacy.
- Apply cool packs to armpits, neck and groin.
- Use evaporation techniques if possible (fans, open windows).
- Keep skin wet by applying water with wet towels or sponges.

- For Heat Cramps and/or Heat Exhaustion: administer water or oral re-hydration-electrolyte solution if patient is alert and has a normal gag reflex and can swallow easily. Elevate legs of supine patient with heat exhaustion.

ADVANCED EMT/PARAMEDIC STANDING ORDERS

A/P

- Consider 500mL fluid bolus for dehydration even if vital signs are normal. **Pediatrics**: 20mL/kg bolus, if indicated.

2.8 Hypothermia (Environmental) Adult & Pediatric

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care
- Avoid Rough Movement and Prevent Further Heat Loss:
  - Insulate from the ground and shield from wind/water
  - Move to a warm environment as soon as practical
  - Remove any wet clothing
  - Cover with warm blankets, particularly the head
- Determine patient's hemodynamic status: Assess pulse and respiratory rates for a period of 60 seconds to determine pulselessness or profound asystole, for which CPR would be required.
- If patient is in cardiopulmonary arrest, (refer to Protocol 3.4A/P Cardiac Arrest - Asystole/Pulseless Electrical Activity and 3.5A/P Cardiac Arrest- Ventricular Fibrillation/Pulseless Ventricular Tachycardia).
  - Initiate CPR and administer oxygen using appropriate oxygen delivery device, as clinically indicated.
  - Use AED according to the ECC guidelines or as otherwise noted in these Protocols and other advisories.
- Whenever possible, use warmed, humidified oxygen (104°F – 107°F, 40°C – 42°C) by non-rebreather mask, during resuscitation procedures for hypothermic patients.

  CAUTION: Do NOT administer anything orally if patient does not have a reasonable level of consciousness and normal gag reflex.
- Manage hypoglycemia and narcotic overdose per protocol.

ADVANCED EMT STANDING ORDERS

A

- Warm IV Fluids should be used.

PARAMEDIC STANDING ORDERS

P

- If pulse and breathing are absent, treat per Cardiac Arrest Protocols.

CAUTION: Do NOT massage extremities in an attempt to actively rewarm the patient.

Nerve Agents Organophosphate Poisoning – Adult & Pediatric

2.9

FIRST RESPONDER/EMT/ADVANCED EMT STANDING ORDERS

FR/E/A

- 1.0 Routine Patient Care
- Assess for SLUDGEM (Salivation, Lacrimation, Urination, Defecation, Gastric upset, Emesis, Muscle twitching/miosis (constricted pupils) and KILLER Bs (Bradycardia, Bronchorrhea, Bronchospasm).
- Remove to cold zone after decontamination and monitor for symptoms.
- Antidotal therapy should be started as soon as symptoms appear.
- All antidote auto-injections must be administered IM.

Determine dosing according to the following symptom assessment and guidelines.

PARAMEDIC STANDING ORDERS

P

- If field conditions permit, initiate cardiac monitoring and consider the administration of IV medications.
- If symptoms persist after the administration of 3 DuoDote kits:
  - **Atropine** 2mg IV/IO; repeat every 5 minutes until secretions clear
  - **Pralidoxime** 1 – 2 gram IV/IO over 30 – 60 minutes
  - **Diazepam** 10mg IM by auto-injector every 10 minutes, as needed.

    Instead of diazepam, may use :
    - **Midazolam** 2 mg IV/IO/IN every 5 minutes; or 6 mg IM every 10 minutes as needed.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications.
- **Pralidoxime** maintenance infusion: up to 500mg per hour (maximum of 12 grams/day).

Protocol Continues

2.9 Nerve Agents Organophosphate Poisoning – Adult & Pediatric

Severity	Cholinergic AGENT Signs & Symptoms	ADULT TREATMENT STANDING ORDERS
MILD	Runny Nose Cough Pupils may be pinpoint Eye Pain Lacrimation	Decontaminate Administer 100% Oxygen Administer **One** kit IM OR 2mg **atropine** IM **only** & either: 600mg IM **pralidoxime** **OR** 1g IV **pralidoxime**
MODERATE	Runny Nose Cough Sweating, twitching Nausea, abdominal cramping Weakness Localized sweating (seen with dermal exposure) Eye pain, trouble seeing Wheezing, shortness of breath	Decontaminate Administer 100% Oxygen Administer **Two to Three** kits IM OR 4mg **atropine** IM **only &** either: 600-1200mg IM **pralidoxime** **OR** 1gm IV **pralidoxime**
SEVERE	All the above, plus: ○ Vomiting ○ Diarrhea ○ Drooling, copious respiratory secretions ○ Significant weakness ○ Seizures ○ Decreased level of consciousness ○ Apnea	Decontaminate Administer 100% Oxygen Administer **Three** kits IM OR 6mg **atropine** IM **only &** either: 1200-1800mg IM **pralidoxime** **OR** 1gm IV **pralidoxime** **&** **Diazepam** 10mg IM Autoinjector (CANA kit)**,OR** **Midazolam** 6-10mg IV/IO/IM

NOTE: Do not administer an adult dose to a child <50kg.

NOTE: Dermal absorption of nerve agents may lead to delayed symptom onset up to 18 hours after exposure. Initial symptoms/signs may only be local such as localized fasiculations and sweating.

PROCEDURES FOR SELF-CARE AND CARE OF AUTHORIZED PUBLIC EMPLOYEES OR FIRST RESPONDERS

Remove self or **fellow authorized public employee** from area if possible.

1. Assess degree of symptoms: Mild, Moderate or Severe.
2. Administer 1 to 3 auto-injector kits IM (each kit with **atropine** 2mg IM and **pralidoxime chloride** 600mg IM) as guided by degree of symptoms.
3. Seek additional medical support for further monitoring and transport of anyone receiving therapy.
4. Disrobing will significantly enhance the decontamination process. Perform decontamination, and seek assistance in further decontamination measures.

Protocol Continues

PEDIATRIC DOSING FOR NERVE AGENT EXPOSURES

Kg	Age	Atropine	Pralidoxime	Midazolam
		0.02-0.05mg/kg	20-40 mg/kg	0.1mg/kg
1	Preemie	0.1mg	20-40mg	0.05-0.1mg
2	Newborn	0.1mg	40-80mg	0.1-0.2mg
5	3 mos	0.1mg-0.25mg	100-200mg	0.25-0.5mg
10	12 mos	0.2-0.5mg	200-400mg	0.5-1mg
15	2-3 yrs	0.3-0.75mg	300-600mg	2mg
20	4-7 yrs	0.4-1mg	400-800mg	2.5mg
25	6-9 yrs	0.5-1.25mg	500mg-1g	3mg
30	7-11 yrs	0.6-1.5mg	600mg-1g	3.5mg
35	8-13 yrs	0.7-1.75mg	700mg-1g	4mg
40	9-14 yrs	0.8-2mg	800mg-1g	4.5mg
45	10-16 yrs	0.9-2mg	900mg-1g	5mg
50	11-18 yrs	1-2mg	1g	5mg
55	12-18 yrs	1.25-2mg	1g	5mg
60	13-18 yrs	1.5-2mg	1g	5mg
65	14-18 yrs	2mg	1g	5mg
70	16-18 yrs	2mg	1g	5mg

PEDIATRIC ATROPENS

Pediatric Atropine Dosing for Nerve Agent Toxicity Using Pediatric Atropens

Weight	Mild	Moderate	Severe
15-40 lb (7-18kg)	1 x 0.5mg Atropen	1 x 1mg Atropen	3 x 0.5mg Atropen
40-90 lb (18-41kg)	1 x 1mg Atropen	1 x 2mg Atropen	3 x 1mg Atropen
>90 lb (41kg)	1 x 2mg Atropen	2 x 2mg Atropen	3 x 2mg Atropen

Note: Pralidoxime reduced dose pediatric autoinjectors are not available

ADULT AUTOINJECTORS

Pediatric Dosing for SEVERE Nerve Agent Toxicity Using Adult Autoinjectors

(i.e. seizures, hypotension, coma, cardiac arrest)

Use only if Pediatric Atropen or when Atropine/Pralidoxime vials are not available

Approximate Age	Approximate Weight	Number of Auto-injectors (each type)	Atropine Dosing Range (mg/kg)	Pralidoxime dosing range (mg/kg)
3-7 yrs	13-25kg	1	0.08-0.13	24-46
8-14 yrs	25-50kg	2	0.08-0.13	24-46
>14 yrs	>51kg	3	0.11 or less	35 or less

- NOTE: Mark I kits and Duodote are not approved for pediatric use, however, they should be used as initial therapy in circumstances for children with severe life-threatening nerve agent toxicity when IV therapy is not available. This assumes 0.8 inch needle insertion depth.
- NOTE: Potential high dose of atropine and pralidoxime for age/weight. However, these numbers are within the general guidelines recommended for the first 60-90 minutes of therapy after a severe exposure.
- NOTE: Administer injection in large muscle mass. Avoid deltoid. Suggest using thigh.

REFERENCE: Pediatric Preparedness for Disasters and Terrorism: A National Consensus Conference, Executive summary 2003. Markenson D, Redlener I. AHRQ, DHHS, EMSC Program of the Maternal and Child Health Resources Services Administration

2.10 Obstetrical Emergencies

EMT/ADVANCED EMT STANDING ORDERS

E/A

- 1.0 Routine Patient Care
- Expose as necessary to access for bleeding/discharge, crowning, prolapsed cord, breech, limb presentation.
- Do not digitally examine or insert anything into the vagina.
  - Exceptions: fingers may be inserted to manage baby's airway in breech presentation or to treat prolapsed or nuchal cord.
- Place mother in left-lateral recumbent position except as noted:
  - Prolapsed cord:
    - Knee-chest position or Trendelenburg position
    - If only the cord has prolapsed and the presenting part has yet to go through the cervix, gently elevate the presenting part to remove pressure on the umbilical vessels to permit blood flow through cord.

PARAMEDIC STANDING ORDERS

P

- Eclamptic Seizures
  - **Midazolam** 2 - 6 mg slow IV/IO/IM/IN

MEDICAL CONTROL MAY ORDER

- Administration of additional IV Normal Saline.
- **Magnesium sulfate** 1- 4 gm IV/IO over 10 minutes (i.e., for eclampsia).
- **Calcium chloride** 10% 2 mg-4 mg/kg slow IV/IO over 5 minutes. (Antidote for Magnesium Sulfate).
- Further anticonvulsant therapy.

Special Considerations in Cardiac Arrest (with additional resources)

- If the fundus height is at or above the level of the umbilicus

Manually displace the gravid uterus to the left to enhance venous return.

Newly Born Care 2.11

EMT/ADVANCED EMT/PARAMEDIC STANDING ORDERS

E / A / P

- 1.0 Routine Patient Care—dry, warm, position, stimulate.
- For newly born requiring resuscitation, see 2.12 Resuscitation of the Newly Born.
- Reassess airway by positioning and clearing secretions (only if needed):
  - Place the newly born on back or side with head in a neutral or slightly extended position.
  - Routine suctioning is discouraged even in the presence of meconium-stained amniotic fluid. Suction oropharynx then nares only if the patient exhibits respiratory depression and/or obstruction, see 2.12 Resuscitation of the Newly Born.
- Clamp and cut the umbilical cord:
  - After initial assessment and after the cord stops pulsating.
  - Leave a minimum of 6 inches of cord.
- Prevent heat loss by rapidly drying and warming:
  - Remove wet linen, wrap newly born in blankets or silver swaddler (preferred) and cover newly born's head.
- Assess breathing by providing tactile stimulation:
  - Flick soles of feet and/or rub the newly born's back.
  - If newly born is apneic or has gasping respirations, nasal flaring, or grunting, proceed to 2.12 Resuscitation of the Newly Born.
- Assess circulation, heart rate, and skin color:
  - Evaluate heart rate by one of several methods:
    - Auscultate apical beat with a stethoscope.
    - Palpate the pulse by lightly grasping the base of the umbilical cord.
  - If the pulse is <100 bpm and not increasing, proceed to 2.12 Resuscitation of the Newly Born. Assess skin color; examine trunk and face; and mucus membranes.
- Record APGAR score at 1 minute and 5 minutes (see chart).
- See A2 Pediatric Color Coded Appendix for vital signs reference.

APGAR Scale

Feature Evaluated	2 Points	1 Point	0 Points
Activity (Muscle Tone)	Active Movement	Arms and legs flexed (Weak, some movement)	Limp or flaccid
Pulse	Over 100 bpm	Below 100 bpm	Absent
Grimace (Irritability/reflexes)	Cry, sneeze, cough, active movement	Grimace (some flexion of extremities)	No reflexes
Appearance (Skin Color)	Completely pink	Body pink, Extremities blue	Blue, pale
Respiration	Vigorous cry Full breaths	Slow, irregular, or gasping breaths, weak cry	Absent

PEARLS:

- Newly born are prone to hypothermia which may lead to hypoglycemia, hypoxia and lethargy. Aggressive warming techniques should be initiated including drying, swaddling, and warm blankets covering body and head.
- Raise temperature in ambulance patient compartment.

2.12 Resuscitation of the Newly Born

EMT/ADVANCED EMT STANDING ORDERS

E/A

- 1.0 Routine Patient Care
- Maintain an open airway and suction the mouth, then nose. If meconium (brown stained fluid) is present, suction the hypopharynx only if the infant is not vigorous (Contact ALS immediately if available for possible need of endotracheal intubation).
- Dry the infant, place on a dry blanket, cover the head and keep the infant warm.
- If ventilations are inadequate or chest fails to rise, reposition head and neck, suction and initiate positive pressure ventilation at room air for term newborns or for preterm (less than 38 weeks gestation) newborns at 40-60 breaths per minute, as clinically indicated.
- For heart rate less than 60, institute positive pressure ventilation with 100% oxygen for 1 minute and if heart rate remains at 60 start chest compressions.

PARAMEDIC STANDING ORDERS

P

- If meconium is present, consider early endotracheal intubation and suctioning. (Note: Do not suction or intubate a neonate with a vigorous cry).
- Newly born in distress and requiring emergency care:
  - For heart rate 60-80 and rapidly rising:
    - Continue manual ventilation at room air for term newborns or for preterm (less then 38 weeks gestation) newborns at 40-60 breaths per minute
    - Cardiac Monitor – Manage dysrhythmias per protocol,
  - For heart rate less than 60:
    - Initiate CPR as indicated.
    - Institute positive pressure ventilation with 100% oxygen for 1 minute and if heart rate remains at 60, start chest compressions.
    - Continue manual ventilation with 100% oxygen after CPR is initiated.
    - Advanced airway management if not already done and perform capnography.
    - Cardiac Monitor. Manage dysrhythmias per protocol.
    - If defibrillation is indicated: initial energy level: 2 joules/kg subsequent: 4 joules/kg.
    - If synchronized cardioversion is indicated: 0.5-1 joules/kg.
  - Establish IV or IO access, if indicated. (Note: appropriately trained and authorized EMT-Paramedics may utilize umbilical lines when necessary). Treat for shock with 10cc/kg of Normal Saline over 5-10 minutes.

MEDICAL CONTROL MAY ORDER:

- **Epinephrine** 1:10,000 (0.01-0.03 mg/kg) IV/IO
- **Epinephrine Infusion**: Administer 0.1-1 mcg/kg/min IV/IO
  - For example:mix 1mg of Epinephrine 1:1000 in 250mL of Normal Saline, (15 micro drops/minute = 1 mcg / min.)

NOTE: The newly born should be evaluated for *central* cyanosis. Peripheral cyanosis is common and may not be a reflection of inadequate oxygenation. If central cyanosis is present in a breathing newborn during stabilization, early administration of 100% oxygen is important while the newborn is being assessed for need of additional resuscitative measures.

Pain & Nausea Management Adult & Pediatric

2.13

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care

ADVANCEDEMT STANDING ORDERS: ADULT

A

- **Ondansetron** 4 mg PO (Oral Disintegrating Tablet (ODT) is the preferred route) /IV/IO/IM.

ADVANCEDEMT STANDING ORDERS: PEDIATRIC

- **Ondansetron** for child under or up to 25 kg 2 mg PO by Oral Disintegrating Tablet (ODT).ODT is the preferred route /IV/IM;
  for a child over 25 kg, 4 mg PO by ODT(the preferred route)/IV/IM.

PARAMEDIC STANDING ORDERS: ADULT

P

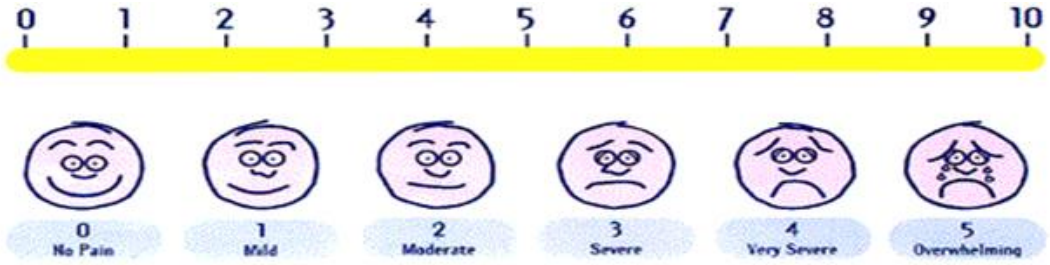
- **Acetaminophen** 650-1000 mg IV or PO.
- **Ibuprofen** 600 mg PO.
- **Ketorolac** 15 mg IV or 30 mg IM.
- **Fentanyl** 1 mcg/kg slow IV/IO/IM/IN weight based (kg) to a max. of 150mcg (150kg).
- **Morphine Sulfate** 0.1mg/kg IV/IO/IM/SC,(max `10 mg).

PARAMEDIC STANDING ORDERS: PEDIATRIC

- **Acetaminophen** 15 mg/kg IV or PO to max 1000 mg.
- **Ibuprofen** 10 mg/kg PO to max 600 mg.
- **Ketorolac** 0.5 mg/kg IV or IM to max 15 mg.
- **Fentanyl** 1 mcg/kg. to max. 150 mcg slow IV/IO/IM/IN.
- **Morphine Sulfate** 0.1 mg/kg IV/IO/IM/SC (maximum individual 5 mg).

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications



NOTE: Pain Management can include positioning, ice packs and other non-pharmacological treatments.

NOTE: All pain medications have contraindications-do not administer medications in such circumstances. These contraindications include but are not limited to: Ketorolac and ibuprofen are contraindicated in head injury, chest pain, abdominal pain, or in any patient with potential for bleeding, ulcer, or renal injury; likely to need surgery Acetaminophen is contraindicated in patients with liver failure. Ketorolac and ibuprofen are contraindicated in pregnancy.

2.14 Poisoning/Substance Abuse/ Overdose/Toxicology- Adult & Pediatric

NOTE:Naloxone should only be administered in suspected overdose patients with inadequate respirations and respiratory rate. Treatment should progress toward the restoration of adequate respirations. Patients with inadequate respiratory rates may need to be ventilated until their respiratory rate increases.

FIRST RESPONDER/EMT STANDING ORDERS

FR/E

- 1.0 Routine Patient Care
- **Naloxone** 2 mg-4 mg via Nasal Atomizer (IN) **or** 0.4 mg via auto-injector (IM).
  - If no response after 3-5 minutes, give second dose.
  - First Responders may only administer if trained and authorized.
- If suspected or confirmed hypoglycemia, treat per protocol.

ADVANCED EMT STANDING ORDERS

A

- **Naloxone** 0.4-4 mg IV/IO/IM/IN. May be repeated as indicated.

P

MEDICAL CONTROL MAY ORDER

- **Calcium chloride 10%,** 2-4 mg/kg IV/IO **SLOWLY OVER FIVE (5) MINUTES** (e.g., for calcium blocker toxicity).
- **Sodium bicarbonate** 0.5 – 1 mEq/Kg IV/IO (e.g. TCA or Aspirin overdose).
- **Atropine** 2- 5 mg IV/IO (e.g., organophosphate poisoning management).
- **Albuterol** 2.5-3 mg by nebulizer (e.g., bronchospasm management).
- **Furosemide** 40 mg IV/IO (e.g., pulmonary edema management).
- **Midazolam** 2 – 6 mg IV/IO/IM/IN.
- **Amyl nitrite**: administer vapors of a crushed inhalant or pearl under the patients nose for 15 out of every 30 thirty seconds with intermittent 100% oxygen administration.
- **CYANIDE ANTIDOTE KIT if available by EMS service and/or industrial site:**
  - Two (2) **amyl nitrite** inhalants.
  - **3% sodium nitrite** (stop Amyl nitrite):
    - ADULT: 10 mL slow IV/IO over 2-4 minutes.
    - PEDI: 0.2 mL/kg (up to 10 mL) slow IV/IO over 5 minutes.
  - **Sodium thiosulfate 25%:**
    - ADULT: 50 mL IV/IO.
    - PEDI: 5 mL Sodium Thiosulfate per 1 mL Sodium Nitrate given. **NOTE**: If hypotension develops, STOP all nitrites, treat for shock, and consider administration of **norepinephrine** or **dopamine**.
- **Hydroxocobalamin** 5 g IV/IO over 15 minutes in an adult
  - In a pediatric patient, 70 mg/kg (to maximum 5 g) IV/IO over 15 minutes
- **Glucagon** 1 – 5 mg IV/IO/IM/SC, for beta-blocker or calcium-channel blocker overdose
- If suspected or confirmed nerve agent exposure, treat per protocol.

Poison Control may be reached at: **800-222-1222**

Seizures - Adult 2.15A

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care
- Manage hypoglycemia and narcotic overdose per protocol.
- Consider eclampsia in a woman of childbearing age

CAUTION: Do NOT administer anything orally if the patient does not have a reasonable level of consciousness and normal gag reflex.

ADVANCED EMT STANDING ORDERS

A

- If Diazepam rectal gel (Diastat) has been prescribed by the patient's physician, assist the caregiver with administration in accordance with physician's instructions.
- If the patient has an implanted vagus nerve stimulator (VNS), suggest that the family use the VNS magnet to activate the VNS and assist if required.
  - To use the VNS magnet, pass the magnet closely over the VNS device; if unsuccessful, repeat every 3-5 minutes for a total of 3 times.

Note: Do not delay medication administration.

PARAMEDIC STANDING ORDERS

P

- Cardiac Monitor and if feasible 12 lead ECG – Manage dysrhythmias per protocol.
- If patient is in **Status Epilepticus**
  - **Midazolam** 2 - 6 mg slow IV/IO/IM/IN.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications.
- **Magnesium sulfate 1-4 grams** IV over 10 minutes if suspect eclampsia.

CAUTION: Benzodiazepines may be contraindicated in head injury or hypotension; discuss with medical control.

NOTE:

- Post-partum patients may experience eclamptic seizures up to several weeks after giving birth.
- **Status epilepticus** is defined as any generalized seizures lasting more than 5 minutes. This is a true emergency requiring rapid airway control, treatment (including benzodiazepines), and transport.

2.15P Seizures - Pediatric

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care
- Prevent patient from accidental self-harm. DO NOT use a bite block.

CAUTION: Do NOT administer anything orally if the patient does not have a reasonable level of consciousness and normal gag reflex.

ADVANCED EMT STANDING ORDERS

A

- If Diazepam rectal gel (Diastat) has been prescribed by the patient's physician, assist the patient or caregiver with administration in accordance with physician's instructions.
- If the patient has an implanted vagus nerve stimulator (VNS), suggest that the family use the VNS magnet to activate the VNS and assist if required.
  - To use the VNS magnet, pass the magnet closely over the VNS device; if unsuccessful, repeat every 3-5 minutes for a total of 3 times.

Note: do not delay medication administration.

PARAMEDIC STANDING ORDERS

P

- If Glucose is less than **70**mg/dL, treat per 2.3P Altered Mental/Neurological Status/Diabetic Emergencies/Coma- Pediatric.
- **Midazolam** 0.05mg/kg IV/IO/IM to a maximum single dose of 4mg.

OR

- **Midazolam** 0.2mg/kg IN to a maximum dose of 10 mg.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications.

Shock - Adult 2.16A

Any patient with signs, symptoms, and history suggesting inadequate tissue perfusion should be considered to be in shock. Make every effort to determine and treat the underlying cause. Regardless of etiology, shock patients should be transported immediately to the nearest appropriate facility for definitive care.

BASIC STANDING ORDERS

- 1.0 Routine Patient Care
- Keep the patient supine.
- Prevent heat loss by covering with warm blankets if available and if the patient is not febrile.
- Physiological signs:
  - Altered mental status.
  - Radial pulse cannot be palpated.
  - Systolic blood pressure less than 100 mmHg.

	CARDIOGENIC SHOCK	DISTRIBUTIVE SHOCK	HYPOVOLEMIC SHOCK	OBSTRUCTIVE SHOCK
E	• Assess and treat for pulmonary edema and/or congestive heart failure (CHF), per 3.6 Congestive Heart Failure.	• If patient has history of adrenal insufficiency, manage according to 2.1 Adrenal Insufficiency.	Control active bleeding using direct pressure, pressure bandages, tourniquets (commercial tourniquets preferred), or hemostatic bandage.	
ADVANCED EMT STANDING ORDERS				
A	• No fluid bolus.	• Total volume administered is to be based on hemodynamic stability. • Consider Normal Saline fluid bolus.	• Total volume administered is determined by hemodynamic stability. • Consider Normal Saline fluid bolus.	• Total volume administered is to be based on hemodynamic stability. • Consider Normal Saline fluid bolus.

Protocol Continues

2.16A Shock – Adult

Protocol Continued

PARAMEDIC STANDING ORDERS

P

- Consider fluid administration.
- If signs and symptoms of hypoperfusion persist or symptoms worsen, regardless of etiology, consider norepinephrine, epinephrine or dopamine administration in the absence of hemorrhagic shock, with medical control approval.

MEDICAL CONTROL MAY ORDER

CARDIOGENIC SHOCK	DISTRIBUTIVE SHOCK	HYPOVOLEMIC SHOCK	OBSTRUCTIVE SHOCK
• **Norepinephrine** infusion: 0.1mcg/kg/min IV/IO, titrate to goal Systolic Blood Pressure of 90mmHg, **OR** • **Epinephrine infusion –** 2-10 mcg/min IV/IO, (for example: mix 1 mg of 1:1000 Epinephrine in 250 ml Normal Saline). (15 micro drops/minute = 1 mcg / min.) **OR** • **Dopamine** 2-20 mcg/kg/min IV/IO	• **Norepinephrine** infusion: 0.1mcg/kg/min IV/IO, titrate to goal Systolic Blood Pressure of 90mmHg, **OR** • **Epinephrine infusion –** 2-10 mcg/min IV/IO **OR** • **Dopamine** 2-20 mcg/kg/min IV/IO • For patients with confirmed or suspected Adrenal Insufficiency, treat per 2.1 Adrenal Insufficiency	• **Norepinephrine** infusion: 0.1mcg/kg/min IV/IO, titrate to goal Systolic Blood Pressure of 90mmHg, **OR** • **Epinephrine infusion –** 2-10 mcg/min IV/IO, **OR** • **Dopamine** 2-20 mcg/kg/min IV/IO	• **Norepinephrine** infusion: 0.1mcg/kg/min IV/IO, titrate to goal Systolic Blood Pressure of 90mmHg, **OR** • **Epinephrine infusion –** 2-10 mcg/min IV/IO, **OR** • **Dopamine** 2-20 mcg/kg/min IV/IO • Needle Decompression, if tension pneumothorax suspected

Etiology of Shock

- **Cardiogenic Shock:** History of cardiac surgery, rhythm disturbances, or post cardiac arrest. Assess for acute MI and pulmonary edema.
  - Signs & Symptoms of cardiogenic shock: chest pain, shortness of breath, crackles, JVD, hypotension, tachycardia, diaphoresis.
- **Distributive Shock:** Anaphylaxis (see 2.2 Allergic Reaction/Anaphylaxis), neurogenic shock, sepsis. Assess for fever and signs of infection.
  - Signs & Symptoms of neurogenic shock: sensory and/or motor loss, hypotension, bradycardia versus normal heart-rate, warm, dry skin.
- **Hypovolemic Shock:** Dehydration, volume loss, or hemorrhagic shock.
  - Signs & Symptoms of hypovolemic shock: tachycardia, tachypnea, hypotension, diaphoresis, cool skin, pallor, flat neck veins.
- **Obstructive Shock:** Consider tension pneumothorax, pulmonary embolism, and cardiac tamponade.
  - Signs and symptoms of tension pneumothorax: asymmetric or absent unilateral breath sounds, respiratory distress or hypoxia, signs of shock including tachycardia and hypotension, JVD, possible tracheal deviation above the sternal notch (late sign).

For patients with uncontrolled hemorrhagic or penetrating torso injuries:

- Restrict IV fluids. Delaying aggressive fluid resuscitation until operative intervention may improve the outcome.
- Patients should be reassessed frequently, with special attention given to the lung examination to ensure volume overload does not occur.
- Several mechanisms for worse outcomes associated with IV fluid administration have been suggested, including dislodgement of clot formation, dilution of clotting factors, and acceleration of hemorrhage caused by elevated blood pressure.

Shock - Pediatric 2.16P

Any patient with signs, symptoms, and history suggesting inadequate tissue perfusion should be considered to be in shock. Make every effort to determine and treat the underlying cause. Regardless of etiology, shock patients should be transported immediately to the nearest appropriate facility for definitive care.

BASIC STANDING ORDERS

- 1.0 Routine Patient Care
- Keep the patient supine.
- Prevent heat loss by covering with warm blankets if available and if the patient is not febrile.

	CARDIOGENIC SHOCK	DISTRIBUTIVE SHOCK	HYPOVOLEMIC SHOCK	OBSTRUCTIVE SHOCK
E		If patient has history of adrenal insufficiency, manage according to protocol 2.1 Adrenal Insufficiency. If suspected anaphylaxis, manage according to protocol. If neurogenic shock is suspected: Spinal immobilization.	• Control active bleeding using direct pressure, pressure bandages, tourniquets (commercial tourniquets preferred), or hemostatic bandage.	
ADVANCED EMT STANDING ORDERS				

A		• Obtain vascular access. Therapeutic end-points to fluid resuscitation (in order of importance) are:
		  • Capillary refill,
		  • Normal pulses,
		  • No difference between peripheral and central pulses,
		  • Warm extremities, Normal mental status, and
		  • THEN normal blood pressure.
		• Consider 20 ml/kg Normal Saline fluid bolus.
			• Obtain vascular access. Therapeutic end-points to fluid resuscitation (in order of importance) are:
			  • Capillary refill,
			  • Normal pulses,
			  • No difference between peripheral and central pulses,
			  • Warm extremities, Normal mental status, and
			  • THEN normal blood pressure.
			• Consider 20 ml/kg Normal Saline fluid bolus.
				• Consider 20 ml/kg Normal Saline fluid bolus.

Medical Protocol 2.16P

Protocol Continues

2.16P Shock – Pediatric

Protocol Continued

PARAMEDIC STANDING ORDERS

- Consider fluid administration
- If signs and symptoms of hypoperfusion persist or symptoms worsen, regardless of etiology, consider norepinephrine or dopamine administration via length-based resuscitation tape in the absence of hemorrhagic shock, with medical control approval.

P

CARDIOGENIC SHOCK	DISTRIBUTIVE SHOCK	HYPOVOLEMIC SHOCK	OBSTRUCTIVE SHOCK

MEDICAL CONTROL MAY ORDER

- **Norepinephrine** infusion: 0.1mcg/kg/min IV/IO, titrate to goal Systolic Blood Pressure of 90mmHg, **OR**

  Dopamine 2-20 mcg/kg/min IV/IO
- Needle decompression for tension pneumothorax

Etiology of Shock

- **Cardiogenic Shock:** History of cardiac surgery, rhythm disturbances, or post cardiac arrest. Assess for acute MI and pulmonary edema.
  - Signs & Symptoms of cardiogenic shock: chest pain, shortness of breath, crackles, JVD, hypotension, tachycardia, diaphoresis.
- **Distributive Shock:** Anaphylaxis (see 2.2 Allergic Reaction/Anaphylaxis), neurogenic shock, sepsis. Assess for fever and signs of infection.
  - Signs & Symptoms of neurogenic shock: sensory and/or motor loss, hypotension, bradycardia versus normal heart-rate, warm, dry skin.
- **Hypovolemic Shock:** Dehydration, volume loss, or hemorrhagic shock.
  - Signs & Symptoms of hypovolemic shock: tachycardia, tachypnea, hypotension, diaphoresis, cool skin, pallor, flat neck veins.
- **Obstructive Shock:** Consider tension pneumothorax, pulmonary embolism, and cardiac tamponade.
  - Signs and symptoms of tension pneumothorax: asymmetric or absent unilateral breath sounds, respiratory distress or hypoxia, signs of shock including tachycardia and hypotension, JVD, possible tracheal deviation above the sternal notch (late sign).

For patients with uncontrolled hemorrhagic or penetrating torso injuries:

- Restrict IV fluids. Delaying aggressive fluid resuscitation until operative intervention may improve the outcome.
- Patients should be reassessed frequently, with special attention given to the lung examination to ensure volume overload does not occur.
- Several mechanisms for worse outcomes associated with IV fluid administration have been suggested, including dislodgement of clot formation, dilution of clotting factors, and acceleration of hemorrhage caused by elevated blood pressure.

Sepsis-Adult 2.17

- IDENTIFICATION OF POSSIBLE SEPTIC SHOCK
- Suspected infection – YES
- Evidence of sepsis criteria-YES (2 or more):
  - Temperature less than 96.8 ° F or greater than 100.4 ° F
  - Heart Rate greater than 90 bpm
  - Respiratory rate greater than 22 bpm
  - Systolic BP less than 90 mmHg OR Mean Arterial Blood Pressure (MAP) less than 65 mm Hg
  - New onset altered mental status OR increasing mental status change with previously altered mental status.
  - Serum Lactate level greater than 4 mmol/l-(if trained and equipment available)
  - $ETCO_2$ less than or equal to 25 mmHg

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care
- Notify hospital of incoming Sepsis Alert prior to arrival if applicable
- Supplemental oxygen to achieve SpO2 of 94%

ADVANCED EMT STANDING ORDERS

A

- Full ALS Assessment and treatment
- Large bore IV access
- IV 0.9% NaCl enroute: administer 500 ml boluses up to 30cc/kg

Warning: assess lung sounds frequently to ensure volume overload does not occur.

PARAMEDIC STANDING ORDER

P

MEDICAL CONTROL MAY ORDER

- **Norepinephrine** infusion: 0.1mcg/kg/min IV/IO by pump, titrate to goal Systolic Blood Pressure of 90mmHg, **OR**
- **Epinephrine infusion** 2-10 mcg/min IV/IO **OR**
- **Dopamine** 2-20 mcg/kg/min IV/IO.
- Additional Fluid boluses.

This protocol is for adult patients 18 years old or older

Medical Protocol 2.17

2.18 Stroke

Say "Stroke Alert" in Hospital Entry Note if patient meets the Stroke Criteria, even if symptoms have resolved.

EMT/ADVANCED EMT/PARAMEDIC STANDING ORDERS

E/A/P

- 1.0 Routine Patient Care
- Perform FAST-ED Stroke Scale.
- Clearly determine time of onset of the symptoms or the last time seen well.
- If the patient wakes from sleep or is found with symptoms of stroke, the time of onset of first symptoms is defined as the last time the patient was observed to be normal. Notify the emergency department as soon as possible.
- If any one of the signs of the stroke scale is abnormal and onset of symptoms are less than **5 hours**, notify receiving hospital of a "Stroke Alert".
- Elevate the head of the stretcher 30 degrees.
- Do not delay transport for ALS intercept.
- Consider transporting a witness, family member, or caregiver with the patient to verify the time of the onset of stroke symptoms.
- If the onset of signs and symptoms PLUS transport time is <5 hours, consider transport to the most appropriate facility in accordance with local guidelines/agreements.
- Transport to a Department approved Stroke Point-of-Entry (POE) hospital.

Avoid hyperoxygenation; oxygen administration should be titrated to patient condition, and withheld unless evidence of hypoxemia, dyspnea, or an SpO2 <94%, especially in the presence of a suspected CVA/TIA or ACS.

Protocol Continues

Stroke 2.18

This checklist is included as a resource for EMTs and receiving hospitals. If used, please leave a copy with the patient and document all elements on Patient Care Report

Date: Amb #: Pt. Age: ❑ M ❑ F
Patient's Name: DOB:

STROKE ALERT! Criteria:

	YES	NO	Unknown
Time last known well (TLKW) <5 hours?	☐	☐	☐
Any abnormal finding not attributable to head trauma?	☐	☐	☐
Blood Glucose >60?	☐	☐	☐

TIME LAST KNOWN WELL:

: AM/PM

BLOOD GLUCOSE LEVEL:

mg/dL

FAST-ED Stroke Scale

Item	Score
Facial Palsy	
Normal or minor paralysis	0
Partial or complete paralysis	1
Arm weakness	
No drift	0
Drift or some effort against gravity	1
No effort against gravity or no movement	2
Speech changes	
Absent	0
Mild to moderate	1
Severe, global aphasia or mute	2
Eye deviation	
Absent	0
Partial	1
Forced deviation	2
Denial/Neglect	
Absent	0
Extinction to bilateral simultaneous stimulation in only 1 sensory modality	1
Does not recognize own hand or orients only to one side of the body	2

History:

Conditions:
- ❑ Head Trauma/ Seizures
- ❑ Cardiac Arrhythmias
- ❑ Recent/current bleeding, trauma, surgery or invasive procedure
- ❑ Bleeding disorder
- ❑ Pregnancy

Medications:
- ❑ Coumadin/ warfarin
- ❑ Pradaxa/ dabigatran
- ❑ Xaralto/ rivaroxaban
- ❑ Eliquis/apixaban
- ❑ aspirin

Sudden Acute Stroke Symptoms:

- ❑ *Sudden* numbness, weakness or paralysis of face, arm or leg-- especially one side of the body
- ❑ *Sudden* confusion, trouble speaking or understanding speech
- ❑ *Sudden* trouble seeing in one or both eyes
- ❑ *Sudden* trouble walking, loss of balance or coordination; or
- ❑ *Sudden* severe headache with no known cause

Say "Stroke Alert" in Hospital Entry Note if patient meets the Stroke Criteria, even if symptoms have resolved.

Medical Protocol 2.18

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SECTION 3:

CARDIAC PROTOCOLS

Statewide Treatment Protocols
Version 2018.1

3.1 Acute Coronary Syndrome- Adult

Not all patients with complaints of chest pain should be treated with aspirin, nitrates and oxygen. Consider the likelihood of ACS based on the nature of the symptoms, the patient's age, cardiac risk factors, past medical history, etc.

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care
- **Aspirin** 324-325 mg. Check allergy status. Check contraindications.
- **Nitroglycerin** 1 tab/spray SL every 5 minutes to a maximum 3 doses
  - Must be patient's own NTG
  - Include doses self-administered PTA
  - SBP must be >120mmHg
- **If suspected MI**, determine patient eligibility for fibrinolytic therapy (within this protocol).

ADVANCED EMT STANDING ORDERS

A

- IV must be established before administration of nitroglycerin
- **Nitroglycerin** 0.4mg SL every 3–5 minutes while symptoms persist and if systolic BP remains >120 mmHg.
  - If patient has taken their own Nitroglycerin PTA, and you have determined that the pharmacologic potency of that nitroglycerin was normal (based upon standard side effects of the med, e.g., headache/tingling sensation) without pain relief, contact Medical Control for other treatment options.

PARAMEDIC STANDING ORDERS

P

NOTE: A second IV line may be indicated for high-risk patient.

- Medication interventions based on risk for ACS, clinical presentation and/or diagnostic EKG changes.
- **Fentanyl** 1 mcg/kg slow IV/IO/IM/IN weight based (kg) to a max of 150mcg (150kg)

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications.

- Avoid nitroglycerin in ALL patients who have used a phosphodiesterase inhibitor such as: **sildenafil** (Viagra, Revatio), **vardenafil** (Levitra, Staxyn), **tadalafil** (Cialis, Adcirca) within the last **48 HOURS**. These medications are often used for erectile dysfunction and pulmonary hypertension. Also avoid use in patients receiving intravenous epoprostenol (Flolan) which is also used for pulmonary hypertension.
- Administer nitrates with extreme caution, if at all, to patients with inferior-wall STEMI or suspected right ventricular (RV) involvement because these patients require adequate RV preload.

Protocol Continues

Acute Coronary Syndrome - Adult

3.1

Protocol Continued

If patient appears to be having a ST-elevation MI (STEMI), refer to the appropriate STEMI-Point of Entry (POE) plan, and transport accordingly.

Avoid hyperoxygenation, oxygen administration should be titrated to patient condition, and administered with evidence of hypoxemia, dyspnea, or an SpO2 <94%, especially in the presence of a suspected CVA/TIA or ACS.

Additional signs and symptoms of an ACS patient may be;

Sudden onset of diaphoresis (cool, clammy, wet skin often profuse), anxiety, restlessness, abnormal vital signs such as an irregular pulse rate, and nausea / vomiting.

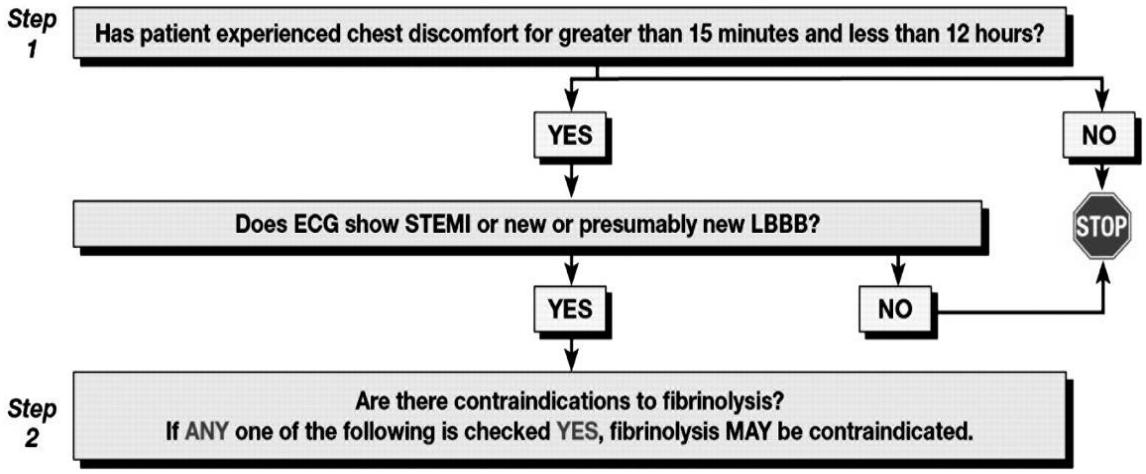
All ACS patients must be carefully monitored until a definitive diagnosis can be made at the hospital and shall have a 12-lead evaluation done by EMT-Paramedics. All patients with ACS-like symptoms of a non-traumatic etiology should be considered to be of cardiac origin until proven otherwise.

Acute Coronary Syndrome (ACS) represents a spectrum of disease. There are at least three conditions identified within the spectrum of ACS: Classic anginal chest pain; atypical chest pain; anginal equivalents; Patients experiencing a myocardial infarction or an ischemic event of unknown etiology may, based on 12-lead interpretation fall into one of three categories, “injury (STEMI)” or “Ischemia” or “Non-Diagnostic.”

Classical Anginal Chest Pain	Atypical Chest Pain	Anginal Equivalents
Central Anterior Pain	Epigastric discomfort	Dyspnea
Chest Pressure, tightness	Musculoskeletal	Syncope
Crushing Pain	Often Unilateral	“Generally Weak”
Pain radiating to arms, neck and back	Nausea/Vomiting	Palpitations

3.1 Acute Coronary Syndrome – Adult Fibrinolytic Checklist

***Note:** This checklist is intended only as a tool for the pre-hospital identification of patients with significant contraindication(s) to the administration of fibrinolytics in the acute ST elevation M.I. (STEMI) setting. It is not intended to be a comprehensive list of all factors to be considered prior to administration of these agents. Significant contraindications may warrant the triage of these patients to facilities capable of percutaneous intervention (PCI). This list can also be used to determine if a possible ischemic stoke victim, is a candidate for ischemic stroke reperfusion.



Systolic BP >180 to 200 mm Hg or diastolic BP >100 to 110 mm Hg	◯ **YES**	◯ NO
Right vs left arm systolic BP difference >15 mm Hg	◯ **YES**	◯ NO
History of structural central nervous system disease	◯ **YES**	◯ NO
Significant closed head/facial trauma within the previous 3 weeks	◯ **YES**	◯ NO
Stroke >3 hours or <3 months	◯ **YES**	◯ NO
Recent (within 2-4 weeks) major trauma, surgery (including laser eye surgery), GI/GU bleed	◯ **YES**	◯ NO
Any history of intracranial hemorrhage	◯ **YES**	◯ NO
Bleeding, clotting problem, or blood thinners	◯ **YES**	◯ NO
Pregnant female	◯ **YES**	◯ NO
Serious systemic disease (eg, advanced cancer, severe liver or kidney disease)	◯ **YES**	◯ NO

Step 3 — **Is patient at high risk?**
If ANY one of the following is checked YES, consider transfer to PCI facility.

Heart rate ≥100/min AND systolic BP <100 mm Hg	◯ **YES**	◯ NO
Pulmonary edema (rales)	◯ **YES**	◯ NO
Signs of shock (cool, clammy)	◯ **YES**	◯ NO
Contraindications to fibrinolytic therapy	◯ **YES†**	◯ NO
Required CPR	◯ **YES**	◯ NO

†Consider transport to primary PCI facility as destination hospital.

Atrial Fibrillation/Flutter 3.2

EMT/ADVANCED EMT STANDING ORDERS

E/A

- 1.0 Routine Patient Care

PARAMEDIC STANDING ORDERS

P

- If the rhythm appears to be amenable, e.g. “regular narrow SVT”, may attempt vagal maneuvers: “Valsalva” and/or cough.
- If the patient’s systolic blood pressure is **unstable** (less than **100 mm Hg, with signs of hypoperfusion**):
  - **In Atrial Fibrillation, synchronized cardioversion** at **200 J, 300J,** and **360 J** or the equivalent biphasic values as per manufacturer).
  - **In Atrial Flutter, synchronized cardioversion** beginning at 50J.
- Check rhythm and pulse between each attempted cardioversion.
- If Cardioversion is warranted, consider use of 7.6 Sedation and Analgesia for Electrical Therapies.
- **Diltiazem HCL**
  - Heart rate greater than 150 and patient stable but symptomatic:
    - Initial bolus: **0.25 mg/kg slow IV/IO over two (2) minutes**.
    - If inadequate response after 15 minutes, re-bolus **0.35 mg/kg SLOW IV/IO over two (2) minutes**.

CONTRAINDICATIONS: Wolff-Parkinson-White Syndrome, second or third degree heart block and sick sinus syndrome (except in the presence of a ventricular pace maker), severe hypotension or cardiogenic shock.

- **Heart rate less than 150 and patient stable but symptomatic:**
  - Contact Medical Control.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications
- **Amiodarone** 150 mg Slow IV/IO over 10 minutes.
- **Metoprolol**:
  - Bolus: 2.5-5 mg SLOW IV/IO over 2 minutes.
  - Repeat dosing in 5 minute intervals for a maximum of 15 mg.

CAUTION: Do not use IV Metoprolol with IV Ca Blockers.

3.3A Bradycardia-Adult

EMT/ADVANCED EMT STANDING ORDERS

E/A

- 1.0 Routine Patient Care

PARAMEDIC STANDING ORDERS

P

- If patient is symptomatic (such as altered mental status or ischemia),
  - Transcutaneous Pacing (TCP).
  - **Atropine sulfate** 0.5 mg IV/IO every three (3) to five (5) minutes up to total dose 3 mg may be considered while waiting for pacer set-up.
  - If Transcutaneous Pacing (TCP) is warranted, consider 7.6 Sedation and Analgesia for Electrical Therapy.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications
- **Norepinephrine** infusion: 0.1mcg/kg/min IV/IO, titrate to goal Systolic Blood Pressure of 90mmHg, **OR**
- **Dopamine** 2-20 mcg/kg/min IV/IO
- **Epinephrine infusion** 2-10 mcg/min IV/IO
  -For example: mix 1mg of Epinephrine 1:1000 in 250mL of Normal Saline, (15 micro drops/minute = 1 mcg / min.)
- **Glucagon** 1 - 5 mg IV/IO/IM/SC for suspected beta-blocker or calcium-channel blocker toxicity.
- **Calcium chloride** 10% 2 - 4 mg/kg max.1 gram IV/IO slowly over five (5) minutes for suspected calcium channel blocker toxicity.

Bradycardia- Pediatric 3.3P

EMT/ADVANCED EMT STANDING ORDERS

E/A

- 1.0 Routine Patient Care
- If pulse is less than 60 in a child, AND the patient is severely symptomatic, consider starting Cardiopulmonary Resuscitation (CPR).

PARAMEDIC STANDING ORDERS

P

- If patient is severely symptomatic:
  - **Epinephrine** 1:10,000, 0.01 mg/kg IV/IO (max. dose 0.5 mg) **OR**,
  - **Atropine** 0.02 mg/kg IV/IO (min. single dose 0.1 mg, max. single dose 1 mg). If increased vagal tone or AV block suspected.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications.
- Additional fluid boluses (10-20mL/kg)
- Transcutaneous pacing, if available.
- **Epinephrine** 1:10,000 – 0.01-0.03 mg/kg IV/IO (max. single dose of 0.5 mg)\
- **Epinephrine** Infusion 1:1,000, 0.1-1 mcg/kg/min IV/IO
  - For example, mix 1mg of Epinephrine 1:1000 in 250mL of Normal Saline, (15 micro drops/minute = 1 mcg / min.)

3.4A Cardiac Arrest (ADULT): Asystole/ Pulseless Electrical Activity

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care
- Early AED Use.
  - Perform HQCPR until AED device is attached and operable.
  - Use AED according to Emergency Cardiovascular Care (ECC) Guidelines or as otherwise noted in these protocols and other advisories.
  - If No Shock Advised, Resume HQCPR when appropriate.
- If suspected opioid overdose administer Naloxone per protocol.

ADVANCED EMT STANDING ORDERS

A

- Consider underlying causes for Asystole/PEA.
- At all times, minimize interruptions of chest compressions, especially during IV/IO placement.

PARAMEDIC STANDING ORDERS

P

- Verify Asystole in 2 leads, if possible.
- Consider and treat underlying causes for Asystole/PEA:
- If cause is unknown and Asystole/PEA persists:
- **Epinephrine** 1:10,000 1 mg IV/IO every 3-5 minutes; may substitute **Vasopressin** 40 UNITS IV/IO in place of first or second dose of epinephrine 1:10,000.
- For suspected hyperkalemia administer **calcium chloride** 2-4mg/kg slow IV over 5 minutes to maximum 1g.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications.
- **Sodium bicarbonate** 1 mEq/kg IV/IO
- **Atropine** 1 mg IV/IO, repeated to max dose 3 mg.

REVERSIBLE CAUSES OF CARDIAC ARREST INCLUDE:

- Hypothermia: initiate 2 large bore IVs (warm) Normal Saline
- Hyperkalemia: Contact Medical Control
- Hypoxia: provide high flow oxygen
- Hypovolemia: 250mL fluid bolus.
- Hydrogen Ion/Acidosis: Contact Medical Control
- Toxins/Tablets: see Toxicology protocol
- Thrombus (Coronary/Pulmonary): Contact Medical Control
- Tension Pneumothorax: Perform needle chest decompression.
- Tamponade (Pericardial): Contact Medical Control

Cardiac Arrest (PEDIATRIC): Asystole/ Pulseless Electrical Activity

3.4P

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care—with focus on CPR
- Ventilate with 100% oxygen.
- If unable to ventilate child after repositioning of airway: assume upper airway obstruction and follow Pediatric Upper Airway Obstruction Protocol.
- Early AED Use.
  - Use AED according to the guidelines of the ECC or as otherwise noted in these protocols and other advisories.
  - If No Shock Advised resume CPR if appropriate.
- If suspected opioid overdose administer Naloxone per protocol.

ADVANCED EMT STANDING ORDERS

A

- Consider 20 ml/kg Normal Saline bolus.

PARAMEDIC STANDING ORDERS

P

- Consider treating for reversible causes.
- **Epinephrine**:
  - For **Bradycardia**: 0.01 mg/kg (1:10,000) IV/IO every 3-5 minutes.
  - **For Asystole or PEA:** 0.01 mg/kg (1:10,000) IV/IO every 3-5 minutes.

Epinephrine infusion: initial dose, 0.1 mcg/kg/min IV/IO. Titrate to desired effect to maximum dose of 1 mcg/kg/min.
For example, mix 1mg of Epinephrine 1:1000 in 250mL of Normal Saline, (15 micro drops/minute = 1 mcg / min.)

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications.
- **Sodium bicarbonate** 1 mEq/kg IV/IO
- **Atropine** 0.02mg/kg IV/IO (minimum single dose 0.1mg, maximum combined doses 1 mg.)
- All other treatment modalities based on suspected etiology for cardiopulmonary arrest.

REVERSIBLE CAUSES OF CARDIAC ARREST INCLUDE:

- Hypothermia: initiate 2 large bore IVs (warm) Normal Saline
- Hyperkalemia: Contact Medical Control
- Hypoxia: provide high flow oxygen
- Hypovolemia: 20mL/kg fluid bolus.
- Hydrogen Ion/Acidosis: Contact Medical Control
- Toxins/Tablets: see Toxicology protocol
- Thrombus (Coronary/Pulmonary): Contact Medical Control
- Tension Pneumothorax: Perform needle chest decompression.
- Tamponade (Pericardial): Contact Medical Control

3.5A Cardiac Arrest (ADULT): Ventricular Fibrillation/Pulseless Ventricular Tachycardia

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care
- Perform HQCPR until defibrillator is attached and operable.
  - Use AED according to the ECC guidelines or as otherwise noted in these protocols and other advisories
  - Resume HQCPR when appropriate.
- If suspected opioid overdose administer Naloxone per protocol.

ADVANCED EMT STANDING ORDERS

A

- Minimize interruptions of chest compressions for IV/IO placement.

PARAMEDIC STANDING ORDERS

P

- Document presenting cardiac rhythm in two separate leads, if possible.
- Defibrillation when available, with minimum interruption in chest compressions (use 360 joules for monophasic and 120 – 200 joules for biphasic defibrillators); then HQCPR for 5 cycles/2 minutes; then rhythm check; Charge defibrillator while performing chest compressions to minimize hands-off-time.
- Consider **epinephrine** (1:10,000) 1mg IV/IO; repeat every 3 – 5 minutes. May substitute **vasopressin** 40 units IV/IO in place of first or second dose of epinephrine 1:10,000.
- Continue HQCPR and defibrillate (each shock at 360J monophasic equivalent) per ECC guidelines if ventricular fibrillation/pulseless ventricular tachycardia is persistent.
- Consider **amiodarone** 300 mg slow IV/IO push.
- **Magnesium sulfate** 1 – 2 grams IV/IO over 5 minutes, in torsades de pointes or suspected hypomagnesemic state or refractory ventricular fibrillation/pulseless ventricular tachycardia.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications.
- **Sodium bicarbonate** 1 mEq/kg IV/IO.
- **Amiodarone** 150 mg. slow IV/IO if one dose already given or 300 mg slow IV/IO if not already given.
- **Lidocaine** 1.5 mg/kg IV/IO; subsequent dosage: 0.5 to 0.75 mg/kg IV/IO every 3 – 5 minutes to a total dose of 3 mg/kg IV/IO.

NOTE:

- Early HQCPR and early defibrillation are the most effective therapies for cardiac arrest care.
- Minimize interruptions in chest compression, as pauses rapidly return the blood pressure to zero and stop perfusion to the heart and brain.
- Switch compressors at least every two minutes to minimize fatigue.
- Perform “hands on defibrillation.”
  - Compress when charging and resume compressions immediately after the shock is delivered.
- Do not hyperventilate as it increases intrathoracic pressure and decreases blood return to the heart. Ventilate at a rate of 1breath every 6 seconds/10 breaths per minute with enough volume to produce adequate chest rise.

Cardiac Arrest (PEDIATRIC): 3.5P
Ventricular Fibrillation/Pulseless Ventricular Tachycardia

EMT/ADVANCED EMT STANDING ORDERS

E/A

- 1.0 Routine Patient Care—with focus on high quality CPR
- Apply AED and use as soon as possible (with minimum interruption of chest compressions). From birth to age 8 years use pediatric AED pads.
- If pediatric AED pads are unavailable, providers may use adult AED pads, provided the pads do not overlap.
- If unable to ventilate child after repositioning of airway, assume upper airway obstruction and follow Pediatric Upper Airway Obstruction Protocol.
- Consider treatable causes.
- If suspected opioid overdose administer Naloxone per protocol.

PARAMEDIC STANDING ORDERS

P

- Defibrillate once at 2-4J/kg.
- **Epinephrine**: 0.01mg/kg IV/IO (1:10,000, 0.1mL/kg); repeat every 3-5 minutes.
- Defibrillate 4-10 J/kg (do not exceed 10J/kg) every 2 minutes.
- **Amiodarone** 5 mg/kg IV/IO
- Defibrillate 4 J/kg 30-60 seconds after each medication.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications.
- **Sodium bicarbonate** 1 mEq/kg IV/IO.
- All other treatment modalities based upon suspected cause of VF/PVT.

NOTE:
The need for early defibrillation is clear and should have the highest priority. Since these patients will all be in cardiopulmonary arrest, use of adjunctive equipment should not divert attention or effort from Basic Cardiac Life Support (BCLS) resuscitative measures, early defibrillation and Advanced Cardiac Life Support (ACLS). Remember: rapid defibrillation and high quality CPR is the major determinant of survival.

NOTE:
- Early CPR and early defibrillation are the most effective therapies for cardiac arrest care.
- Minimize interruptions in chest compression, as pauses rapidly return the blood pressure to zero and stop perfusion to the heart and brain.
- Switch compressors at least every two minutes to minimize fatigue.
- Perform “hands on defibrillation.”
  - Compress when charging and resume compressions immediately after the shock is delivered.
- Do not hyperventilate as it increases intrathoracic pressure and decreases blood return to the heart. Ventilate at an appropriate rate, with enough volume to produce adequate chest rise.

3.6 Congestive Heart Failure (Pulmonary Edema)

EMT/ADVANCED EMT STANDING ORDERS

E/A

- 1.0 Routine Patient Care

PARAMEDIC STANDING ORDERS

P

- **Nitroglycerin** 0.4-0.8mg (1/150 gr.) tablet/spray, sublingual
  - SBP must be >120 mm Hg
  - May be repeated every 5 minutes, as dictated by BP.
- **Nitropaste** 1 inch to chest wall if SBP >120 mm Hg.
- Continuous positive airway pressure (CPAP) assistance, if not contraindicated.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications.
- **Furosemide** 20-40mg IV/IO, or 40-80mg IV/IO if patient is already on diuretics.
- **Norepinephrine** infusion: 0.1mcg/kg/min IV/IO, titrate to goal Systolic Blood Pressure of 90mmHg, **OR**
- **Dopamine** 2-20 mcg/kg/min IV/IO
- In patients who require emergent intubation, and cannot be intubated by conventional means, see 5.2 Difficult Airway Protocol.

Avoid nitroglycerin in ALL patients who have used a phosphodiesterase inhibitor such as: **sildenafil** (Viagra, Revatio), **vardenafil** (Levitra, Staxyn), **tadalafil** (Cialis, Adcirca) which are used for erectile dysfunction and pulmonary hypertension within the last **48 HOURS**. Also avoid use in patients receiving intravenous epoprostenol (Flolan) which is also used for pulmonary hypertension.

Targeted Temperature Management – Adult 3.7

Indications:
- > 16 years or older; If <16, contact **Medical Control**
- ROSC – patient demonstrates no purposeful movement to sternal rub or response to commands 5 minutes into ROSC, and
- Palpable Carotid pulse with a stable cardiac rhythm, and
- Patient does not have existing hypothermia (< 32º C), and
- Patient is intubated or appropriate rescue airway.
- Post-cardiac arrest with return of spontaneous circulation (ROSC)
- Post-cardiac arrest in setting of STEMI

Contraindications:
- Traumatic arrest, or
- Hypothermia exists (< 32° C) by core temperature
- Identified Pregnancy, or
- Respiratory arrest

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care

MEDICAL CONTROL MAY ORDER

- Ice packs or equivalent in armpits, neck, torso and groin areas of patients that meet indications criteria.

ADVANCED EMT STANDING ORDERS

A

- Airway interventions, as appropriate, according to protocol, prior to cooling. **Do not hyperventilate; goal ETCO2 of around 40 mmHg.**
- Ice packs or equivalent in armpits, neck, torso and groin areas of patient.
- Obtain 1-2 points of vascular access.

PARAMEDIC STANDING ORDERS

P

- Cardiac Monitor: (12 lead ECG where appropriate**)** manage dysrhythmias per protocol. **If STEMI present, transport to nearest STEMI Center.**
- Place esophageal thermometer probe to establish patient's baseline body temperature. **(IF AVAILABLE)**
- If patient has significant shivering, you may administer:
  - **Midazolam** 2 - 6 mg IV/IO/IM/IN, OR
  - **Fentanyl** 50 mcg IV/IO/IM/IN every 5 minutes to max. 200 mcg OR
  - **Morphine** 0.1mg/kg IV/IO/IM/SC, (max. dose 10 mg).

CAUTION: Routine prehospital cooling of patients with ROSC with intravenous (IV) rapid infusion is not advised (class III: no benefit; level of evidence A).

NOTE: The end temperature goal is 32-36 degrees C (89.6-96.8 F).

3.8 Post Resuscitative Care/ROSC – Adult & Pediatric

EMT/ADVANCED EMT STANDING ORDERS

E/A

- 1.0 Routine Patient Care

PARAMEDIC STANDING ORDERS

- Consider treatable causes such as overdose, cardiogenic shock and STEMI.
- Consider treatable causes such as respiratory arrest.
- Bolus IV fluid at a rate of 20ml/kg.
- Manage dysrhythmias according to specific protocols.
- Perform a 12-lead ECG; If STEMI is present and the patient is stable enough follow the Department – approved STEMI POE plan. Consult with medical control if questions arise.
- Begin induced therapeutic hypothermia (3.7 Induced Therapeutic Hypothermia), but do not delay transport

P

Adult:

- **Norepinephrine** infusion: 0.1mcg/kg/min IV/IO via pump, titrate to goal Systolic Blood Pressure of 90mmHg,

  OR
- **Dopamine** 2-20mcg/kg/min IV/IO.

Pediatric:

- **Norepinephrine** infusion: 0.1 mcg/kg/min IV/IO via pump, titrate to goal Systolic Blood Pressure of 90mmHg.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications.

Adult:

- **Epinephrine infusion** - Administer 2 mcg to 10 mcg per minute IV or IO.
  - For example, mix 1 mg of 1:1000 Epinephrine in 250 ml Normal Saline, then 15 micro drops/minute = 1 mcg / min
- **Amiodarone** bolus (150mg in 10mL Normal Saline slow over 8-10 minutes), followed by 1 mg/min IV/IO drip.
  - For example: 100mg/100mL - 1mg/minute.
- **Lidocaine** 1-1.5 mg/kg IV/IO followed by drip at 2-4 mg/min.

Pediatric:

- Pediatric patients **epinephrine infusion** - Administer 0.1 to 1 mcg/kg/min IV or IO by pump with titration to goal SBP of 90mm Hg.
  - For example, mix 1 mg of 1:1000 Epinephrine in 250 ml Normal Saline, then 15 micro drops/minute = 1 mcg / min.

REMINDER: This is an extremely unstable period. The patient should be monitored closely and frequently. Recurrent dysrhythmias, hypotension and re-arrest are not uncommon occurrences. Avoid hyperthermia and hyperventilation.

Avoid hyperoxygenation; oxygen administration should be titrated to patient condition, and withheld unless evidence of hypoxemia, dyspnea, or an SpO2 <94%, especially in the presence of a suspected CVA/TIA or ACS.

Avoid hyperoxygenation; oxygen administration should be titrated to patient condition.

Supraventricular Tachycardia-Adult

3.9A

EMT/ADVANCED EMT STANDING ORDERS

E/A

- 1.0 Routine Patient Care

PARAMEDIC STANDING ORDERS

P

- Vagal Maneuvers: Valsalva's and/or cough.
- If Systolic BLOOD PRESSURE is unstable (less than 100mm Hg): Synchronized cardioversion at 50 J, 100 J, 200 J, 300 J and 360 J or the equivalent biphasic values as per manufacturer. Check rhythm and pulse between each attempted cardioversion.
- If cardioversion is warranted, consider 7.6 Sedation and Analgesia for Electrical Therapy.
- **Adenosine** 6 mg rapid IV/IO over 1-3 seconds. If previous dose failed to resolve rhythm disturbance, **adenosine** 12mg rapid IV/IO over 1-3 seconds. Repeat **adenosine** 12 mg rapid IV/IO over 1-3 seconds if previous doses failed to resolve rhythm disturbance.

Note: Follow all Adenosine with a 20 mL Normal Saline bolus and elevate extremity.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications.
- Administration of **diltiazem HCL:**
  - Initial bolus: 0.25 mg/kg IV/IO over two (2) minutes.
  - If inadequate response after 15 minutes, **re-bolus** 0.35 mg/kg IV/IO over two (2) minutes.

CONTRAINDICATIONS: Wolff-Parkinson-White Syndrome, second or third degree heart block and sick sinus syndrome (except in the presence of a ventricular pace maker), severe hypotension or cardiogenic shock.

OR

- **Amiodarone** 150 mg IV/IO slowly over 10 minutes.

3.9P Supraventricular Tachycardia-Pediatric

EMT/ADVANCED EMT STANDING ORDERS

E/A

- 1.0 Routine Patient Care
- If tachycardia is related to acute injury or volume loss, see 2.16P Shock.

PARAMEDIC STANDING ORDERS

P

- IV Normal Saline (KVO). If hypovolemic component is suspected, administer **20 mL/kg** IV Bolus of normal saline.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications.
- Synchronized cardioversion **0.5 joules/kg** for symptomatic patients. Subsequent cardioversion may be done at up to 1 joule/kg. If cardioversion is warranted, consider administration of 7.6 Sedation and Analgesia for Electrical Therapy**,** per protocol.
  - See A2 Pediatric Color Coded Medication Reference for dosing.
- **Adenosine** 0.1 mg/kg rapid IV/IO. If no effect, repeat **adenosine** 0.2 mg/kg Rapid IV push. MAXIMUM single dose of Adenosine must not exceed 12 mg.
- Consider Vagal maneuvers (see Reminder below).

Synchronized cardioversion should be considered for only those children whose heart rate is in excess of 220, and who demonstrate one or more of the following signs of hypoperfusion: Decreased level of consciousness, weak and thready pulses, capillary refill time of more than 4 seconds, or no palpable BLOOD PRESSURE.

REMINDER: Vagal maneuvers may precipitate asystole and therefore should be employed with caution in the field and only in a cardiac-monitored child with IV access.

Ventricular Tachycardia with Pulses – Adult & Pediatric 3.10

EMT/ADVANCED EMT STANDING ORDERS

E/A

- 1.0 Routine Patient Care

PARAMEDIC STANDING ORDERS

P

- If Systolic BLOOD PRESSURE is unstable (less than 100mm Hg): synchronized cardioversion at 100 J, 200 J, 300 J and 360 J or the equivalent biphasic values as per manufacturer. Check rhythm and pulse between each attempted cardioversion.
  - In Pediatric patients, synchronized cardioversion per Pediatric Color-Coded Appendix.
  - If cardioversion is warranted, see 7.6 Sedation and Analgesia for Electrical Therapy.
- If systolic BLOOD PRESSURE is stable (greater than or equal to 100mm Hg) administer **amiodarone** 150 mg in 10 cc Normal Saline, slow IV/IO over 8-10 minutes.
- In Pediatric patients, **amiodarone** dose per Pediatric Color-Coded Appendix.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications or attempts at cardioversion.
- **Magnesium sulfate** (for Torsades de Pointes or suspected hypomagnesemic state or severe refractory VENTRICULAR TACHYCARDIA) 1 – 2 grams IV/IO over 5 minutes.
  - CONTRAINDICATIONS: Heart Block, renal disease.
- **Amiodarone infusion** 1 mg/min IV/IO.
  - For example: 100mg/100ml – 1mg/minute.
- **Lidocaine** 1 – 1.5 mg/kg IV/IO; subsequent dosage: 0.5 – 0.75 mg/kg IV/IO every 3 – 5 minutes to a total dose of 3 mg/kg. If dysrhythmia is successfully converted after administration of Lidocaine bolus, consider IV infusion of Lidocaine 2 – 4 mg/min.
- **Adenosine** 6 mg or 12 mg IV push; in selected cases ONLY.

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SECTION 4:

TRAUMA PROTOCOLS

Statewide Treatment Protocols
Version 2018.1

4.1 Burns/Inhalation/Electrocution and Lightning Strike Injuries – Adult & Pediatric

EMT STANDING ORDERS

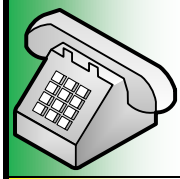
E

- 1.0 Routine Patient Care
- Appropriately manage Thermal vs. Chemical burns.

THERMAL

- Stop burning process with water or saline.
- Remove smoldering, non-adherent clothing and jewelry. DO NOT remove skin or tissue.
- Cover burns with a CLEAN, DRY, STERILE DRESSING.
- Large thermal injuries are susceptible to hypothermia-- attempt to reduce heat loss in burn victims.

CHEMICAL



- Determine offending agent(s) and consider HAZMAT intervention, if indicated.
- Wash with copious amounts of clean water and/or sterile normal saline for 10-15 minutes, unless contraindicated by chemical agent (i.e., sodium, potassium and/or lithium metals). **CAUTION**: Primary water irrigation is contraindicated for Dry Lime/Lye and/or Phenol exposure (may produce further chemical reactions). Dry powders should be brushed off prior to flushing with large amounts of water. It is advised to contact **MEDICAL CONTROL** for further advice.
- If chemical viscous, remove with tongue depressor.

ADVANCED EMT STANDING ORDERS

A

- Begin fluid resuscitation for treatment of the BURN INJURY if greater than 20% BSA including second and third degree injuries (1st degree [sunburn] not included in TBSA estimation),

  - **Adults**: Bolus 1 Liter Normal Saline
  - **Pediatrics**: 20 mL/kg Normal Saline
- Burn <20% age appropriate, maintenance fluids as follows:

  - **Adults**: 500 mL Normal Saline
  - **Pediatrics**: 10mL/kg Normal Saline
- For transport times GREATER THAN 1 HOUR, or further fluid administration, **consult medical control**

MEDICAL CONTROL MAY ORDER

- Additional IV fluid boluses.

PARAMEDIC STANDING ORDERS

P

- After a complete patient assessment consider initiating the pain management protocol.
- In a patient who may have experienced smoke inhalation with suspected cyanide toxicity (e.g. hypotension, altered mental status, seizure or other), if carried, consider **hydroxocobalamin** 5 gm IV/IO over 15 minutes in an adult, and 70 mg/kg (to maximum 5 gm) IV/IO over 15 minutes in a pediatric patient.
- In patients with suspected CO poisoning, initiate high flow oxygen.

Protocol Continues

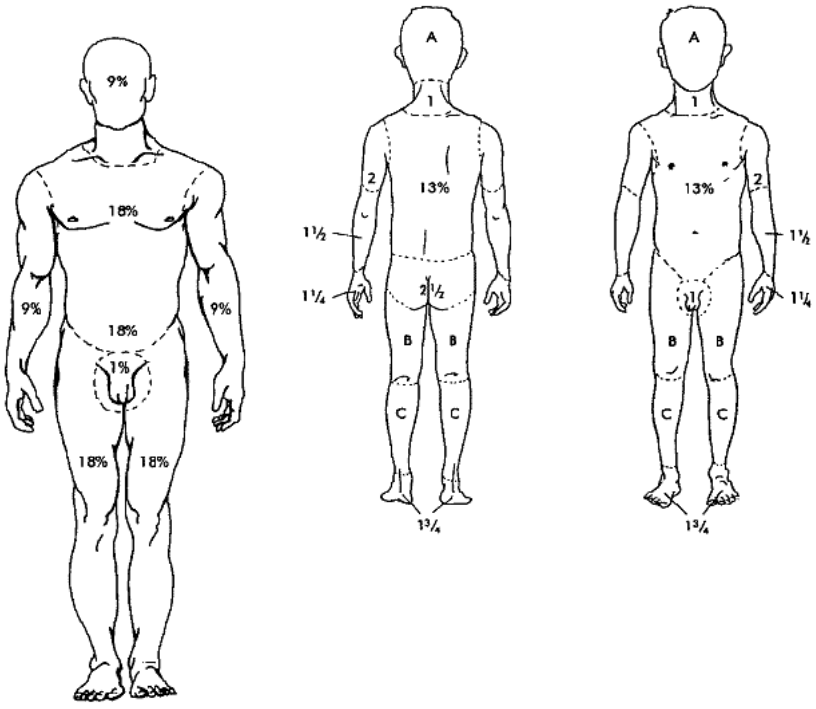
Burns/Inhalation/Electrocution and Lightning Strike Injuries – Adult & Pediatric 4.1

Protocol Continued

The committee on Trauma of the American College of Surgeons (ACS) and the American Burn Association (ABA) have identified certain injuries as those which generally require referral to a burn center.

The following injuries generally require referral to a burn unit:

1. Partial thickness burns greater than 10% total body surface area (TBSA)
2. Burns that involve the face, hands, feet, genitalia, perineum, or major joints
3. Third-degree burns in any age group
4. Electrical burns, including lightning injury
5. Chemical burns
6. Inhalation injury
7. Burn injury in patients with preexisting medical disorders that could complicate management, prolong recovery, or affect mortality. Burns in any patients with concomitant trauma (such as fractures) in which the burn injury poses the greatest risk of morbidity or mortality. In such cases, if the trauma poses a greater immediate risk than the burns, it may be necessary to stabilize the patient in a trauma center before being transferred to a burn unit. Physician judgment is necessary in such situations and should be in concert with **established** triage protocols.



Estimation of Burn Size (Children)					
Area	**Age 0**	**1 yr.**	**5 yr.**	**10 yr.**	**15 yr.**
A - ½ of head	9 ½ %	8 ½ %	6 ½ %	5 ½ %	4 ½ %
B - ½ of one thigh	2 ¾ %	3 ¼ %	4 %	4 ¼ %	4 ½ %
C - ½ of one leg	2 ½ %	2 ½ %	2 ¾ %	3 %	3 ¼ %

4.2 Drowning/Submersion Injuries Adult & Pediatric

EMT/ADVANCED EMT STANDING ORDERS

E/A

- Routine Patient Care
- Begin resuscitation efforts while removing the patient from the water
- Consider hypothermia.

Note: Ensure spinal stabilization and immobilization if indicated (e.g. unwitnessed event, unconscious patient, or mechanism of injury).

PARAMEDIC STANDING ORDERS

P

MEDICAL CONTROL MAY ORDER

- Additional fluid boluses.

Eye Emergencies
Adult & Pediatric

4.3

EMT/ADVANCED EMT STANDING ORDERS

E/A

- 1.0 Routine Patient Care
- Obtain visual history (e.g., use of corrective lenses, surgeries, use of protective equipment).
- Obtain visual acuity, if possible.
- Assist patient with the removal of contact lens, if applicable.
- Chemical irritants, including pepper spray: flush with copious amounts of water, or 0.9% NaCl.
- Thermal burns to eyelids: patch both eyes with cool saline compress.
- Impaled object: immobilize object and patch both eyes.
- Puncture wound: place rigid eye shield over both eyes. Do not apply pressure.
- Foreign body: patch both eyes.
- If the patient cannot close their eyelids, keep their eye moist with a sterile saline dressing.

PARAMEDIC STANDING ORDERS

P

- Topical anesthetic: **tetracaine** 1-2 eye drops as needed, if available.
- Use of Morgan lens for eye irrigation.

MEDICAL CONTROL MAY ORDER

- Special consideration: Sudden painless loss of vision: If suspect central retinal artery occlusion in patient with acute non-traumatic, painless loss of vision in one eye (most common in elderly patient): apply vigorous pressure using heel of hand (massage) to affected eye for three(3) to five(5) seconds, then release. The patient may perform this procedure. Repeat as necessary. NOTE: Cardiac (EKG) monitor (12 lead ECG) is required for this procedure (i.e., vagal stimulus: asystole). CAUTION: If tetracaine has been administered, do not apply pressure to eye.
- If chemical eye burn suspected in patients who wear contact lenses, contact medical control regarding removing contact lenses.

CHEMICAL IRRITANTS: Eye(s) should be flushed as soon as possible using copious amounts of water for a period of fifteen (15) minutes with a controlled stream of Sterile Normal Saline, Sterile water or tap water.

BLUNT TRAUMA: Both eyes should be patched and protected.

PENETRATING TRAUMA: Puncture wound with no impaled object: Both eyes should be patched and protected.

NOTE: *If object is impaled in the eye, the object must be immobilized and both eyes should be patched and protected. (Objects penetrating the eye globe should only be removed in-hospital.)

THERMAL BURNS: Both eyes should be patched and protected.

SECURING IMPALED OBJECT IN AN EYE

1. Place a roll of gauze bandage or folded gauze pads on either side of the impaled object, along the vertical axis of the head. These rolls or pads are placed so they stabilize the object.
2. Fit an eye shield around the impaled object. The protective shield should not press the impaled object.
3. Secure the dressings and shield in place with self adherent roller bandage or wrapping of gauze. **DO NOT** secure bandage over the top of the shield.
4. Patch and bandage the uninjured eye to reduce eye movements.

4.4 Head Trauma & Injuries Adult & Pediatric

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care
- Ensure cervical spine stabilization and immobilization**
- Elevate head of patient to 20° - 30° unless contraindicated.
- Within your scope of practice, work to avoid hypoxia and hypotension.

ADVANCED EMT STANDING ORDERS

A

- Provide advanced airway management only if patient is not adequately oxygenating (defined as SpO2 maintained at > 95%) or ventilating and not corrected by BVM. Maintain ETCO2 at 35-40 mmHg.
- When obtaining vascular access, avoid fluid overload, only give fluids to maintain SBP >100mmHg.

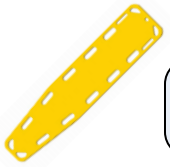
PARAMEDIC STANDING ORDERS

P

- In patients who require emergent intubation, and cannot be intubated by conventional means, see 5.2 Difficult Airway.

MEDICAL CONTROL MAY ORDER

- Further fluid boluses.



Note: Medical Director Option for Selective Spinal Assessment if trained and authorized, see 6.4 Selective Spinal Assessment.

Multisystem Trauma Adult & Pediatric

4.5

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care
- Control/stop any identified life threatening hemorrhage (direct pressure, tourniquet, etc.), suspected pelvic fractures with commercial device (preferred) or bed sheet.

ADVANCED EMT STANDING ORDERS

A

- Initiate 1-2 large bore IV(s) Normal Saline (KVO) while **en route** to the hospital.

MEDICAL CONTROL MAY ORDER

- Additional fluid boluses.

PARAMEDIC STANDING ORDERS

P

- For a patient ≥ 16 years of age, who has SBP< 90 or P>110, or if the provider determines the patient to be at high risk for significant hemorrhage: **tranexamic acid (TXA)** 1 gram IV over 10 minutes. (mix 1 gram of TXA in 100ml of Normal Saline)

- In patients who require emergent intubation who cannot be intubated by conventional means – Consult 5.2 Difficult Airway.

**Note: Service Medical Director Option for use of TXA only if trained and authorized, see 6.5 Tranexamic Acid.

4.6 Musculoskeletal Injuries Adult & Pediatric

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care
- Manually stabilize the injury.
- Control bleeding and treat for shock (see shock protocol).
- Remove obvious debris, irrigate open wounds with saline solution, and cover with a dry sterile dressings.
- Assess CSMs distal to injury before and frequently after immobilization.
  - Splint extremity as required
  - Traction splinting is preferred technique for isolated adult and pediatric closed mid-shaft femur fractures (unless contraindicated by associated injury)
- Stabilize suspected pelvic fractures with commercial device (preferred) or bed sheet.

ADVANCED EMT STANDING ORDERS

MEDICAL CONTROL MAY ORDER

A

- Additional fluid boluses.

PARAMEDIC STANDING ORDERS

P

- After thorough patient assessment, consider use of 2.13 Pain and Nausea Management.

Note: If no palpable, distal pulse is present following suspected extremity fracture, position injured extremity in correct anatomic position, and apply gentle traction along the axis of the extremity distal to the injury until the distal pulse is palpable and immobilize in place. This does not apply to dislocations.

Soft Tissue / Crush Injuries Adult & Pediatric

4.7

EMT/ADVANCED EMT STANDING ORDERS

E/A

- 1.0 Routine Patient Care
- Control/stop any identified life threatening hemorrhage (direct pressure, tourniquet, etc.).
- Place dry sterile dressing on all open wounds and bandage as needed:
  - If wound is grossly contaminated, irrigate with sterile water or Normal Saline.
  - Stabilize all protruding foreign bodies (impaled objects) if noted.
- If severe crushing injury/compartment syndrome is suspected and injury permits:
  - Remove all restrictive dressings.
  - Close monitoring of distal pulse, sensation, and motor function (CSM).
- Splint/immobilize injured areas as indicated.

MEDICAL CONTROL MAY ORDER

- Additional fluid boluses.

PARAMEDIC STANDING ORDERS

P

- After patient assessment consider using 2.13 Pain and Nausea Management.

Crush injury is associated with severe trauma and most commonly occurs in multiple casualty disasters, such as bombings, earthquakes, building collapse, train accidents and mining accidents. It is the result of compression or pressure on various parts or all of the human body. Crush injuries may result in fatal injury or severe metabolic abnormalities that may result in death. Careful monitoring of these patients is essential.

Compartment syndrome is usually due to a crush injury and is a surgical emergency. It occurs most commonly in the forearm, leg, gluteal region, thigh, and lumbar paraspinous muscles. Compartment syndrome may result in ischemic swelling, muscle infarction, nerve injury and permanent loss of extremity function.

4.8 Spinal Column/Cord Injuries Adult & Pediatric

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care
- Control/stop any identified life-threatening hemorrhage (direct pressure, tourniquets)
- Ensure cervical spine stabilization**.
- Determine presence or absence of significant neurologic signs and symptoms: decreased motor function, decreased sensory function, priapism, and loss of bladder/ bowel control.
- Long backboards are NOT considered standard of care in most cases of potential spinal injury. Instead, use spinal motion restriction with a cervical collar and cot in most cases. Note that there are exceptions, such as a patient with a potential spinal injury who cannot be logrolled while being transported and may be at risk of a compromised airway.
- Spinal Immobilization Procedure
  1. Establish manual c-spine stabilization in the position that the patient is found.
  2. Assess for correct size and properly apply a cervical collar.
  3. Move patient from the position found to the location of the ambulance stretcher utilizing a device such as a scoop stretcher, long spine board, or if necessary, by having the patient stand and pivot to the stretcher. DO NOT permit the patient to struggle to their feet from a supine position.
  4. Position patient on the ambulance stretcher.
  5. Remove scoop or logroll patient off long spine board or other device (if such device was utilized).
  6. A blanket roll or blocks and tape attached to the stretcher may be used to minimize lateral movement of head during transport.
  7. Once on the ambulance stretcher, instruct patient to lie still.
  8. The head of the stretcher may be elevated 20-30 degrees in a position of comfort.
  9. Secure cross stretcher straps and over-the-shoulder belts firmly.
  10. Utilize a SLIDE BOARD, if available, at the destination to move the patient smoothly to the hospital stretcher.
  11. Ensure appropriate documentation of procedure in patient care report

ADVANCED EMT STANDING ORDERS

A

- Provide advanced airway management only if patient is not adequately oxygenating or ventilating and not corrected by BVM.

MEDICAL CONTROL MAY ORDER

- Additional fluid boluses.

PARAMEDIC STANDING ORDERS

P

- NOTE: Bradydysrhythmias are commonly seen in high level spinal injuries.
- Consider 12 lead ECG.

MEDICAL CONTROL MAY ORDER

- For suspected neurogenic shock (without hypovolemia):
  - **Norepinephrine** infusion: 0.1mcg/kg/min IV/IO, titrate to goal Systolic Blood Pressure of 90mmHg, **OR**
  - **Dopamine** 2-20 mcg/kg/min IV/IO

Note: Service Medical Director Option for Selective Spinal Assessment if trained and authorized, see 6.3 Selective Spinal Assessment.

Thoracic Trauma
Adult & Pediatric

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care
- Provide appropriate management for identified thoracic injuries:

  OPEN PNEUMOTHORAX:
  • immediately apply an occlusive dressing sealing 3 sides.
  • monitor patient closely for evidence of tension pneumothorax.

  TENSION PNEUMOTHORAX: (Respiratory distress or apnea, Difficult to ventilate with bag, distended neck veins, unilateral decreased or absent breath sounds, tracheal deviation away from the side without breath sounds.)
  • if present following closure of open pneumothorax, release occlusive dressing temporarily.

  FLAIL CHEST: (paradoxical movement of portion of chest wall)
  • position patient with injured side down, unless contraindicated.
  • provide manual stabilization of the flail segment.
  NOTE: **Assisted positive pressure ventilations using a BVM device may be indicated and may also serve as an "internal splinting" of the flail segment due to lung expansion.**

- Control/stop any identified life threatening hemorrhage (direct pressure, tourniquets, etc.).
- Impaled Objects:
  - Secure in place with a bulky dressing.
- Open chest wound:
  - Cover with an occlusive dressing, sealed on 3 sides, or use a commercial device; if the patient's condition deteriorates, remove the dressing momentarily, then reapply.
- Flail segment with paradoxical movement and in respiratory distress:
  - Consider positive-pressure ventilation.
  - Do not splint the chest.

ADVANCED EMT STANDING ORDERS

A

- Provide advanced airway management only if patient is not adequately oxygenating or ventilating and not corrected by BVM.

PARAMEDIC STANDING ORDERS

P

- Needle chest decompression if indicated.

4.10 Traumatic Amputations Adult & Pediatric

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care
- Control/stop any identified life-threatening hemorrhage (direct pressure, tourniquets).

ADVANCED EMT / PARAMEDIC STANDING ORDERS

A/P

- Provide advanced airway management only if patient is not adequately oxygenating or ventilating and not corrected by BVM.

MEDICAL CONTROL MAY ORDER

- Additional Fluid Boluses.

Traumatic Cardiac Arrest Adult & Pediatric

4.11

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care
- If direct pressure and other methods cannot stop bleeding, apply an appropriate tourniquet. Document the exact time of tourniquet application and notify receiving hospital staff.
- Provide appropriate management for identified injuries:
  - 4.4 Head Trauma/Injuries
  - 4.9 Thoracic Injuries
- Treat according to appropriate Cardiac Arrest Protocol.

ADVANCED EMT STANDING ORDERS

A

- Provide advanced airway management only if patient is not adequately oxygenating or ventilating and not corrected by BVM.
- Obtain 1-2 points of vascular access (IV, IO) while **en route** to the hospital.

MEDICAL CONTROL MAY ORDER

- Additional fluid boluses.

PARAMEDIC STANDING ORDERS

P

- For medication facilitated intubation, see 5.2 Difficult Airway Protocol.
- Needle Decompression, if indicated.

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SECTION 5:

AIRWAY PROTOCOLS AND PROCEDURES

Statewide Treatment Protocols
Version 2018.1

5.1A Upper Airway Obstruction- Adult

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care
- If the obstruction due to a foreign body is **complete** or is partial with **inadequate** air exchange: follow ECC guidelines for foreign body obstruction. Maintain an open airway, remove secretions, vomitus and assist ventilations as needed.
- If **partial obstruction** due to foreign body is suspected and there is **adequate** air exchange: transport to appropriate medical facility. Do not attempt to remove foreign body in the field.

MEDICAL CONTROL MAY ORDER

- Emergent removal of tracheostomy tube, if present, and evidence of obstruction resulting in inadequate air exchange. See 5.3 Tracheostomy Tube Obstruction Management for more information.

ADVANCED EMT STANDING ORDERS

A

- Provide airway management if indicated for **mechanical obstruction**: If unable to remove obstructing foreign body, continue BLS airway management by providing positive pressure ventilations if needed.

PARAMEDIC STANDING ORDERS

P

- Perform direct laryngoscopy if foreign body suspected. If foreign body is visible and easily accessible, attempt removal with Magill Forceps.
- If foreign body is removed, proceed with endotracheal intubation if necessary and perform capnography.
- If unable to clear airway obstruction, unable to intubate as needed or unable to perform positive pressure ventilations, perform a needle cricothyrotomy, if permitted under 6.2 Needle Cricothyrotomy.
- Consult Medical Control for removal of tracheostomy tube.

Upper Airway Obstruction- Pediatric

5.1P

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care
- See 5.3 Tracheostomy Tube Obstruction Management, if applicable.

ADVANCED EMT STANDING ORDERS

A

- Determine presence of upper airway obstruction (stridor):
  - If the obstruction due to a foreign body is **complete** or partial with **inadequate** air exchange: Follow ECC guidelines for foreign body obstruction. Maintain an open airway, remove secretions, vomitus and assist ventilations as needed.
  - If **partial obstruction** due to a foreign body is suspected and the child has **adequate** air exchange: transport to appropriate medical facility. Do not attempt to remove foreign body in the field.
  - If suspected **croup** (barking cough, no drooling) or epiglottitis (stridor, drooling), maintain an open airway, place child in position of comfort and avoid **upper airway stimulation**.

MEDICAL CONTROL MAY ORDER

- Emergent removal of tracheostomy tube, if present, and evidence of obstruction resulting in inadequate air exchange. See 5.3 Tracheostomy Tube Obstruction Management for more information.

PARAMEDIC STANDING ORDERS

P

- Provide advanced airway management if indicated for mechanical obstruction: perform direct laryngoscopy if foreign body is suspected. If foreign body is visible and readily accessible, attempt removal with Magill forceps. If unable to remove obstructing foreign body, continue BLS airway management by providing positive pressure ventilations.
- If foreign body is removed, proceed with endotracheal intubation if necessary and perform capnography.
- If unable to clear airway obstruction, unable to intubate as needed or unable to perform positive pressure ventilations, perform a needle cricothyrotomy, if permitted under 6.2 Needle Cricothyrotomy.
- **Nebulized racemic epinephrine** 11.25 mg in 2.5ml Normal Saline, for suspected **severe croup,** with stridor at rest and respiratory distress.

5.2 Difficult Airway - Adult

The Difficult Airway protocol is to be used only after conventional attempts at airway management have failed and the patient cannot be ventilated by ordinary means such as with the insertion of an oral or nasal pharyngeal airway and bag-valve mask ventilation or by insertion of a supraglottic airway device. The patient care report must include all attempts at airway management, including failed attempts in order to illustrate the need for the use of this protocol. Midazolam is the recommended drug for facilitating intubation and the use of any other sedation such as Fentanyl can only be done with medical control direction and consult.

In all cases adjustments to technique are to be made based on training and equipment (i.e. mask size/seal, positioning, suction, and use of adjuncts) It is necessary to correct all manageable causes of inadequate ventilation prior to utilizing this protocol. When confronted with an airway that is unstable and conventional intubation is determined to be unlikely (Mallampati IV), EMTs are to use alternative equipment such as supraglottic airway devices, in accordance with your certification and training.

An Unstable Airway situation can be defined as *unable to clear a foreign body airway obstruction, OR airway grading* (Figure 1 & 2) *suggests intubation unlikely, OR unsuccessful intubation after no more than a total of 3 attempts.***

Assessment/Treatment Priorities:

- Routine Patient Care.
- Maintain Grading of the patient's airway (see below for figure 1 and 2)
- Continue Bag-Valve-Mask (BVM) management with supplemental oxygen with oropharyngeal or nasopharyngeal adjuncts, (OPA or NPA) in place.
- Initiate transport as soon as possible.
- Follow AHA & ARC guideline for management of the adult FBAO.

ADVANCED EMT STANDING ORDERS

A

- After completing your assessment as listed above:
  - If BVM failure is the result of a manageable cause.
    - Apply countermeasures if applicable
  - If the patient can be ventilated, but the airway is unstable insert the supraglottic device

PARAMEDIC STANDING ORDERS

P

a. If the airway is unstable and the adult patient can be ventilated.

I. In patients who require emergent intubation

II. Cannot be intubated by conventional means

To facilitate intubation:

a. **Midazolam** 2 mg SLOW IV/IO/IM/IN. Repeat as necessary to total of 6 mg.

b. **If intubation is unsuccessful,** insert the supraglottic device

c. If the airway is unstable and the patient cannot be ventilated, perform a needle cricothyrotomy and provide oxygen via jet ventilation.

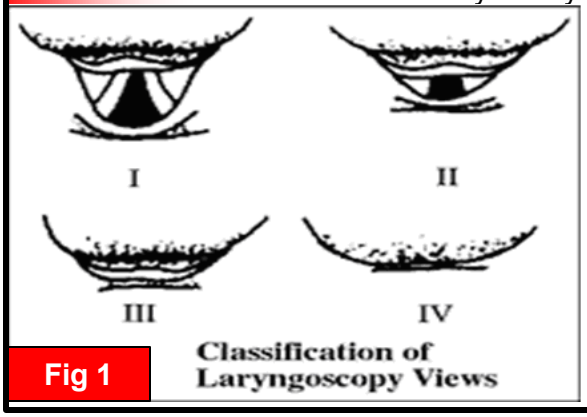

Fig 1 Classification of Laryngoscopy Views

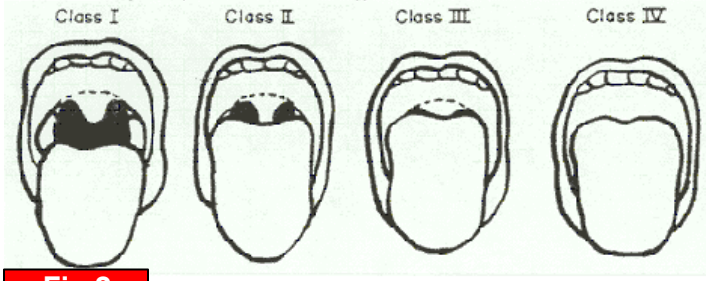

Fig 2

Figure 1 depicts the Cormack & LeHane laryngoscopy classifications. Figure 2 depicts the Mallampati system of airway grading, generally performed with patient sitting in full fowlers position with tongue extended.

Tracheostomy Tube Obstruction Management Adult & Pediatric

5.3

EMT/ADVANCED EMT STANDING ORDERS

E/A

<u>In the patient with an obstructed tracheostomy tube, in whom no effective ventilation/oxygenation is possible, the following are to be considered **Standing Orders**:</u>

- Wipe neck opening with gauze
- Attempt to suction tracheostomy tube
- Remove tracheostomy tube if necessary
- Once airway is open, begin ventilations as necessary/possible
- Clearing of the tube and re-insertion, for those whose tracheostomy tube is noted to be plugged
- In patients able to be oxygenated and ventilated by the above criteria,
- Wipe neck opening with gauze
- Attempt to suction tracheostomy tube
- Remove tracheostomy tube as necessary
- Once airway is open, begin ventilations as possible/necessary

PARAMEDIC STANDING ORDERS

P

- Paramedics may attempt intubation of the patient if no other means of ventilating/oxygenating the patient are possible

MEDICAL CONTROL MAY ORDER

Signs of inadequate oxygenation/ventilation are:

- Falling pulse oximetry
- Change in patient's color
- Change in patient's vital signs
- Inability to deliver oxygenation by all other means

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SECTION 6:

MEDICAL DIRECTOR OPTIONS

Statewide Treatment Protocols
Version 2018.1

6.0 Medical Director Options

The following conditions must be met in order for your service to provide any of the following optional treatments as listed in this section:

1. Your service has a written policy adopting use of the procedure, in accordance with the terms of this Protocol section, and such policy is signed by the service's affiliate hospital medical director.

2. Your service's affiliate hospital medical director must have authorized you as an EMT to utilize the procedures in this section, based on your level of certification.

3. You must be trained to use the procedure, and be approved by the affiliate hospital medical director.

BLS:

a. Albuterol Administration via Nebulizer (Service Option), see advisory of 4/9/10, at OEMS website and 6.1 BLS/ILS Albuterol.
b. Glucometry, see AR 5-520, at OEMS website.
c. Selective Spinal Assessment (Service Option), replacing cervical spinal assessment/precaution procedures of 4.8 Spinal Column/Cord Injuries.
d. Check and Inject Epinephrine by BLS Providers, see 6.6.

ALS:

a. Needle Cricothyrotomy, see 6.2.
b. Selective Spinal Assessment (Service Option), see 6.3, replacing cervical spinal assessment/precaution procedures of 4.8 Spinal Column/Cord Injuries
c. Urban Search and Rescue (USAR) Medical Specialist, see 6.4.
d. Tranexamic Acid, see 6.5.
e. Acetaminophen IV, see 6.7.

BLS Assisted Albuterol Adult & Pediatric

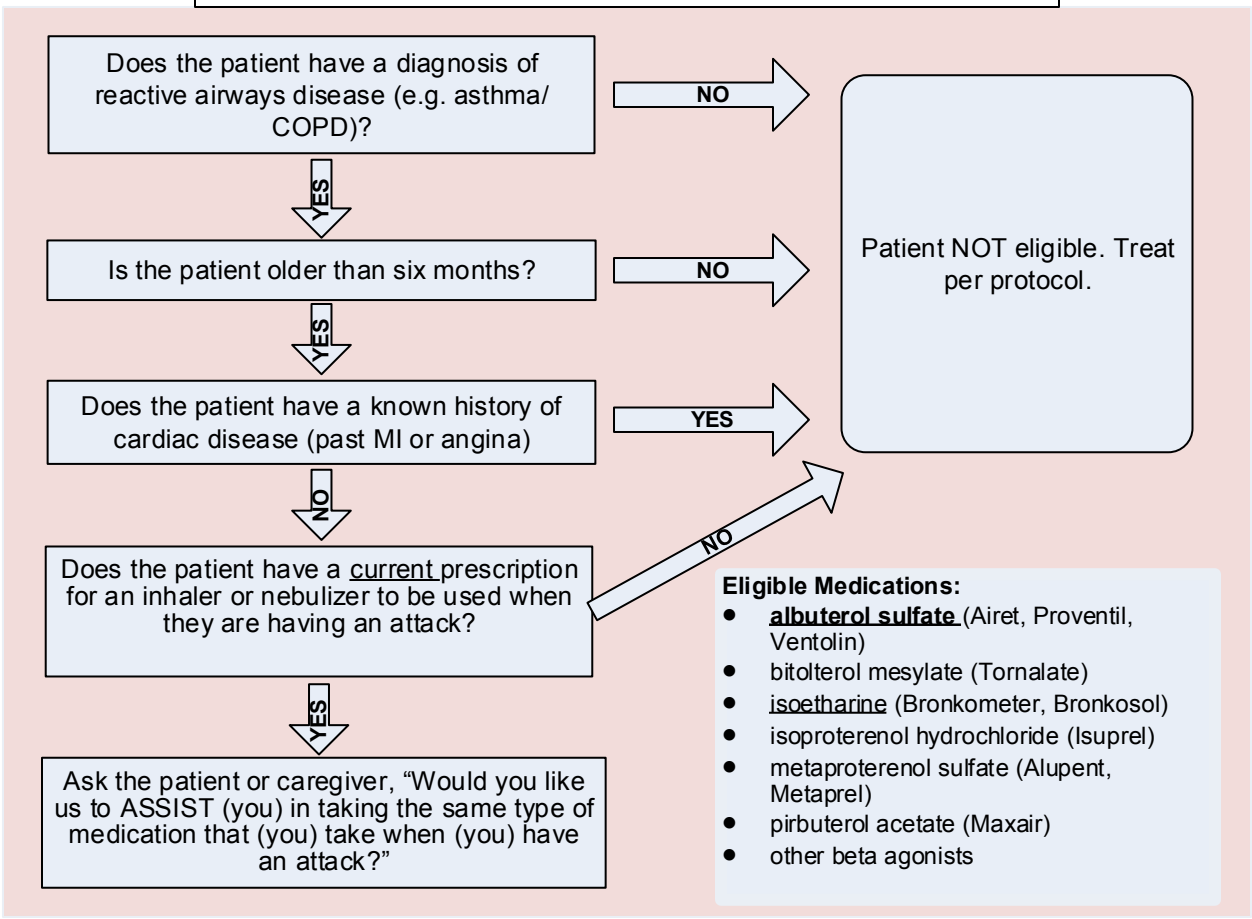
6.1

EMT STANDING ORDERS

E

- If trained and authorized by your medical director, treat bronchospasm in known Asthmatics, and confirmed Reactive Airway Disease (Asthma/COPD), in accordance with the flowchart below, with:
  - For a patient between 6 months and 2 years of age,
    - **Albuterol** 1.25mg in 3ml Normal Saline, via nebulizer, x1 dose
  - For a patient older than 2 years of age,
    - **Albuterol** 2.5-3mg in 3ml Normal Saline, via nebulizer, x1 dose
- ALS intercept must be arranged for and confirmed whenever possible and available.

ASSISTED ALBUTEROL FLOWCHART:



6.2 Needle Cricothyrotomy

ALS: Needle Cricothyrotomy (Approved for Paramedics Only)

The following is a general description of one of several accepted techniques being used throughout the Commonwealth, and may be used as a guideline. Due to differences in medical devices used by individual systems, the procedure may vary slightly. Refer to your local and regional guidelines for the technique and equipment used in your system.
Note: Appropriate body substance isolation precautions are required whenever caring for the trauma patient.
Indications: The indications for performing a needle Cricothyrotomy on a patient will be:

1. The patient is in imminent danger of death.
2. No alternative airway device/maneuver has been successful.
3. The patient cannot be oxygenated or ventilated by any other means

The local EMS Medical Director has appropriately trained and authorized the treating EMT-Paramedics.
Examples of types of patients potentially meeting the above criteria include (but are not limited to):

1. Patients suffering traumatic arrest
2. Patients suffering multiple traumatic injuries
3. Patients suffering an upper airway obstruction

Recognizing the time critical nature of the emergency, Needle Cricothyrotomy will be a Standing Order for patients/systems/paramedics meeting all of the above criteria.

1. Assemble and prepare oxygen tubing by cutting a hole toward one end of the tubing. Connect the other end of the oxygen tubing to an oxygen source, capable of delivering 50 psi or greater at the nipple, and assure free flow of oxygen through the tubing.
2. Place the patient in a sitting position.
3. Assemble a #12 or 14-gauge, 8.5 cm, over-the-needle catheter to a 6- to 12-mL syringe.
4. Clean the neck with an aseptic technique, using antiseptic swabs.
5. Palpate the cricothyroid membrane, anteriorly, between the thyroid cartilage and cricoid cartilage. Stabilize the trachea with the thumb and forefinger of one hand to prevent lateral movement of the trachea during the procedure.

Policy Continues

Policy Continued

6. Puncture the skin midline with the needle attached to a syringe, directly over the cricothyroid membrane (i.e., mid-saggital).
7. Direct the needle at a 45 degree angle caudally, while applying negative pressure to the syringe.
8. Carefully insert the needle through the lower half of the cricothyroid membrane, aspirating as the needle is advanced.
9. Aspiration of air signifies entry into the tracheal lumen,
10. Remove the syringe and withdraw the stylet while gently advancing the catheter downward into position, being careful not to perforate the posterior wall of the trachea,
11. Attach the oxygen tubing over the catheter needle hub (you may use a 4.0 ET tube connector), and secure the catheter to the patient's neck.
12. Intermittent ventilation can be achieved by occluding the open hole cut into the oxygen tubing with your thumb for one second and releasing it for four seconds. After releasing your thumb from the hole in the tubing, passive exhalation occurs. Note: Adequate PaO2, can be maintained for only 30 to 45 minutes.
13. Continue to observe lung inflations and auscultate the chest for adequate ventilation.

Complications of Needle Cricothyrotomy

1. Asphyxia
2. Aspiration
3. Cellulitis
4. Esophageal perforation
5. Exsanguinating hematoma
6. Hematoma
7. Posterior tracheal wall perforation
8. Subcutaneous and/or mediastinal emphysema
9. Thyroid perforation
10. Inadequate ventilations leading to hypoxia and death

6.3 Selective Spinal Assessment

ALS and BLS: **Selective Spinal Assessment**

This procedure, if used, should be in conjunction with Protocol 4.8 Spinal Column/Cord Injuries and/or A3 Interfacility Transfer Protocols.

SELECTIVE SPINAL ASSESSMENT

Spinal cord injury may be the result of direct blunt and/or penetrating trauma, compression forces (axial loading), abnormal motion (hyper-flexion, hyperextension, hyper-rotation, lateral bending and distraction, i.e., hanging). Most spinal injuries result from motor vehicle crashes, falls, firearms, and recreational activities.

Spinal injuries may be classified into sprains, strains, fractures, dislocations and/or actual cord injuries. Spinal cord injuries are classified as complete or incomplete and may be the result of pressure, contusion or laceration of the cord.

Individuals should be assessed and treated for possible spinal injury, and immobilized if necessary, if they have sustained an injury with a concerning mechanism, and either have symptoms of injury and/or have a reason not to adequately perceive or to be able to communicate the symptoms of such injury.

Long backboards are NOT considered standard of care in most cases of potential spinal injury. Instead, use spinal motion restriction with a cervical collar and cot in most cases. Note that there are exceptions, such as a patient with a potential spinal injury who cannot be logrolled while being transported and may be at risk of a compromised airway.

Concerning mechanisms that may result in spinal column injury:

- Fall from over 3 feet, including adult fall from standing, or 5+ stair steps
- MVC at 30+ mph, or rollover or ejection
- Motorcycle, bicycle, other mobile conveyance, or pedestrian-vehicle accident
- Diving or axial load
- Electric shock

Symptoms of spinal column injury may include:

- Posterior neck or back pain or tenderness;
- Paresthesias or loss of sensation in extremities;
- Weakness or paralysis of extremities;

Conditions placing individuals at risk to not perceive or complain of the symptoms of spinal column injuries:

- Altered mental status due to disease, injury, intoxication, or other causes;
- Inability to adequately communicate;
- History of cervical spine injury or abnormality, or conditions causing fragile bones;
- Distracting injury (such as long-bone fracture);
- Age extremes (including >65 years of age);

Individuals sustaining lesser injuries, patients who do not have symptoms of spinal column injury and do not experience a condition that would impair the patient's ability to perceive or communicate symptoms of spinal column injuries **do not require spinal immobilization**

Penetrating injuries to the neck generally do not require spinal immobilization.

Policy Continues

Policy Continued

ASSESSMENT / TREATMENT PRIORITIES

1. Ensure scene safety, appropriate universal precautions, request additional EMS resources (BLS or ALS), perform thorough primary survey, treat any life threatening injuries immediately, appropriate oxygen and IV therapy

MEDICAL CONTROL OPTIONS

a. **ADVANCED EMT AND PARAMEDIC:** Additional Normal Saline 250 mL - 500 mL bolus(es), wide open or titrated to patient's hemodynamic status.

b. **PARAMEDIC:** For suspected neurogenic shock (without hypovolemia): **norepinephrine** infusion: 0.1mcg/kg/min IV/IO, titrate to goal Systolic Blood Pressure of 90mmHg, **OR dopamine** 2-20mcg/kg/min IV/IO.

If patient is assessed as stable and there is a suspicion of possible c-spine injury begin assessment and history to determine if the patient needs to be placed in a collar and undergo spinal motion restriction. Mechanism of Injury should be used as a historical component of the assessment and lead to further spine assessment (i.e. Axial loading (diving), blunt trauma, motor vehicle crash (MVC)*, fall >3ft, adult fall from standing height.

*MVC applies to crashes of all motorized vehicles: e.g. automobile, motorcycle, snowmobile, etc.)

SPINAL IMMOBILIZATION PROCESS

1. Establish manual c-spine stabilization in the position that the patient is found.
2. Assess for correct size and properly apply a cervical collar.
3. Move patient from the position found to the location of the ambulance stretcher utilizing a device such as a scoop stretcher, long spine board, or if necessary, by having the patient stand and pivot to the stretcher.

   DO NOT permit the patient to struggle to their feet from a supine position.
4. Position patient on the ambulance stretcher.
5. Remove scoop or logroll patient off long spine board or other device (if such device was utilized).
6. A blanket roll or blocks and tape attached to the stretcher may be used to minimize lateral movement of head during transport.
7. Once on the ambulance stretcher, instruct patient to lie still.
8. The head of the stretcher may be elevated 20-30 degrees in a position of comfort.
9. Secure cross stretcher straps and over-the-shoulder belts firmly.
10. Utilize a SLIDE BOARD at the destination to move the patient smoothly to the hospital stretcher.
11. Ensure appropriate documentation of procedure in patient care report.

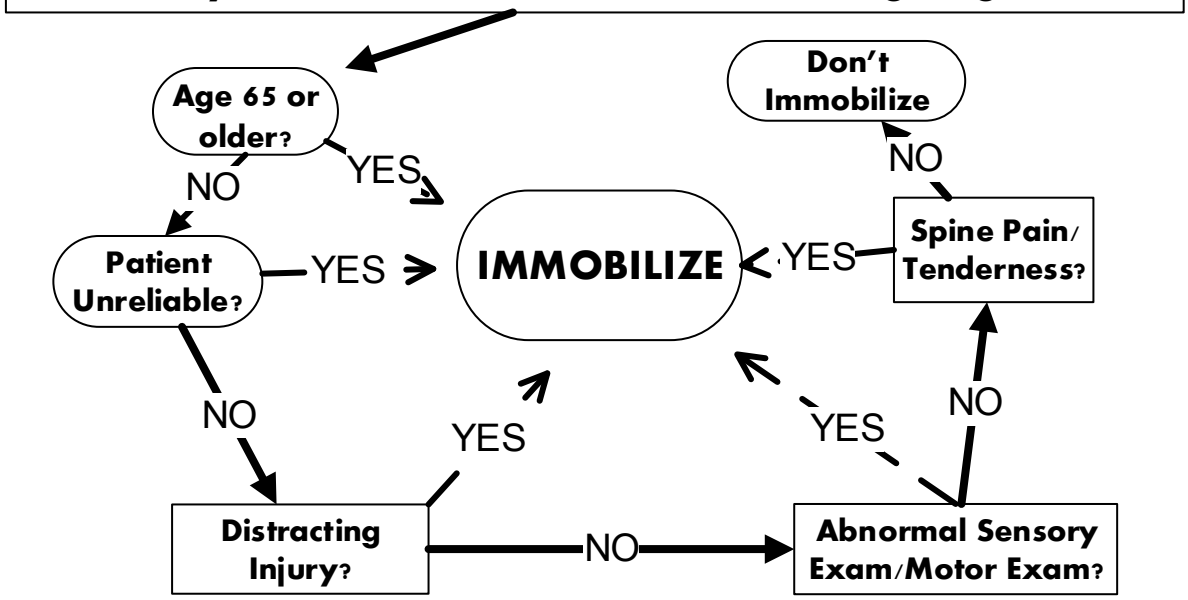
If it is determined through a complete assessment that the patient is 1) Reliable (including ability to communicate adequately) 2) Has no distracting injuries 3) Has no abnormal sensory/motor deficits 4) Has no spine pain/tenderness – DO NOT IMMOBILIZE

Policy Continues

Policy Continued

Selective Spinal Assessment, Continued

Spine Assessment Protocol



Abnormal Sensory/Motor Exam?
If, based on the assessment, the patient has any abnormal neurological findings (including, but not limited to, paresthesias or loss of sensation in extremities, weakness or paralysis of extremities, loss of urethral or sphincter control, etc.) **–Immobilize (See Spine Assessment Protocol)**

Distracting Injury?
Distracting injuries include any injury that produces clinically apparent pain that might distract the patient from the pain of a spine injury – pain would include medical as well as traumatic etiologies of pain – **If, based on the assessment, the patient has distracting injuries - Immobilize (See Spinal Assessment Protocol)**

Complaints of Pain or Examination Tenderness?
Complete an assessment of the patient's spine for pain or tenderness. The assessment should include, but is not limited to, palpation of the entire spine (posterior, midline spine, and cervical spine), range of motion (if appropriate). – **If, based on the assessment, the patient is experiencing any pain or tenderness along the spine - Immobilize (See Spinal Assessment Protocol)**

Patient Reliability
Is the patient intoxicated, have an altered mental status, is having an acute stress reaction, at the extremes of age or any other reason that results in an inability to either adequately perceive or communicate symptoms, etc. – **If the patient is unreliable based on the assessment - Immobilize (See Spinal Assessment Protocol)**

CAUTION: This protocol **cannot** be used to rule out need for immobilization in any patient age 65 or older.

Urban Search and Rescue (USAR) Medical Specialist 6.4

INTRODUCTION

The Urban Search and Rescue (USAR) Medical Specialist is a paramedic level or higher medical provider capable of delivering immediate medical response and support to urban search and rescue operations and based on the FEMA National USAR Task Force medical team model. The primary mission of the medical team is to maintain the health and well-being of ALL team members during technical rescue operations. The secondary mission is to provide specialized medical care to injured victims. Overall, the role of the medical team is to act as the *medical conscience* for the team and to always act as an *advocate for the patient*.

Medical Specialists follow the explicit orders of their agency's Affiliate Hospital Medical Director (AHMD) or designee functioning under a *comprehensive* set of local policies and protocols based on nationally-accepted standards. Per regulations, any EMS personnel functioning at the ALS level of care must have a qualified and designated AHMD. These protocols are intended for use only by trained Medical Specialists specifically during USAR operations. Medical Specialists are not directly responsible for any person(s) outside the immediate area of operations, whose care may safely be provided by the local EMS provider.

One of the primary functions of the Medical Specialist is to support the tactical operations by ensuring the health and safety of critical public safety personnel as well as any victims requiring specialty care inside the perimeter of high-risk, large-scale, and extended operations that otherwise cannot be attended to by conventional EMS providers. As such, the Medical Specialist may be asked to provide sick call care for predefined service members as directed by the AHMD in order to ensure they remain healthy and operationally capable; any other person(s) or service members who present with an acute medical issue, should be considered patients under the definition of 105 CMR 170.020. Such care will be provided in accordance with the State Treatment Protocols. These protocols supplement the Commonwealth of Massachusetts DPH/OEMS State Treatment Protocols (STP) and shall be used only by Medical Specialists functioning with an AHMD.

Once a victim is removed from the inner perimeter of operations, a transition of care will be made to the local EMS service for continued patient care and transport. An exception may be made when a Medical Specialist's training is needed to manage a specific illness/injury during transport. In this instance, a Medical Specialist should accompany the transporting EMS crew and patient to the hospital and maintain any care/medications not covered by the STP. If during transport, the Medical Specialist encounters a significant conflict between these protocols and those of the transporting EMS service, they should attempt to contact the Medical Specialist's AHMD and request a dual consult with the AHMD for the transporting EMS service. If the Medical Specialist's AHMD cannot be reached, standard online medical consultation should be initiated.

In most cases, a USAR team physician or AHMD will be on-scene to provide real time medical direction in accordance with these protocols. The following protocols serve as a Medical Director's optional protocol program for use *ONLY* by a trained Medical Specialist providing care in a search and rescue environment. These protocols *SUPPLEMENT* already existing service-specific treatment protocols as well as the STP. Paramedics operating under these protocols *MUST* have completed an approved FEMA (or equivalent) medical team training program, be a designated member of a recognized local, county or state USAR team and have the authority to function in this capacity from their agency's AHMD.

Protocol Continues

6.4 Urban Search and Rescue (USAR) Medical Specialist

Protocol Continued

Once a victim is removed from the inner perimeter of operations, a transition of care will be made to the local EMS agency for continued patient care and transport. An exception may be made when a Medical Specialist's training is needed to manage a specific illness/injury during transport. In this instance, a Medical Specialist should accompany the transporting EMS crew and patient to the hospital and maintain any care/medications not covered by the OEMS STP. If during transport, the Medical Specialist encounters a significant conflict between these protocols and those of the transporting EMS agency, they should attempt to contact the Medical Specialist's AHMD and request a dual consult with the AHMD for the transporting EMS agency. If the Medical Specialist's AHMD cannot be reached, standard online medical consultation should be initiated.

In most cases, a USAR team physician or AHMD will be on-scene to provide real time medical direction in accordance with these protocols. The following protocols serve as a Medical Director's optional protocol program for use *ONLY* by a trained Medical Specialist providing care in a search and rescue environment. These protocols *SUPPLEMENT* already existing service-specific treatment protocols as well as the STP. Paramedics operating under these protocols *MUST* have completed an approved FEMA (or equivalent) medical team training program, be a designated member of a recognized local, county or state USAR team and have the authority to function in this capacity from their agency's AHMD.

STANDING/VERBAL MEDICAL ORDERS

Given the medical complexity of most victims of a USAR scenario, it is the expectation that all patient care activity during USAR operations have real-time medical direction established with a USAR team physician or AHMD as soon as feasibly possible. *Only* agency approved Medical Specialists designated to operate at the paramedic level as a part of a recognized regional USAR team may initiate care utilizing these protocols. Any other on-scene EMT providing care at a special operations incident shall function in accordance with the STP and service-specific protocols.

These protocols are designed to provide supplemental guidance for patient care in the search and rescue environment. Unless otherwise specified, all medication doses have been presented in a weight-based format for use in both adult and pediatric patients. These guidelines represent the best practices drawn from current nationally accepted standards of care and evidence-based practice. Medicine is a constantly evolving practice and as such, guidelines cannot be developed for every possible clinical situation. These guidelines are *NOT* meant to replace good clinical judgment. Medical team members shall not act beyond their usual scope of practice (i.e. USAR or other service-specific protocols) unless trained or specifically approved to perform additional skills.

TRAINING AND QUALITY ASSURANCE/IMPROVEMENT

Given the low frequency, high risk nature of these cases, it is presumed that ALL cases requiring the use of these protocols will undergo QA/QI review by the USAR team physician or AHMD. Any deviations from these protocols will be reviewed by the AHMD and reviewed with the agency's medical team members. It is also the expectation that as part of competency maintenance and participation as a Medical Specialist, a comprehensive training program by the AHMD and sponsoring agency will occur at least annually to include a review of these protocols.

Protocol Continues

Protocol Continued

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1. Confined Space/Collapse Rescue Patient Medical Care
2. Crush Injury/Crush Syndrome Management
3. Hyperkalemia
4. Limb Injury/Compartment Syndrome
5. Procedural Sedation and Analgesia
6. Medical Specialist- Medication List

Protocol Continues

6.4 Urban Search and Rescue (USAR) Medical Specialist

Protocol Continued

Initial Patient Medical Care

1. Perform an assessment of the scene, if not already done during the medical threat assessment:
   a. Determine scene hazards
   b. Survey the work environment for adequate oxygen levels, hazardous CO or gas levels and other hazardous materials around, lockout/tagout all utilities. Ideally, this should be done in conjunction with the incident HAZMAT team manager or Safety Officer.
   c. Assess weather and weather forecast.

2. Develop a medical care plan and prepare the appropriate needed supplies/equipment prior to entry "in the hole." Planning should be performed in conjunction with the Task Force Leader (TFL) or Incident Commander (IC) and other USAR discipline-specific team leaders (i.e. Search, Rescue, HAZMAT, etc.).

3. Perform initial assessment on the total number of victims, locations and priority of care/ extrication.

4. PROTECT THE PATIENT from further injury as well as particulate inhalation – ear and eye protection, dust mask (particulate mask, N95 or P-100 mask, oxygen via NRB mask, etc.), helmet, heat/cold protection. Drop patient packs to the victim(s) if unable to access immediately.

5. Once access is gained to the victim, a Medical Specialist should perform an initial clinical assessment of general condition, vital signs and injuries. Initiate routine patient care as outlined in the Statewide Treatment Protocols.

6. Assess for any unrecognized hemorrhage and control all sources of severe bleeding. Use an approved tourniquet for life-threatening external hemorrhage that is anatomically amenable to tourniquet application or for any traumatic amputation. Apply the tourniquet over the clothing proximal to the bleeding site as high as possible, or if able to fully expose and evaluate the wound, apply directly to the skin 2-3 inches above the wound (DO NOT APPLY OVER THE JOINT). If a tourniquet is not needed, use other techniques to control bleeding.

7. The patient's AIRWAY and BREATHING status should be assessed. If necessary, perform advanced airway management utilizing direct in-line cervical spine immobilization only as needed. Consider use of the Selective Spine Assessment Program (SSAP) if trained and authorized to do so. A supraglottic airway device may be used in place of endotracheal tube if intubation is not possible.

8. Begin cardiac monitoring. Record and interpret a baseline 12-lead EKG as soon as possible.

9. Obtain intravenous (IV) access and begin infusion of Normal Saline (NS).
   a. For signs and symptoms of hypovolemic shock, administer a 20 mL/kg bolus of NS.
   b. In the absence of signs of hypovolemia, administer 2 mL/kg/hour infusion of NS.
   c. If unable to obtain IV access, establish an IO (if indicated) and begin NS infusion.

Protocol Continues

Protocol Continued

Initial Patient Medical Care, Continued

10. Re-assess the victim for any uncontrolled hemorrhage. If any tourniquets were placed earlier, they should be re-assessed for adequate hemorrhage control. Consider use of hemostatic gauze pressure dressing for exsanguinating wounds not amenable to tourniquet use.

11. If a victim is anticipated to need significant blood transfusion (for example: presents with hemorrhagic shock, one or more major amputations, penetrating torso trauma, or evidence of severe bleeding) administer **tranexamic acid (TXA)** 1 gm in 100 cc NS over 10 minutes IV/IO infusion as soon as possible but NOT later than 3 hours after injury. Begin a second infusion of 1 gm **TXA** after intravenous fluid treatment. It should NOT be administered through the same line being used for blood products or as an IV push (may cause hypotension). Consultation with medical direction for use of **TXA** is ***required***.

12. Assess for and treat potential hypoglycemia and dehydration. Consider oral hydration so long as the patient is can follow commands, alert and oriented, and a patent airway and gag reflex is present. This should be done only if a prolonged extrication is anticipated and there are no other means of fluid administration. Limit initial hydration to 16-32 ounces of potable water.

13. Assess and manage the victim for any evidence of entrapment or crush injury. Refer to the Crush Injury / Crush Syndrome management protocol.

14. Monitor patient for hypothermia or hyperthermia. Preferably, a core temperature measurement should be obtained. Provide necessary treatment as per sub-protocols.

15. If available and trained to do so, draw blood sample and analyze blood chemistry using point-of-care testing. Continue analyzing PRN and consult with an AHMD for further direction.

16. For pain management of the non-isolated extremity injury refer to the Sedation and Analgesia protocol.

17. Re-assess the medical care plan with the AHMD and rescue team leader as appropriate.

Protocol Continues

Protocol Continued

Crush Injury/Crush Syndrome Management

1. ***Consider*** the use of an approved tourniquet to prevent reperfusion of a crushed limb prior to removal of compressive forces only if **pre-treatment of the patient cannot be performed.**

2. Initiation of fluid resuscitation with NS should ideally occur **prior** to any extrication or release from compressive forces. Administer fluids at an initial rate of 1 L/hr (10-15 ml/kg/hr) for up to 2 L total. Subsequent fluid administration can be delivered at a rate up to 500 ml/hr (5-7 ml/kg/hr) up to 24 hours.

a. NOTE: Given the risk of hyperkalemia due to crush injury, potassium containing solutions (i.e. Lactated Ringers solution) should be avoided.

3. For victims with prolonged crush (> 1-2 hour) or at high risk of crush syndrome, initiate serum alkalinization **prior** to extrication. **Bicarbonate** therapy should be goal directed based on available clinical data (i.e. urine output, hemodynamic parameters, evidence of hypocalcemia, etc.) and point-of-care testing (urine and serum pH, serum electrolyte levels, etc.). Consider alternating bicarbonate-containing fluids with NS to minimize volume overload. Medical Direction should be consulted for any use of bicarbonate therapy.

a. Add 150 mEq of 8.4% (1 mEq/ml) **sodium bicarbonate** into a 1 L D_5W bag infused at a rate of 250-500 ml/hr. Remember to remove 150 ml of D_5W to accommodate the **sodium bicarbonate**. This mixture provides a near "isotonic" solution capable of alkalinizing the bloodstream.

b. If 1 L D_5W bags are not available, add 50 mEq of **sodium bicarbonate** to 1 L NS bag infused at a rate of 500 ml/hr.

c. Bolus doses of **sodium bicarbonate** at 0.5 – 2 mEq/kg IV/IO in accordance with STP can be administered if an infusion cannot be initiated.

d. For pediatric patients, administer **bicarbonate** infusion at the following rates:

Up to	10 kg:	8 ml/kg/hr
	10-20 kg:	80 ml/hr + 4 ml/kg/hr
	>20 kg:	160 ml/hr + 2 ml/kg/hr

e. Consider placement of a urine bladder catheter to monitor urine output to a diuresis goal of > 200-300 ml/hr (3-4 ml/kg/hr) or a urine pH of > 6.5.

4. Re-assess the patient and coordinate extrication with technical rescue personnel. Be vigilant for sudden hypotension and hyperkalemic changes. Be prepared to control severe hemorrhage as well as the development of compartment syndrome if fluid begins to third space into injured tissue.

5. For patients with point of care values or EKG findings consistent with hyperkalemia refer to the hyperkalemia protocol.

Protocol Continues

Protocol Continued

Hyperkalemia

1. Administer 1000 mg **calcium chloride** 10% (100 mg/ml) IV/IO bolus (20 mg/kg IV/IO for pediatric patient) over 2 minutes. Calcium chloride should ***not*** be routinely given to crush patients unless there is evidence of hyperkalemia (ECG changes, i-STAT confirmed).
NOTE: DO NOT ADMINISTER CaCl and $NaHCO_3$ in the same IV line as a salt may precipitate.

2. Administer **sodium bicarbonate** 0.5 – 2 mEq/kg IV bolus. However, if the patient is already receiving large volumes of sodium bicarbonate as an infusion, contact medical direction for further guidance.

3. Administer **albuterol sulfate** 0.083% up to 10 mg via inline nebulizer.

4. Administer 10 Units of regular **insulin** IV followed by 50 ml of **Dextrose 50%** (25 gm/50 ml) IV for adult hyperkalemic patients with medical direction.

For pediatric patients, administer 0.1 Units/kg of regular **insulin** (up to 10 units) IV bolus followed by **$D_{10}W$** 0.5 g/kg (5 mL/kg) IV bolus (infants) or **$D_{25}W$** 0.5 -1 g/kg (2 – 4 mL/kg) IV bolus (child). Blood glucose monitoring should be repeated in 30 minutes and treated appropriately.

5. Contact medical direction for **furosemide** 0.5-1 mg/kg IV/IO bolus.

Protocol Continues

Protocol Continued

Limb Injury/Compartment Syndrome

1. Control any life-threatening hemorrhage with direct pressure, hemostatic dressing or tourniquet placement, assess distal CSM function and splint any obvious deformities.

2. Consider placing an approved tourniquet (do not tighten) as distal as possible near site of injury if there is potential for severe hemorrhage upon release of an entrapped limb.

3. Depending on the degree of tissue injury, bony involvement, duration of patient rescue and overall environmental conditions, tetanus and antibiotics administration may be indicated. Consult medical control for further direction on specific antibiotic type and dosing.

4. Monitor closely for the development of compartment syndrome, especially in fixed muscle compartments such as the forearm or lower leg. Compartment syndrome is typically the result of muscle tissue swelling within the non-expansive fascial compartments which pressure rises greater than tissue perfusion pressure.

5. Palpate limbs carefully (especially where entrapped or laid upon) for firmness or functional loss. Some signs/symptoms to watch for include:
   a. PAIN out of proportion to physical examination.
   b. PALLOR of skin color
   c. PARESTHESIAS
   d. PARALYSIS
   e. PULSELESSNESS (This is often a late sign. The presence of a distal pulse DOES NOT rule out compartment syndrome)

6. Ensure adequate fluid resuscitation of the patient.

7. If compartment syndrome is recognized, immediately consult with a medical control regarding further treatment. Fasciotomy should NOT be routinely performed in the field due to technical difficulties, inadequate analgesia and high rates of wound infection. Contact medical direction for further guidance.

Protocol Continues

Protocol Continued

Amputation

1. Amputation of a limb should ***ONLY*** be considered if there is an immediate threat to life as a ***LAST RESORT*** for freeing an entrapped victim, trading limb for life. An extreme circumstance is when it has been assessed that an entrapped limb is the ***ONLY*** remaining impediment to extricating an entrapped victim.

2. The decision to performing a field amputation should be made by a USAR team physician or AHMD (preferably on-scene) in coordination with a trauma surgeon whenever possible and in conjunction with the TFL or IC. The procedure should be ***ONLY*** performed by an *appropriately trained physician*.

3. Properly prepare the patient as much as time allows for amputation and immediate extrication – supplemental oxygen, end-tidal CO_2 and cardiac monitoring, adequate IV access, VS monitoring. Ensure all necessary equipment is nearby.

4. Expose the entrapped extremity as distally as possible

5. Place an approved tourniquet as distally as possibly, leaving just enough soft tissue to perform the amputation and should only be tightened prior to amputation under direction of medical control.

6. Administer the appropriate analgesia and sedation.

7. After the procedure has been completed, assess the limb for any re-bleeding (tourniquet tightening, additional tourniquet placement, bone marrow bleeding, etc.), dress the wound appropriately and consider the early administration of prophylactic antibiotics as directed by medical control.

Protocol Continues

Protocol Continued

Sedation and Analgesia

Adequate pain control is an integral component in effecting a successful victim rescue.

Pharmacological agents available to the medical specialist should both be easy to titrate and have minimal impact on cardiorespiratory function.

1. Perform the initial patient care protocol.

2. Ensure that all appropriate monitoring (ECG monitoring, NIBP, pulse oximetry, $ETCO_2$, etc.) have been placed on the patient as feasibly possible given the operational environment.

3. For moderate to severe pain, consider administering a parenteral opiate analgesic such as **fentanyl citrate** 1 mcg/kg (typically 50-100 mcg) IV/IO/IM/IN in a titrated fashion. Consult medical direction for any additional doses. *NOTE*: An opiate reversal agent such as **naloxone** should be readily available.

4. For patients in pain that cannot be adequately controlled with the above agent, it may be necessary to administer a dissociative agent such as **ketamine hydrochloride** at a sub-dissociative dose. The sub-dissociative, analgesic dose of **ketamine** is 10-20 mg IV/IO bolus (0.2 mg/kg for pediatric patients) or 50 mg IM (0.4 mg/kg for pediatric patients) repeated every 20-30 minutes as needed until pain is controlled or the development of nystagmus.

Ketamine offers advantages such as preserved airway reflexes and minimal hypotension. Consultation with medical direction is ***required*** for **ketamine** use.

5. In the event an emergent field procedure is to be performed (i.e. limb amputation, fracture/ dislocation reduction, soft tissue injury repair, etc.), procedural sedation may be appropriate in order to achieve adequate operating conditions for the patient. A USAR team physician or AHMD ***MUST BE*** contacted prior to any sedation for procedures or extrication.

   a. All appropriate monitoring equipment must be in place and applied as the situation dictates. Airway equipment and reversal agents should be ready at the bedside.

   b. For sedation alone (i.e. anxiolysis during extrication), **midazolam** 0.1 – 0.3 mg/kg (2.5-5 mg) IV/IO/IM bolus can be administered and titrated to effect.

   c. For analgesia, administer **fentanyl citrate** 1 mcg/kg (50-100 mcg) IV/IO/IM bolus as needed in conjunction with sedation.

   d. Alternatively, single agent use of **ketamine** 1 – 2 mg/kg initial IV/IO bolus (4 mg/kg IM) followed by 0.5 – 1.0 mg/kg doses IV/IO (2 mg/kg IM) as needed to maintain adequate dissociation if there are any contraindications to **midazolam**/**fentanyl** or if it is more appropriate for the situation. If **ketamine** is used, consider a pre-treatment bolus dose of **midazolam** 0.1 – 0.3 mg/kg (2.5-5 mg) IV/IM/IN to reduce the occurrence of emergence reaction if not already administered.

Protocol Continues

Protocol Continued

Medical Specialist- Medication List

This is a list of medications which are *NOT* covered within the MA DPH/OEMS Statewide Treatment Protocols. The use of these medications are governed by the USAR Protocols and applied in the context of a USAR operation by an authorized Medical Specialist in conjunction with medical direction from a designated USAR Team Physician or AHMD. Use of these medications during routine EMS operations *IS NOT* authorized

ANTIBIOTICS

Ceftriaxone

Cefazolin

Levofloxacin

Vancomycin

ANALGESIA

Ketamine

Insulin – Regular

Dextrose 5% in Water (D_5W)

Tranexamic Acid (TXA)

6.5 Tranexamic Acid

Tranexamic Acid (TXA) is of a safe drug that is approved for use in trauma patients suspected of hemorrhage/internal bleeding. Studies have shown that providing TXA earlier is significantly beneficial to patients.

Eligible patients:

- Patients with blunt or penetrating trauma mechanisms suffered in the past 3 hours,
- who appear age 16 or over and
- show signs of significant hemorrhage (SBP < 90 mm Hg, HR > 110 BPM), or if the provider determines the patient to be at high risk for significant hemorrhage.
- Pregnant trauma patients and trauma patients on blood thinners are eligible.

Dose:

- TXA is given 1 gram IV over 10 minutes.

Timing:

- Treat early.

Contraindications/Allergies:

- Greater than 3 hours since the event.
- Less than 16 years of age.
- Known allergy to TXA.

Side effects:

- Hypotension
- Seizures

EMT STANDING ORDERS

E

- 1.0 Routine Patient Care
- Control/stop any identified life threatening hemorrhage (direct pressure, tourniquet, etc.), suspected pelvic fractures with commercial device (preferred) or bed sheet.

ADVANCED EMT STANDING ORDERS

A

- Initiate 1-2 large bore IV(s) Normal Saline (KVO) while **en route** to the hospital.

MEDICAL CONTROL MAY ORDER

- Additional fluid boluses.

PARAMEDIC STANDING ORDERS

P

- For a patient over ≥ 16 years of age, who has SBP< 90 or HR >110 BPM, or if the provider determines the patient to be at high risk for significant hemorrhage: **Tranexamic Acid (TXA)** 1 gram IV over 10 minutes.
  (mix 1 gram of TXA in 100ml of Normal Saline)

Check and Inject Epinephrine by BLS Providers

6.6

Kit criteria:

- **Epinephrine** administration supplies must be maintained in a separate container from all other medications;
- **Epinephrine** 1:1,000 1mg/1mL concentration must be in a glass vial;
- Kit case and medication vial must both be labeled with "NOT FOR IV USE";
- Kit contains 2 sterile 1cc graduated syringes and 21- to 25-gauge needles (3/8-1 inch long) that are permanently attached (i.e. needle cannot be removed from syringe). Needle must be "safety" engineered, easily sheathed or protected following use, and
- Documentation and direction card must be included in kit, noting the **epinephrine** is NOT for IV use, and noting dosing for adult/pediatric patients.

Indications: Patients experiencing Allergic Reaction/Anaphylaxis, Bronchospasm/Respiratory Distress who would benefit from an epinephrine injection. Protocol for use in 2.2A Allergic Reaction/Anaphylaxis - Adult, 2.2P Allergic Reaction/Anaphylaxis - Pediatric and 2.6P Bronchospasm/Respiratory Distress - Pediatric.

EMT STANDING ORDERS

- 1.0 Routine Patient Care
- **ADULT** dose **epinephrine** 1:1,000 0.3mg IM-ONLY
- **PEDIATRIC** dose **epinephrine** 1:1,000 0.15mg IM **(for pediatric patient with a body weight less than 25 kg).**
  If body weight is over 25 kg. use **epinephrine** 1:1,000 0.3mg IM.
- 2nd dose may be administered in 5 minutes if necessary
- Contact Medical Control if the patient is < 6 months or > than 65 years of age.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications.

Criteria for participation:

1. Affiliate Hospital Medical Director (AHMD) approval to participate.
2. Check and Inject kits (described above) are available.
3. Initial training and AHMD oversight.
4. EMT participants complete and pass a competency exam.
5. 100% standard tracking of cases with 100% CQI.
6. Quarterly retraining of all EMTs.

6.7 Acetaminophen IV

Purpose: With Affiliate Hospital Medical Director (AHMD) approval, an ambulance service may choose to stock the ALS ambulance(s) with IV acetaminophen, for administration by trained Paramedics as a pain medication option.

Indication: Pain

Contraindications:

1. Acetaminophen is contraindicated in patients with liver failure.

PARAMEDIC STANDING ORDERS: ADULT

P

- 1.0 Routine Patient Care
- **Acetaminophen** 650-1000 mg IV

PARAMEDIC STANDING ORDERS: PEDIATRIC

- **Acetaminophen** 15 mg/kg IV to max 1000 mg.

MEDICAL CONTROL MAY ORDER

- Additional doses of above medications.

Conditions for participation:

1. Affiliate Hospital Medical Director (AHMD) approval to participate.
2. Initial training and AHMD oversight.
3. 100% standard tracking of cases with 100% CQI.
4. Routine retraining of all Paramedics.

SECTION 7:

MEDICAL POLICIES AND PROCEDURES

Statewide Treatment Protocols
Version 2018.1

7.1 Air Medical Transport

Introduction:

The use of air medical services has become the standard of care for many critically ill or injured patients who require transport to specialized medical facilities such as Trauma Centers.

The purpose of these Guidelines is to establish a clinical framework for prehospital EMS personnel upon which to make decisions regarding when to access air medical support services. The following constitute the philosophical foundation for these Guidelines.

- EMS personnel should consider requesting ground advanced life support (ALS) and air medical support when operational conditions listed below exist and the following patient conditions are present;
- Patients with an uncontrolled or compromised airway should be brought to the nearest appropriate facility unless advanced life support (ALS) service (by ground or air) can intercept in a more timely fashion; and:
- Patients in cardiac arrest subsequent to blunt trauma should be taken to the nearest facility.

These guidelines have been established so that air medical support does not require prior Medical Control approval. However, Medical Control contact should be considered whenever appropriate for patient management issues.

Operational Conditions:

1. When a patient meets patient criteria defined below and scene arrival time to estimated arrival time at the nearest appropriate hospital, including extrication time, exceeds 20 minutes:
2. Patient location, weather or road conditions preclude the use of standard ground ambulance; or
3. Multiple casualties / patients are present which will exceed the capabilities of local hospital and agencies.

Patient Conditions

1. Physiologic Criteria:

a. Unstable Vital Signs

2. Anatomic Injury:

a. Evidence of Spinal Cord injury including paralysis or paresthesia.

b. Severe Blunt Trauma:

- Head injury (Glasgow Coma Scale of twelve [12] or less)
- Severe chest or abdominal injury
- Severe pelvic injury excluding simple hip fractures.

c. Burns:

- Greater than 20% Body Surface Area (BSA) second or third degree burns;
- Evidence of airway or facial burns;
- Circumferential extremity burns; or
- Burns associated with trauma.

d. Penetrating injuries of head, neck, chest, abdomen or groin.

e. Amputation of extremities, excluding digits.

Special Conditions: The following should be considered in deciding whether to request air medical transport, but are **not** automatic or absolute criteria:

1. **Mechanism of Injury**

a. Motor Vehicle Crash:

- Patient ejected from vehicle.
- Death in same passenger compartment.

b. Pedestrian struck by a vehicle and thrown more than 15 feet, or run over by a vehicle.

2. **Significant Medical History**

a. Age greater than 55.

b. Significant coexistent illness (such as anticoagulation).

c. Pregnancy.

Electronic Control Weapons 7.2

In some situations, state and local law enforcement utilize devices known as electronic control weapons (ECW), such as a TASER®, to assist with controlling persons. When used, the device discharges a wire that, at the distal end, contains an arrow-like barbed projectile that penetrates the suspect's skin and embeds itself, allowing the officer to administer an incapacitating electric shock. Current medical literature does not support routine medical evaluation for an individual after an ECW application. **In most circumstances, probes can be removed by law enforcement without further medical intervention.**

E/A/P

EMS should be activated following ECW application in the following circumstances:

- The probe is embedded in the eye, genitals, or bone.
- Seizure is witnessed after ECW application.
- There is excessive bleeding from probe site after probe removal.
- Cardiac arrest, complaints of chest pain, palpitations.
- Respiratory distress.
- Change in mental status after application.
- Pregnancy.

Removal must be done by law enforcement unless lodged in a vulnerable area

CONTRAINDICATIONS TO REMOVAL

- Patients with probe penetration in vulnerable areas of the body as mentioned below should be transported for further evaluation and probe removal.
- Genitalia, female breast, or skin above level of clavicles.
- Suspicion that probe might be embedded in bone, blood vessel, or other sensitive structure.

EMT/ADVANCED EMT / PARAMEDIC STANDING ORDERS

1. 1.0 Routine Patient Care
2. Ensure wires are disconnected from weapon.
3. Secure probe with padded dressing.
4. Transport to Emergency Department.

7.3 Medical Orders for Life Sustaining Treatment (MOLST) and Comfort Care/Do Not Resuscitate (DNR) Order Verification

Introduction

EMS personnel at all levels are required to provide emergency care and transport patients to appropriate health care facilities. EMS personnel are further required to provide treatment to the fullest extent possible, subject to their level of certification and the level of licensure of the ambulance service for which they are working. However, more and more patients, where it is medically appropriate, are opting for limitations on life-sustaining treatments, such as cardiopulmonary resuscitation (CPR), in the event of cardiac arrest. Thus, EMS personnel may encounter a patient who has chosen such options and has either a Massachusetts Medical Orders for Life Sustaining Treatments (MOLST) or the Comfort Care/DNR Order Verification Form or bracelet (CC/DNR). These documents provide for a statewide, standardized form, approved by the Massachusetts Department of Public Health (DPH), Office of Emergency Medical Services (OEMS), that EMS personnel can instantly recognize as an actionable order (MOLST) or verification of such an order (CC/DNR) regarding the use of life sustaining treatments. This protocol governs EMS personnel response to a patient with a MOLST or CC/DNR form.

Implementation Procedures

1. Confirm the identity of the individual with the MOLST or CC/DNR Order Verification Form or bracelet;

2. Check validity:

   a. CC/DNR: To assure that a DNR order is recognized in any out-of-hospital setting, an attending physician, nurse practitioner, or authorized physician assistant, who is licensed in Massachusetts, must provide a patient who has a current DNR order, with a fully executed CC/DNR Order Verification form to verify the existence of a DNR order. To be valid, the CC/DNR Order Verification Form shall contain:

   i. the patient's name, and all other patient identifiers requested on the form;
   ii. date of issuance;
   iii. the signature and telephone number of an attending physician, nurse practitioner, or authorized physician assistant;
   iv. the signature and printed name of the patient, guardian or health care agent signing the form, and:
   v. a date of expiration, **if any,** of the underlying DNR order. If there is a date of expiration, and that date has passed, the CC/DNR is not valid.

   b. MOLST: Alternatively, to assure a patient with a desire to document decisions regarding DNR and/or other life-sustaining treatments (LST, which includes CPR, intubation with ventilation, and non-invasive ventilation, such as continuous positive airway pressure, or CPAP) has those preferences honored, a Massachusetts-licensed attending physician, nurse practitioner or authorized physician assistant can provide a patient with a MOLST form. The MOLST form represents actual medical orders to EMS personnel related to a patient's preferences for resuscitation, ventilation and hospitalization. To be valid, the MOLST form must contain:

   i. patient name and appropriate identifiers as requested on the form,
   ii. box D and E of the MOLST form must be fully completed for page 1 to be considered valid – which is all that is relevant for EMS personnel. A MOLST order that has an expiration date or revocation date that is in the past is not valid.

   c. Revocation: A MOLST order for DNR or CC/DNR form may state it has been revoked. If that is the case, the order or form is not valid.

Policy Continues

Policy Continued

3. Action of EMS if no valid CC/DNR or no valid MOLST that includes a DNR order: In accordance with standard EMS Statewide Treatment Protocols, EMS personnel will resuscitate patients without a valid CC/DNR Order Verification Form or without a MOLST that has documented a DNR order, as well as a patient who has a MOLST form indicating a preference FOR resuscitation. Remember, if there is any doubt about the current validity of a MOLST or CC/DNR Order Verification form, EMS personnel are to resuscitate and provide care in accordance with the Statewide Treatment Protocols.
4. Patient Care for confirmed valid CC/DNR or MOLST with orders for DNR:

   a. If the patient is **in full respiratory or cardiac arrest**, the EMS personnel shall not resuscitate, which means:

      i. do not initiate CPR,
      ii. do not insert an oropharyngeal airway (OPA),
      iii. do not provide ventilatory assistance,
      iv. do not artificially ventilate the patient (e.g. mouth-to-mouth, bag valve mask)
      v. do not administer chest compressions,
      vi. do not initiate advanced airway measures,
      vii. do not administer cardiac resuscitation drugs, and
      viii. do not defibrillate.

   b. If the patient is **not in full respiratory or cardiac arrest**, but the patient's heartbeat or breathing is inadequate, EMS personnel shall not resuscitate but shall provide, within the scope of their training and level of certification, full palliative care and transport, as appropriate, including:

      i. additional interventions a patient has indicated be given on the MOLST form, including intubation with ventilation or non-invasive ventilation such as CPAP.
      ii. emotional support;
      iii. suction airway;
      iv. administer oxygen;
      v. application of cardiac monitor;
      vi. control bleeding;
      vii. splint;
      viii. position for comfort;
      ix. initiate IV line; and,
      x. contact Medical Control, if appropriate for further orders, including necessary medications.

   c. If the patient is not in respiratory or cardiac arrest, and the patient's heart beat and breathing are adequate, but **there is some other emergency illness or injury**, the EMS personnel shall provide full treatment and transport, as appropriate, within the scope of their training and level of certification.
5. Questions about the MOLST or CC/DNR: If EMS personnel have any questions regarding the applicability of the MOLST or CC/DNR form with regard to any specific individual, or a good-faith basis to doubt the continued validity of the MOLST or CC/DNR form, EMS personnel shall verify with the patient if the patient is able to respond. If the patient cannot respond, EMS personnel shall provide full treatment and transport, or contact Medical Control for further orders. In all cases, EMS personnel shall document the circumstances on the trip record.

Policy Continues

Policy Continued

6. Previously-initiated CPR: In the event of respiratory or cardiac arrest and resuscitative efforts are initiated prior to EMS confirmation of the valid DNR order on the MOLST form or a valid CC/DNR Order Verification form, EMS shall discontinue the following measures: a) CPR; b) cardiac medications, and c) advanced airway measures.
7. Documentation: EMS personnel must document the existence and validity of the MOLST order or CC/DNR form on their trip record. For a MOLST form, EMS personnel must specifically document on the trip record all clinical information on the MOLST form regarding the patient's preferences for care. For both MOLST and CC/DNR Order Verification Form, EMS personnel must also document on the trip record all care they provided to the patient, including palliative measures.
8. Revocation on scene: The MOLST order with DNR or CC/DNR may be revoked by the patient at any time, regardless of mental or physical condition, by the destruction or affirmative revocation of the MOLST or CC/DNR Order Verification, or by the patient's direction that the MOLST or CC/DNR Order Verification not be followed by EMS personnel or be destroyed. EMS personnel, upon witnessing or verifying a revocation, shall communicate that revocation in writing to the hospital to ensure its inclusion in the patient's medical record. EMS personnel shall also document the revocation on their trip record.

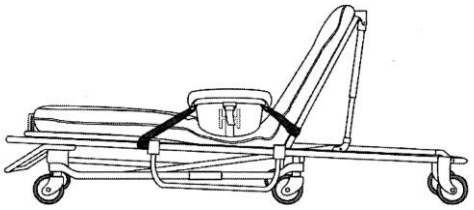
PATIENT TRANSPORT

Massachusetts statute requires that all children under the age of 8 traveling in a motor vehicle must be secured in a child passenger restraint (aka car seat), unless they are 57 inches or taller, in which case, they need to be using a seat belt. An ill or injured child must be restrained in a manner that minimizes injury in an ambulance crash. The best location for transporting a pediatric patient is on the ambulance cot. The method of restraint will be determined by various circumstances including the child's medical condition and weight.

1. Convertible car seat with two belt paths (front and back) with four points for belt attachment to the cot is considered best practice for pediatric patients who can tolerate a semi-upright position.
   - Position safety seat on cot facing foot-end with backrest fully elevated.
   - Secure safety seat with 2 pairs of belts at both forward and rear points of seat.
   - Place shoulder straps of the harness through slots just below child's shoulders and fasten snugly to child.
   - Follow manufacturer's guidelines regarding child's weight.

   Note: Non-convertible safety seats cannot be secured safely to cot. If child's personal safety seat is not a convertible seat, it cannot be used on the cot.

2. Car bed with both a front and rear belt path
   - For infants who cannot tolerate a semi-upright position or who must lie flat.
   - Position car bed so infant lies perpendicular to cot, keeping infant's head toward center of patient compartment.
   - Fully raise backrest and anchor car bed to cot with 2 belts, utilizing 4 loop straps supplied with car bed.
   - Secure the car bed at the foot end to ensure that it cannot slide forward and off the end of the stretcher during a sudden stop.
   - Only appropriate for infants from 5 – 20 lbs.



3. Restraint device (marketed to EMS) with 5-point harness
   - Attach securely to cot utilizing upper back strap behind cot and lower straps around cot's frame.
   - 5-point harness must rest snugly against child.
   - Adjust head portion of cot according to manufacturer's recommendation.

Policy Continues

Policy Continued

4. Child belted directly to backboard and/or cot in manner to prevent ramping or sliding in a front or rear end crash
   - Loop narrow belt under each arm and extend over child's shoulder securing belt at shoulder level so no gap exists above shoulder.
   - Use soft, sliding, or breakaway connector to hold shoulder straps together on chest.
   - Anchor 2 belts to non-sliding cot member and route over thighs and hips, not around waist.
   - Secure the foot end of the backboard by using a foot strap or harness looped through the bottom of the device and then tighten to the foot end of the cot to ensure stability in the event of a sudden stop.
5. Isolette restraint device with 3-point harness
   - Rest harness securely on child with no blanket or sheet between harness and child.
   - Attach to isolette tray at four points.
   - Additional soft Velcro straps may be added for lateral security.
   - Blanket or towels may be used to provide stabilization of the head.
   - Infants under 5 lbs should ideally be secured in a transport isolette.

NON-PATIENT TRANSPORT

Best practice is to transport well children in a vehicle other than the ambulance, whenever possible, for safety.

If no other vehicle is available and circumstances dictate that the ambulance must transport a well child, he/she may be transported in the following locations:
- Captain's chair in patient compartment using a size appropriate integrated seat or a convertible safety seat that is secured safely in relationship to the orientation of the captain's chair.
- Passenger seat of the driver's compartment if child is large enough (according to manufacturer's guidelines) to ride forward-facing in a child safety seat or booster seat. Airbag should be turned off. If the air bag can be deactivated, an infant, restrained in a rear-facing infant seat, may be placed in the passenger seat of the driver's compartment.

MOTHER AND NEWBORN TRANSPORT

Transport the newborn in an approved size-appropriate child restraint system that complies with the injury criteria of the Federal Motor Vehicle Safety Standard (FMVSS) No. 213 in the rear-facing EMS provider seat /captain's chair) that prevents both lateral and forward movement, leaving the cot for the mother. Use a convertible seat with a forward-facing belt path). Do NOT use a rear-facing only seat in the rear-facing EMS provider's seat. You may also use an integrated child restraint system certified by the manufacturer to meet the injury criteria of FMVSS No. 213.

USE OF PATIENT'S CHILD PASSENGER SAFETY SEAT AFTER INVOLVEMENT IN MOTOR VEHICLE CRASH

The patient's safety seat may be used to transport the child to the hospital after involvement in a minor crash if ALL of the following apply:
- It is a convertible seat with both front and rear belt paths.
- Visual inspection, including under movable seat padding, does not reveal cracks or deformation.
- Vehicle in which safety seat was installed was capable of being driven from the scene of the crash.
- Vehicle door nearest the child safety seat was undamaged.
- The air bags (if any) did not deploy.

Refusal of Medical Care and Ambulance Transport 7.5

PURPOSE:
Establish guidelines for the management and documentation of situations where patients refuse treatment or transportation.
Under the Commonwealth's EMS System regulations, at 105 CMR170.355 (A) "Responsibility to Dispatch, Treat and Transport," ambulance services and their agents may not refuse any of these responsibilities, absent a documented patient refusal. Ambulance services and their EMS personnel must be extremely cautious about accepting patient refusals.

Refusal of care
There are three components to a valid refusal of care. Absence of any of these components will most likely result in an invalid refusal. The three components are as follows:

1. Competence: In general, a patient who is an adult or a legally emancipated minor * is considered legally competent to refuse care. A parent or legal guardian who is on-scene may refuse care on his or her minor children's behalf.
2. Capacity: In order to refuse medical assistance a patient must have the capacity to understand the nature of his or her medical condition, the risks and benefits associated with the proposed treatment, and the risks associated with refusal of care. A health care agent who is named in a health care proxy document for the patient may refuse care on behalf of the patient only if 1) he or she is on-scene and 2) he or she has his/her health care proxy document in hand to show EMS. If the patient objects to the health care agent's decision, there is no effective refusal. If there is any doubt about the health care agent's authority, EMS is to transport the patient
3. Informed Refusal: A patient must be fully informed about his or her medical condition, the risks and benefits associated with the proposed treatment and the risks associated with refusing care.

Patients who meet criteria in this Protocol shall be allowed to make decisions regarding their medical care, including refusal of evaluation, treatment, or transport. These criteria include:

1. Initiated solely by the patient, not suggested/prompted by the EMTs.
2. Adults (≥ 18 years of age) and legally emancipated minors*
3. Orientation to person, place, time, and situation.
4. No evidence of altered level of consciousness resulting from head trauma, medical illness, intoxication, dementia, psychiatric illness or other causes.
5. No evidence of impaired judgment from alcohol or drug influence.
6. No language communication barriers. Reliable translation available (e.g., on scene interpreter, language line).
7. No evidence or admission of suicidal ideation resulting in any gesture or attempt at self-harm. No verbal or written expression of suicidal ideation regardless of any apparent inability to complete a suicide.

Definitions

Minor: A person under the age of 18, who is not an emancipated minor (see below).
Emancipated Minor: For the purpose of making decisions regarding medical care and treatment, an emancipated minor is a person under the age of 18 who is

1. married, widowed or divorced;
2. the parent of a child;
3. a member of the armed forces;
4. pregnant or believes herself to be pregnant; or
5. living separate and apart from a parent/legal guardian and is managing his or her own financial affairs.

Protocol Continues

7.5 Refusal of Medical Care and Ambulance Transport

Protocol Continued

EMS providers will make every reasonable effort to convince reluctant patients to access medical care at the emergency department via the EMS system before accepting a refusal of medical care and ambulance transport.

Contact on-line medical control for all patients who present a threat to themselves, present with an altered level of consciousness or diminished mental capacity, or have history or examination findings consistent with a high-risk refusal. The physician is to be provided all relevant information and may need to speak directly with the patient by radio or preferably a recorded landline.

Although a minor cannot legally consent to medical treatment, consent is legally implied in an emergency. In assessing whether there is an emergency, particularly with regard to motor vehicle crashes, EMTs must include the mechanism of injury in their analysis.

Procedure

1. Perform an assessment of the patient's medical/traumatic condition, and, to the extent permitted by the patient, a physical exam including vital signs. Your assessment, or the patient's refusal of assessment, must be fully documented in the trip record.
2. Explain to the patient the nature and severity of his/her illness or injury, the treatments being proposed, the risks and consequences of accepting or refusing treatment, and the potential alternatives. Fully document the explanation given to the patient in your trip report.
3. Prepare and explain the refusal of medical care and ambulance transport document.
4. Documentation of refusal of medical care and ambulance transport must be signed by the patient (or, in the case of a minor patient, by the minor patient's parent, legal guardian, or authorized representative) at the time of the refusal. Documentation should include, when possible, a signature by a witness, preferably a competent relative, friend, police officer, or impartial third person.
5. The fact that the patient refused medical care and transport must be documented in the trip record, and the signed refusal of medical care and ambulance transport document must be included as part of the trip record.
6. If on-line medical control was consulted for a refusal of care, obtain and document the physician's name in the patient care report.

Sedation and Analgesia for Electrical Therapy-Adult & Pediatric 7.6

P

PARAMEDIC STANDING ORDERS

- If cardioversion or pacing is warranted, consider administration of any of the following for sedation:
  - **Midazolam**
    - 0.5mg-2 mg Slow IV/IO/IM/IN; OR
  - **Fentanyl**
    - 1 mcg/kg slow IV/IO/IM/IN weight based (kg) to a max of 150mcg (150kg); OR
  - **Morphine**
    - 0.1mg/kg IV/IO/IM/SC,(max. dose 10 mg).

For Pediatric Doses, see A2 Pediatric Color Coded Medication Reference

7.7 Withholding and Cessation of Resuscitation

Purpose: 1) To clarify for EMS services and their EMTs when resuscitative measures may be withheld for patients in cardiac arrest and 2) to define when EMTs can cease resuscitative measures already initiated.

Background and EMS Services' Training/Support Services Obligations:

Emergency Medical Technicians must begin or continue resuscitative measures for all patients in cardiac arrest except as indicated in this Protocol (also issued as Administrative Requirement (A/R) 5-515). If in doubt, begin resuscitative efforts.

All EMS services must provide appropriate training on management of death in the field, including legal, procedural, and psychological aspects; and access to support services.

EMS services and EMS personnel should be aware that the nursing staff of a health care facility, such as a skilled nursing facility, may need a physician order (including a medical control physician's order, if allowed by nursing home policy) to halt resuscitation attempts, even in the case of patients meeting EMS "obvious death" criteria, as set out below. Nursing staff and EMS personnel should come to a cooperative decision on continuation or termination of resuscitation; this process may include obtaining physician input and orders. If the medical professionals at the bedside are unable to reach agreement on attempting or terminating efforts, the presumption should be to continue resuscitative efforts and transport the patient to an emergency department.

I. Exceptions to Initiation of Resuscitation

Other than in overriding circumstances such as a large mass-casualty incident or a hazardous scene, the following are the **only** exceptions to initiating and maintaining resuscitative measures in the field:

1. Current, valid DNR, verified per the Medical Orders for Life Sustaining Treatment (MOLST)/Comfort Care Protocol.
2. Trauma inconsistent with survival
    a. Decapitation: severing of the vital structures of the head from the remainder of the patient's body
    b. Transection of the torso: body is completely cut across below the shoulders and above the hips
    c. Evident complete destruction of brain or heart
    d. Incineration of the body
    e. Cardiac arrest (i.e. pulselessness) documented at first EMS evaluation when such condition is the result of significant blunt or penetrating trauma and the arrest is obviously and unequivocally due to such trauma, EXCEPT in the specific case of arrest due to penetrating chest trauma and short transport time to definitive care (in which circumstance, resuscitate and transport)
3. Body condition clearly indicating biological death.
    a. Complete decomposition or putrefaction: the skin surface (**not** only in isolated areas) is bloated or ruptured, with sloughing of soft tissue, and the odor of decaying flesh.
    b. Dependent lividity and/or rigor: when the patient's body is appropriately examined, there is a clear demarcation of pooled blood within the body, and/or major joints (jaw, shoulders, elbows, hips, or knees) are immovable.
    Procedure for lividity and/or rigor: All of the criteria below must be established and documented in addition to lividity and/or rigor in order to withhold resuscitation:

Policy Continues

Policy Continued

Exemptions to Initiation of Resuscitation, Continued

i. Respirations are absent for at least 30 seconds; **and**
ii. Carotid pulse is absent for at least 30 seconds; **and**
iii. Lung sounds auscultated by stethoscope bilaterally are absent for at least 30 seconds; **and**
iv. Both pupils, if assessable, are non-reactive to light.

II. Cessation of Resuscitation by EMTs

Emergency Medical Technicians must continue resuscitative measures for all patients in cardiac arrest unless contraindicated by one of the exceptions below.

1. EMTs at all levels of certification may cease resuscitative efforts at any time when any "Exception to Initiation of Resuscitation" as defined in I., above, is determined to be present.
2. EMTs certified at the **Paramedic level only** may cease resuscitative efforts in an adult patient 18 years of age or older, regardless of who initiated the resuscitative efforts, without finding "obvious death" criteria **only** by the following procedure, and **only** if the EMS system's Affiliate Hospital Medical Director has approved of use of this procedure, as follows:
   a. There is no evidence of or suspicion of hypothermia; **AND**
   b. Indicated standard Advanced Life Support measures have been successfully undertaken (including for example effective airway support, intravenous access, medications, transcutaneous pacing, and rhythm monitoring); **AND**
   c. The patient is in asystole or pulseless electrical activity (PEA), and REMAINS SO persistently, unresponsive to resuscitative efforts, for at least twenty (20) minutes while resuscitative efforts continue; **AND**
   d. No reversible cause of arrest is evident; **AND**
   e. The patient is not visibly pregnant; **AND**
   f. An on-line medical control physician gives an order to terminate resuscitative efforts.

Special Considerations and Procedures:

1. a. If during transport, EMTs cease resuscitation of a patient in accordance with the requirements above, they shall continue to the closest appropriate hospital for pronouncement of death. This is always a special circumstance that is in the interest of public health and safety, and thus meets the requirements of 105 CMR 170.365.
   b. During transports when resuscitative efforts have appropriately been ceased in accordance with the requirements above, EMTs must cover the person with a sheet, transport without the use of emergency vehicle audible and visual warning devices, and notify the receiving hospital in advance.
2. In all cases where EMTs have withheld or ceased resuscitative efforts in accordance with the requirements above, and left the person in the field, procedures must include notification of appropriate medical or medico-legal authorities, such as police.
3. EMS trip record documentation must reflect the criteria used to determine obvious death or allow cessation of resuscitative efforts.

7.8 Ventricular Assist Devices (VADs)

EMT/ADVANCED EMT/ PARAMEDIC STANDING ORDERS

PURPOSE

To provide an overview of how Left Ventricular Assist Device (LVAD) works and how EMS provider assessment and treatment differs for a patient with an LVAD.

Highlights of Assessing and Treating an LVAD patient

- Recognize that you have a patient with an LVAD
- Determine if your patient has an LVAD problem, or an unrelated illness or injury
- A completely stable patient may have no palpable pulse or measurable blood pressure
- Mental status and skin color must be used to determine patient stability
- CPR should almost never be performed on an LVAD patient
- Patients with an LVAD should almost never be pronounced dead at the scene

Overview of an LVAD

The LVAD, or Left Ventricular Assist Device, is a mechanical device that takes over some or all of the pumping function of the heart's left ventricle. This device is used for patients of any age or gender with advanced heart failure who would not otherwise survive without this device. Heart failure can result from chronic/long-term hypertension and heart disease, congenital heart defects, mechanical damage to the heart, infection, postpartum complications and many other reasons.

E/A/P

Some LVAD patients will have an LVAD while they are waiting for a heart transplant (called Bridge-to-Transplant). Other LVAD patients, who are not eligible for a heart transplant for some reason, will live with the device for the rest of their lives (called Destination Therapy, or Lifetime use)

How the Heart Works versus How LVAD works

The normal pumping function of the heart is achieved by the contraction of the left ventricular muscle, which pushes a bolus of blood forward in the cardiovascular system with each contraction. This contraction is what we feel when checking a pulse, and what we hear when taking a blood pressure. If the heart is not contracting, blood is not moving forward in the system, and we don't feel or hear a pulse. The LVAD, in contrast, flows constantly and therefore creates no "pulse" to feel or hear.

The LVAD is a tube that is about ½ -1 inch in diameter with a pump in the middle. One end of the tube (inflow) is surgically inserted into the left ventricle, and the other end (outflow) is sewn into the aorta, just above where it exits the heart.

The pump on the LVAD spins constantly. The right side of the heart still pushes blood through the lungs and back to the left ventricle, but then the LVAD pump pulls the blood out of the left ventricle and pumps it out to the body, taking over most or all of the failed pumping action of the left ventricle.

The drive unit for the pump, which includes the power source and programming controls, is outside of the body and connects to the LVAD by a cord that exits the body through the abdomen, usually in the right upper quadrant.

NOTE: The important part to us as EMS providers is that *the pump is a constant flow pump*. There is no rhythmic pumping as there is with the ventricle, and therefore there is little to no pulse. This means you can have a perfectly stable and healthy looking person who has no palpable pulse and whom you may or may not be able to take a blood pressure!

Policy Continues

E/A/P

Assessing the LVAD Patient

1. Recognize you have an LVAD patient!
The LVAD patient has a control unit attached to their waist, or in a shoulder bag. The control unit is attached to a power cord exiting from the patients' abdomen. The control unit will be attached to batteries mounted to the belt, in shoulder holsters, or in a shoulder bag. At home, it could be attached to a long cord that connects to a large power unit.

2. DECIDE if you have a patient with an LVAD problem, or a patient with a medical problem who just happens to have an LVAD. Patients with LVADS will have all the same illnesses and injuries as any other patient you see. Their LVAD may have nothing to do with the reason you were called.

3. LOOK:
Alarms on the control unit will most likely indicate an LVAD problem. Follow resource guides with the patient to trouble shoot.
Skin color and mental status are the most reliable indicators of patient stability for the LVAD patient.

4. LISTEN:
Listen over the LVAD pump location to make sure you can hear it running. This will be just to the left of the epigastrium, immediately below the base of the heart. You should hear a low hum with a stethoscope if the pump is running. Don't assume the pump is running just because the control unit looks OK.
The patient and their family are experts on this device. Listen to what they have to say about any problems with the LVAD.

5. FEEL:
Feel the control unit. A hot control unit indicates the pump is working harder than it should and often indicates a pump problem such as a thrombosis (clot) in the pump. The use of pulse and blood pressure to assess stability can be unreliable in an LVAD patient, even if they are very stable.

6. VITALS:
Pulse: generally, you will be unable to feel a pulse.

Blood Pressure: you may or may not be able to obtain one, standard readings are unreliable and may vary from attempt to attempt. If NIBP machine can detect a blood pressure, adjust it to display Mean Arterial Pressure (MAP). This is a more reliable measure of perfusion and the calculation for MAP can overcome variations in standard readings. A MAP of 60-70 is normal.

Pulse-oximetry: readings seem to be fairly accurate and consistent, according to data, despite the manufacturer stating that pulse oximetry often doesn't work.

Quantitative Continuous Waveform Capnography: This should remain accurate, as it relies on respiration, not pulse. Normal (printed) waveform shape with a normal respiratory rate and low CO_2 readings (<30) can indicate low perfusion = poor pump function.

Temperature: infection and sepsis are common, check temperatures!

7.9 Process for Changes to the Statewide Treatment Protocols

All changes (any addition, deletion, or any other type of amendment) to the Massachusetts Statewide Pre-Hospital Treatment Protocols require statewide dissemination and often require training of EMTs and Medical Control physicians prior to implementation. Therefore, to ensure a thorough review and orderly implementation, all protocol changes shall be approved and implemented on an ANNUAL basis, with the exception of those arising out of procedures described in Part B below.

Any protocol change must be approved pursuant to the following procedures.

PART A
Procedures for ANNUAL Protocol Changes

1. All requests for protocol changes shall be submitted by at least one Regional Medical Director to the Medical Services subcommittee by October 1 of the preceding year. The request for a protocol change shall include the following:
    a. A detailed description of the proposed change;
    b. A formal written endorsement from the Region(s) of origin for the proposed change;

2. The Medical Services subcommittee shall review and make a recommendation regarding each proposed change to the protocols. Where training is required for implementation of the protocol change, the Medical Services subcommittee shall timely distribute the approved protocol changes to the Training subcommittee for its approval of the training component.

3. All protocol changes approved by the Medical Services Committee, with Training Committee approval of training if appropriate, shall be forwarded to the Executive Committee. The EMCAB Executive subcommittee shall review the proposed protocol changes and make a final recommendation at its meeting.

4. A presentation of the approved changes shall be made at the first meeting of the full EMCAB following the Executive subcommittee recommendation.

5. Recommendations go to DPH/OEMS for review and final action. DPH/OEMS shall timely notify all providers of approved protocol changes and any requirements regarding implementation (i.e. training and implementation date).

Policy Continues

Policy Continued

PART B

Procedures for Protocol Changes Allowable Other Than on an Annual Basis

1. The State EMS Medical Director shall have the discretion to implement immediate protocol changes when such action is deemed by the Department to be necessary for the protection of public health and safety.
    a. The State EMS Medical Director shall base such action on a thorough review of relevant literature, any applicable national and/or state standard(s) and, when feasible, consultation with EMS Regional Councils, the Medical Services subcommittee and/or the EMCAB Executive subcommittee.
    b. When feasible, the State Medical Director shall convene an emergency meeting of the Medical Services subcommittee. The Medical Services subcommittee shall recommend any change to the protocols, and refer its recommendation and all supporting documents relating to the proposed change to the EMCAB Executive subcommittee for action. The EMCAB Executive subcommittee shall review the recommendation and make a final recommendation to DPH/OEMS.
    c. DPH/OEMS shall review such recommendation and take final action. It can also establish reasonable time frames for said implementation, particularly if a change requires training, and shall timely disseminate such a protocol change and any relevant implementation requirements.

2. DPH/OEMS shall always have the discretion to make changes to bring the Protocols into compliance with national standards of care.
    a. This shall be done, when feasible, in consultation with Regional EMS Councils, the Medical Services subcommittee, and/or EMCAB Executive subcommittee.
    b. OEMS shall establish reasonable time frames for said implementation, particularly if a change requires training, and shall timely disseminate such a protocol change and any relevant implementation requirements.

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SECTION 8:

SPECIAL OPERATIONS PRINCIPLES

Statewide Treatment Protocols
Version 2018.1

8.1 Fire and Tactical EMS Rehabilitation

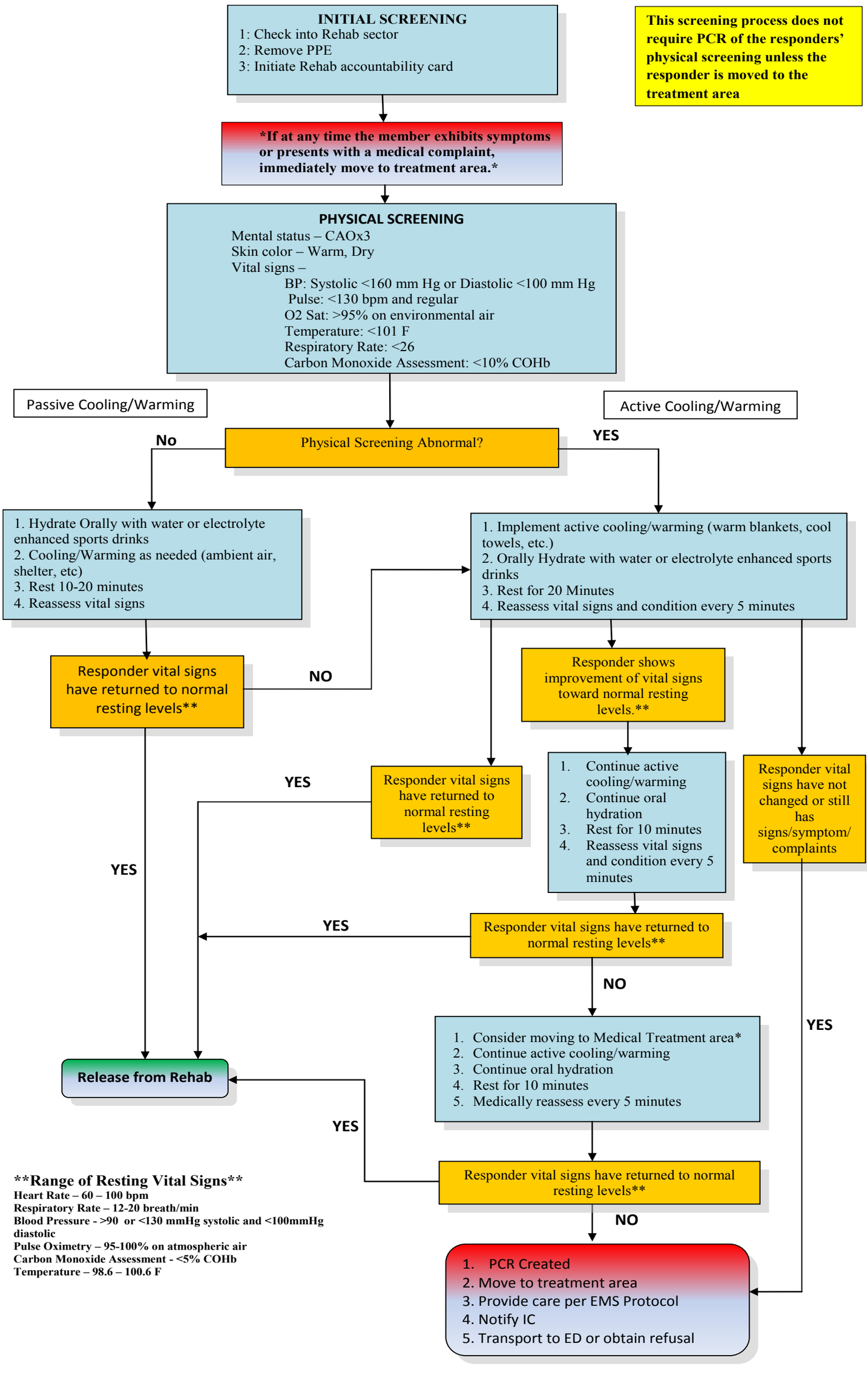
EMS Principles for Rehab at Emergency Incidents

EMS personnel may be designated by the Incident Commander (IC) at the scene of an emergency or training exercise to perform the function as *rehab providers* to assure the safety and well-being of the emergency responders, and the overall integrity of the operation. The need for establishing a Rehab Sector shall be based upon the duration, complexity, intensity of the incident and the climatic conditions, but shall not be the sole criteria for establishing REHAB.

The IC may establish a Rehab Manager as his/her designee. The Rehab Manager shall assure that all resources necessary to operate the Rehab Sector are communicated to the Logistics Officer or IC. The Rehab sector shall provide rest for the emergency responders. Adequate resources for re-hydration, cooling/warming, medical screening, and accountability shall be available. Multiple Rehab locations may be necessary based on the size of the incident. Each Rehab area shall have its own manager and identification, i.e.: Rehab 1, Rehab 2.

The Rehab Manager shall assure that adequate EMS staffing (paramedic level preferred) shall be available for responder screening and medical treatment if necessary. A dedicated ambulance (ALS level preferred) shall be assigned to the Rehab Sector for the duration of the incident. Easy access by EMS vehicles to the Rehab Sector shall be maintained at all times.

All emergency responders directed to the Rehab Sector by the IC shall be screened according to local protocol, and the attached “Rehab Flow Chart”. Any emergency responder who presents at the Rehab Sector with an acute medical condition shall be considered a patient under the definition of 105 CMR 170.020 and shall be treated in accordance with the appropriate Statewide Treatment Protocol. The Rehab Manager shall be responsible for tracking all responders entering and exiting the Rehab area, or who are transported from Rehab to a medical facility.


INITIAL SCREENING
1: Check into Rehab sector
2: Remove PPE
3: Initiate Rehab accountability card
This screening process does not require PCR of the responders' physical screening unless the responder is moved to the treatment area
If at any time the member exhibits symptoms or presents with a medical complaint, immediately move to treatment area.
PHYSICAL SCREENING
Mental status – CAOx3
Skin color – Warm, Dry
Vital signs –
BP: Systolic <160 mm Hg or Diastolic <100 mm Hg
Pulse: <130 bpm and regular
O2 Sat: >95% on environmental air
Temperature: <101 F
Respiratory Rate: <26
Carbon Monoxide Assessment: <10% COHb
Passive Cooling/Warming
Active Cooling/Warming
Physical Screening Abnormal?
No
YES
1. Hydrate Orally with water or electrolyte enhanced sports drinks
2. Cooling/Warming as needed (ambient air, shelter, etc)
3. Rest 10-20 minutes
4. Reassess vital signs
1. Implement active cooling/warming (warm blankets, cool towels, etc.)
2. Orally Hydrate with water or electrolyte enhanced sports drinks
3. Rest for 20 Minutes
4. Reassess vital signs and condition every 5 minutes
Responder vital signs have returned to normal resting levels**
NO
Responder shows improvement of vital signs toward normal resting levels.**
Responder vital signs have returned to normal resting levels**
YES
1. Continue active cooling/warming
2. Continue oral hydration
3. Rest for 10 minutes
4. Reassess vital signs and condition every 5 minutes
Responder vital signs have not changed or still has signs/symptom/ complaints
YES
YES
Responder vital signs have returned to normal resting levels**
NO
1. Consider moving to Medical Treatment area*
2. Continue active cooling/warming
3. Continue oral hydration
4. Rest for 10 minutes
5. Medically reassess every 5 minutes
YES
Release from Rehab
YES
Responder vital signs have returned to normal resting levels**
NO
1. PCR Created
2. Move to treatment area
3. Provide care per EMS Protocol
4. Notify IC
5. Transport to ED or obtain refusal
Range of Resting Vital Signs
Heart Rate – 60 – 100 bpm
Respiratory Rate – 12-20 breath/min
Blood Pressure - >90 or <130 mmHg systolic and <100mmHg diastolic
Pulse Oximetry – 95-100% on atmospheric air
Carbon Monoxide Assessment - <5% COHb
Temperature – 98.6 – 100.6 F

8.2 Multiple Casualty Incidents (MCI Triage)

Each MCI/Disaster scene presents its own unique hazards and difficulties. This plan is a general guide to the management of MCIs. It should be understood that modifications may need to be made by command personnel on scene as such changes are needed. When the Statewide MCI plan is officially in place, nothing in this protocol shall be intended to replace or supersede the statewide plan.

A multiple casualty incident (MCI) is any situation where the number of sick or injured patients exceeds the available local, regional or state EMS system resources to provide adequate care in a timely manner to minimize injury and death. An MCI may be the result of a man made disaster or a natural event. Successful management of an MCI will require preplanning and organization of local, regional and state EMS, fire, law enforcement and emergency management resources. CMED, Hospital resources and specialized care services must also be included in preparing your MCI plan.

MCI management process is defined in the Incident Command System (ICS). In general, the Fire Department or Emergency Medical Service Agency having jurisdictional authority establishes the overall command and designates the incident commander (IC) at an MCI scene. **NOTE:** Other agencies may function as the IC, for example, Law Enforcement agencies at a crime scene or hostage situation. Other agencies may assist the IC. Clear precise inter-agency communication networks must be established for successful MCI management.

MCIs within the Commonwealth assessed by EMS will be classified by levels. Response to an MCI is based on the number of potential victims generated by the incident. The following levels indicate the number of potential MCI casualties, should regional EMS providers require a mutual aid response:

Level 1: 1-10 potential victims
Level 2: 11-30 potential victims
Level 3: 31-50 potential victims
Level 4: 51-200 potential victims
Level 5: Greater than 200 victims
Level 6: Long-Term Operational period(s)

TRIAGE

Triage is a special process of sorting patients by the severity of injury or illness to determine the need of emergency care and transportation. This needs to be a continuous process throughout the management of an MCI. The initial triage process should be performed by the first crew to arrive on scene and needs to be continuously reevaluated since the patient's triage status may change. Presently there are no national standard guidelines established for triage. Massachusetts services in general will be using a form of the SMART TAG system, while New England services in general use START triage and compatible tagging methods.

MCI triage and treatment priorities are generally defined as:

Zero priority (BLACK): Deceased or live patients with obvious fatal and non-resuscitatable injuries

First priority (RED): Severely injured patients requiring immediate care and transport. (e.g., respiratory distress, thoracoabdominal injury, severe head or maxillofacial injuries, shock/severe bleeding, severe burns)

Second priority (YELLOW): Patients with injuries that are determined not to be immediately life threatening. (e.g., abdominal injury without shock, thoracic injury without respiratory compromise, major fractures without shock, head injury/cervical spine injury, and minor burns)

Third priority (GREEN): Patients with minor injuries that do not require immediate stabilization. (e.g., soft tissue injuries, extremity fractures and dislocations, maxillofacial injuries

Protocol Continues

Protocol Continued

Scene Assessment and Triage Priorities

1. Maintain universal blood and body fluid precautions.
2. The initial response team should assess the scene for potential hazards, safety and number of victims to determine the appropriate level of response.
3. Notify agency dispatch to declare an MCI and need for interagency support as defined by incident level. Agency dispatch should coordinate request for additional resources and contact local mutual aid, regional and state level agencies for assistance and notification as needed.
4. Identify and designate the following positions as qualified personnel become available: EMS Command responsible for overall command of all EMS resources and tactics; Triage Officer responsible for overseeing all triage group activities; Treatment Officer responsible for overseeing all treatment group activities; Staging Officer responsible for overseeing staging of all arriving ambulances and other mobile EMS resources; Loading Officer responsible for overseeing loading of all treated patients into ambulances, buses and helicopters and logging patient info, tag numbers and coordinating hospital destinations with CMED.
5. Identify and designate EMS sector areas of MCI including Triage, Treatment, Staging, and Loading.
6. Post incident MCI Plan.

EMT, Advanced EMT and Paramedic MCI Procedure Summary

All EMT level personnel will eventually be involved in the management of an MCI. It is imperative that all EMTs implement the above incident command system (ICS) in all MCI situations. Every EMT must be aware and have a thorough knowledge of their particular role and responsibilities in the rescue effort.

Due to the many complexities of MCI/Disaster situations, it is recommended that all EMTs should participate and receive additional training in MCI/Disaster management.

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APPENDICES

Statewide Treatment Protocols
Version 2018.1

Adult Medication Reference

See Pediatric Color Coded Reference Appendix for pediatric dosages

Medication	Adult Dosing
Acetaminophen **Indications:** • Pain relief **Contraindications:** Liver failure	**Pain Relief** • 650-1000mg IV or po
Adenosine (Adenocard ®) **Indications:** • Specifically for treatment or diagnosis of Supraventricular Tachycardia. • Consider for regular or wide complex tachycardia	**Tachycardia** • 6 mg rapid IV/IO push over 1-3 seconds. ▪ May repeat 12 mg after 1 – 2 minutes X 2, if no conversion.

Albuterol Beta-Agonist
 	
Indications:
• Nebulized treatment for use in respiratory distress with bronchospasm.
	Allergic Reaction/Anaphylaxis
	• 2.5mg via nebulizer.
	  ▪ May repeat 2.5mg.
	
	Asthma/COPD/RAD
	• 2 puffs per dose of MDI.
	  ▪ May repeat every 5 minutes.
	• Albuterol is second line drug, the initial treatment should be 2.5mg albuterol and 0.5mg ipratropium (DuoNeb).
	  ▪ May repeat every 5 minutes.

Amiodarone (Cordarone ®) **Indications/Contraindications:** • Antiarrhythmic used mainly in wide complex tachycardia and ventricular fibrillation. • Avoid in patients with heart block or profound bradycardia. • Contraindicated in patients with iodine hypersensitivity.	**Cardiac Arrest** **V-Fib/Pulseless V-Tach** • 300 mg IV push. ▪ Repeat dose of 150 mg IV/IO push for recurrent episodes. **Post-Arrest** • 150mg in 10mL normal saline slow IV/IO push over 8-10 minutes. • If successful, consider maintenance infusion of 1 mg/minute **Tachycardia** **Wide complex tachycardia** • 150 mg in 50 – 100mL normal saline infused over 10 minutes. • If successful, consider maintenance infusion of 1 mg/minute.

Adult Medication Reference

See Pediatric Color Coded Reference Appendix for pediatric dosages

Medication	Adult Dosing
Aspirin **Indications/Contraindications:** • An antiplatelet drug for use in cardiac chest pain. • History of anaphylaxis to aspirin or NSAIDs • Not used in presence of active GI bleeding	**Acute Coronary Syndrome** • 324 mg chewed PO.
Atropine **Indications:** • Anticholinergic drug used in bradycardias and organophosphate poisonings.	**Bradycardia** • 0.5 - 1 mg IV/IO every 3 – 5 minutes up to maximum of 3 mg. **Organophosphate Poisoning and Nerve Agent** • 2-6 mg IM/IV/IO every 5 minutes as needed.
Atropine and Pralidoxime Auto-Injector (DuoDote) Nerve Agent Kit **Indications:** • Antidote for Nerve Agents or Organophosphate Overdose.	**Nerve Agents** • Patients experiencing: apnea, convulsions, unconsciousness, flaccid paralysis administer 3 DuoDote and 1 atropine (10 mg) auto-injectors. • Patients experiencing: dyspnea, twitching, nausea, vomiting, sweating, anxiety, confusion, constricted pupils, restlessness, weakness administer 1 DuoDote.
Calcium Chloride 10% solution **Indications:** • For calcium channel blocker overdose.	**Bradycardia** • 2-4mg/kg slow IV over 5 minutes, maximum 1g. • Avoid use if pt is taking digoxin.
Cyanide Antidote Kit Amyl Nitrite, Sodium Nitrite and Sodium Thiosulfate **Indications:** • Antidote for Cyanide Posioning	**Poisoning:** • Amyl Nitrite: (2) Inhalants • Sodium Nitrite: 3%, 10mL slow IV/IO over 2-4 minutes. • Sodium Thiosulfate: 25% 50mL IV/IO bolus

Adult Medication Reference

See Pediatric Color Coded Reference Appendix for pediatric dosages

Medication	Adult Dosing
Cyanokit (Hydroxocobalamin) **Indications:** • Antidote for Cyanide Posioning	**Poisoning:** • 5gm IV/IO over 15 minutes.
Dextrose **Glucose solutions** **Indications:** • Symptomatic hypoglycemia.	**Diabetic Emergencies** • 12.5 g to 25 g IV/IO **Name / Concentration / Volume (25g)** **D50** 0.5g/mL 25g/50mL **D25** 0.25g/mL 25g/100mL **D10** 0.1g/mL 25g/250mL
Diazepam **(Valium ®)** **Benzodiazepine** **Indications:** • Seizure control. • Sedation. • Anti-anxiety (anxiolytic)	**Nerve Agent** • 10 mg IM via auto-injector
Diltiazem **(Cardizem ®)** **Indications/Contraindications:** • Calcium channel blocker used to treat narrow complex SVT. • Contraindicated in patients with heart block, ventricular tachycardia, WPW, and/or acute MI.	**Tachycardia** **Narrow Complex Tachycardia** • 0.25 mg/kg slow IV/IO push. ▪ May repeat dose in 15 minutes at 0.35 mg/kg if necessary.
Diphenhydramine **(Benadryl ®)** **Indications:** • Antihistamine used as an adjunctive treatment in allergic reactions.	**Allergic Reaction/Anaphylaxis** • 25-50 mg IV/IO/IM

Adult Medication Reference

See Pediatric Color Coded Reference Appendix for pediatric dosages

Medication	Adult Dosing
Dopamine **Indications:** • A vasopressor used in shock or hypotensive states. • Used when infusion pump/Norepinrphrine not available	**Bradycardia, Post-Resuscitation and Shock** • Infusion 2-20 mcg/kg/min IV/IO.
Epinephrine 1:1000 (Auto-Injector ONLY) **Indications:** • Bronchodilation in Asthma and COPD exacerbation. Primary treatment for anaphylaxis	**Allergic Reaction/Anaphylaxis** • 0.3 mg IM ▪ Repeat every 5 minutes to a total of 3 doses. **Asthma/COPD/RAD** • 0.3 mg IM (no repeat). If authorized by service, Advanced EMTs and Paramedics may administer **Epinephrine** 1:1,000 IM if using a kit that meets the following criteria: ▪ Administration supplies maintained in separate container from all other medications; ▪ Medication provided as 1mg/mL in glass vial; ▪ Kit case and medication vial labeled with “NOT FOR IV USE”; ▪ Kit contains 2 sterile 1cc graduated syringes and 21- to 25-gauge needles (3/8 to 1 inch long) that are permanently attached (i.e. needle cannot be removed from syringe). Needle must be “safety” engineered, easily sheathed or protected following use, and ▪ Documentation and direction card included in kit notes medication NOT for IV use, and noting dose for adult/pediatric patients.
Epinephrine 1:1,000 (by infusion only) **Indications:** • Vasopressor Post-Resuscitation, Bradycardia, allergic reaction	**Allergic Reaction** • 2-10 mcg/min IV/IO infusion (maintenance) **Bradycardia** • 2-10 mcg/min IV/IO infusion **Post-Resuscitation** • 2-10 mcg/min IV/IO infusion **Shock-Adult** • 2-10 mcg/min IV/IO infusion-by pump
Epinephrine 1:10,000 **Indications:** • Vasopressor used in cardiac arrest.	**Cardiac Arrest** • 1 mg IV/IO ▪ Repeat every 3 – 5 minutes per AHA guidelines

Adult Medication Reference

See Pediatric Color Coded Reference Appendix for pediatric dosages

Medication	Adult Dosing
Epinephrine (Racemic, for Inhalation) **Indications:** • Croup	**Croup** • 11.25mg in 2.5mL solution
Fentanyl (Sublimaze ®) **Indications:** • Opioid analgesic	**Pain** • 1 mcg/kg up to 150 mcg slow IV/IO/IM/IN **Therapeutic Hypothermia, Shivering** • 50mcg every 5 minutes, maximum 200mcg IV/IO/IM/IN
Furosemide (Lasix ®) **Indications:** • Congestive Heart Failure, Pulmonary Edema, Hypertensive Emergencies, Toxicology	**Congestive Heart Failure, Pulmonary Edema** • 20-40mg IV/IO **Hypertensive Emergencies** • 0.5-1mg/kg IV/IO **Toxicology** • 40mg IV/IO
Glucagon **Indications:** • Hypoglycemia • Beta Blocker or Calcium Channel Blocker Overdose	**Diabetic Emergencies** • 1 mg IV/IO/IM/IN/SC **Beta Blocker/Calcium Channel Blocker Overdose** • 1-5mg IV/IO/IM/IN/SC **Bradycardia** • 1-5 mg IV/IO/IM/IN/SC
Glucose Oral Glucose Solutions **Indications:** • Use in conscious hypoglycemic states.	**Diabetic Emergencies** • Administer 1-2 tubes of commercially prepared glucose gel or equivalent.
Haloperidol (Haldol ®) Phenothiazine Preparation **Indications/Contraindications:** • Medication to assist with sedation of agitated patients.	**Behavioral Emergencies** • 5 mg IM;

Adult Medication Reference

See Pediatric Color Coded Reference Appendix for pediatric dosages

Medication	Adult Dosing
Hydrocortisone (Solu-Cortef ®) **Indications/Contraindications** • Adrenal Insufficiency/Crisis • Other inflammatory processes (COPD/Asthma)	**Adrenal Insufficiency/Crisis** • 100mg IV/IO/IM **Respiratory Distress (COPD/Asthma)** • 100mg IV/IO/IM
Ibuprofen **Indications** • Pain relief **Contraindications** • head injury, chest pain, abdominal pain, or in any patient with potential for bleeding, ulcer, or renal injury; or likely need for surgery.	**Pain relief** • 600mg po
Ipratropium Bromide (Atrovent ®) **Indications/Contraindications:** • Anticholinergic bronchodilator. Blocks the muscarinic receptors of acetylcholine. • Relief of bronchospasm in patients with reversible obstructive airway disease and bronchospasm.	**Asthma/COPD/RAD** • 2-3 puffs per dose of MDI combination of albuterol/ipratropium bromide. ▪ May repeat as necessary every 5 minutes **OR** • 0.5mg ipratropium and 2.5mg albuterol(DouNeb). ▪ May repeat as necessary every 5 minutes. ▪ 0.5mg ipratroprium nebulized ▪ May repeat as necessary every 5 minutes
Ketamine **Indications/Contraindications:** • agitated patient	**Behavioral** • 4mg/kg IM only, to a maximum dose of 400mg IM only, as a single dose.
Ketorolac **Indications:** • Pain relief **Cotraindications:** • head injury, chest pain, abdominal pain, or in any patient with potential for bleeding, ulcer, or renal injury; or likely need for surgery.	**Pain relief** • 15 mg IV or 30 mg IM

Adult Medication Reference

See Pediatric Color Coded Reference Appendix for pediatric dosages

Medication	Adult Dosing
Lidocaine **Indications/Contraindications:** • Antiarrhythmic used for control of ventricular dysrhythmias. • Used prior to intubation of patients with suspected increased intracranial pressure (e.g., TBI, ICH) to reduce increases in intracranial pressure • Anesthetic for nasotracheal intubation and intraosseous procedures.	**Cardiac Arrest** • 1-1.5mg/kg IV/IO. ▪ Repeat dose 0.75 mg/kg up to a maximum dose of 3 mg/kg, followed by; ▪ 2-4 mg/min maintenance infusion. **Ventricular Tachycardia (with pulses)** • 1 – 1.5mg/kg IV/IO. (considered second-line therapy to Amiodarone). ▪ Repeat dose of 0.5-0.75mg/kg every 3-5 minutes up to total dose of 3 mg/kg, followed by; ▪ 2-4 mg/min maintenance infusion. **Post-Resuscitation** • 1-1.5 mg/kg IV/IO, followed by; • 2-4mg/min maintenance infusion **Nasotracheal Intubation** • 2% lidocaine jelly. **Intraosseous** • 40mg 2% lidocaine, **slow** bolus over two minutes, followed by 10mL normal saline flush, then use IO access for medications
Lorazepam (Ativan ®) **Benzodiazepine** **Indications/Contraindications:** • Seizure control. • Sedation. • Anti-anxiety (anxiolytic).	**Behavioral** • 2-4 mg IV/IO/IM **Nerve Agent/ Seizures** • 2-4 mg slow IV/IO/IM
Magnesium Sulfate **Indications/Contraindications:** • Elemental electrolyte used to treat eclampsia during the third trimester of pregnancy. • A smooth muscle relaxer used in refractory respiratory distress resistant to beta-agonists. • Torsades de Pointes.	**Asthma/RAD** • 2 grams in 100ml NS given IV over 10 minutes. **Seizures** • 4 grams IV over 10 minutes in the presence of seizure in the third trimester of pregnancy or post partum. **Cardiac Arrest/Tachycardia – Torsades de Pointes.** • 1 – 2 grams IV over 5 minutes.

Adult Medication Reference

See Pediatric Color Coded Reference Appendix for pediatric dosages

Medication	Adult Dosing
Methylprednisolone (Solu-medrol ®) **Indications/Contraindications:** • Steroid used in respiratory distress to reverse inflammatory and allergic reactions.	**Asthma/COPD/RAD** • 125 mg IV/IO/IM
Metoprolol (Lopressor ®) **Indications/Contraindications:** Rate control for adult patients who are already prescribed a beta blocker NOTE: Do not use IV Beta-blockers with IV Calcium channel blockers	**Tachycardia** • 2.5mg to 5mg slow IV over 2 – 5 minutes. ▪ May repeat every five minutes to a maximum of 15mg
Midazolam (Versed ®) Benzodiazepine **Indications/Contraindications:** • Seizure control. • Sedation. • Anxiolytic.	**Behavioral/Seizures/Induced Therapeutic Hypothermia** • 2 – 6 mg IV/IO/IM/IN **Nerve Agent/Organophosphate Poisoning** • 2 mg IV/IO/IN every 5 minutes; or 6 mg IM every 10 minutes as needed **Sedation and Analgesia for Electrical Therapy** • 0.5 - 2 mg IV/IO/IM/IN **Difficult Airway** • 2 mg slow IV/IO/IM/IN; Repeat of necessary to a total dose of 6 mg
Morphine Sulfate **Indications/Contraindications:** • Opioid analgesic **Avoid use if BP < 100 mmHg.**	**Pain** • 0.1mg/kg every 5 minutes IV/IO/IM/SC, up to 10mg max.

Naloxone (Narcan ®) Opioid Antagonist
Indications/Contraindications:
• Opioid overdose.
	Pain
	• **Antidote:** For hypoventilation from opiate administration by EMS personnel, administer naloxone 0.4mg-4.0 mg IV/IM/IN as needed.
	Poisoning/Substance Abuse/Opioid OD
	• 0.4 – 4 mg IV/IM/IN.
	  ▪ If no response, may be repeated as needed
	  ▪ First Responders and EMTs may administer by auto-injector or nasal atomizer.

Adult Medication Reference

See Pediatric Color Coded Reference Appendix for pediatric dosages

Medication	Adult Dosing
Nitroglycerin **Indications/Contraindications:** • Vasodilator used in the treatment of chest pain secondary to acute coronary syndrome and CHF. • Hypertensive emergencies. • Not used in presence of Hypotension or recent use of phosphodiesterase-type-5-inhibitor within last 48 hours.	**Cardiac Conditions/Hypertensive Emergencies** • 0.4mg SL tabs or 1 spray every 3 – 5 minutes while symptoms persist and if systolic BP remains >120 mmHg. • 1 inch paste to chest wall, transdermal.
Norepinephrine (Levophed ®) **Indications/Contraindications:** • Alpha and Beta 1 receptor adrenergic receptor agonist vasopressor • Infusion pump **required**	**Hypotension** • 0.1mcg/kg/min IV/IO titrate to goal SBP of 90mmHg-generally to a maximum dose of 30 mcg/min. ○ 4mg mixed in 250mL of D5 diluent packaged with medication • Maximum dose: generally to a maximum dose
Ondansetron (Zofran ®) Anti-emetic **Indications:** • Used to control Nausea and/or Vomiting.	**Nausea/Vomiting** • 4mg IV/IO/IM/ODT.
Oxygen **Indications:** • Any condition with increased cardiac work load, respiratory distress, or illness or injury resulting in altered ventilation and/or perfusion. Goal oxygen saturation ≥94%. • Used for pre-oxygenation whenever possible prior to endotracheal intubation. Goal oxygen saturation 100%.	• 1-6 liters/min via nasal cannula. • 10-15 liters/min via NRB mask. • 15 liters/min via BVM

Adult Medication Reference

See Pediatric Color Coded Reference Appendix for pediatric dosages

Medication	Adult Dosing
Pralidoxime (2-PAM) **Indications:** • Antidote for Nerve Agents or Organophosphate Overdose. • Administered as part of Mark I kit.	**Nerve Agent/Organophosphate Poisoning** • 600mg via Auto-Injector IM per kit, 1-3 kits.
Sodium Bicarbonate **Indications:** • A buffer used in acidosis to increase the pH in Cardiac Arrest, Hyperkalemia or Tricyclic Overdose.	**Poisoning/Substance Abuse/OD/Toxicology** • 0.5-1 mEq/kg IV/IO **Cardiac Arrest/Known Hyperkalemia/Acidosis/TCA Overdose** • 1 mEq/kg IV/IO
Tranexamic Acid (TXA) **Indications:** • Trauma patient at high risk for life threatening bleeding.	**Multisystem Trauma** • 1 Gram IV over 10 minutes
Tetracaine 0.5% **Indications:** • Topical anesthetic for eye injuries	**Eye Injuries** • 1-2 drops to affected eye; repeat every 5 minutes as needed.
Vasopressin **Indications:** • Cardiac Arrest	**Cardiac Arrest; Asystole, Pulseless Electrical Activity, Ventricular Fibrillation, Ventricular Tachycardia (without pulses)** • 40 units IV/IO in place of first or second dose of Epinephrine

Adult Medication Reference

See Pediatric Color Coded Reference Appendix for pediatric dosages

Cyanokit® Dose Chart Estimation

(Y.M) age	Term	1m	2m	4m	6m	8m	10m	1	1.4	1.8	2	2.4	2.8	3
lbs	7	9	11	13	15	18	20	22	24	26	29	31	33	35
Kg	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Dosage(Mg)	**210**	**280**	**350**	**420**	**490**	**560**	**630**	**700**	**770**	**840**	**910**	**980**	**1050**	**1120**
Amount (mL)	8	11	14	17	20	22	25	28	31	34	36	39	42	45
Estimated (gtts/sec)	1gtt 8 sec	1gtt 5 sec	1gtt 5 sec	1 gtt 3 sec	1gtt 3 sec	1gtt 2 sec	1gtt 2 sec	1gtt 2 sec	1gtt 2 sec	1gtt 2 sec	1gtt 2 sec	1gtt 1 sec	1gtt 1 sec	1gtt 1 sec

(Y.M) age	3.4	3.8	4	4.4	5	5.8	6.4	7	7.8	8.4	9	9.8	10	11
lbs	37	40	42	44	48	53	57	62	66	70	75	79	81	88
Kg	17	18	19	20	22	24	26	28	30	32	34	36	37	40
Dosage(Mg)	**1190**	**1260**	**1330**	**1400**	**1540**	**1680**	**1820**	**1960**	**2100**	**2240**	**2380**	**2520**	**2590**	**2800**
Amount (mL)	48	50	53	56	62	67	73	78	84	90	95	101	104	112
Estimated (gtts/sec)	1gtt 1 sec	1gtt 1 sec	1gtt 1 sec	1gtt 1 sec	1gtt 1 sec	1gtt 1 sec	1gtt 1 sec	1gtt 1 sec	1gtt 1 sec	1gtt 1 sec	1gtt 1 sec	1gtt 1 sec	1gtt 1 sec	1gtt 1 sec

Colors based on Broselow Pediatric Emergency Tape

Weight based on Luscombe Formula - **weight(kg)=3(age)+7**

Pediatric dosage = **70 mg/kg** Over 15 min

Estimated (gtts / sec) based on **15 gtts/ml** administration set

Adult Dosage
5gm over 15 min
200 gtts/min
(Run at a Fast Steady Rate)

Pediatric Color Coded Appendix

NOTE: if you are using an appropriate weight or size based dosing system for an approved medication, use the dose specified in that system. If not, use the dose given in the applicable protocol.

Length < 59.5 cm — Weight 3-5 Kg (Avg 4.0 Kg) — Gray (0-3 months)

Vital Signs
Heart Rate: 120-150
Respirations: 24-48
BP Systolic: 70 (+/-25)

Equipment
ET Tube: 2.5 - 3.5
Blade Size: 0 - 1

Defibrillation
Defibrillation: 8 J, 15 J
Cardioversion: 2 J, 4 J

Normal Saline 80 ml

Acetaminophen	60 mg
Adenosine:	
1st Dose-	0.4 mg
Repeat Dose-	0.8 mg
Albuterol	2.5 mg
Amiodarone	20 mg
Atropine- Bradycardia	0.08 mg
- Organophosphate Poison	0.2 mg
Calcium Chloride	81mg
Dextrose 10%	20 ml
Diazepam (IV)	1 mg
(Rectal)	2 mg
Diphenhydramine	HOLD
Dopamine (800 mg in 500 cc)	
2 mcg/kg/min	0.3 ml/hr
5 mcg/kg/min	0.9 ml/hr
10 mcg/kg/min	1.7 ml/hr
20 mcg/kg/min	3.3 ml/hr
Epinephrine 1:10,000	0.04 mg
Epinephrine 1:1000 Nebulized	2.5 mg
Epinephrine Auto-Injector Pedi (IM)	
Epinephrine 1:1000 IM-ONLY	0.15mg
Epinephrine infusion	0.1-1 mcg/kg/min
Fentanyl	2 mcg
Glucagon	0.5 mg
Glucose Oral	1 tube
Hydrocortisone	10 mg
Hydroxocobalamin	280 mg
Ibuprofen	40 mg
Ipratropium w/ albuterol	500 mcg
Ketorolac	2 mg
Levalbuterol	0.63 mg
Lidocaine:	
- Cardiac Arrest	4 mg
-Traumatic Brain Injury	6 mg
- Intraosseous	2 mg
Lorazepam	0.4 mg
Magnesium Sulfate	
- RAD	150 mg
- Torsades	200 mg
Methylprednisolone	4 mg
Midazolam	0.2 mg
Morphine Sulfate	0.4 mg
Naloxone	0.4 mg
Norepinephrine	0.1mcg/kg/min
Ondansetron - IV	0.4 mg
- ODT	4 mg
Pralidoxime IV	300 mg
- Infusion	80 mg/hr
Proparacaine	2 drops
Sodium Bicarbonate	8 mEq
Tetracaine	2 drops

Length 59.5-66.5 cm — Weight 6-7 Kg (Avg 6.5 Kg) — Pink (3-6 Months)

Vital Signs
Heart Rate: 120-125
Respirations: 24-48
BP Systolic: 85 (+/-25)

Equipment
ET Tube: 3.5
Blade Size: 1

Defibrillation
Defibrillation: 10 J, 20 J
Cardioversion: 2 J, 5 J

Normal Saline 130 ml

Acetaminophen	97.5 mg
Adenosine:	
1st Dose-	0.65 mg
Repeat Dose-	1.3 mg
Albuterol	2.5 mg
Amiodarone	30 mg
Atropine- Bradycardia	0.13 mg
- Organophosphate Poison	0.32 mg
Calcium Chloride	130 mg
Dextrose 10%	35 ml
Diazepam (IV)	1 mg
(Rectal)	3 mg
Diphenhydramine	HOLD
Dopamine (800 mg in 500 cc)	
2 mcg/kg/min	0.5 ml/hr
5 mcg/kg/min	1.3 ml/hr
10 mcg/kg/min	2.5 ml/hr
20 mcg/kg/min	5.0 ml/hr
Epinephrine 1:10,000	0.065 mg
Epinephrine 1:1000 Nebulized	2.5 mg
Epinephrine Auto-Injector Pedi (IM)	
Epinephrine 1:1000 IM-ONLY	0.15mg
Epinephrine infusion	0.1-1 mcg/kg/min
Fentanyl	3 mcg
Glucagon	0.5 mg
Glucose Oral	1 tube
Hydrocortisone	10 mg
Hydroxocobalamin	455 mg
Ibuprofen	65mg
Ipratropium w/ albuterol	500 mcg
Ketorolac	3.25 mg
Levalbuterol	0.63 mg
Lidocaine:	
- Cardiac Arrest	6.5 mg
-Traumatic Brain Injury	9.75 mg
- Intraosseous	3.25 mg
Lorazepam	0.65 mg
Magnesium Sulfate	
- RAD	300 mg
- Torsades	350 mg
Methylprednisolone	6.0 mg
Midazolam	0.3 mg
Morphine Sulfate	0.6 mg
Naloxone	0.6 mg
Norepinephrine	0.1mcg/kg/min
Ondansetron - IV	0.6 mg
- ODT	4 mg
Pralidoxime IV	325 mg
- Infusion	130 mg/hr
Proparacaine	2 drops
Sodium Bicarbonate	12 mEq
Tetracaine	2 drops

Length 66.5-74 cm — Weight 8-9 Kg (Avg 8.5 Kg) — Red (7-10 Months)

Vital Signs
Heart Rate: 120
Respirations: 24-32
BP Systolic: 92 (+/-25)

Equipment
ET Tube: 3.5 -4.0
Blade Size: 1

Defibrillation
Defibrillation: 20 J, 40 J
Cardioversion: 5 J, 9 J

Normal Saline 170 ml

Acetaminophen	127.5 mg
Adenosine:	
1st Dose-	0.85 mg
Repeat Dose-	1.7 mg
Albuterol	2.5 mg
Amiodarone	40 mg
Atropine- Bradycardia	0.17 mg
- Organophosphate Poison	0.42 mg
Calcium Chloride	172 mg
Dextrose 10%	43 ml
Diazepam (IV)	2 mg
(Rectal)	4 mg
Diphenhydramine	HOLD
Dopamine (800 mg in 500 cc)	
2 mcg/kg/min	0.7 ml/hr
5 mcg/kg/min	1.6 ml/hr
10 mcg/kg/min	3.2 ml/hr
20 mcg/kg/min	6.5 ml/hr
Epinephrine 1:10,000	0.085 mg
Epinephrine 1:1000 Nebulized	2.5 mg
Epinephrine auto-injector Pedi (IM)	
Epinephrine 1:1000 IM-ONLY	0.15 mg
Epinephrine infusion	0.1-1 mcg/kg/min
Fentanyl	4 mcg
Glucagon	0.5 mg
Glucose Oral	1 tube
Hydrocortisone	20 mg
Hydroxocobalamin	595 mg
Ibuprofen	85mg
Ipratropium w/ albuterol	500mcg
Ketorolac	4.25 mg
Levalbuterol	0.63 mg
Lidocaine:	
- Cardiac Arrest	8.5 mg
-Traumatic Brain Injury	12.75 mg
- Intraosseous	4.25 mg
Lorazepam	0.85 mg
Magnesium Sulfate	
- RAD	350 mg
- Torsades	400 mg
Methylprednisolone	8.0 mg
Midazolam	0.4 mg
Morphine Sulfate	0.8 mg
Naloxone	0.8 mg
Norepinephrine	0.1mcg/kg/min
Ondansetron - IV	0.8 mg
- ODT	4 mg
Pralidoxime IV	420 mg
- Infusion	210 mg/hr
Proparacaine	2 drops
Sodium Bicarbonate	20 mEq
Tetracaine	2 drops

Pediatric Color Coded Appendix

Weight 10-11 Kg (Avg 10.5 Kg)

Length 74-84.5 cm

Vital Signs
Heart Rate: 115-120
Respirations: 22-30
BP Systolic: 96 (+/-30)

Equipment
ET Tube: 4.0
Blade Size: 1

Defibrillation
Defibrillation: 20 J, 40 J
Cardioversion: 5 J, 10 J

Normal Saline 210 ml

Acetaminophen	157.5 mg
Adenosine:	
1st Dose-	1.05 mg
Repeat Dose-	2.1 mg
Albuterol	2.5 mg
Amiodarone	50 mg
Atropine- Bradycardia	0.21 mg
- Organophosphate Poison	0.52 mg
Calcium Chloride	210 mg
Dextrose 10%	50 ml
Diazepam (IV)	2 mg
(Rectal)	5 mg
Diphenhydramine	12.5 mg
Dopamine (800 mg in 500 cc)	
2 mcg/kg/min	0.8 ml/hr
5 mcg/kg/min	2.0 ml/hr
10 mcg/kg/min	4.0 ml/hr
20 mcg/kg/min	8.0 ml/hr
Epinephrine 1:10,000	0.105 mg
Epinephrine 1:1000 Nebulized	5 mg
Epinephrine Auto-Injector Pedi (IM)	
Epinephrine 1:1000 IM-ONLY	0.15mg
Epinephrine infusion	0.1-1 mcg/kg/min
Fentanyl	5 mcg
Glucagon	0.5 mg
Glucose Oral	1 tube
Hydrocortisone	20 mg
Hydroxocobalamin	735 mg
Ibuprofen	105 mg
Ipratropium w/ albuterol	500 mcg
Ketorolac	5.25 mg
Levalbuterol	0.63 mg
Lidocaine:	
- Cardiac Arrest	10.5 mg
-Traumatic Brain Injury	15.75 mg
- Intraosseous	5.25 mg
Lorazepam	1 mg
Magnesium Sulfate	
- RAD	400mg
- Torsades	500 mg
Methylprednisolone	10 mg
Midazolam	0.5 mg
Morphine Sulfate	1 mg
Naloxone	1 mg
Norepinephrine	0.1mcg/kg/min
Ondansetron- IV	1 mg
- ODT	4 mg
Pralidoxime IV	540 mg
- Infusion	210 mg/hr
Proparacaine	2 drops
Sodium Bicarbonate	20 mEq
Tetracaine	2 drops

Purple (11-18 Months)

Weight 12-14 Kg (Avg 13 Kg)

Length 84.5-97.5 cm

Vital Signs
Heart Rate: 110-115
Respirations: 20-28
BP Systolic: 100 (+/-30)

Equipment
ET Tube: 4.5
Blade Size: 2

Defibrillation
Defibrillation: 30 J, 50 J
Cardioversion: 6 J, 15 J

Normal Saline 260 ml

Acetaminophen	195 mg
Adenosine:	
1st Dose-	1.3mg
Repeat Dose-	2.6 mg
Albuterol	2.5 mg
Amiodarone	60 mg
Atropine- Bradycardia	0.26 mg
- Organophosphate Poison	0.65 mg
Calcium Chloride	259 mg
Dextrose 10%	60-80 ml
Diazepam (IV)	3 mg
(Rectal)	6 mg
Diphenhydramine	12-14 mg
Dopamine (800 mg in 500 cc)	
2 mcg/kg/min	0.8 ml/hr
5 mcg/kg/min	2.5 ml/hr
10 mcg/kg/min	5.0 ml/hr
20 mcg/kg/min	10 ml/hr
Epinephrine 1:10,000	0.13 mg
Epinephrine 1:1000 Nebulized	5 mg
Epinephrine Auto-Injector Pedi (IM)	
Epinephrine 1:1000 IM-ONLY	0.15mg
Epinephrine infusion	0.1-1 mcg/kg/min
Fentanyl	6.5 mcg
Glucagon	0.5 mg
Glucose Oral	1 tube
Hydrocortisone	30 mg
Hydroxocobalamin	910 mg
Ibuprofen	130 mg
Ipratropium w/ albuterol	0.5 mcg
Ketorolac	6.5 mg
Levalbuterol	0.63 mg
Lidocaine:	
- Cardiac Arrest	13 mg
-Traumatic Brain Injury	19.5mg
- Intraosseous	6.5 mg
Lorazepam	1.2 mg
Magnesium Sulfate	
- RAD	500 mg
- Torsades	650 mg
Methylprednisolone	12 mg
Midazolam	0.6 mg
Morphine Sulfate	1.2 mg
Naloxone	1.2 mg
Norepinephrine	0.1mcg/kg/min
Ondansetron- IV	1.4 mg
- ODT	4 mg
Pralidoxime IV	660 mg
- Infusion	260 mg/hr
Proparacaine	2 drops
Sodium Bicarbonate	26 mEq
Tetracaine	2 drops

Yellow (19-35 Months)

Weight 15-18 Kg (Avg 16.5 Kg)

Length 97.5-110 cm

Vital Signs
Heart Rate: 100 - 115
Respirations: 20-26
BP Systolic: 100 (+/-20)

Equipment
ET Tube: 5.0
Blade Size: 2

Defibrillation
Defibrillation: 30 J, 70 J
Cardioversion: 8 J, 15 J

Normal Saline 330 ml

Acetaminophen	247.5 mg
Adenosine:	
1st Dose-	1.65 mg
Repeat Dose-	3.3 mg
Albuterol	2.5 mg
Amiodarone	80 mg
Atropine- Bradycardia	0.33 mg
- Organophosphate Poison	0.82 mg
Calcium Chloride	330 mg
Dextrose 10%	80 ml
Diazepam (IV)	3 mg
(Rectal)	8 mg
Diphenhydramine	20 mg
Dopamine (800 mg in 500 cc)	
2 mcg/kg/min	1.2 ml/hr
5 mcg/kg/min	3 ml/hr
10 mcg/kg/min	6 ml/hr
20 mcg/kg/min	12 ml/hr
Epinephrine 1:10,000	0.165 mg
Epinephrine 1:1000 Nebulized	5 mg
Epinephrine Auto-Injector Pedi (IM)	
Epinephrine 1:1000 IM-ONLY	0.15mg
Epinephrine infusion	0.1-1 mcg/kg/min
Fentanyl	8 mcg
Glucagon	0.5 mg
Glucose Oral	1 tube
Hydrocortisone	30 mg
Hydroxocobalamin	1155 mg
Ibuprofen	165 mg
Ipratropium w/ albuterol	500 mcg
Ketorolac	8.25 mg
Levalbuterol	0.63 mg
Lidocaine:	
- Cardiac Arrest	16.5 mg
-Traumatic Brain Injury	24.75 mg
- Intraosseous	8.25 mg
Lorazepam	1.6 mg
Magnesium Sulfate	
- RAD	650 mg
- Torsades	800 mg
Methylprednisolone	16 mg
Midazolam	0.8 mg
Morphine Sulfate	1.6 mg
Naloxone	1.6 mg
Norepinephrine	0.1mcg/kg/min
Ondansetron - IV	1.6 mg
- ODT	4 mg
Pralidoxime IV	810 mg
- Infusion	330 mg/hr
Proparacaine	2 drops
Sodium Bicarbonate	32 mEq
Tetracaine	2 drops

White (3-4 yrs)

Pediatric Color Coded Appendix

Weight 19-22 Kg (Avg 20.75 Kg)

Length 110-122 cm

Vital Signs
Heart Rate: 100
Respirations: 20-24
BP Systolic: 100 (+/-15)

Equipment
ET Tube: 5.5
Blade Size: 2

Defibrillation
Defibrillation: 40 J, 85 J
Cardioversion: 10 J, 20 J

Normal Saline 410 ml

Acetaminophen	311.25 mg
Adenosine:	
1st Dose-	2.075 mg
Repeat Dose-	4.15 mg
Albuterol	2.5 mg
Amiodarone	100 mg
Atropine- Bradycardia	0.41 mg
- Organophosphate Poison	1.0 mg
Calcium Chloride	416 mg
Dextrose 10%	100 ml
Diazepam (IV)	4.0 mg
(Rectal)	10 mg
Diphenhydramine	30 mg
Dopamine (800 mg in 500 cc)	
2 mcg/kg/min	1.6 ml/hr
5 mcg/kg/min	3.9 ml/hr
10 mcg/kg/min	7.8 ml/hr
20 mcg/kg/min	16 ml/hr
Epinephrine 1:10,000	0.2075 mg
Epinephrine 1:1000 Nebulized	5 mg
Epinephrine Auto-Injector Pedi (IM)	
Epinephrine 1:1000 IM-ONLY	0.15mg
Epinephrine infusion	0.1-1 mcg/kg/min
Fentanyl	10 mcg
Glucagon	1 mg
Glucose Oral	1 tube
Hydrocortisone	40 mg
Hydroxocobalamin	1453 mg
Ibuprofen	207.5 mg
Ipratropium w/ albuterol	500 mcg
Ketorolac	10.37 mg
Levalbuterol	0.63 mg
Lidocaine:	
- Cardiac Arrest	20.75 mg
-Traumatic Brain Injury	31.125mg
- Intraosseous	10.375 mg
Lorazepam	2.0 mg
Magnesium Sulfate	
- RAD	850 mg
- Torsades	1050 mg
Methylprednisolone	20 mg
Midazolam	1 mg
Morphine Sulfate	2 mg
Naloxone	2 mg
Norepinephrine	0.1mcg/kg/min
Ondansetron - IV	2 mg
- ODT	4 mg
Pralidoxime IV	1020 mg
- Infusion	415 mg/hr
Proparacaine	2 drops
Sodium Bicarbonate	42 mEq
Tetracaine	2 drops

Blue (5-6 yrs)

Weight 24-28* Kg (Avg 27 Kg)

Length 122-137 cm

Vital Signs
Heart Rate: 90
Respirations: 18-22
BP Systolic: 105 (+/-15)

Equipment
ET Tube: 6.0
Blade Size: 2-3

Defibrillation
Defibrillation: 50 J, 100 J
Cardioversion: 15 J, 30 J

Normal Saline 540 ml

Acetaminophen	405 mg
Adenosine:	
1st Dose-	2.7 mg
Repeat Dose-	5.4 mg
Albuterol	2.5 mg
Amiodarone	130 mg
Atropine- Bradycardia	0.5 mg
- Organophosphate Poison	1.3 mg
Calcium Chloride	540 mg
Dextrose 10%	135 ml
Diazepam (IV)	5.0 mg
(Rectal)	13 mg
Diphenhydramine	40 mg
Dopamine (800 mg in 500 cc)	
2 mcg/kg/min	2 ml/hr
5 mcg/kg/min	5 ml/hr
10 mcg/kg/min	10 ml/hr
20 mcg/kg/min	20 ml/hr
Epinephrine 1:10,000	0.27 mg
Epinephrine 1:1000 Nebulized	5 mg
Epinephrine Auto-Injector Adult (IM) (>25kg)	
Epinephrine 1:1000 IM-ONLY(>25kg)	0.3mg
Epinephrine infusion	0.1-1 mcg/kg/min
Fentanyl	13.5 mcg
Glucagon	1 mg
Glucose Oral	1 tube
Hydrocortisone	60 mg
Hydroxocobalamin	1890 mg
Ibuprofen	270 mg
Ipratropium w/ albuterol	500 mcg
Ketorolac	13.5 mg
Levalbuterol	0.63 mg
Lidocaine:	
- Cardiac Arrest	27 mg
-Traumatic Brain Injury	40.5 mg
- Intraosseous	13.5 mg
Lorazepam	2.8 mg
Magnesium Sulfate	
- RAD	1100 mg
- Torsades	1350 mg
Methylprednisolone	28 mg
Midazolam	1.4 mg
Morphine Sulfate	2.8 mg
Naloxone	2 mg
Norepinephrine	0.1mcg/kg/min
Ondansetron - IV	2.8 mg
- ODT	4 mg
Pralidoxime IV	1350 mg
- Infusion	540 mg/hr
Proparacaine	2 drops
Sodium Bicarbonate	54 mEq
Tetracaine	2 drops

Orange (7-9 yrs)

Weight 30-36 Kg (Avg 33 Kg)

Length 137-150 cm

Vital Signs
Heart Rate: 85-90
Respirations: 16-22
BP Systolic: 115 (+/-20)

Equipment
ET Tube: 6.5
Blade Size: 3

Defibrillation
Defibrillation: 60 J, 150 J
Cardioversion: 15 J, 30 J

Normal Saline 720 ml

Acetaminophen	495 mg
Adenosine:	
1st Dose-	3.6 mg
Repeat Dose-	7.2 mg
Albuterol	2.5 mg
Amiodarone	180 mg
Atropine- Bradycardia	0.5 mg
- Organophosphate Poison	1.8 mg
Calcium Chloride	718 mg
Dextrose 10%	180 ml
Diazepam (IV)	7.2 mg
(Rectal)	18 mg
Diphenhydramine	50 mg
Dopamine (800 mg in 500 cc)	
2 mcg/kg/min	2.7 ml/hr
5 mcg/kg/min	7 ml/hr
10 mcg/kg/min	14 ml/hr
20 mcg/kg/min	28 ml/hr
Epinephrine 1:10,000	0.36 mg
Epinephrine 1:1000 Nebulized	5 mg
Epinephrine Auto-Injector Adult (IM)	
Epinephrine 1:1000 IM-ONLY	0.3mg
Epinephrine infusion	0.1-1 mcg/kg/min
Fentanyl	18 mcg
Glucagon	1 mg
Glucose Oral	1 tube
Hydrocortisone	80 mg
Hydroxocobalamin	2310 mg
Ibuprofen	330 mg
Ipratropium w/ albuterol	500 mcg
Ketorolac	
Levalbuterol	0.63 mg
Lidocaine:	
- Cardiac Arrest	36 mg
-Traumatic Brain Injury	54 mg
- Intraosseous	18 mg
Lorazepam	3.6 mg
Magnesium Sulfate	
- RAD	1450 mg
- Torsades	1800 mg
Methylprednisolone	36 mg
Midazolam	1.7 mg
Morphine Sulfate	3.6 mg
Naloxone	2 mg
Norepinephrine	0.1mcg/kg/min
Ondansetron- IV	3.6 mg
- ODT	4 mg
Pralidoxime IV	1800 mg
- Infusion	720 mg/hr
Proparacaine	2 drops
Sodium Bicarbonate	72 mEq
Tetracaine	2 drops

Green (10-12 yrs)

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A3 IFT Guidelines and Protocols

Minimum Standards for Interfacility Transfers:

1.Staffing, Training

Minimum staffing at the Advanced Level requires one Advanced EMT and one EMT-Basic. Minimum staffing at the Paramedic level requires one EMT-Paramedic and one Advanced EMT/ EMT-Basic, in accordance with 105 CMR 170.305(C)(2).

Minimum staffing

EMTs providing patient care that exceed their regular scope of practice under the Protocols during Interfacility Transfers must meet the following requirements as outlined in 105 CMR 170.000 et al:

a. current certification as an EMT in Massachusetts;

b. completion of Department approved supplemental training that is specific to and consistent with levels of certification of involved EMTs and includes
   - expanded roles and responsibilities
   - additional, approved treatment modalities, equipment, devices, and technologies; and
   - ambulance service policies and procedures regarding ALS Interfacility Transfers

c. has maintained current authorization to practice pursuant to the Affiliate Hospital Medical Director's review of clinical competency

It shall be the responsibility of the transferring ambulance service to ensure and to verify appropriate training of its personnel providing ALS Interfacility Transfers. This includes ensuring that all its personnel successfully complete refresher training in providing ALS Interfacility Transfers at least every two years, and whenever new equipment or medication is approved for use on interfacility transfer calls.

2. Affiliation Agreements; Medical Control

An ambulance service must be licensed at an ALS level by the Department to provide ALS care during Interfacility Transfers, and it must maintain an affiliation agreement, in accordance with 105 CMR 170.300, with a hospital licensed by the Department for Medical Control, pursuant to 105 CMR 130.1501-130.1504 of the Hospital Licensure regulations. Such affiliation agreements must designate an Affiliate Hospital Medical Director (105 CMR 170.300(A)(2) and 105 CMR 130.1502(C)), whose medical oversight functions are defined in 105 CMR 130.1503. Standards for Affiliate Hospital Medical Directors are defined in 105 CMR 130.1504.

3. Communications:

All communications with a Medical Control physician must be recorded.

4. Scope of Practice:

Section 170.360(A) of the EMS Regulations states, "No ambulance service or agent thereof shall transport a patient between health care facilities who is receiving medical treatment that is beyond the training and certification capabilities of the EMTs staffing the ambulance unless an additional health care professional with that capability accompanies the patient..." Depending on the individual's condition, there may be situations in which a physician or some other specialist's presence might be necessary; such determination shall be made by the on-line medical control physician in consultation with the physician at the sending hospital. All involved in this decision should consider whether the benefits of the transfer sufficiently outweigh the risks; a patient's greatest benefit may result from being transported by a standard IFT crew to a higher level of hospital care rather than delay for other transport.

Protocol Continues

Protocol Continued

The scope of practice for each EMT level is defined (1) in regulation (105 CMR 170.810, 170.820 and 170.840), (2) through established training programs approved by the Department, and (3) through the Statewide Treatment Protocols consistent with the Interfacility Transfer Guidelines.

The following are patient condition classifications and corresponding requirements for EMT personnel during ambulance transport:

a. Routine, scheduled transport; Patient clearly stable for transport with no requirement for airway management and no device in place that is actively running or requires any maintenance or monitoring. Patient may have a device in place, but device must be locked and clamped, not require any maintenance and not be actively running. Such inactive devices may include, but are not limited to, IVs (if disconnected from fluid and on a saline lock during transport), nasogastric tubes, feeding tubes, PICC lines, bladder irrigation and wound vacs (wound vacs that are self-contained, gravity draining or battery powered can be transported by BLS providers).

   Minimum Staffing: BLS licensed ambulance service; two EMT-Basics

b. Patient clearly stable for transport (as above) who has a "maintenance" IV running without additives; (e.g., cancer patient transported for radiation therapy, with unadulterated crystalloid IV solution running). Advanced EMTs may transport patients with Dextrose-containing IV solutions.

   Minimum Staffing: ALS-Advanced EMT licensed ambulance service; one Advanced EMT attending to patient care and one EMT-Basic driving

c. Patient with an acute or sub acute problem, who is either completely or, at least, to the best of a facility's ability, stabilized; who has the potential to become less stable during transport. Instrumentation or medication running must be consistent with the Interfacility Transfer Guidelines.

   Minimum Staffing: ALS-Paramedic licensed ambulance service; one EMT-Paramedic and one Advanced EMT or EMT-Basic, in accordance with 105 CMR 170.305(C)(2). The EMT with the highest level of certification must attend to patient care.

d. Patient with an acute problem with high potential to become unstable; Critical care patient with any other instrumentation or medication running that is not included in the Interfacility Transfer Guidelines.

   Minimum Staffing: Appropriate additional medical personnel (per 105 CMR 170.360(A)) must accompany the patient during transfer; any level of ambulance service licensure; two EMT-Basics. The ALS Interfacility Transfer Subcommittee recommends that the referring hospital consider Critical Care Transport for such a patient. In the event that CCT is unavailable, medical personnel accompanying the patient must be able to manage all equipment and instrumentation associated with the patient's care and provide advanced resuscitative measures if needed.

e. Critical Care Transports (see 105 CMR 170.000, for regulatory requirements regarding critical care transport).

   Under no circumstances shall EMTs function or be assigned to transfers beyond, or potentially beyond, the scope of their training and level of certification. The scope of practice for all EMTs is limited to the levels of EMT certification and training and by licensure level of the ambulance service by which they are employed.

Protocol Continues

Protocol Continued

If (1) a patient's medical condition necessitates immediate transport to another health care facility and (2) the patient's medical treatment during transport will exceed the level of licensure of the transferring ambulance service and/or level of certification of the transferring ambulance's personnel, and (3) the transferring facility will not provide appropriate additional personnel pursuant to 105 CMR 170.360(A), Critical Care Transport by ground or air should be employed.

The transferring facility may at any time opt to exceed these minimum requirements by transferring patients in BLS ambulances with appropriate medical personnel as defined in 170.360(A) or by Critical Care Ground or Air Transport.

5. Quality Assurance/Quality Improvement

a. Ambulance services providing ALS Interfacility Transfers shall be required to have quality assurance/quality improvement policies specific to ALS Interfacility Transfers in conjunction with both their affiliate hospital medical directors and their ambulance service medical directors, if any, and include at a minimum:

- review of appropriateness of transfers, denials, and conformance with EMTALA regulations;
- review of critical skills (e.g., intubations, cardiac arrest management, IV therapy), and other measures of system function as deemed appropriate by the Department;
- steps for system improvement and individual remediation, available for Department review, of cases found to be deficient in critical interventions

b. Ambulance services shall report to the Department and the Affiliate Hospital Medical Director any violations of 105 CMR 170.000, this Administrative Requirement and/or prevailing treatment protocols as they relate to ALS Interfacility Transfers.

c. EMT skill maintenance and didactic knowledge will be continually assessed and appropriate measures taken to ensure quality of patient care by affiliate hospital medical directors and by ambulance service medical directors, if any.

Patient ALS Transfer Procedure

Once an ALS Interfacility Transfer has been deemed appropriate by the transferring ambulance service (see "Scope of Practice" above), paramedic staff, upon arrival at the transferring facility, will:

- receive a report from the staff of the transferring facility;
- assess the patient; and
- in cases where the patient's care during the transfer exceeds the standing-order scope of practice as defined by the current version of the Statewide Treatment Protocols for an EMT-Paramedic or the patient is unstable or is likely to become unstable as defined previously (see "Scope of Practice" above) will provide a concise, complete and accurate patient report to an On-Line Medical Control physician, according to the EMS service's and the Affiliate Hospital's policies and procedures. When EMTs have a concern regarding the safety of the patient being transferred, the EMT-Paramedic will contact an On-Line Medical Control physician for guidance.

  The report should include, at a minimum, the following information:

  a. Names of transferring and receiving facilities;
  b. Patient's diagnosis;
  c. Reason(s) for transfer;
  d. Brief history of present illness and any intervention(s) which has occurred to date;
  e. Pertinent physical findings;
  f. Vital signs;
  g. Current medications and IV infusions;
  h. Presence of or need for additional medical personnel;

Protocol Continues

Protocol Continued

i. Anticipated problems during transport, if any;
j. Anticipated transport time; and
k. Staffing configuration of the transporting ambulance

NOTE: Complete copies of all pertinent medical records, including X-Rays, CT Scans, consultative notes and ECGs, as available, must accompany the patient to the receiving facility.

When necessary, the Medical Control Physician and paramedic will discuss with the transferring physician the orders for maintenance of existing and/or addition of new therapies according to the needs of the patient, within the scope of existing treatment protocols and EMT scope of practice. The Medical Control Physician will be responsible for all actions/interventions initiated by the EMS personnel during transport unless the referring physician accompanies the patient.

If the transferring physician is unavailable, or the patient is unstable, the Medical Control Physician may recommend to the transferring facility additional therapies prior to the transfer of the patient in the interest of patient safety and quality care.

In some situations, consistent with the intent of EMTALA, the transfer of a patient not stabilized for transport may be preferable to keeping that patient at a facility incapable of providing stabilizing care. If the transferring facility cannot provide appropriate medical care or appropriately trained and experienced personnel to accompany the patient, alternative means of transfer, including Critical Care Transport, must be utilized. The use of a local Emergency Ambulance Service is strongly discouraged in such a situation. All such responses must be reported by the ambulance service to the Department's Division of Health Care Quality and the Affiliate Hospital Medical Director for review. It is primarily the responsibility of the referring physician and Medical Control Physician to determine the appropriate method of transferring an unstable patient.

When a facility sends its own staff with the patient during transfer (additional medical personnel) and the patient's condition deteriorates en route, EMS personnel must contact the Medical Control Physician for appropriate intervention orders and notify the receiving facility of the change in patient status.

Under 105 CMR 170.360(A), ambulance services may not transport a patient between health care facilities who is receiving medical treatment beyond the training and certification capabilities of the EMTs staffing the ambulance, unless an additional health care professional with that capability accompanies the patient. Further, 105 CMR 170.310(B) authorizes hospital staff, such as an RN or RT or MD or DO, to go on the ambulance and render care to the patient during transport. Such sending facility additional health care professional would be responsible for primary patient care of that patient during transport, and would receive any additional orders from the sending physician, since the care of the patient exceeded what the ambulance and its crew could provide.

If the accompanying staff is an RN s/he will maintain patient care responsibility, functioning within his/her scope of practice and under the orders of the transferring physician. The Paramedic and the RN will work collaboratively in the provision of patient care. If the patient's condition deteriorates en route, the Paramedic may assume full responsibility in conjunction with their Medical Control Physician for care that exceeds the RN's scope of practice and/or the transferring physician's medical orders. Prior to transfer with an RN, the referring physician must contact the service's Medical Control Physician and provide staffing rationale.

If the accompanying staff includes a physician from the transferring facility, that physician shall be in charge of patient care. Prior to transfer, the transferring physician accompanying the patient must contact the service's Medical Control Physician and coordinate patient care between the physician-in-charge and the paramedic practicing within the Statewide Treatment Protocols. Clear lines of command and responsibility shall be established prior to transport.

Protocol Continued

Interstate ALS Interfacility Transfers

Interstate transfers are permitted. Paramedics must obtain Medical Control through normal channels, through the Affiliation Agreement for Medical Control of the ambulance service for whom they are working. Appropriate provisions for re-contacting the Medical Control physician en route, if necessary, should be made prior to departure from the transferring facility. If a transfer originates out of state and no contact with Medical Control Physician is possible, the transfer should be made at the BLS level only with appropriate additional personnel provided by the transferring facility.

The purpose of this section is to determine which patients must be transported by critical care transport (CCT). Scenarios and circumstances beyond the scope of practice of the paramedic (including, but not limited to those described below) require CCT. CCT can be furnished by any of the following:

- Licensed critical care service
- An advanced life support (ALS) vehicle with hospital MD and / or RN on board. **(A respiratory therapist is acceptable in place of MD and / or RN for ventilator management only)**
- Any advanced (ALS) or basic life support (BLS) vehicle staffed by a self-contained and properly equipped critical care team.

If CCT is unavailable **AND** sending facility staff is unavailable, **AND** this patient has a condition requiring time-sensitive intervention **AND** it is approved by **MEDICAL CONTROL**, this patient may be transferred by any ALS ambulance, provided that all interventions are within the scope of practice of the transporting paramedic and vehicle.

The **MEDICAL CONTROL** physician and **SENDING PHYSICIAN** should be in direct communication if there are any **concerning** issues prior to patient transport.

Protocol Continues

ALS Interfacility Transfer Protocols
Part B- Determining the need for CCT

A3

Protocol Continued

B1 – PEDIATRIC PATIENTS (8 years of age or younger)

- ❑ ***Any neonate (30 days or younger) requiring transfer for evaluation and/or treatment of an UNSTABILIZED acute condition.***
- ❑ Any pediatric patient with critical illness or injury.

  NOTE: On-line **MEDICAL CONTROL** should be involved in determining whether pediatric patients require critical care.
- ❑ Any pathology associated with the potential for imminent upper airway collapse and / or obstruction (including but not limited to airway burns, toxic inhalation, epiglottitis, retropharyngeal abscess, etc.). If any concerns whether patient falls into this category, contact MEDICAL CONTROL.
- ❑ ***Any pediatric patient requiring <u>acute</u> ventilatory support (NIV, high flow NC, ventilator, etc.) who requires an interfacility transfer.***
- ❑ All conditions that apply to adult medical patients also require CCT for the pediatric patient.

NOTE: On-line MEDICAL CONTROL should be involved in determining whether pediatric patients require critical care.

B2 – ADULT MEDICAL PATIENTS

- ❑ Unless approved by **MEDICAL CONTROL**, patients requiring more than three (3) medication infusions by IV pump, not including maintenance fluids must be transported by CCT.
- ❑ Unless approved by **Medical Control**, any patient receiving more than one vasoactive medication infusion must be transported by CCT.
- ❑ Any patient who is being actively paced (either transvenous or transcutaneous) must be transported by CCT.
- ❑ Patients being transferred due to an issue with a ventricular assist device that may require active monitoring or management.
- ❑ Patients with an intra-aortic balloon pump.
- ❑ Any patients with a pulmonary artery catheter.

  NOTE: Central lines may be transported by ALS IFT
- ❑ Any patient with an intracranial device requiring active monitoring.

  NOTE: Except for chronic use devices, such as ventriculoperitoneal shunts, etc.
- ❑ Any pathology associated with the potential for imminent upper airway collapse and / or obstruction (including but not limited to airway burns, toxic inhalation, epiglottitis, retropharyngeal abscess, etc.). If any concerns whether patient falls into this category, contact **MEDICAL CONTROL**.

  NOTE: If any concerns about whether patient falls into this category, contact **MEDICAL CONTROL.**
- ❑ Any patient being artificially ventilated for ARDS or Acute Lung Injury.

Protocol Continues

ALS Interfacility Transfer Protocols
General Protocols for ALS IFT Care

Part C – General Protocols for ALS Interfacility Transfer Care

- ❑ Vital signs should be obtained and documented every ten (10) minutes, unless otherwise required by protocol.
  - If clinically indicated, patients will have continuous monitoring of electrocardiogram (ECG) and / or pulse oximetry (SpO2).
  - All artificially ventilated patients (and all other patients where it is clinically indicated) will have continuous monitoring of waveform capnography.
- ❑ The recommended route for medication infusions in the ALS IFT setting is the peripheral intravenous (IV) line. Intraosseous (IO) lines may also be used.
  - Medications may also be administered through any central venous catheter
  - Paramedics may administer medication boluses, infusions and fluids through administration sets connected by the sending facility to subcutaneous devices (e.g., Port-a-Cath)
- ❑ Patients who are being transferred ALS between facilities should have peripheral intravenous (IV) access, if possible.
  - Paramedics should attempt to establish IV access if no attempts have been made at the sending facility. Paramedics are authorized to establish IO access if warranted by the patient's condition.
- ❑ All monitoring and therapy will be continued until care is transferred to the receiving medical staff.
- ❑ Paramedics may not accept any medications from the sending facility for the purposes of bolus administration during transport.
- ❑ Any patient who qualifies for spinal immobilization per pre-hospital statewide treatment protocols who has not been cleared by CT scan or appropriate physician assessment must be properly immobilized for transport. If there is identification of a clinical concern of thoracic or lumbosacral spine injury, the patient should be immobilized with a long board and log roll precautions used at all times.
  - If any confusion arises regarding the need for spinal immobilization MEDICAL CONTROL will be contacted and the MEDICAL CONTROL physician and the SENDING PHYSICIAN should be in direct communication.
- ▪ If appropriately trained and authorized, EMTs may follow Protocol 6.4 Selective Spinal Assessment following consultation with the sending physician.
- ❑ Paramedics must be familiar with the treatments and interventions instituted at sending facility.
- ❑ Patient care documentation should include, at a minimum:
  - Patient's diagnosis / reason for transfer
  - Brief history of present illness / injury
  - Brief overview of interventions performed by sending facility
  - Pertinent physical examination findings and recent vital signs
  - Current medications and IV infusions
  - Presence of or need for additional medical personnel
- ❑ For all patients being transferred to an emergency department, who are critically ill, unstable, or have a change in clinical status en route, EMTs should notify receiving emergency department via CMED prior to arrival. If local CMED is unavailable, entry notes should be made by telephone (on a recorded line, if possible).
- ❑ Paramedics will contact on-line MEDICAL CONTROL for:
  - Any intervention(s) that exceed the standing order scope of practice as defined by the current version of the Massachusetts Pre-Hospital Statewide Treatment Protocols for an EMT-Paramedic.
  - Any patient that is unstable or is likely to become unstable.
  - When there is any concern regarding the safety of the patient being transferred.
  - Any significant patient care related questions or issues prior to transfer or en route.
- ❑ The MEDICAL CONTROL physician and SENDING PHYSICIAN should be in direct communication if there are any concerning issues prior to patient transport.
- ❑ On occasion good medical practice and the needs of patient care may require deviations from these protocols, as no protocol can anticipate every clinical situation. In those circumstances, EMS personnel deviating from the protocols shall only take such actions as allowed by their training and only in conjunction with their ON-LINE MEDICAL CONTROL PHYSICIAN.

Protocol Continues

Protocol Continued

- ❑ It is recommended that central access and / or two large bore IV lines are in place prior to transport.

- ❑ Care during transport:
  - Administer high-flow supplemental oxygen
  - Continuous cardiac monitoring
  - Heart rate, blood pressure, neurologic evaluations documented every 5 – 10 minutes
  - Target heart rate = 60 – 80 bpm
  - Target systolic blood pressure = 90 – 100 mm Hg
  - Continually assess mentation.
  - If patient is outside of these parameters, contact **MEDICAL CONTROL**.

- ❑ If not approved by on-line **MEDICAL CONTROL** prior to transport, you must contact **MEDICAL CONTROL** to adjust all medication infusions:
  - Adjust antihypertensive medications initiated at sending facility (until systolic blood pressure is less than 100 mm Hg and/or MAP is less than 60 mm Hg):
  - If l**abetalol** infusion has been initiated by sending facility, **increase by 2 mg / minute every 10 minutes** (to a maximum of 8 mg/minute)
  - If **esmolol** infusion has been initiated by sending facility, **increase by 50 mcg / kg / minute every 4 minutes** (to a maximum of 300 mcg / kg / minute)
  - If **nitroprusside** infusion has been initiated by sending facility, **increase by 0.5 mcg / kg / minute every 5 minutes** (to a maximum of 4 mcg / kg / minute)
  - Discontinue drip and contact medical control for instructions if:
  - Systolic blood pressure < 90 mm Hg, or;
  - Heart rate < 60 bpm
  - If no medication infusion has been initiated to control blood pressure and / or heart rate, **MEDICAL CONTROL** may order the administration of metoprolol 5 mg IV every 5 minutes to a maximum of 15 mg.

A3 ALS Interfacility Transfer Protocols Part D2- Blood Transfusion Reaction

Symptoms of a Transfusion Reaction during Infusion of Packed RBCs (PRBCs)

Acute Hemolytic Reaction

Fever, hypotension, flushing, wheezing, dark and / or red colored urine, oozing from IV sites, joint pain, back pain, chest tightness

Nonhemolytic Febrile Reaction

Fever, chills, rigors, vomiting, hypotension

Allergic Reaction

Urticaria, hives (usually without fever or hypotension)

Anaphylactic Reaction

Dyspnea, wheezing, anxiety, hypotension, bronchospasm, abdominal cramps, vomiting, diarrhea

Volume Overload

Dyspnea, hypoxia, rales, tachycardia, jugular vein distention

Transfusion-Related Acute Lung Injury ("TRALI")

Dyspnea, hypoxia, rales (usually without fever or signs of pulmonary edema)

- ❑ STOP the infusion if any of the above symptoms are discovered!
- ❑ Start infusion of normal saline
- ❑ Contact **MEDICAL CONTROL**
- ❑ Treat hypotension and anaphylactic reaction with standing orders (established pre-hospital protocols)
- ❑ If minor allergic reaction (urticaria / wheezing) administer Benadryl, 50 mg IV
- ❑ If SpO2 is below 90% or patient experiences wheezing / rales, administer high-flow supplemental oxygen
- ❑ If SpO2 is below 90% and accompanied by rales, administer Lasix, 40 mg IV

ALS Interfacility Transfer Protocols
Part D3 – CVA Post tPA

A3

- Seizures (either generalized motor or nonconvulsive) should be quickly controlled.
  - After assessing airway, breathing, and applying high-flow oxygen:
    - **Midazolam** 2.5-5mg IV/IO/IM/IN
- For an ischemic CVA, if a tPA (tissue plasminogen activator) infusion will be continued during the transport, follow these guidelines:
  - Sending facility staff should withdraw excess tPA from the bottle, so that the bottle will be empty once the full dose has infused.

    Example: 100 mg bottle of tPA contains 100 mL of fluid when reconstituted; if the total dose being administered is 70 mg, then the facility should remove 30 mL of fluid from the bottle before departure.
  - When the pump alarm indicates that the bottle is empty, you should take the following steps to ensure that the drug contained within the administration tubing is administered to the patient:
    - Remove the IV tubing from the tPA bottle and spike a bag of 0.9% NS and restart the infusion; the pump will stop infusing when the preset volume has been administered.
- If systolic blood pressure is found to be greater than 180 mm Hg or diastolic blood pressure is found to be greater than 105 mm Hg consult **MEDICAL CONTROL**, then:
  - Adjust antihypertensive medications initiated at sending facility:
  - If **labetalol** has been initiated by sending facility;
    - ✓ **Increase by 2 mg/minute every 10 minutes** (to a maximum of 8 mg/minute) until systolic blood pressure is less than 180 mm Hg and/or diastolic blood pressure is less than 105 mm Hg
    - ✓ Discontinue drip and contact medical control for instructions if the reduction in MAP is greater than 30% of initial BP or SBP < 140 mm Hg, DBP < 80, or heart rate < 60 bpm
  - If **nicardipine** has been initiated by sending facility;
    - ✓ **Increase by 2.5 mg / hour every 5 minutes** (to a maximum of 15 mg / hour) until systolic blood pressure is less than 180 mm Hg and/or diastolic blood pressure is less than 105 mm Hg
    - ✓ Discontinue drip and contact medical control for instructions if the reduction in MAP is greater than 30% of initial BP or SBP < 140 mm Hg, DBP < 80, or heart rate < 60 bpm
- For any acute worsening of neurologic condition (e.g., acutely worsening neurological deficits, development of severe headache, acute hypertension, vomiting, etc.):
  - If patient is receiving tPA, discontinue the infusion.
  - Contact **MEDICAL CONTROL** for further instructions.
  - Contact receiving hospital emergency department with an update on patient's condition and an estimated time of arrival.

ALS Interfacility Transfer Protocols

Part D4- Post-Arrest Induced Hypothermia (PAIH)

- ❑ If post-arrest induced hypothermia (PAIH) therapy in progress at the time of IFT ALS arrival, it should be continued during the transport.
- ❑ Pre-transport temperature should be documented, and temperature should be monitored with vital signs every five minutes.
- ❑ The temperature target for post-arrest induced hypothermia (PAIH) is 32° C – 34°C (89°F – 93°F).
- ❑ If pre-transport or inter-transport temperature is less than or equal to 34°C:
  - Maintain temperature with cold packs placed in the groin, axillae, and on the chest and sides of neck.
  - Discontinue any cold saline infusion.
- ❑ If pre-transport or inter-transport temperature is greater than 34°C:
  - Continue cooling with cold packs placed in the groin, axillae, and on the chest and sides of neck.
  - Continue or initiate cold saline infusion, initially chilled and maintained at approximately 4°C, at 30 mL / kg over 30 minutes.
- ❑ Core temperature should be monitored if possible for transport times longer than 20 minutes.
- ❑ Patients should be handled gently (due to risk of arrhythmias).
- ❑ ALS IFT crews will not discontinue PAIH unless ordered to do so by **MEDICAL CONTROL**.
- ❑ If patient temperature is less than 31°C, contact **MEDICAL CONTROL** and utilize any external warming devices (blankets, etc.) to actively rewarm patient until the temperature is greater than 31°C.
  - If ordered by **MEDICAL CONTROL** and available, consider infusion of 250 mL IV boluses of warmed normal saline solution, until the temperature is greater than 31°C.
- ❑ If hemodynamically significant dysrhythmias or bradycardia of any type develop, or if the patient develops significant bleeding, PAIH should be stopped, **MEDICAL CONTROL** contacted, and active rewarming pursued.

ALS Interfacility Transfer Protocols
Part D5 – Pregnancy Related

A3

- ❑ Patients who are in labor with concern for imminent delivery must be accompanied by sending facility staff.
- ❑ In high-risk situations, a physician / registered nurse will accompany the patient for transport.
- ❑ If any confusion arises regarding the need for additional OB staff **MEDICAL CONTROL** will be contacted and the **MEDICAL CONTROL** physician and **SENDING PHYSICIAN** should be in direct communication.
- ❑ In addition to the documentation standards listed in the General ALS IFT Care Guidelines, when transporting an obstetrical patient, the following should be documented:
  - The presence of a fetal heart rate before and after transfer
  - Estimated date of confinement, maternal history of any complications
  - Condition of membranes, dilation
  - Gravida / Para
  - Timing and nature of contractions
  - Fetal Position
- ❑ Patients should be transported in a left-lateral position or sitting upright, if possible.
- ❑ Document that the fetal heart rate was evaluated prior to transport and upon arrival.
- ❑ If patient should develop eclamptic seizures:
  - After assessing airway, breathing, and applying high-flow oxygen:
  - **Midazolam** 2.5-5mg IV/IO/IM/IN
  - **MEDICAL CONTROL** can authorize administration of more Midazolam and administration of magnesium sulfate (4 g over 3 minutes) for seizures.

ALS Interfacility Transfer Protocols
Part D6- ST-Segment Elevation MI (STEMI)

- ❑ **Paramedics should be familiar with the care and treatment the patient has received.**
- ❑ **Consider discontinuing or avoiding all medication infusions (except for basic IV fluids) to expedite transfer.**
- ❑ Receiving facility should be contacted to ensure rapid transfer to cardiac cath lab.
- ❑ Patients should receive appropriate supplemental oxygen therapy.
- ❑ All other interventions per state-wide treatment protocol, if not already administered:
    - **Aspirin**, 325 mg PO
- ❑ If patient continues to experience chest discomfort:
    - Nitroglycerine (if systolic blood pressure is greater than 100 mm Hg), 0.4 mg SL tablet or spray; may be repeated in 5 minute intervals for a total of three (3) doses
    - Morphine, 2 – 4 mg slow IV push; ***or,***
    - Fentanyl, 1 mcg / kg slow IV push, to a maximum of 150 mcg.

Part E1- General Guidelines for Medication Administration

- ❑ The transport paramedic must be familiar or become familiar through consultation (i.e., with a drug reference or discussion with hospital staff) on the following attributes of each drug the patient has received prior to and will receive during transport:
    - The type and name of medication being administered.
    - The indication and contraindications for administration of the medication.
    - The correct dose, rate, and mixture of medication.
    - Any titration indications or instructions.
    - Any specific medical control instructions.
    - Any patient-specific information
    - Any adverse effects of the medication being administered.
    - The seven rights of medication administration should always be considered, even when transporting patients between facilities.
        - ✓ Right patient, drug, dose, route, time, outcome, documentation
- ❑ Paramedics may not accept any medications from the sending facility for the purposes of bolus administration during transport.

ALS Interfacility Transfer Protocols
Part E2 Approved Medications and Classes

Any of the following medications or medication classes, not currently part of the EMT Paramedic Statewide Treatment Protocols, may be maintained if initiated at the sending facility, and can only be titrated through specific IFT protocols **and** by on-line **MEDICAL CONTROL**.

- Aminophylline
- Analgesics
- Anticonvulsants
- Antidotes
- Antidysrhythmics
- Antihypertensive agents
- Anti-infectives (e.g., antibiotics, anti-sepsis)
- Benzodiazepines
- Blood products
- Chemotherapeutic agents
- Electrolyte infusions
    - ✓ Potassium, limited to 10 mEq / hour
    - ✓ Magnesium, maintenance infusion limited to 2 g / hour
- Glycoprotein IIb / IIIa inhibitors
- Heparin
- Insulin infusions
- Intravenous steroids
- Mannitol infusions
- Octreotide
- Paralytics
- Parenteral nutrition
- Proton Pump Inhibitors
- Sedatives
- Standard IV infusion fluids (including 10% Dextrose)
- Thrombolytic agents
- Vasodilators (including all forms of Nitroglycerin)
- Vasopressors

Part E3- Medications Requiring the use of an IV Pump

The following medications / types of medications must be administered by IV pump:

- Anticoagulant
- Anticonvulsants
- Antidysrhythmics
- Antihypertensives
- Electrolyte Solutions
- Insulin
- Paralytics
- Sedatives
- Thrombolytics
- TPN
- Vasodilators
- Vasopressors

Part E4 Blood and / or Blood-Product Administration

- ❑ Heating devices, automatic and rapid infusers are prohibited for ALS IFT use.
- ❑ Infusion / bloodbank documentation should be transported with the patient.
- ❑ Paramedics will not initiate a blood product infusion.
- ❑ At least one additional IV line should be in place.
- ❑ Paramedic will not administer any medications through an IV line which is being used to infuse blood or a blood product.
- ❑ Ensure the blood and / or blood products are infusing at the prescribed rate.
- ❑ Monitor and record the patient's vital signs every 5 – 10 minutes.
- ❑ **If any signs and symptoms of transfusion reaction, proceed immediately to the TRANSFUSION REACTION PROTOCOL (Part 3.2)**
- ❑ **Blood products should be infusing for at least 20 minutes prior to departure, to reduce the risk of transfusion reaction.**
    - ✓ The only exception to this is for administration of fresh frozen plasma (FFP) for patients suffering life-threatening intracranial bleeding
- ❑ When the transfusion has finished:
    - ✓ Record transfusion end-time and post-infusion vital signs.
    - ✓ Disconnect infusion set tubing from primary line.
    - ✓ Flush primary line with normal saline only.
    - ✓ Place any used supplies into a clean biohazard marked container or bag.
    - ✓ Deliver all empty transfusion bags and tubing to the receiving facility with the patient.

ALS Interfacility Transfer Protocols

Part F1- Mechanical Ventilation

A3

- ❑ All artificially ventilated patients must be transferred on a ventilator.
- ❑ All ventilators must be able to meet the demands of the patient's condition, taking into consideration all settings and features described or stipulated by the sending facility and / or physician.
- ❑ Ventilators may <u>not</u> be full control mode only and must be capable of meeting the patient's ventilatory needs.
- ❑ Unless the transfer is time sensitive in nature (e.g., STEMI, aortic dissection, acute CVA, unstable trauma, etc.), the following requirements apply to ventilator use and / or adjustment:
    - Patients must be observed, by the sending facility, for a minimum of 20 minutes after any adjustment in ventilator settings.
    - Patients should be on the transport ventilator for 20 minutes prior to departure.
- ❑ On-line **MEDICAL CONTROL** is required for any instance when adjustment of the ventilator settings is needed.

ALS Interfacility Transfer Protocols

Part F2 Intravenous Pumps

Paramedics who operate at the ALS IFT level are expected to have a thorough understanding of the functions and operations of the infusion pump they will utilize (whether property of the ambulance service or sending facility).

Paramedics are expected to not only control the basic functions of the pump, but also be able to dynamically troubleshoot pump issues. Prior to transport, paramedics must be proficient at the following:

- ❑ How to turn the pump on and off.
- ❑ How to load and safely eject the administration set into pump.
- ❑ The importance of having spare tubing.
- ❑ How to suspend pump operation.
- ❑ How to adjust the infusion rate, if necessary.
- ❑ How to clear air bubbles from the tubing.
- ❑ How to troubleshoot problems (e.g., occlusion alarms).
- ❑ How the specific service addresses low battery or power issues.

It is strongly recommended that paramedics be trained and practiced on the infusion pump they will be using in the field.

ALS Interfacility Transfer Protocols
Part F3 Pleural Chest Tube Monitoring

A3

- ❑ Obtain and document the indication for placement of the pleural chest tube.
- ❑ Ensure that the chest tube is secured to the patient, and that the drainage system remains in an upright position and below the level of the patient's chest at all times.
- ❑ Regularly evaluate lung sounds and vital signs.
    - Signs and symptoms of a tension pneumothorax include: Dyspnea, tachypnea, decreased / absent lung sounds on affected side, hypotension, tachycardia, jugular venous distention, tracheal deviation (late sign)
- ❑ Tubes and connections should be evaluated following any movement of the patient to ensure leak-proof operation and chest tube patency.
- ❑ Check the following initially and after moving the patient:
    - Ensure the dressing remains dry and occlusive.
    - Ensure there are no kinks or dependent loops (e.g., a loop or turn in the tubing that forces the drainage to move against gravity to reach the collection chamber) in the tubing.
    - Amount of water in the water seal chamber; if the water level appears low ask a staff member if it requires refilling prior to departure.
- ❑ Monitor the following items after routine assessment of patient's vital signs:
    - Drainage (document the appearance and amount of fluid, at the start and at the conclusion of transport)
    - Bubbling in the water seal chamber
    - Gentle rise and fall of the water level, which corresponds with the patient's respirations is called "tidalling" and indicates that the system is functioning properly.
- ❑ Troubleshooting / problems
    - ✓ **Abnormal bubbling in the water seal chamber**
        - Remember, gentle rise and fall of the water level, which corresponds with the patient's respirations is called "tidalling" and indicates that the system is functioning properly.
        - Continuous air bubbling confirms a constant air leak from a tube connection or from the patient's chest (e.g., unresolved pneumothorax).
        - Intermittent bubbling confirms an intermittent air leak from the patient's chest.
    - No air bubbling confirms no air leak from the patient's chest and no air leak from a tube connection.
    - ✓ **If the entire chest tube is removed from the chest:** Cover with a three-sided dressing and contact **MEDICAL CONTROL**.
    - ✓ **If the chest drainage system tips over and spills:** Contact **MEDICAL CONTROL**; you may be instructed to clamp tube.
    - ✓ **If the chest drainage system is crushed or broken open, or the chest drain becomes detached from the chest tube:** Contact **MEDICAL CONTROL** immediately, do not reconnect; you may be instructed to place the end of the chest tube in a bottle of sterile water to create a seal.

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Adult and Pediatric Scope of Practice A4

Airway/Respiratory Management	EMT	AEMT	PARAMEDIC
BVM	X	X	X
Capnography		X	X
Chest Tube Maintenance			Δ
Cleared, Opened, Heimlich	X	X	X
CPAP	❑	❑	X (Adult only)
Endotracheal Intubation			X
Endotracheal Suctioning		X	X
Supraglottic Airways		X	X
Nasogastric/Orogastric Tube			X
Nasopharyngeal Airway	X	X	X
Nasotracheal Intubation			X
Nebulizer Treatment	*	X	X
Needle Decompression			X
Oral Suctioning	X	X	X
Oropharyngeal Airway	X	X	X
Oxygen Administration	X	X	X
Pulse Oximetry	X	X	X
Tracheostomy Maintenance	X	X	X
Ventilator Operation			*/Δ

Legend:

X *Skill allowed under protocol and in MA permitted Scope of Practice.*

** Skill allowed under protocol with medical director approval and training.*

Δ *Skills allowed under protocol for IFT use only*

❑ *Skills allowed only under Paramedic-Basic/ALS-assist staffing and training.*

A4 Adult and Pediatric Scope of Practice

Routes of Access/ Medication Administration	EMT	AEMT	PARAMEDIC
Auto Injector	X	X	X
Blood Products			Δ
Endotracheal			
Inhalation	MDI/*	X	X
Intramuscular	*	X	X
Intraosseous		X	X
Intravenous		X	X
Intravenous Pump			Δ/X
Oral	X	X	X
Intranasal	X	X	X
Rectal		Assist (Diastat)	X
Subcutaneous		X	X
Sublingual	Assist	X	X
Central Line Maintenance			Δ
Peripheral Venous Access		X	X
Intraosseous Access		X	X

Legend:

X *Skill allowed under protocol and in MA permitted Scope of Practice.*

** Skill allowed under protocol with medical director approval and training.*

Δ *Skills allowed under protocol for IFT use only*

❑ *Skills allowed only under Paramedic-Basic/ALS-assist staffing and training.*

Adult and Pediatric Scope of Practice A4

Cardiac Management	EMT	AEMT	PARAMEDIC
Application of 12 Lead ECG	❑	❑	X
Application of 3 or 4 lead ECG	❑	❑	X
CPR - Cardiopulmonary Resuscitation	X	X	X
Defibrillation - AED	X	X	X
Defibrillation - Manual			X
Induced Therapeutic Hypothermia	*	*	X (Adult Only)
Interpretation of 12 Lead ECG			X
Interpretation of 3 or 4 lead			X
Synchronized Cardioversion			X
Transcutaneous Pacing			X

Advanced EMTs may administer the following medications (in addition to those of an EMT):

- **Albuterol** (MDI/Nebulizer), Adult & Pediatric
- **Dextrose** (IV/IO)
- **Epinephrine** (IM or via auto-injector)
- **Glucagon** (IV/IO/IM/IN/SC)
- **Ipratroprium Bromide** (MDI/Nebulizer)
- **Lidocaine HCL 2%** (following IO Insertion)
- **Naloxone** (IV/IO/IM/IN)
- **Nitroglycerin** (SL)
- **Ondansetron** (PO by ODT/IV/IM)

Legend:

X *Skill allowed under protocol and in MA permitted Scope of Practice.*

*** *Skill allowed under protocol with medical director approval and training.*

Δ *Skills allowed under protocol for IFT use only*

❑ *Skills allowed only under Paramedic-Basic/ALS-assist staffing and training.*

A4 Adult and Pediatric Scope of Practice

Other Skills	EMT	AEMT	PARAMEDIC
Blood Draw		X	X
Blood Glucose Analysis	*	X	X
Blood Lactate Analysis			X
Burn Care	X	X	X
Cervical Spinal Immobilization	X	X	X
Childbirth	X	X	X
Cold Pack	X	X	X
Extrication	X	X	X
Eye Irrigation (Morgan Lens)			X
Hot Pack	X	X	X
Restraints - Pharmacological			X
Restraints - Physical	X	X	X
Selective Spinal Assessment	*	*	*
Spinal Immobilization - Lying (Long board)	X	X	X
Spinal Immobilization - Seated (K.E.D.)	X	X	X
Spinal Immobilization - Standing	X	X	X
Splinting	X	X	X
Splinting - Traction	X	X	X
Wound Care - Occlusive Dressing	X	X	X
Wound Care Pressure Bandage	X	X	X

Legend:

X *Skill allowed under protocol and in MA permitted Scope of Practice.*

*** *Skill allowed under protocol with medical director approval and training.*

∆ *Skills allowed under protocol for IFT use only*

❑ *Skills allowed only under Paramedic-Basic/ALS-assist staffing and training.*

DPH APPROVED STATEWIDE POINT OF ENTRY PLANS

In Massachusetts, point of entry for EMS is governed by the EMS System regulations, and their definition of "appropriate health care facility." An appropriate health care facility is the emergency department of an acute care hospital, or a licensed satellite emergency department, that is closest geographically (interpreted by DPH to be "in time") to the patient's location, OR in compliance with a Department of Public Health-approved point of entry plan. The following are statewide DPH-approved EMS point of entry plans, and are included here at the end of the Protocols as a resource, for your convenience.

Protocol Continues

Massachusetts Department of Public Health-Approved
Statewide Point of Entry Plan for
Appropriate Health Care Facility Destination
Based on Patient's Specific Condition and Need

Effective Date: August 1, 2008; Updated January 18, 2011 and March 24, 2016

Background and Scope:
As a general rule, in the case of an emergency, EMS transports patients to the closest geographic hospital with a licensed emergency department, in accordance with the EMS System regulations, 105 CMR 170.355, and the definition in 170.020 for "appropriate health care facility." The Department interprets this to be the closest hospital by driving time.

Sometimes, a patient's medical condition makes it more appropriate to take the patient to a hospital that is not the closest. Under the definition at 105 CMR 170.020, an "appropriate health care facility" can also be one designated in a Department-approved point-of-entry plan. The Department currently has approved condition-specific point-of-entry plans for trauma, stroke and STEMI patients.

This point-of-entry plan addresses other circumstances when, because of the patient's specific medical needs, the patient would clinically benefit from going to a more distant hospital emergency department. Following the procedures in this point-of-entry plan, an ambulance service and its EMTs may transport an emergency patient not covered by a condition-specific Department-approved point-of-entry plan (i.e., stroke, STEMI or trauma) to a hospital other than the closest, based on the patient's medical condition and need. However, this point-of-entry plan would not require a service and its EMTs to deviate from taking such a patient to the closest hospital emergency department, when not permitted by service policy.

This point-of-entry plan does not affect transport of patients covered by condition-specific Department-approved point of entry plans (i.e., trauma, stroke and STEMI). Such patients are to continue to be transported in accordance with these special point-of-entry plans.

Procedure:

I. Unstable patients: Transport to the closest hospital emergency department, or as required under a condition-specific Department-approved point-of-entry plan. An unstable patient is one whose vital signs have significantly changed (either upwards or downwards) from normal ranges, in the absence of interventions. See EMS textbooks for normal ranges of vital signs. **If there is any question about the stability of the patient, transport to the closest hospital.**

II. Stable patients:

A. Considerations: Based on an appropriate assessment of the patient, including obtaining of the patient's medical history, EMTs may consider transporting a patient to a hospital other than the closest, if the more distant hospital is more appropriate to the patient's specific medical condition and needs, based on the following factors:

1. The more distant hospital better meets the medical needs of the patient because

a. The patient's current physician and medical records are there; the patient has recently been discharged from that hospital; the patient has had previous hospitalizations there; the patient's complex medical history is followed at the hospital; or

b. The patient's specific medical condition needs one of the following specialty services for which the hospital is licensed:
Burn Unit, Obstetrics, Pediatrics

c. The patient's specific medical condition would be most appropriately addressed at a hospital designated by the Department as a MA Sexual Assault Nurse Examiner (SANE) site.

Protocol Continues

Protocol Continued

2. The additional time required to transport the patient to the more distant hospital does not exceed 20 minutes. (Multiple hospitals for which estimated transport time from the patient is less than 10 minutes are considered to be of equal transport distance.)
3. The level of service at which the ambulance is operating and the care capabilities of the EMTs are appropriate to the patient's needs during transport.
4. The available EMS resources in the system at the time of the call would be capable of handling the additional transport time for this unit.

B. Medical Control input:

1. If there is any question about whether, based on the above considerations, the patient should be transported to the more distant hospital, contact medical control.
2. If the additional transport time to the more distant hospital, compared to the closest hospital, is less than 20 minutes, EMTs may transport the patient to the more distant hospital under this point-of-entry plan.
3. If the additional transport time to the more distant hospital may be more than 20 minutes, contact medical control.

C. Documentation and Quality Assurance

1. EMTs must document on their patient care report the clinically based reason for deviating from transport to the closest hospital emergency department. EMTs must also document on the trip record the name of the authorizing physician, if medical control was contacted.
2. The ambulance service will maintain a system for review of all instances in which patients are transported to a hospital more distant than the closest hospital emergency department.

Ambulance calls in which patients are transported to a hospital more distant than the closest hospital are reviewable by the ambulance service's affiliate hospital medical director, or, until July 1, 2016, for BLS services with no affiliate hospital medical director, the regional medical director.

Protocol Continues

A5 Department Approved Point of Entry Plans

Protocol Continued

Statewide Trauma Field Triage Criteria and Point of Entry Plan for Adult and Pediatric Patients

Early notification of the receiving facility, even from the scene, will enhance patient

Preconfigured response initiated/appropriate pre-arrival instructions given based on Local

Perform Primary Survey

1) Does the patient have:

- Uncontrolled airway?
- Cardiopulmonary arrest?

Yes → **IMMEDIATELY LIFE THREATENING** → **Transport immediately to nearest hospital**

N

2) Does the patient have:

Physiologic Criteria:

- Glasgow Coma Scale <14
- Respiratory rate < 10 or > 29 or respiratory rate out of range for age?
- Systolic Blood Pressure < 90 mmHg or < 70-90 in pediatrics

Anatomic Criteria:

- Flail Chest?
- Open or depressed skull fractures?
- Penetrating trauma to head, neck, torso, or extremities proximal to elbow and knee?
- Crushed, degloved or mangled extremity
- Pelvic fractures (excluding simple fractures)
- Paralysis
- 2 or more proximal long bone fractures, or any open proximal long bone fracture?
- Amputations proximal to wrist or ankle

Yes → **CRITICAL TRAUMA** → **Transport to:**

-A Level I, II or III Trauma Center or Pediatric Trauma Center**. These patients should be transported preferentially to the highest level of care within the trauma system in accordance with DPH-approved Regional Point of Entry Plan.

- For prolonged transport times, consider activating the appropriate air ambulance service.

For patients being transported by air ambulance, transport to a level 1 trauma center with helipad facilities.

** MDPH-designated, or ACS-verified if out-of-state

NO

3) Mechanism-of -Injury Criteria:

Falls:

- •Adults > 20 feet (one story is equal to 10 feet)
- •Children > 10 feet or two or three times the height of the child

- High-Risk auto crashes.
  - •Death in same passenger compartment
  - •Intrusion > 12 inches occupant site, >18 inches any site
  - •Ejection (partial or complete) from vehicle
  - •Vehicle telemetry data consistent with high risk of injury
- •Auto vs. pedestrian/bicycle thrown/run over or with significant (>20 mph) impact
- •Motorcycle crash > 20 mph

Yes → Transport to closest appropriate Trauma Center** which may not be the highest level Trauma Center**

N

4) Assess special patient or systems considerations

Age:

- Older adults (aged > 55 years)
- Children should be triaged to pediatric trauma centers per Regional Point of Entry Protocols

Anticoagulation and bleeding disorders

Burns:

- Without other trauma mechanism to burn facility
- With traumatic mechanism to Trauma Center

Time sensitive extremity injury

End stage renal disease requiring dialysis

Pregnancy > 20 weeks

EMS provider judgment

EMS providers are encouraged to contact medical control for direction of trauma patients as needed.

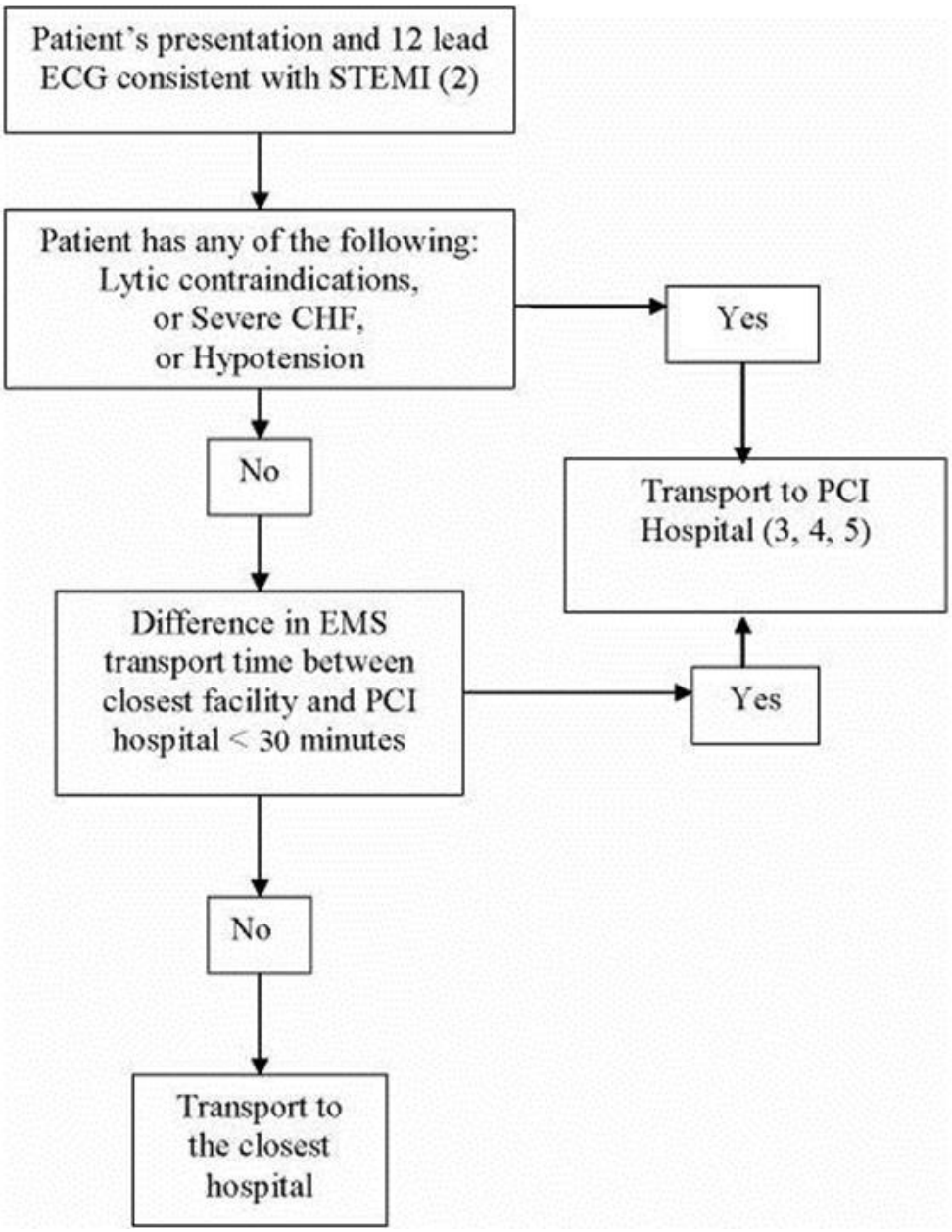
Yes → **Contact medical control and consider transport to a Trauma Center** or specific resource hospital**

NO → **Transport to closest appropriate hospital.**

Protocol Continues

Protocol Continued

Algorithm for Paramedic-Level Transported STEMI Patients



Following conditions apply:

(1) Patients in arrest, with compromised airway, or transported at BLS or ALS-Advanced EMT level will go to the closest appropriate health care facility
(2) Ambiguous cases transported at ALS-Paramedic level will go to closest facility
(3) Contact medical control for any questions regarding point of entry or treatment
(4) PCI facility will be notified
(5) Use patient's medical history and established medical relations if multiple PCI facilities

Protocol Continues

Protocol Continued

Stroke Point of Entry Plan (S-PEP)

EMS operational definition of acute stroke:
Presence of symptoms < 5 hr duration (or since last seen at baseline) according to the Massachusetts Stroke Scale **or** other concerning neurologic signs consistent with stroke. Other neurologic signs include:

- sudden onset dizziness with inability to walk
- double vision and eye movement abnormalities
- weakness affecting the leg

1. Following the Mass EMS Pre-hospital Treatment Protocols for Acute Stroke, establish a diagnosis of possible acute stroke based on Massachusetts Stroke Scale scale (Protocols Appendix Q)
2. Establish time of onset and last time seen at baseline
3. If stroke symptoms present and time from onset of symptoms to hospital arrival will be ≤ 2 hours, transport patient to nearest appropriate DPH-designated Primary Stroke Service (PSS)*
4. Notify receiving facility as early as possible

*** Determining most appropriate transport:**

1. The goal is to transport patient to PSS within 5 hours of symptom onset. Choose the most appropriate mode of transport (air, ground, etc.) and destination to achieve this.
2. If patient has depressed level of consciousness, compromised airway control, known hypoglycemia, suspected severe hypoglycemia (diaphoretic and a known diabetic), or is hemodynamically unstable, it may be more appropriate to transfer to nearest receiving hospital for acute stabilization.
3. If CT Scan capability is unavailable at the nearest PSS (e.g., “Cautionary Status”), the patient should be transported to the next nearest appropriate PSS as per above guidelines.

NAVY EMERGENCY MEDICAL SERVICES TREATMENT PROTOCOLS

Effective Date: 1 September 2022
version 1.2

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From: BUMED Navy Medicine Medical Directors
CNIC EMS Program Manager

To: Navy EMS Providers

Subj: Navy EMS Medical Treatment Protocols Authorization

Ref: (a) OPNAVINST 11320.27A, Navy Installation Emergency Medical Services Program, 21 February 2019
(b) BUMEDINST 6320.94, Pre-Hospital Emergency Medical Services for Navy Facilities, 8 August 2008

Encl: (1) Navy EMS Medical Treatment Protocols Effective 1 January 2022

1. Navy Medicine has the responsibility for the medical oversight and clinical scope of practice for Navy personnel involved with Emergency Medical Services (EMS) systems aboard Navy installations per references (a) and (b).

2. Commander Navy Installations Command (CNIC) has overall responsibility for the Navy EMS Program as the single responsible office, advocate, and point of contact for the program. CNIC administers the Navy EMS Program for the Chief of Naval Operations N4 and has authority and responsibility to develop and implement detailed policy for Navy wide functions per reference (a).

3. Enclosure (1) includes the Navy EMS Medical Treatment Protocols applicable to all Navy personnel assigned to deliver EMS pre-hospital emergency medical treatment, care and transport on Navy Installations and during the provision of mutual-aid.

4. The Medical Directors assigned to support and provide clinical oversight to the Navy EMS Program have reviewed and officially approved the use of the Navy EMS Treatment Protocols as prescribed in Enclosure (1) for use by Navy EMS Providers.

5. The 2021 Navy EMS Treatment Protocols are implemented under authority granted per references (a) and (b) and replaces all previous editions and versions.

6. Effective Date: 1 January 2022

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Lewis J Moore
CNIC EMS Program Manager

GENERAL INFORMATION

A. Protocol Provisions

The goal of prehospital EMS is to deliver a viable patient to appropriate definitive care as soon as possible (e.g., Right Patient, Right Place, in the Right Time). The protocols contained in this document are a form of standing orders for emergency patient care. Navy EMS personnel shall operate within their CNIC scope of practice and protocols when responding to incidents on and off the Installation.

It remains the responsibility of Navy EMS personnel to obtain online medical control when appropriate. If it is genuinely impossible or inappropriate (e.g., when rendering emergency care to a patient who has a life-threatening injury or medical condition) to obtain online medical control, Navy EMS personnel shall deliver emergency patient care in accordance with these protocols. Whenever emergent, life-saving patient care is rendered outside the scope of standing orders, the treatment provided and the reason online medical control could not be obtained must be documented on the patient care report (PCR).

The Universal Patient Care (UPC) protocol within the document should be followed in the specific sequence presented for each EMS response. The individual (adult and pediatric) treatment protocols are categorized based on the type of emergency and are further divided based on the individual level of care provider. To assist Navy EMS personnel in referencing patient care protocols, the outline format is broken down by the National Registry of Emergency Medical Technicians scope of practice (Emergency Medical Technician (EMT), Advanced-EMT (AEMT) and Paramedic). It is not intended to direct a mandatory sequence for providing patient care.

To improve organization of the protocols, page numbers have been replaced with protocol abbreviations. Each abbreviation is defined in the appendix at the end of the protocols.

Requests for additions, deletions, or exceptions to the Navy EMS Protocols shall be submitted in writing to the CNIC EMS Program Office using the form provided in the Appendix and available on CNIC G2.

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Section 1: Universal Patient Care

Scene Safety

- Use appropriate body substance isolation (BSI) and/or personal protective equipment (PPE)
- Consider airborne or droplet precautions, if indicated
- Identify potential hazards to rescuers, patients, and the public
- Await appropriate authorities if the scene is deemed unsafe
- Identify the number of patients
- Mass assembly consider WMD/terrorism Request additional resources, if needed
- Observe the patient's positioning and surroundings

Protective Equipment

Apply a standard set of protections based on the patient's symptoms and the clinical care rather than a specific suspected organism. The goal is to utilize PPE to prevent exposure to potentially infectious bodily fluids, secretions, droplets, or aerosols, as well as environmental exposures. The ASPR/TRACIE EMS Infectious Disease Playbook will be utilized as the gold-standard reference for implementation of PPE in the pre-hospital environment.

Universal patient precautions are to be implemented for every patient encounter. This means that, at a minimum, hand hygiene and gloves will be worn during any patient contact. Eye protection (e.g. goggles or face shield) and a surgical mask will be worn for any airway procedures (e.g. intubation, airway suctioning) or when caring for patients with potential respiratory infections (e.g. fever, cough, shortness of breath). This is also intended to protect mucous membranes from splash/liquid exposures.
Impermeable gowns should be used for any situation likely to generate splash/liquid exposures.

Consider using a checklist to assist with proper donning and doffing. PPE should be removed in an appropriate doffing area to prevent secondary contamination. Meticulous care should be taken to avoid self-contamination. PPE waste should be placed in a labeled leak-proof container.

Equipment

- Disposable exam gloves – standard gloves for standard precautions
- Sterile exam gloves – with elongated cuffs for use with barrier gowns/suits
- Cleanable goggles OR face shield
- Surgical masks for patients and providers
- Disposable fluid-resistant gown OR disposable fluid-resistant coverall
- Disposable National Institute for Occupational Safety and Health (NIOSH)-approved, fit-tested N95 or equivalent/higher level respirator (e.g., reusable half-face elastomeric respirator N95 or higher rating mask or PAPR with full hood and HEPA filter)
- Disposable boot/shoe covers

Special Respiratory Precautions – additional equipment required

- Full face shield (plus consider head cover)
- Respiratory protection options:
  - » NIOSH-approved, fit-tested N95 respirator worn with impermeable hood that covers head and shoulders and full-face shield
  - » PAPR with HEPA filtration and integrated impermeable drape-style hood
- Boots (disposable or reusable)
- Fluid-resistant coverall – if service uses gowns for other contact exposures

Upon Scene Arrival

- Bring all necessary equipment to the patient – jump bag, IV start bag, monitor/AED, O2 bag and extrication equipment (e.g., stair chair, KED, stretcher, scoop, long spine board, etc.)
- Demonstrate professionalism and courtesy
- Determine the mechanism of injury (MOI)/nature of illness (NOI)

Primary Assessment

e**X**sanguination, **A**irway, **B**reathing, **C**irculation is cited below, although there are specific circumstances where **C**irculation, **A**irway, **B**reathing may be indicated (e.g. cardiac arrest). Life threatening conditions identified during primary survey should be immediately addressed.

1. **eXsanguination**
   - Control any life-threatening hemorrhage with direct pressure (utilize one or two fingers directly over the source of bleeding to maximize effectiveness)
   - For extremity bleeding, apply a commercial tourniquet device to the injured extremity – go to the Tourniquet Protocol
   - Pressure dressings are inadequate when used alone to control life-threatening hemorrhage
   - For wounds not amenable to application of a tourniquet, consider packing the wound with a hemostatic gauze – go to the Combat Gauze Wound Packing protocol

2. **Airway** (assess for patency and open the airway as indicated)
   - Patient is unable to maintain airway patency—open airway
     - Head tilt, chin lift – not to be performed on patients with cervical spine precautions
     - Jaw thrust
     - Suction
     - Consider use of the appropriate airway management adjuncts and devices: oral airway, nasal airway, blind insertion, supraglottic airway device, or endotracheal tube
   - For patients with laryngectomies or tracheostomies, remove all objects or clothing that may obstruct the opening of these devices, maintain the flow of prescribed oxygen, and reposition the head and/or neck
   - Utilize continuous End Tidal CO2 monitoring to assess the adequacy of the patient's
   - airway – clear waveforms rising and falling with exhalation and inhalation should be observed if the airway is patent, indicating effective ventilation
   - If the airway remains obstructed - go to the Airway Management/Failed Airway Protocol

3. **Breathing**
    - Evaluate rate, chest wall rise, breath sounds, accessory muscle use, retractions, and patient positioning
    - Obtain a pulse oximeter reading
    - Administer oxygen as appropriate with a target saturation of a minimum of 94% for most acutely ill patients.
        - When explicit oxygen saturation targets are required for a given condition (e.g., neonates, carbon monoxide poisoning), it will be specified in the associated protocol.
    - Excess oxygen is associated with worse patient outcomes in those with ROSC after cardiac arrest, myocardial infarction, and stroke. Oxygen should be withheld in these patients unless the SpO2 is less than 90% or they are in respiratory distress
    - Continuous end-tidal CO2 monitoring can be utilized to monitor the effectiveness of ventilations. It is required for providers to monitor EtCO2 whenever bag-valve-mask ventilations, ventilations through an advanced airway, or CPAP is utilized.
    - Apnea (not breathing) – go to Airway Management/Failed Airway Protocol

4. **Circulation**
    - Assess pulse
        - If none – go to Cardiac Arrest Protocol or Pediatric Cardiac Arrest Protocol
        - Assess rate and quality of carotid and radial pulses
    - Evaluate perfusion by assessing skin color and temperature
        - Evaluate capillary refill
    - Attach the cardiac monitor and leads to obtain an electrocardiogram (EKG), if indicated by the patient's presentation or referenced in a specific protocol
    - Establish IV or IO access as dictated by each specific protocol
        - For conscious patients with IO access, infuse 2% lidocaine over 1-2 minutes followed by a NS flush
        - Adult dose – 40 mg (2 mL of 2% lidocaine)
        - Pediatric dose – 0.5 mg/kg up to 40 mg (2 mL of 2% lidocaine)

5. **Disability**
    - Evaluate patient responsiveness: AVPU scale (Alert, Verbal, Pain, Unresponsive)
    - Consider the need to initiate spinal motion restriction (SMR). Indicators to initiate include: a blunt trauma patient with a high-energy mechanism and one of the following OR inability to respond or communicate to the examiner:
        - Midline spinal tenderness
        - Focal neurologic deficit, including paraplegia or quadriplegia
        - Altered mental status or confusion
        - Intoxication or alcohol use
        - Presence of a distracting injury (any injury that would impair a person's ability to properly notice spinal tenderness or pain)
    - Evaluate gross motor and sensory function in all extremities
    - Check a finger stick blood glucose in patients with altered mental status, active seizures, unconsciousness, stroke-like symptoms, dizziness, or other conditions that could be explained by hypoglycemia – go to Diabetic Emergency Protocol

- If acute stroke suspected – go to Suspected Stroke Protocol

6. **Expose**
   - As appropriate to their chief complaint
   - Be considerate of patient modesty
   - Keep the patient warm

Secondary Survey

The performance of the secondary survey should not delay transport in critical patients. Secondary survey elements specific to individual complaints are detailed further in other protocols. Secondary surveys should be tailored to the patient presentation and chief complaint. The following are suggested considerations for the secondary survey assessment:

1. **Head**
   - Pupils
   - Nasopharynx and oropharynx
   - Mouth opening and dentition
   - Skull and scalp

2. **Neck**
   - Mobility
   - Jugular venous distension
   - Tracheal position
   - Neck masses
   - Spinal tenderness

3. **Chest**
   - Retractions
   - Breath sounds and respiratory rate
   - Chest wall deformities
   - Crepitus
   - Symmetry

4. **Abdomen/Pelvis**
   - Flank/abdominal tenderness
   - Ecchymosis
   - Abdominal distension or rigidity
   - Pelvic tenderness or instability

5. **Extremities/Back**
   - Extremity edema
   - Distal pulses
   - Range of motion (ROM)
   - Deformities
   - Spinal tenderness or deformities

6. **Skin**
   - Color
   - Temperature

- Dry or diaphoretic
- Rashes or bruises

7. **Neurologic**
   - Mental status/orientation
   - Speech
   - Motor/sensory
   - Gait and coordination

8. **Obtain Baseline Vital Signs; an initial full set of vital signs is required (see appendix A-5)**
   - Neurologic status assessment involves establishing a baseline and then trending any change in patient neurologic status
   - Glasgow Coma Score (GCS) – does the patient follow commands?
   - AVPU (Alert, Verbal, Painful, Unresponsive)
   - Stable patients should have at least two sets of pertinent vital signs. Ideally, one set should be taken shortly before arrival at receiving facility

9. **Critical patient should have vital signs continuously monitored and recorded at a minimum of every 5 minutes or with changes in status**

10. **Obtain OPQRST history (see appendix A-5)**

11. **Obtain SAMPLE history (see appendix A-5)**

Transport/Transfer of Care

- Continue on-going patient assessment.
- Repeat initial vital signs; every 5 minutes on unstable patients, every 15 minutes on stable patients. Evaluate effectiveness of interventions and procedures.
- Transfer patient to receiving facility. Hand-off includes patient information, personal property, summary of care, and response to care.

IF NO APPROPRIATE PROTOCOL CAN BE DETERMINED CONTACT MEDICAL CONTROL

Adult Patients

- An adult is considered hypotensive when Systolic Blood Pressure (SBP) is less than 90 mmHg.
- Diabetic patients and women may have atypical presentations (e.g., shortness of breath without chest pain) of cardiac related problems such as myocardial infarction or STEMI.
- Generalized weakness or dizziness can be the symptom of a very serious underlying process, such as sepsis or stroke.
- The presence of normotension in a patient with poorly controlled hypertension may signal the presence of hypotension and shock.

Geriatric Patients

- Altered mental status is not always dementia. Always check a finger stick blood sugar and assess for signs of stroke, poisoning, intoxication, trauma, etc.
- Beta blockers and other hypertensive medications may prevent a reflex tachycardia in shock states, resulting in falsely reassuring low to normal pulse rates.
- Minor or moderate injury in the typical adult may be very serious in the elderly.
- Although seemingly benign, complications from ground level falls are the leading cause of death from injury in patients over age of 65.

Pediatric Patients

- Pediatric patients are defined as age less than 18 years old and/or weight less than 50 kg (110 LBS).
- A weight needs to be obtained and documented on ALL pediatric patients.
- The Broselow-Luten Resuscitation Tape (or equivalent validated tool – e.g. HandTevy) should be utilized for all pediatric patients whose weight is unknown to determine appropriate weight-based medication dosing,
- Pediatric patients with special needs may require continued use of pediatric based protocols regardless of age and weight.

Oxygen Administration

- Oxygen is ubiquitous in prehospital patient care and probably over utilized. Oxygen is a pharmaceutical
- with indications, contraindications, as well as untoward side effects.
- Research demonstrates a clear link with increased mortality when given in overdose (hyperoxia/hyperventilation) in cardiac arrest.
- Supplemental oxygen is not indicated for full-term neonates with uncomplicated vaginal deliveries. If requiring respiratory support, assisted ventilations should be initiated with room air.
- Utilize oxygen when indicated and not because it is available. A reasonable target oxygen saturation, unless otherwise specified in a treatment protocol, is 94% regardless of delivery device.

Patient Refusal of Treatment and/or Transport

- All patients will be encouraged to accept transport to a medical treatment facility (MTF). Encourage the patient to allow an assessment, including vital signs.
- In order to refuse care or transport, the clinician must determine if the patient has capacity. The patient:

    1. Must have sufficient information about their medical condition.

2. Understand the risks and benefits of their available options.
3. Have the ability to make a clear decision with the information they have.
4. Be able to consistently communicate these wishes, and.
5. Have the freedom to act without undue influence.

- Documentation of the event is very important, including the patient's capacity to refuse care. All five parts of the capacity determination must be clearly documented in the patient care report.For patients with high-risk medical conditions who wish to refuse transport, the clinician should contact online medical control and encourage the patient to discuss their care with a physician before accepting the refusal.
- A copy of an approved Patient Refusal Form must be included with the patient care report (PCR) or attached to the electronic PCR. This should be submitted for review as described in the document / quality assurance procedures.

Section 2: Triage

Triage is a method that allows patients to be quickly evaluated and have their condition prioritized based on the urgency of the treatment needed, type and seriousness of injury, and likelihood of survival. Typically, triage is performed when the number of patients exceeds the available resources, as seen in unexpected mass casualty disasters. The goal of triage is to rapidly identify those who need immediate care and those who can have medical assistance delayed. The strategy is designed to provide the greatest good for the greatest number of victims. Triage allows for an efficient use of personnel, equipment, and facilities while promoting organization and order in situations that are often chaotic.

When conducting triage, each casualty is categorized according to a color-coded system: Red denotes immediate attention, yellow denotes delayed, green denotes minor, and black suggests a dead or a patient who conditions will likely lead to death given the currently available resources (e.g., expectant).

Note that triage is a dynamic process and patients should be continually reassessed, as able, to determine if their condition has changed. Patients once designated as Yellow may have decompensated and should be re-categorized as Red. Conversely, if additional resources become available, patients initially tagged Expectant may be able to be properly resuscitated.

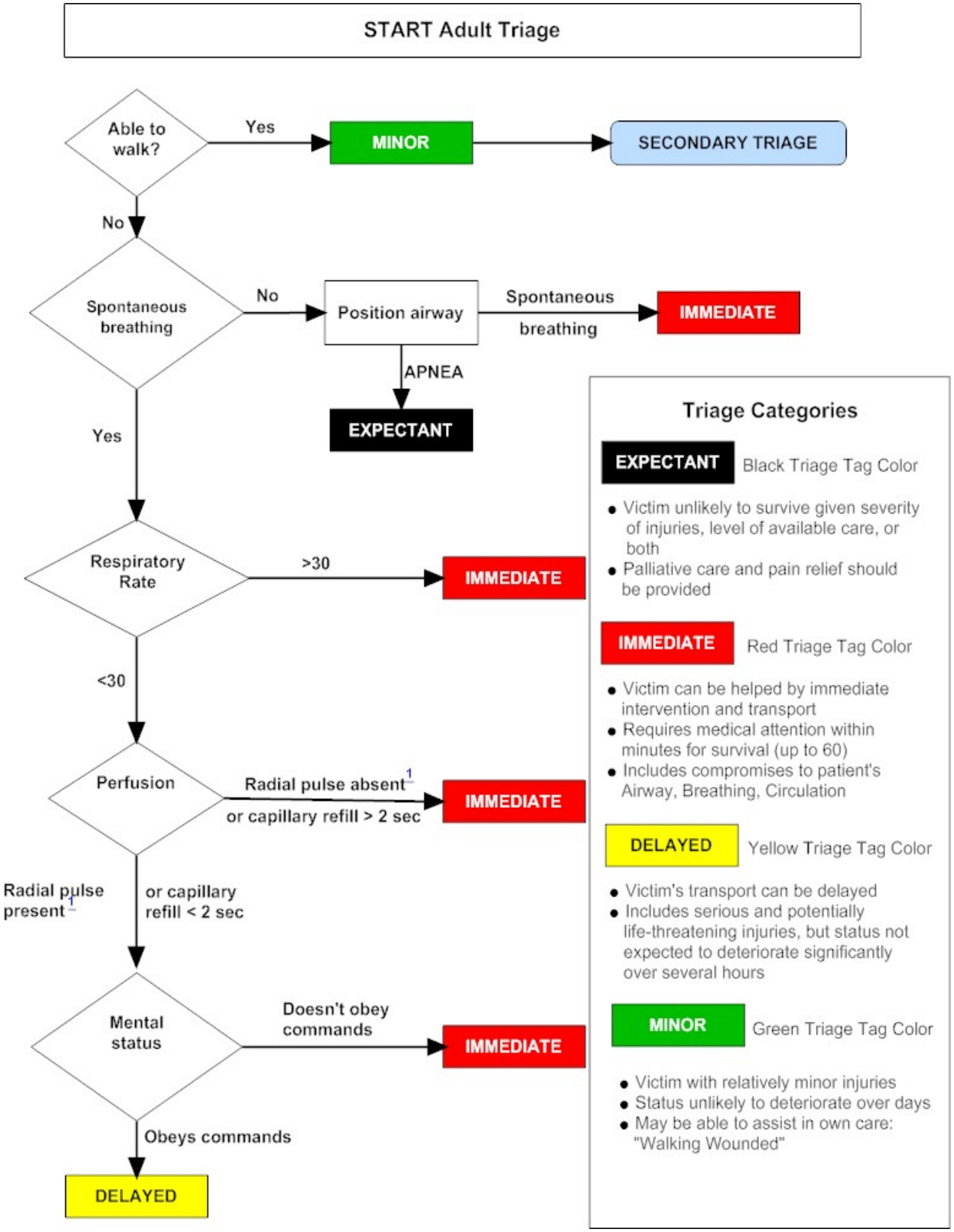
Triage Category	**Color**	**Description**
Immediate	Red	The victim has life-threatening injuries (airway, bleeding or shock) that demand immediate attention to save his or her life; rapid, lifesaving treatment is urgent. These victims are marked with a red tag.
Delayed	Yellow	Injuries do not jeopardize the victim's life. The victim may require professional medical care, but treatment can be delayed. These victims are marked with a yellow tag.
Minor	Green	Minor injuries and generally ambulatory. These victims are marked with a green tag.
Dead or Expectant	Black	No respiration after two attempts to open the airway. Because CPR is one-on-one care and is labor intensive, CPR is not performed when there are more victims than rescuers. These victims are marked with a black tag or labeled "DEAD."

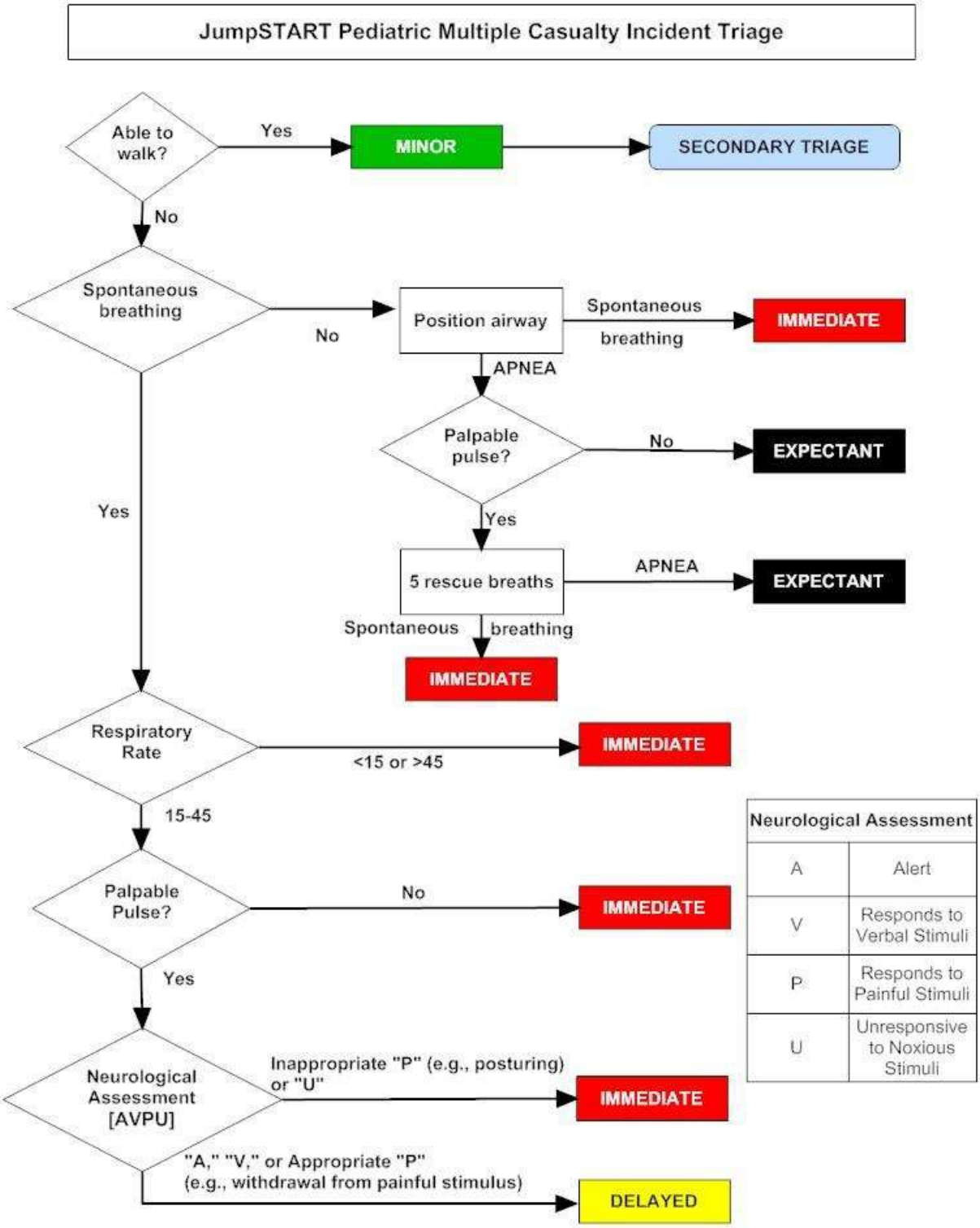
The triage process typically begins with voice triage, whereby the responder calls out to the casualties and asks that person who can walk should move to the sound of the voice and remain in a designated area. These patients are often referred to as the 'walking wounded' and are usually labeled "Green." They are either tagged with paper tags or with green triage tape. Ambulatory patients are sometimes asked to assist rescuers, when appropriate. Conversely, some walking wounded, such as patients with upper extremity tourniquets to control hemorrhage, will require prompt or emergent medical care. Do not assume all walking wounded will be tagged Green.

After the ambulatory patients are tagged, the rescuers begin evaluating the non-ambulatory patients for airway (breathing/respiration), bleeding (circulation/profusion) and mental status. In triage, airway obstruction, bleeding, and shock are the most significant concerns because without treatment they will lead to death.

The Department of Defense is often partnered with civilian medical operations as needed during the management of mass casualty events. The Department of Defense may coordinate with the Department of Health and Human Services, Federal Emergency Management Agency (FEMA), local Emergency Medical Services (EMS), and multijurisdictional public health responders in joint operations. Mass casualty triage can be initiated by military or civilian responders. In both cases general planning considerations are similar in nature. Rehearsing and practice are essential for effective management of mass casualty events.

The Simple Triage and Rapid Treatment (START) and Jump START (for pediatrics) mass casualty triage system will be utilized within U.S. Navy EMS.


START Adult Triage
Able to walk?
Yes
MINOR
SECONDARY TRIAGE
No
Spontaneous breathing
No
Position airway
Spontaneous breathing
IMMEDIATE
APNEA
EXPECTANT
Yes
Respiratory Rate
>30
IMMEDIATE
<30
Perfusion
Radial pulse absent[1]
or capillary refill > 2 sec
IMMEDIATE
Radial pulse present[1]
or capillary refill < 2 sec
Mental status
Doesn't obey commands
IMMEDIATE
Obeys commands
DELAYED
Triage Categories
EXPECTANT
Black Triage Tag Color
Victim unlikely to survive given severity of injuries, level of available care, or both
Palliative care and pain relief should be provided
IMMEDIATE
Red Triage Tag Color
Victim can be helped by immediate intervention and transport
Requires medical attention within minutes for survival (up to 60)
Includes compromises to patient's Airway, Breathing, Circulation
DELAYED
Yellow Triage Tag Color
Victim's transport can be delayed
Includes serious and potentially life-threatening injuries, but status not expected to deteriorate significantly over several hours
MINOR
Green Triage Tag Color
Victim with relatively minor injuries
Status unlikely to deteriorate over days
May be able to assist in own care: "Walking Wounded"


JumpSTART Pediatric Multiple Casualty Incident Triage
Able to walk?
Yes
MINOR
SECONDARY TRIAGE
No
Spontaneous breathing
No
Position airway
Spontaneous breathing
IMMEDIATE
APNEA
Palpable pulse?
No
EXPECTANT
Yes
5 rescue breaths
APNEA
EXPECTANT
Spontaneous breathing
IMMEDIATE
Yes
Respiratory Rate
<15 or >45
IMMEDIATE
15-45
Palpable Pulse?
No
IMMEDIATE
Yes
Neurological Assessment [AVPU]
Inappropriate "P" (e.g., posturing) or "U"
IMMEDIATE
"A," "V," or Appropriate "P" (e.g., withdrawal from painful stimulus)
DELAYED
Neurological Assessment
A
Alert
V
Responds to Verbal Stimuli
P
Responds to Painful Stimuli
U
Unresponsive to Noxious Stimuli

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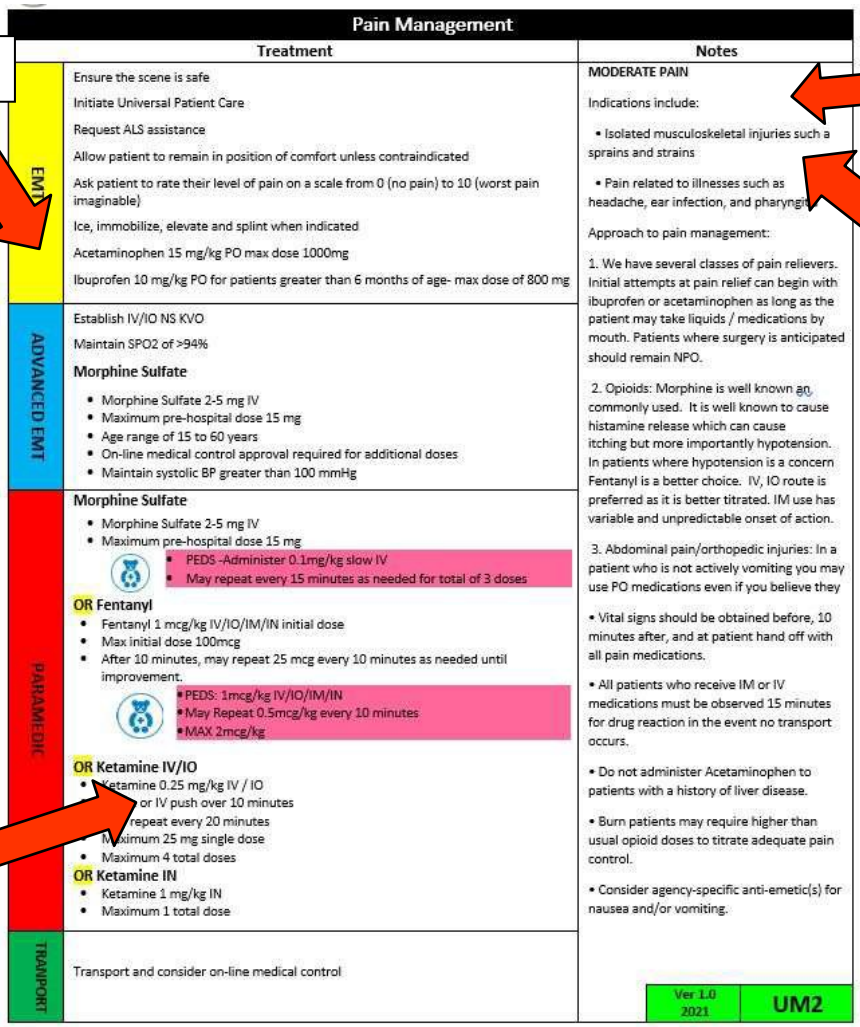
SECTION 3

Treatment Protocols

Section 3: Treatment Protocols

Written procedures for assessment, treatment, patient transportation, or patient transfer between hospitals. The EMS treatment protocols are implemented as standing orders.



Pain Management

	Treatment	Notes
EMT	Ensure the scene is safe Initiate Universal Patient Care Request ALS assistance Allow patient to remain in position of comfort unless contraindicated Ask patient to rate their level of pain on a scale from 0 (no pain) to 10 (worst pain imaginable) Ice, immobilize, elevate and splint when indicated Acetaminophen 15 mg/kg PO max dose 1000mg Ibuprofen 10 mg/kg PO for patients greater than 6 months of age- max dose of 800 mg	**MODERATE PAIN** Indications include: • Isolated musculoskeletal injuries such a sprains and strains • Pain related to illnesses such as headache, ear infection, and pharyngit Approach to pain management: 1. We have several classes of pain relievers. Initial attempts at pain relief can begin with ibuprofen or acetaminophen as long as the patient may take liquids / medications by mouth. Patients where surgery is anticipated should remain NPO. 2. Opioids: Morphine is well known an commonly used. It is well known to cause histamine release which can cause itching but more importantly hypotension. In patients where hypotension is a concern Fentanyl is a better choice. IV, IO route is preferred as it is better titrated. IM use has variable and unpredictable onset of action. 3. Abdominal pain/orthopedic injuries: In a patient who is not actively vomiting you may use PO medications even if you believe they • Vital signs should be obtained before, 10 minutes after, and at patient hand off with all pain medications. • All patients who receive IM or IV medications must be observed 15 minutes for drug reaction in the event no transport occurs. • Do not administer Acetaminophen to patients with a history of liver disease. • Burn patients may require higher than usual opioid doses to titrate adequate pain control. • Consider agency-specific anti-emetic(s) for nausea and/or vomiting.
ADVANCED EMT	Establish IV/IO NS KVO Maintain SPO2 of >94% **Morphine Sulfate** • Morphine Sulfate 2-5 mg IV • Maximum pre-hospital dose 15 mg • Age range of 15 to 60 years • On-line medical control approval required for additional doses • Maintain systolic BP greater than 100 mmHg	
PARAMEDIC	**Morphine Sulfate** • Morphine Sulfate 2-5 mg IV • Maximum pre-hospital dose 15 mg • PEDS -Administer 0.1mg/kg slow IV • May repeat every 15 minutes as needed for total of 3 doses **OR Fentanyl** • Fentanyl 1 mcg/kg IV/IO/IM/IN initial dose • Max initial dose 100mcg • After 10 minutes, may repeat 25 mcg every 10 minutes as needed until improvement. • PEDS: 1mcg/kg IV/IO/IM/IN • May Repeat 0.5mcg/kg every 10 minutes • MAX 2mcg/kg **OR Ketamine IV/IO** • Ketamine 0.25 mg/kg IV / IO • or IV push over 10 minutes • repeat every 20 minutes • Maximum 25 mg single dose • Maximum 4 total doses **OR Ketamine IN** • Ketamine 1 mg/kg IN • Maximum 1 total dose	
TRANPORT	Transport and consider on-line medical control	

Ver 1.0 2021 | UM2

Provider level

Title

Added notes and information to aid you in medical treatment

Pediatric symbol and information or medication doses for pediatric patients highlighted in

Protocol number

Protocol version number and date placed in-service

Altered Mental Status

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of ≥ 94% Check blood glucose level. If < 60 mg/dL, follow Diabetic Emergency Protocol If presents as hypotensive, follow Hypoperfusion/Shock Protocol If suspected overdose/toxic exposure, follow Poisoning Overdose Protocol If suspected hypo/hyperthermia, follow Hypothermia - Cold Exposure Protocol or Hyperthermia - Heat Related Emergencies Protocol If suspected CVA/Stroke, follow Suspected Stroke Protocol If suspected cardiac related illness, follow age-appropriate cardiac protocol If suspected fever/sepsis, follow Sepsis Protocol	**Patient Presentation:** The patient may exhibit confusion, changes in speech, focal motor or sensory deficits, unusual behavior, and unresponsiveness to verbal or painful stimulus. **NOTE:** Alcohol can cause altered mental status but is not commonly a cause of total unresponsiveness to pain. **Differential – AEIOU TIPS** • Abuse (alcohol, drugs), acidosis (DKA, lactate, respiratory), ammonia (liver disease), arrhythmia • Electrolytes (sodium, calcium), endocrine (thyroid, adrenal), encephalopathy • Infection, Intracranial injury • Overdose, oxygen, opiates • Uremia (renal or heart failure) • Trauma, temperature, tumor • Insulin (hypo or hyperglycemia) • Poisoning (carbon monoxide, vapors, ingestions) Stroke, seizures, shock, space occupying lesion (brain)
ADVANCED EMT	Establish IV/IO normal saline KVO, as necessary	
PARAMEDIC	Monitor EKG	
TRANSPORT	Transport and consider on-line medical control	

Pain Management

EMT

- Ensure the scene is safe
- Initiate Universal Patient Care
- Request ALS assistance
- Maintain SpO_2 of ≥ 94%
- Allow patient to remain in position of comfort unless contraindicated
- Ask patient to rate their level of pain on a scale from 0 (no pain) to 10 (worst pain imaginable) - Ice, immobilize, elevate and splint when indicated

Acetaminophen (Tylenol)

- 15 mg/kg PO max dose 1,000 mg (liquid dose for pediatrics)

ADVANCED EMT

Establish IV/IO normal saline KVO, as necessary

Morphine Sulfate

- Morphine Sulfate 2-5 mg IV
- May repeat every 10 minutes as needed for a total of 3 doses
- Maximum pre-hospital dose 15 mg
- Age range of 15 to 60 years
- On-line medical control approval required for additional doses
- Maintain systolic BP greater than 90 mmHg

PARAMEDIC

Ketorolac

- 15 mg IV/IO or 30 mg IM
- Maximum 1 dose

Morphine Sulfate

- Morphine Sulfate 2-5 mg IV
- May administer every 10 minutes
- Maximum pre-hospital dose 15 mg

- **PEDS -Administer 0.1 mg/kg slow IV**
- **May repeat every 15 minutes as needed for total of 3 doses**

OR Fentanyl

- Fentanyl 1 mcg/kg IV/IO/IM/IN initial dose
- Max initial dose 100 mcg
- After 10 minutes, may repeat 25 mcg every 10 minutes as needed until improvement.

- **PEDS: 1 mcg/kg IV/IO/IM/IN**
- **May Repeat 0.5 mcg/kg every 10 minutes**
- **MAX 2 mcg/kg**

OR Ketamine IV/IO

- Ketamine 0.25 mg/kg IV / IO
- Infuse or IV push over 10 minutes
- May repeat every 20 minutes
- Maximum 25 mg per dose for 4 total doses

OR Ketamine IN

- Ketamine 1 mg/kg IN divided equally in both nares (max 1 mL per nares)
- Maximum 1 total dose

TRANPORT

Transport and consider on-line medical control

Notes

MODERATE PAIN

Indications include:

1. Traumatic injuries
2. Pain related to illnesses (e.g. myocardialinfarction)

Approach to pain management:

3. There are several classes of pain relievers.Initial attempts at pain relief can begin with ibuprofen or acetaminophen as long as the patient may take liquids / medications by mouth. Patients where surgery is anticipated should remain NPO.
4. Opioids: Morphine is well known and commonly used. It is well known to causehistamine release which can cause itching but more importantly hypotension. Inpatients where hypotension is a concern Fentanyl is a better choice. IV/IO route is preferred as it is better titrated. IM use has variable and unpredictable onset of action.
5. Abdominal pain/orthopedic injuries: In a patient who is not actively vomiting you may use PO medications
6. Vital signs should be obtained before, 10 minutes after, and at patient hand off with all pain medications.
7. A pain scale should be performed before and after medication administration
8. All patients who receive IM or IV medications must be observed > 15 min for drug reactions in the event of no transport
9. Do not administer Acetaminophen topatients with a history of liver disease.
10. Do not administer ketorolac to patientswith severe renal disease.
11. Burn patients may require higher than usual opioid doses for adequate pain control
12. Consider anti-emetic(s) for nausea and/or vomiting.

Seizures

Treatment

EMT

Initiate Universal Patient Care

Request ALS assistance

Maintain SpO_2 of ≥ 94%

If patient is still seizing do NOT restrain

Consider cause of seizure activity – epilepsy, trauma, pregnancy, hypoglycemia, etc.

If pregnant refer to the Obstetrical Protocol

Obtain blood glucose level. If < 60 mg/dL, refer to Diabetic Emergency Protocol

Protect patient from further injury

When seizure activity has stopped identify and treat injuries

- **Check patient's temperature. If febrile, consider febrile seizure and treat with acetaminophen, if not contraindicated:**
- **Acetaminophen 15 mg/kg PO**

ADVANCED EMT

Establish IV/IO normal saline KVO, as necessary

Manage the airway as needed per the Airway Management/Failed Airway Protocol

PARAMEDIC

For active seizures / status epilepticus

Lorazepam (Ativan) IV/IM/IO

- Lorazepam 4 mg
- May repeat 2 mg dose every 5 minutes
- Maximum total pre-hospital dose is 10 mg

OR Midazolam (Versed) IV/IM

- Midazolam 5 mg
- May repeat every 3- 5 minutes prn
- Max pre-hospital dose 10 mg

- **Midazolam 0.1 mg/kg IV/IM**
- **May repeat 0.1 mg/kg**
- **Max single dose 5 mg**

If unable to obtain IV access administer:

Midazolam (Versed) IN

- Midazolam 10 mg
- Use 5 mg/ml concentration and administer half the dose in each nostril using a mucosal atomizer device
- Maintain systolic greater than 90 mmHg

Midazolam 0.2 mg/kg IN

TRANSPORT

Transport and consider on-line medical control

Notes

Patient Presentation

The patient may present with tonic/clonic activity or altered level of consciousness. Seizures may also be "focal" and only affect a single body part (e.g. repetitive eye movement, hand shaking, or staring). Seizures are a neuromuscular response to an underlying cause such as: epilepsy, hypoxia, hypoglycemia, hypoperfusion, head injury, stroke, and alcohol or drug abuse. Consider recent history of possible illness, infection, fever, or stiff neck.

Differential

- CNS (Head) trauma
- Tumor
- Metabolic, Hepatic, or Renal failure
- Hypoxia, hypoxic brain injury
- Electrolyte abnormality (Na, Ca, Mg)
- Drugs, Medications, Non-compliance
- Infection / Fever
- Alcohol withdrawal
- Eclampsia
- Stroke
- Hyperthermia
- Hypoglycemia

Diabetic Emergency

Treatment

EMT

Initiate Universal Patient Care

Request ALS assistance

Maintain SpO_2 of ≥ 94%

Obtain blood glucose level (BGL)

HYPOGLYCEMIA

(BGL less than 60 mg/dL)

Oral Glucose
Adult/Pediatric

- 10-15 grams
- Ensure patient can swallow and is able to protect airway
- Administer between cheek and gum
- Re-administer after glucose has dissolved, until full dose has been delivered
- Remeasure blood glucose level in 5 minutes increments

ADVANCED EMT

Establish IV/IO normal saline KVO, as necessary

HYPOGLYCEMIA (BGL less than 60 mg/dL)

Dextrose 50%

- 12.5-25 grams IV/IO accompanied by 50-100 mL Normal Saline if administered IV
- Repeat blood glucose check in 5 minutes. Repeat dosing if blood glucose < 60 mg/dL and continued altered level of consciousness (consider alternative causes of AMS if BGL > 80 mg/dL and persistent symptoms)

- **Dextrose 10% IV/IO**
- **0.5 g/kg D10**

Glucagon

- 1 mg IM (if unable to establish IV access)

- **If < 20 kg – 0.5 mg IM**
- **If > 20 kg - 1 mg IM**

HYPERGLYCEMIA (BGL greater than 250 mg/dL)

- Administer 20 mL/kg NS bolus IV/IO
- **10 mL/kg NS bolus IV/IO, max dose 500 mL**

PARAMEDIC

Monitor EKG

TRANSPORT

Transport and consider on-line medical control

Notes

Hypoglycemia with Insulin Agents:

- Many forms of insulin now exist. Longer acting insulin places the patient at risk of recurrent hypoglycemia even after a normal blood glucose is established.
- Not all insulin has prolonged action so contact medical control for advice.
- All patients should be offered and encouraged to accept transport. Criteria that should be met for patients to be considered for refusing transport include: known history of diabetes mellitus on insulin or metformin, pre-treatment hypoglycemia, post-treatment blood sugar > 80 mg/dL, prompt return of normal mental status (< 10 min), no seizure activity, absence of other active medical conditions (e.g. chest pain, intoxication), able to take PO, no social concerns / difficulty contacting EMS if needed, proper decision making capacity determined, and clear cause of hypoglycemia determine (e.g. missed meal, excess insulin administration)
- Patients who meet criteria to refuse care should be instructed to contact their physician immediately and consume a meal.

Diabetic Emergency

Treatment		Notes	
		Effective Date 1 Jan 2022	UM4

Suspected Stroke

Treatment

EMT

Initiate Universal Patient Care

Request ALS assistance

Determine and document time of signs/symptoms onset = last known normal

Maintain SpO_2 of ≥ 94%

Obtain blood glucose level (BGL). If blood glucose < 60 mg/dL, follow Diabetic Emergency Protocol

Complete **Cincinnati Pre-hospital Stroke Scale**

- If positive, perform **Los Angeles Motor Scale (LAMS)**
- If LAMS ≥ 4, consider transport directly to a thrombectomy capable facility if transport time is < 30 minutes and LKW is < 23 hours

Call receiving hospital to notify of positive stroke scale and document time of notification

Obtain 12-Lead EKG and transmit to receiving hospital

ADVANCED EMT

Establish IV normal saline KVO, as necessary

Manage the airway as needed per the Airway Management/Failed Airway Protocol

PARAMEDIC

Complete secondary Stroke assessment based on receiving hospital / Stroke center

Notify receiving hospital of findings for proper hospital activations

TRANSPORT

Contact on-line medical control.

Transport and contact a Stroke Center, if available

Notes

Cincinnati Pre-Hospital Stroke Scale

Facial Droop (Have patient show teeth or smile)

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

Arm Drift (Patient closes eyes and holds both arms out 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 down

Speech ("You can't teach an old dog new tricks")

- Normal – Patient uses correct words with no slurring
- Abnormal – Slurs words (dysarthria), uses inappropriate words or is unable to speak (aphasia)
- Facial Droop (show teeth or smile)
- Visual Fields (four quadrants)
- Horizontal Gaze (side to side)
- Motor—Arm Drift (close eyes and hold out both arms)
- Motor—Leg Drift (open eyes and lift each leg separately
- Sensory—Arm and Leg (close eyes and touch, pinch)
- Coordination—Arm and Leg (finger to nose, heel to shin)

Subarachnoid	Level of Consciousness (AVPU)
Hemorrhage?	Neck Stiffness (cannot touch chin to chest)

Any abnormal finding on examination?
Deficit not likely due to head trauma?
Blood Glucose >80?
Last Time Seen Normal? < 3 > 6.5 hours? – obtain accurate time

Los Angeles Motor Scale

Facial Droop – absent / present (+1)
Arm Drift – absent / drifts down (+1) / falls rapidly (+2)
Grip strength – normal / weak (+1) / absent (+2)

Score ≥ 4 is 89% specific for predicting large vessel occlusion (LVO)

Pediatrics

- **Strokes do occur in children; they are slightly more common in ages < 2.**
- **Newborn and infant symptoms consist of seizures, extreme sleepiness, and using only one side of the body.**
- **Children and teenagers' symptoms may consist of severe headaches, vomiting, sleepiness, dizziness, and/or loss of balance or coordination.**

Abdominal Pain/Nausea/Vomiting

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of ≥ 94% Give nothing by mouth (NPO) Anticipate vomiting For patients with nausea: • Provide the patient an isopropyl alcohol wipe and instruct them to inhale as needed until nausea subsides • May repeat for a total of three wipes every 15 minutes as needed OR **Ondansetron (Zofran) ODT** • NPO if suspected vomiting • 4 mg x 1, may repeat dose after 15 minutes for persistent nausea • Additional doses require on-line medical control approval Place patient in a position of comfort	**Patient Presentation:** The patient may present with pain (generalized or localized), nausea, vomiting, diarrhea, blood in emesis/stool, poor signs of skin turgor, abdominal tenderness, distension, and/or guarding upon palpation. For suspected intra-abdominal catastrophe or suspected aortic aneurysm, transport to a facility that has surgical resources immediately available. Patients with an acute abdomen can deteriorate rapidly; continuous reassessment and management is important.
ADVANC ED EMT	Establish IV/IO normal saline KVO, as necessary Consider administration of: **Ondansetron (Zofran) 4 mg IV** • Administer IV route slowly (over 2 minutes) • May repeat dose 1 time after 15 minutes for persistent nausea  **• Pediatric (6 months – 14 years old): 0.15 mg/kg IV/PO (maximum dose of 4 mg)** **• Administer IV route slowly (over 2 minutes)** **• May repeat dose 1 time after 15 minutes for persistent nausea** If patient displays signs and symptoms of shock administer: **Normal Saline** • Administer 20 mL/kg bolus • Titrate to a systolic BP of 90 mmHg (adults) or age-appropriate systolic blood pressure (pediatrics) • Particularly in pediatrics, monitor the mental status, capillary refill, and pulse rate to assess response to IV fluid challenge	
PARAMEDIC	Monitor EKG For pain management, refer to Pain Management Protocol	
TRANSPORT	Transport and consider on-line medical control	

Behavioral Emergencies

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Ensure the scene is safe, law enforcement should be available on scene prior to approaching the patient Protect the patient from harming themselves or others During initial assessment and/or treatment rule out the following: • Hypoglycemia • Hyperglycemia • Drug Overdose • Intoxication • Hypoxia • Head Trauma Implement the **SAFER** model Patient refusals cannot be accepted for patients: • Who lacks capacity • Have an organic cause of their symptoms (e.g., stroke, drug abuse) • Have evidence of active suicidal or homicidal behavior • Without prior history of psychiatric disease • Without social support Consider the use of restraints ONLY for patients who are uncooperative, unable to refuse transport but will not go willingly, or present with severe agitation • Implement the least restrictive method of restraint available that protects the EMS crew and patient • Ensure adequate personnel are present to reduce risk to providers and patient • Protect the exit and maintain a safe distance from the patient • EMS and law enforcement must cooperate and coordinate in the initial restraint of a patient • Hobbling, hog-tying, patients in prone position with their hands and feet behind their back, sandwiching between piece of equipment, or placing patients in any position that restricts their neck is strictly forbidden • Patients who are restrained must have vital signs, assessment of the airway, breathing, circulation, and neurovascular status of the extremities documented at least every 10 minutes.	**SAFER model** **S**tabilize the situation by containing and lowering the stimuli **A**ssess and acknowledge the crisis **F**acilitate the identification and activation of resources (chaplain, family, friends, or police) **E**ncourage patient to use resources and take actions in his/her best interest **R**ecovery or referral – leave patient in care of responsible person or professional, or transport to appropriate facility **EXCITED DELIRIUM** • Characterized by tachycardia, hypertension, hyperthermia, dilated pupils, skin changes (may be dry or wet), abnormal behavior, incoherent speech, and aggressive behavior • Usually associated with the ingestion of a stimulant (e.g., cocaine, cathinones, amphetamines) or hallucinogens such as ecstasy or MDMA • Patients are in a state of catecholamine overload and can precipitously go into cardiovascular collapse and cardiac arrest, especially after a prolonged period of struggle or aggression • The goal of medication administration is to abort the catecholamine surge before the patient's cardiovascular system collapses General communications techniques • Ask Open-ended questions (questions that cannot be answered with a yes/no) • "Tell me how we can help you?" "What caused you to call 911 today?" • Active listening (stay engaged, be able to summarize patient's story, use your body language to convey listening) • Eye contact, nodding your head, periodically repeating back part of patient's story
ADVANCED EMT	Establish IV/IO normal saline KVO, as necessary	

Behavioral Emergencies

	Treatment	Notes
PARAMEDIC	Monitor EKG **CHEMICAL RESTRAINT** For physically restrained patients who continue to resist or struggle, consider use of (1) of the following sedation medications for chemical sedation to facilitate transport: **Midazolam (Versed) IV/IO/IM/IN** • Midazolam 5 mg • Max dose 10 mg • IV slow push over 2 minutes • Administer ½ dose for patients > age 65 years • Maintain systolic greater than 100 mmHg  • **Pediatrics: 0.1 mg/kg IV IM OR 0.3 mg/kg IN** • **Max dose 5 mg** **OR Haloperidol IV/IM** • Haloperidol 5mg IV or 10mg IM • If the patient develops dystonia or sudden jerking movements, administer Diphenhydramine 25 mg IV or 50 mg IM  • **Pediatrics (age 5 - 14 years)** • **0.05 mg/kg IM (max dose 2.5 mg)** **OR Ketamine IM – Administered for excited delirium ONLY** • INDICATION – situation where you fear for the safety of yourself and others, where the patient cannot be safely calmed, physically restrained, or sedated by other means • Ketamine 4 mg/kg IM (max dose of 400 mg)  • **Pediatrics (age > 13 years): 4mg/kg IM (max dose 400 mg)** • A pulse oximeter and continuous $EtCO_2$ must be applied • Be prepared to support the patient's airway per the Airway Management Protocol • Medical control must be contacted to approve ANY additional doses of sedation medications once ketamine has been administered	• Encouraging (remain positive, convey interest in patient's crisis) • "Tell me more about that…" • Clarifying questions (ask patient to rephrase or repeat if you don't understand) • "I'm not sure I understand, can you…?" • Emotional labeling (naming emotions patient is demonstrating, validating emotions • "You look upset." "You seem angry." • Conversational pause (okay to allow a period of silence for patient to processinformation)
TRANSPORT	Transport and consider on-line medical control	

Renal Failure/Dialysis

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of ≥ 94% Place patient in a position of comfort If abnormal heart rhythm, respiratory distress, or chest pain, obtain 12-lead EKG and transmit to receiving hospital **FLUID OVERLOAD** Initiate CPAP/BiPAP to patient acceptance rate and within manufacturer guidelines of device **UNCONTROLLED BLEEDING** • Apply firm pressure to bleeding site • Apply pressure dressing if bleeding controlled after direct pressure • If bleeding does not stop, refer to Hypoperfusion-Shock Protocol	**NOTE:** Calcium (Chloride and Gluconate) may precipitate when mixed with sodium bicarbonate. Flush IV line thoroughly with normal saline. **Key questions to ask dialysis patients**: • What is your dialysis schedule? (e.g. M/W/F, T/R/S, etc.) • Were you able to make your last appointment? If not, why? • At your last appointment, how many liters of fluid were removed? Is this more or less than is normally removed?
ADVANCED EMT	Establish IV/IO normal saline KVO in arm that does not have graft/AV fistula, if necessary	
PARAMEDIC	Monitor EKG Treat patient according to one of the following presentations: **SYMPTOMATIC PATIENT WITH SUSPECTED HYPERKALEMIA** • Findings may include: wide QRS complex (usually very wide), peaked T-waves, loss of P waves, irregular bradycardia or AV blocks • Expedite transport to the closest MTF with renal dialysis capability **Calcium Gluconate IV/IO** • 1 g over 2-3 minutes • Do not administer through the same line concurrently with sodium bicarbonate **Sodium Bicarbonate IV** • 50 mEq over 5 minutes **RESPIRATORY DISTRESS** Manage the airway as needed per the Airway Management/Failed Airway Protocol	
TRANSPORT	Transport and consider on-line medical control	

Airway Management/Failed Airway

	Treatment		Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of ≥ 94%. Monitor pulse oximetry Establish adequate airway patency: • If patient awake but choking due to suspected foreign body, reassure, encourage coughing, perform abdominal thrusts (chest thrusts in obese or pregnant patients) Maintain airway (head tilt chin lift or modified jaw thrust) Suction upper airway as needed Look in mouth clear any foreign objects visualized For conscious patients who can follow commands, consider initiating NIPPV in patients with a history of COPD, asthma, CHF, pneumonia, or near-drowning • Initiate NIPPV to patient acceptance rate and within manufacturer guidelinesof device If patient is unresponsive: • Verify no visible foreign objects are obstructing the airway • Place oral or nasal airway • Ventilate the patient with a bag-valve-mask and oxygen at a rate of 10 breaths per minute		Unable to ventilate or oxygenate consider the following and address appropriately: • **D**isplacement • **O**bstruction • **P**neumothorax • **E**quipment Failure Gastric tube placement should be considered in all intubated patients if available or time allows. Ventilation rate: • 30 for Neonates • 25 for Toddlers • 20 for School Age • Adolescents the normal adult rate of 10 per minute
A-EMT	Establish IV/IO normal saline KVO, as necessary Monitor continuous waveform $EtCO_2$ to goal of 35-45 mmHg For unstable airways not controlled with BLS techniques: • Place a supraglottic airway (e.g., King LT, i-Gel, LMA Supreme)		Maintain an $EtCO_2$ between 35 and 45 and avoid hyperventilation
PARAMEDIC	**CARDIAC ARREST / APNEIC** • Place an endotracheal tube (oral route preferred to nasal) or a supraglottic airway • Utilize a gum-elastic bougie and video laryngoscope on first attempt, if available • Maximum 2 attempts for endotracheal intubation • If unsuccessful in placing an endotracheal tube, immediately place a supraglottic airway • After securing the airway, place a NG/OG tube **FAILED AIRWAY** If unable to place an endotracheal tube or supraglottic airway and unable to ventilate with a Bag-Valve-Mask, perform percutaneous cricothyrotomy **TENSION PNEUMOTHORAX** Consider needle chest decompression per Shock / Hypoperfusion protocol	***For intubated patients who are difficult to ventilate due to inadequate sedation:*** **Midazolam (Versed)** • Midazolam 5 mg IV/IO • Administer IV/IO routes slowly (over 2 minutes) • Systolic BP must be greater than 100 mmHg • May repeat 2.5 mg if resistance continues every 5 minutes • Max prehospital dose: 10 mg IV/IO*  **• Midazolam 0.1 mg/kg IV/IO over 2 minutes, max dose 2.5 mg.** **• Repeat every 5 to 10 min. Maximum dose 5 mg*** *Contact medical control for authorization of additional sedation	Supraglottic / extra-glottic airway devices are preferred in most out-of-hospital cardiac arrest scenarios as success rates are higher and speed of placement allows the paramedic to assume other patient care responsibilities (e.g. IO / IV access, medication administration, scene management). If sufficient personnel are available, endotracheal intubation can be considered if it does not interfere with pit crew CPR concepts and does not prevent the performance of high quality chest compressions

Airway Management/Failed Airway

	Treatment	Notes
TRANSPORT	Transport and consider on-line medical control	Effective Date 1 May 2022 AR1

Allergic Reaction/Anaphylaxis

Treatment

EMT

Initiate Universal Patient Care
Request ALS assistance
Maintain SpO_2 of ≥ 94%
Remove from environment in which allergic reaction began
Monitor airway and localized swelling if present

FOR WHEEZING / DIFFICULTY BREATHING
Ipratropium Bromide / Albuterol Sulfate (DuoNeb)

- Ipratropium bromide 0.5 mg / albuterol sulfate 2.5 mg in 3 ml NS via Nebulizer
- If may administer two additional albuterol only (2.5 mg) doses at 5-minute intervals

- **Age < 1 year - albuterol 1.25 mg + 0.25 mg ipratropium bromide via nebulizer**
- **Age > 1 year - follow adult dosing**

OR

Albuterol - Metered Dose Inhaler (MDI) – *for patient's a self-prescribed inhaler on hand or when infection control precautions limit the use of nebulized medications*

- Administer two puffs (90 mcg each) via metered dose inhaler
- May repeat dosage of two puffs (90 mcg each) two times in ten minutes for a total of three doses

SEVERE OR MILD/MODERATE SYMPTOMS WITH HISTORY OF ANAPHYLAXIS
Epinephrine Auto-Injector - one dose (0.3 mg) IM into the outer mid-thigh

- **Weight < 30kg - administer one dose (0.15 mg) IM into the outer mid-thigh**
- **Weight > 30kg - administer one dose (0.3 mg) IM into the outer mid-thigh**

ALS

Establish IV/IO normal saline KVO, as necessary

- Administer 20 mL/kg bolus, titrate to a systolic BP of 90 mmHg

FOR ITCHING / HIVES

Diphenhydramine (Benadryl) 25-50 mg slow IV/IM

- **Pediatric dose: 1 mg/kg slow IV/IM to max dose of 50 mg**

SEVERE OR MILD/MODERATE SYMPTOMS WITH HISTORY OF ANAPHYLAXIS
Epinephrine 1 mg/mL (1 mg/mL) 0.3 (auto-injector) or 0.5mg IM (manual syringe)

- May repeat every 5 minutes up to 3 doses

- **Weight < 30kg - administer one dose (0.15 mg) IM into the outer mid-thigh**
- **Weight > 30kg - follow adult dosing**
- **May repeat every 5 minutes for up to 3 doses**

PARAMEDIC

Monitor EKG

Manage the airway as needed per the Airway Management/Failed Airway Protocol

MODERATE / SEVERE SYMPTOMS
Methylprednisolone (Solu-Medrol) 125 mg IV/IO

- **Pediatric does: 1 mg/kg IV/IO to max dose 125 mg**

SEVERE OR MILD/MODERATE SYMPTOMS WITH HISTORY OF ANAPHYLAXIS
Epinephrine 1 mg/10 mL (0.1 mg/mL) IV/IO - 0.1 mg over 1-2 minutes, may repeat x 1 in 3 min

IV epinephrine is indicated only for patients with pending cardiovascular collapse or refractory shock unresponsive to IM epinephrine

Notes

Patient Presentation: The patient should have exposure to a known or likely allergen (food, insect sting, chemical, medication, etc.) and may present in one of the three categories:

MILD: Local swelling and itching at the reaction site.

MODERATE: Hives and mild wheezing.

SEVERE/ANAPHYLAXIS: Diffuse wheezing, swollen lips tongue or throat, dyspnea, hypotension, tachycardia, abnormal skin color, generalized hives, low oxygen saturation, stridor, and/or loss of peripheral pulses.

The decision to administer epinephrine should be based on the clinical history (e.g., exposure to an allergen known to previously cause anaphylaxis) and the rapidity or extent of onset of symptoms. Do not wait for severe symptoms to develop to administer epinephrine in these patients.

Utilize the weight-based medication charts to confirm dosage calculations

Allergic Reaction/Anaphylaxis

Treatment		Notes
TRANSPORT	Transport and consider on-line medical control	Effective Date 1 May 2022 AR2

Asthma/Chronic Obstructive Pulmonary Disease

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Initiate Universal Patient Care Calm and reassure the patient Provide supplemental oxygen in order to maintain SpO_2 of ≥ 94% **FOR PATIENTS WITH MILD SYMPTOMS**: **Albuterol Sulfate - Metered Dose Inhaler (MDI)** • Administer two puffs (90 mcg each) via metered dose inhaler • May repeat dosage of two puffs (90 mcg each) every five minutes for 3 total doses **FOR PATIENTS WITH MODERATE / SEVERE SYMPTOMS:** **Ipratropium Bromide/Albuterol Sulfate (DuoNeb) via Nebulizer** • ipratropium bromide 0.5 mg/albuterol sulfate 5 mg in 3 ml normal saline • Administer one DuoNeb by nebulized aerosol • If no improvement (wheezing persists) after the first dose may administer two additional Nebulizer treatments (total of 3) at 5-minute intervals **FOR PATIENTS WITH SEVERE DISTERSS / DIFFICULTY SPEAKING:** Consider initiating NIPPV (CPAP or BiPAP) in patients with a history of COPD, asthma, CHF, pneumonia, or near-drowning • Initiate CPAP/BiPAP to patient acceptance rate and within manufacturer guidelines of device Suction the nose and/or mouth if excessive secretions are present	Patients with a known history of asthma or COPD (chronic bronchitis or emphysema) and symptoms consistent with an acute exacerbation can be treated presumptively. Ensure there are no other possible etiologies – e.g. pneumonia, anaphylaxis, and pneumothorax – that could be causing the patient's respiratory distress. Clues include: • Trauma • Fever • Purulent sputum • Urticaria • Angioedema • Pleuritic chest pain • Upper airway obstruction SEVERE asthma exacerbations • RR > 30 breaths / min • HR > 120 bpm • Accessory muscle use • Diaphoresis • Inability to speak full sentences • Orthopnea SEVERE COPD exacerbations • RR > 30 breaths / min • Altered mental status • High flow oxygen to maintain SpO_2 88-92% • Elevated $EtCO_2$ (> 55) • Diminished or absent airflow
ADVANCED EMT	Establish IV/IO normal saline KVO, as necessary	
PARAMEDIC	**FOR MODERATE/SEVERE EXACERBATIONS** **Methylprednisolone (Solu-Medrol)** • 125 mg IV/IM **FOR PATIENTS REFRACTORY TO NEBULIZER / IMPENDING RESPIRATORY FAILURE** **Magnesium Sulfate** • 50 mg/kg IV, maximum dose of 2 g • Administer over 10-15 minutes **Epinephrine 1 mg/mL (1 mg/mL)** • 0.01mg/kg IM to maximum dose of 0.5 mg Manage the airway as needed per the Airway Management/Failed Airway Protocol	
TRANSPORT	Transport and consider on-line medical control	

Congestive Heart Failure/Pulmonary Edema

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Calm and reassure the patient Place the patient in a high-fowler's position Provide supplemental oxygen in order to maintain SpO_2 of ≥ 94% Obtain 12-Lead EKG and transmit to receiving hospital **FOR PATIENTS WITH SEVERE DISTERSS / DIFFICULTY SPEAKING:** Consider initiating NIPPV (CPAP or BiPAP) in patients with a history of CHF • Initiate CPAP/BiPAP to patient acceptance rate and within manufacturer guidelines of device Suction the nose and/or mouth if excessive secretions are present	Patient Presentation: The patient may present with shortness of breath and a history of CHF; physical exam may yield jugular vein distension (JVD) and possible atrial fibrillation. Patient's past medical history typically includes cardiac disease (coronary artery disease or MI) and/or hypertension. In addition to the above, dyspnea, rales, chest pain, diaphoresis, edema and anxiety may also be present.
ADVANCED EMT	Establish IV/IO normal saline KVO, as necessary Monitor $EtCO_2$ If systolic BP is greater than 90 mmHg, administer: **Nitroglycerin** • 0.4 mg SL (tablet or spray) • May repeat dose twice every 3-5 minutes as long as systolic BP is greater than 90mmHg. • Maximum three doses or 1.2 mg total	
PARAMEDIC	Manage the airway as needed per the Airway Management/Failed Airway Protocol If severe respiratory failure persists or patient does not tolerate CPAP consider intubation	
TRANSPORT	Transport and consider on-line medical control	

Chest Pain/Acute Coronary Syndrome (ACS)/ST-segment Elevation Myocardial Infarction (STEMI)

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Place patient in a position of comfort Withhold supplemental oxygen unless the patient's SpO_2 is < 90% or severe dyspnea / respiratory distress is present Obtain 12-lead EKG in 10 minutes of patient contact if the patient presents with symptoms suggestive of acute coronary syndrome (see Notes): If appropriate equipment is available, transmit 12-lead EKG within 10 minutes of acquisition for interpretation by a physician For chest pain discomfort thought to be cardiac in nature administer, assist the patient with administration of their own prescribed: **Aspirin** 324 mg or 325 mg chewed **Patient's Nitroglycerin** 0.4 mg SL (tablet or spray) • Systolic BP must be greater than 90 mmHg • May cause hypotension Assess and treat for shock if indicated Constantly monitor airway and reassess vital signs every 5 minutes	Patient Presentation Patient may present with or without typical chest pain/discomfort that may or may not radiate to the arm, shoulders, jaw, or back. Acute Coronary Syndrome (ACS) is defined as patients presenting with angina or angina equivalents due to poor coronary artery perfusion. In persons > 35 years of age, an EKG should be obtained within 10 minutes if symptoms are suggestive of ACS: • Chest pain or discomfort • Chest pressure • Non-traumatic shoulder or neck pain • Heartburn or epigastric / upper abdominal pain • Tachycardia or bradycardia • Syncope • Severe weakness > 45 years of age • New onset stroke symptoms • Difficulty breathing Persons with ACS risk factors (Diabetes mellitus, history of CAD, family history of CAD, severe obesity, and cocaine use) with the above symptoms should also have an EKG performed within 10 minutes of patient contact. Administer nitrates with extreme caution, if at all, to patients with inferior-wall STEMI or suspected right ventricular (RV) involvement • ST elevations in inferior leads, lead III elevations greater than lead II • ST elevation in V1 ± ST depression in V2 • Confirmation with ST elevation in right sided leads V3R – V6R
ADVANCED EMT	Establish IV/IO NS KVO **Nitroglycerin** 0.4 mg SL (tablet or spray) • Systolic BP must be greater than 90 mmHg • May repeat twice at 3-5 minute increments • Maximum three doses or 1.2 mg total (patient administered or EMT assisted) For refractory pain, consider: **Morphine Sulfate** • Morphine Sulfate 2-5 mg IV • May administer every 10 minutes • Maximum pre-hospital dose 15 mg	
PARAMEDIC	Interpret 12-lead EKG, transmit, and Activate STEMI protocol if appropriate Manage the airway as needed per the Airway Management/Failed Airway Protocol	
TRANSPORT	Activate hospital-based STEMI system of care Transport and consider on-line medical control	

Bradycardia

Treatment		Notes
EMT	Initiate Universal Patient Care Maintain Airway as necessary Provide supplemental oxygen in order to maintain SpO_2 of ≥ 94% Request ALS assistance Obtain a 12-lead EKG and transmit to receiving hospital	Transcutaneous Pacing Procedure (TCP) • Utilize TCP early if no response to Atropine. If time allows transport to specialty center because transcutaneous pacing is a temporizing measure. Transvenous/permanent pacemaker will probably be needed. • Immediate TCP with high-degree AV block (2nd or 3rd degree) with no IV/IO access. • Consider treatable causes for bradycardia (Beta Blocker OD, Calcium Channel Blocker OD, etc.) .
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary Normal Saline Fluid Bolus 20 mL/kg Manage the airway as needed per the Airway Management/Failed Airway Protocol	
PARAMEDIC	**SYMPTOMATIC BRADYCARDIA** **Atropine IV/IO** • Atropine 0.5 mg • Repeat every 3-5 min as needed or until maximum dose of 3 mg. • If rhythm refractory to Atropine, initiate transcutaneous pacing **UNSTABLE BRADYCARDIA** (Systolic BP less than 90 mmHg, chest pain, dyspnea, altered mental status or syncope) **Transcutaneous Pacing Procedure** Transcutaneous pacing should not be delayed if AV 2° Type II or 3° block is identified If capture occurs and systolic BP is greater than 90 mmHg ***For persistent hypotension after initiation of pacing, consider:*** **Epinephrine drip** • Initiate at 10 mcg/min IV/IO • Titrate to SBP > 90 mmHg or MAP > 65 mmHg • Max dose 30 mcg/min • See Epinephrine Drip Chart (M-EP4) for drip calculation	***Consider Midazolam for discomfort related to pacing*** Do not delay pacing to administer analgesia in an unstable patient **Midazolam (Versed) 5 mg IV/IM/IO/IN** May repeat 2.5 mg every 5 to 10 minutes Maximum total dose is 10 mg Additional doses require on-line medical control approval * Decrease initial dose in half for patients > 65 years
TRANSPORT	Transport and consider on-line medical control	

Tachycardia with a Pulse

Treatment

EMT

Initiate Universal Patient Care

Request ALS assistance

Maintain SpO_2 of ≥ 94%

Maintain patent airway; assist breathing as necessary

Obtain 12-lead EKG and transmit to receiving hospital

ADVANCED EMT

Establish IV/IO normal saline KVO, if necessary

PARAMEDIC

Narrow Complex: Stable (if regular rhythm and suspected SVT)

Perform modified Valsalva maneuver (see Notes)

Adenosine IV/IO

- Adenosine **6 mg** rapid push with normal saline 20mL flush
- May repeat after 2 minutes with **12 mg** rapid push with normal saline 20mL flush
- May repeat after 2 minutes with **12 mg** rapid push with normal saline 20mL flush

Wide Complex (≥0.12 second): Stable

Amiodarone IV/IO

- Amiodarone 150 mg in 100 mL of D5W
- Infuse over 10 minutes
- May repeat in 10 minutes if wide complex tachycardia recurs
- If successful, start 1 mg/min infusion

Or Lidocaine 2% IV/IO

- Administer 1 to 1.5mg/kg
- Subsequent dosing 0.5 to 0.75mg/kg
- If successful conversion, consider starting an infusion at 2 to 4mg/min
- Maximum dose of 3 mg/kg

UNSTABLE

Perform immediate synchronized cardioversion, starting at 100J (or 200J for monophasic devices)

Consider sedation prior to cardioversion (if patient condition permits**)

Midazolam (Versed)IV/IM/IO/IN

- Midazolam 5 mg
- May repeat once in 10 minutes
- Maximum total pre-hospital IM dose is 10 mg
- Call online medical direction for additional dosages

TRANSPORT

Consider transportation to specialty cardiac care center, if available and consider on-line medical control

Notes

STABLE PATIENT

Defined as: systolic BP greater than 90 mmHg, evidence of adequate end-organ perfusion, and no altered level of consciousness.

UNSTABLE PATIENT

Defined as: systolic BP less than 90 mmHg, shortness of breath or pulmonary edema, chest pain or discomfort, and altered mental status, or inadequate end-organ perfusion. Unstable condition must be related to tachycardia.

* Verify that "SYNC" mode is utilized before each synchronized cardioversion attempt to prevent accidental defibrillation

**Do not delay cardioversion to administer medication in an unstable patient

Modified Valsalva maneuver – with the patient in a semi-Fowlers position, instruct the patient to breathe into a 10 mL syringe forcefully (hard enough to push the plunger) for 15 seconds. Then immediately lay the patient supine and raise their legs to 45° for 15 seconds

Cardiac Arrest (Asystole, PEA, V-Fib, pV-Tach)

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Initiate CPR and defibrillate with AED as soon as available Push hard and fast (100-120/min) and allow complete chest recoil Provide ventilations with BVM at a ratio of compressions to ventilations of 30:2 Minimize interruptions in compressions and avoid excessive ventilation Change compressor every 2 minutes, or sooner if fatigued Apply mechanical compression device, if available If the patient returns to signs of circulation refer to Post Cardiac Arrest Care Protocol	Utilize an OPA to facilitate BVM ventilations for patients in cardiac arrest Follow Pit Crew CPR principles • Prepare prior to scene arrival – identify crew member roles, prepare first 3 doses of medications • Manage the patient on scene • Provide continuous compressions • Rapid supraglottic airway placement • Immediate IO access • First defibrillation < 3 minutes from scene arrival • Transition to mechanical CPR device • First medication < 8 minutes from scene arrival • Monitor CPR effectiveness with continuous $EtCO_2$ Consider Possible Causes • Hypovolemia • Hypoxia • Hydrogen ion (acidosis) • Hypo/hyperkalemia • Hypothermia • Tension pneumothorax • Tamponade, cardiac • Toxins • Thrombosis, pulmonary • Thrombosis, coronary
ADVANCED EMT	Continue ventilations with BVM at a ratio of compressions to ventilations of 30:2 Establish IV/IO Place a supraglottic airway (e.g. King LT, i-Gel, LMA Supreme) Ventilate at a rate of 10 breaths per minute (1 every 6 seconds) Monitor with continuous waveform $EtCO_2$ to goal of > 20 mmHg and SpO_2 of 94% Defibrillate if in a shockable rhythm **Epinephrine 1 mg/10 mL (0.1 mg/mL) IV/IO** • 1 mg, repeat every 4 minutes or every other CPR cycle	
PARAMEDIC	**V- Fib & V- Tach ONLY** **Amiodarone IV/IO** • Initial dose 300 mg IV/IO • Second dose of 150 mg IV/IO may be given in 4 minutes **OR** **Lidocaine 2% IV/IO** • Initial dose: 1-1.5 mg/kg • Second dose: 0.5-0.75 mg/ • If successful conversion, start drip using premixed 2g/250 mL bag at 2-4 mg/min **POLYMORPHIC VT / TORSADES DE POINTES** **Magnesium Sulfate 2 gram IV/IO** • Use premix or dilute in 50 mL D5W, administer over 5 to 10 minutes	
TRANSPORT	Consider underlying causes (H&Ts) Transport and consider on-line medical control	

Post Cardiac Arrest Care (ROSC)

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance If Return of Spontaneous Circulation (ROSC) is obtained **Manage Airway:** • Start 10 breaths/min • SpO_2 goal of 94% • $EtCO_2$ 35-45 mmHg **Manage hemodynamic parameters** • Systolic blood pressure >90 mmHg • Mean arterial pressure >65 mmHg Obtain 12-Lead EKG and transmit to the receiving hospital If not already in place, consider applying mechanical CPR device before transport to reinitiate CPR if the patient goes into cardiac arrest	**Continue to treat suspected underlying etiology of arrest** • Hypovolemia • Hypoxia • Hydrogen ion (acidosis) • Hypokalemia/hyperkalemia • Hypothermia • Tension pneumothorax • Tamponade, cardiac • Toxins • Thrombosis, pulmonary • Thrombosis, coronary
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary Administer IV fluids to achieve SBP or MAP goals • Normal Saline 20 mL/kg IV bolus Provide advanced airway management per the Airway Management / Failed Airway protocol	
PARAMEDIC	Activate a STEMI alert if present and document time of notification Initiate norepinephrine infusion to achieve SBP or MAP goals • Refer to Shock / Hypoperfusion protocol	
TRANSPORT	Transport and consider on-line medical control Consider for Cardiac Specialty center if • STEMI present • Unstable cardiogenic shock • Mechanical circulatory support required	

Pediatric Asthma

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of ≥ 94% Calm and reassure the patient **MILD SYMPTOMS** Monitor airway and oxygen saturation **Albuterol Inhaler Metered Dose Inhaler (MDI)** • Administer two puffs (90 mcg each) via metered dose inhaler • Administer with a spacer • May repeat dosage of two puffs (90 mcg each) one time in 3-5 min **MODERATE/SEVERE SYMPTOMS** **Ipratropium Bromide/Albuterol Sulfate (DuoNeb) via Nebulizer** • Age < 1 years – albuterol sulfate 1.25 mg + 0.25 ipratropium bromide • Age > 1 year – albuterol sulfate 2.5 mg + 0.5 ipratropium bromide • Mix in 3 mL NS x 1 • To be used in place of albuterol inhalers (not in conjunction with) • May repeat every 5 minutes for maximum of 2 doses	***Use adult respiratory distress protocol for patients age ≥ 12 years** **Patient Presentation:** The patient may present with wheezing and/or crackles. Abnormal respiratory rate and effort, tachycardia, cyanosis, mottled skin, altered mental status, nasal flaring, retractions, accessory muscle use, dyspnea and/or diminished or absent breath sounds. **MILD symptoms** • Normal alertness, expiratory wheezing only, mildly prolonged expirations, SpO_2 > 95% **MODERATE symptoms** • Normal alertness, elevated respiratory rate, wheezing throughout, prolonged expirations, accessory muscle use, SpO_2 92 – 95% **SEVERE symptoms** • Inability to speak short phrases, wheezing throughout, poor aeration / very diminished breath sounds, significant accessory muscle use, SpO_2 < 92% **Signs of impending respiratory failure** – • Cyanosis, difficulty maintaining respiratory rate (i.e. normal respiratory rate), lethargy, SpO_2 < 90%, elevated $EtCO_2$
ADVANCED EMT	Establish IV/IO NS KVO Monitor $EtCO_2$ Manage the airway as needed per the Airway Management/ Failed Airway Protocol	
PARAMEDIC	Monitor EKG For **MODERATE or SEVERE** symptoms, administer: **Methylprednisolone (Solu-Medrol) 1 mg/kg IV/IO** • Maximum dose is 125 mg • Administration should not distract from sequential dosing of nebulized albuterol / ipratropium For **SEVERE** symptoms refractory to nebulized medications: **Magnesium Sulfate 50 mg/kg IV** • Give in 100 mL NS over 10-15 min • Max dose of 2 grams For **SEVERE** symptoms and / or impending **respiratory failure** **Epinephrine 1 mg/mL (1 mg/mL) IM** • 0.01 mg/kg to max dose of 0.3 mg. Administer in lateral thigh. • Use weight-based medication charts to confirm dosage calculation	

Pediatric Asthma

	Treatment	Notes
TRANSPORT	Transport and consider on-line medical control	

Effective Date
1 May 2022

P-AR1

Croup

Treatment	Notes
EMT Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of ≥ 94% Calm and reassure the patient Assess respiratory status looking specifically for nasal flaring, retractions, increased/decreased respirations, skin color and/or change in level of consciousness In patients with drooling, stridor, and tripoding, allow the patient to maintain this position and do not attempt to manipulate the airway or ***If epiglottitis is suspected (i.e., drooling with above signs and symptoms), do not initiate this protocol without on-line medical control approval.***	**Patient Presentation:** The patient will present with respiratory distress and stridor (suspected croup) "Barking Cough and Audible Stridor" **Moderate**: Patient has a barking cough, mild retractions, and audible stridor. No signs of agitation. **Severe**: Stridor present at rest, decreased air entry, severe retraction (suprasternal), anxious, agitated, pale, or cyanosis **Imminent respiratory failure:** fatigue, listlessness, marked retractions, absent breath sounds, decreased level of consciousness, cyanosis or pallor, tachycardia
ADVANCED EMT Establish IV/IO NS KVO **MODERATE/SEVERE RESPIRATORY DISTRESS** **Epinephrine 1 mg/mL (1 mg/mL) via nebulizer** • Dose < 1 year: 2.5 mg / 2.5 mL • Dose > 1 year: 5 mg / 5 mL • Establish IV/IO access after appropriate airway management has been accomplished	
PARAMEDIC Monitor EKG Manage the airway as needed per the Airway Management/Failed Airway Protocol **SEVERE RESPIRATORY DISTRESS** (in danger of imminent respiratory arrest) **Epinephrine 1 mg/mL (1 mg/mL) via IM** • 0.01 mg/kg IM • Maximum single dose of 0.3 mg • On-line medical control approval required if patient is less than 1 year	
TRANSPORT Transport and consider on-line medical control	

Pediatric Cardiac Arrest

Treatment

EMT

Initiate Universal Patient Care

Request ALS assistance

Initiate CPR and defibrillate with AED as soon as available

If under age of 8 years, utilize pediatric pads (if available). If pediatric pads are unavailable, adult pads may be used, as long as the pads do not touch

Push hard and fast (100-120/min) and allow complete chest recoil

Focus on continuous compressions and avoid excessive ventilation

- 2-person CPR rate: 15 compressions to 2 breaths

Change compressor every 2 minutes, or sooner if fatigued or decreasing $EtCO_2$ reading

After 2 minutes, perform a rhythm check
Apply mechanical CPR device, if available

ADVANCED EMT

Establish IO – distal femur preferred site, proximal tibia acceptable

Place a supraglottic airway (e.g., King LT, i-Gel, LMA Supreme)

Ventilate at a rate of 10 to 20 breaths per minute (1 every 3-6 seconds)

Monitor with continuous waveform $EtCO_2$ to goal of >20mmHg and SpO_2 of 94%

Defibrillate:

- First Shock 2 J/kg
- Second Shock 4 J/kg
- Subsequent Shocks >4 J/kg Max 10 J/kg

Epinephrine 1 mg/10 mL (0.1 mg/mL) IO/IV*

- 0.01 mg/kg to max dose 1mg
- Repeat every 5 minutes or every 3rd round of CPR

*Can consider IV placement if sufficient personnel available and three rounds of epinephrine

PARAMEDIC

V FIB or PULSELESS V TACH

Amiodarone IO/IV:

- 5mg/kg mg IO/IV up to max 300 mg
- May repeat up to 3 doses for max total dose of 15 mg/kg or 900 mg

OR

Lidocaine IO/IV

1 mg/kg loading dose

Consider Possible Causes

- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-/hyperkalemia
- Hypothermia
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis, pulmonary Thrombosis, coronary

TRANSPORT

Transport and consider on-line medical control

Notes

Practice Pit Crew CPR concepts:

- Organize team members and roles prior to arrival
- If available, use an age-based dosing algorithm to facilitate drawing up three epinephrine doses prior to arrival
- Immediate continuous compressions with two-person team
- Immediate airway management – BVM ventilations with an oropharyngeal airway with placement of supraglottic airway once ALS available
- Immediate IO placement – distal femur preferred, proximal tibial accepted
- Defibrillation within 3 minutes of arrival
- Apply mechanical CPR device
- Epinephrine administration within 8 minutes of arrival
- Use continuous $EtCO_2$ to monitor CPR effectiveness.
- Remain on scene to administer the first three epinephrine doses before considering patient transport

Pediatric Bradycardia

	Treatment	Notes
EMT	Initiate Universal Patient Care Maintain Airway as necessary Maintain SpO_2 of ≥ 94% Request ALS assistance Obtain a 12 lead EKG and transmit to the receiving hospital If evidence of: Inadequate perfusion, such as decreased capillary refill, mottled or cool skin, altered mental status, chest pain, dyspnea, or hypotension • Assist breathing with positive pressure ventilation via BVM If signs of shock AND heart rate < 60 bpm • Initiate chest compressions	Transcutaneous Pacing Procedure (TCP) • Utilize TCP early if no response to epinephrine. If time allows transport to specialty center because transcutaneous pacing is a temporizing measure. Transvenous / permanent pacemaker will probably be needed. • Immediate TCP with high-degree AV block (2nd degree Type II or 3rd degree) with no IV / IO access. • Consider treatable causes for bradycardia – hypothermia, hypoxia, head injury, hypoglycemia, or medications such as beta-blockers or calcium channel blockers
ADVANCED EMT	Establish IV/IO normal saline KVO, as necessary **Normal Saline** Fluid Bolus 20 mL/kg Manage the airway as needed per the Airway Management/Failed Airway Protocol Continue CPR for heart rate < 60 bpm **For PERSISTENT BRADYCARDIA** **Epinephrine 1 mg/10 mL (0.1 mg/mL) IV/IO** • 0.01 mg/kg IV to max dose of 1 mg • Repeat every 5 min as needed or until maximum dose of 3 mg	
PARAMEDIC	**For PERSISTENT BRADYCARDIA DUE TO HIGH VAGAL TONE or AV BLOCK** **Atropine 0.02 mg/kg IV/IO** • Min single dose 0.1 mg • Max single dose is 0.5 mg • May repeat dose one time **Transcutaneous Pacing Procedure** If capture occurs and systolic BP is greater than 90 mmHg ***Consider Midazolam for discomfort related to pacing*** Do not delay pacing to administer analgesia in an unstable patient **Midazolam (Versed) IV/IO** • 0.1 mg/kg up to 2.5 mg per dose • May repeat once in 10 min • Maximum total dose is 5 mg	
TRANSPORT	Consider underlying causes (H&Ts) Transport and consider on-line medical control	

Pediatric Tachycardia with a Pulse

Treatment	Notes
EMT Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of ≥ 94% Maintain patent airway; assist breathing as necessary Obtain 12-lead EKG and transmit to receiving hospital	**Typical Pediatric Heart Rates** Age — Rate 0 – 3 mo. 123 – 164 bpm 3 – 6 mo. 120 – 159 bpm 6 – 9 mo. 114 – 154 bpm 9 – 12 mo. 109 – 145 bpm 12 – 18 mo. 103 – 140 bpm 18 – 24 mo. 98 – 135 bpm 2 – 3 yrs. 92 – 128 bpm 3 – 4 yrs. 86 – 123 bpm 4 – 6 yrs. 81 – 117 bpm 6 – 8 yrs. 74 – 111 bpm 8 – 12 yrs. 67 – 103 bpm
ADVANCED EMT Establish IV/IO normal saline KVO, if necessary	**Typical Sinus Tachycardia findings** • Presence of P waves • Variable R to R intervals • Infant rate (< 12 months) < 220 / min • Child rate (> 1 year) < 180 / min
PARAMEDIC **STABLE – Narrow (QRS ≤ 9 msec) and wide Complex (QRS > 9 msec):** • If likely SVT, perform vagal (i.e., Valsalva) maneuver • If likely sinus tachycardia, find and treat underlying cause **Adenosine IV/IO** • First dose: 0.1 mg/kg IV (max dose 6 mg) • Rapid push with normal saline 10 mL flush • Second dose: 0.2 mg/kg rapid bolus (max dose 12 mg) • Consider treatment for wide QRS complex tachycardia ONLY if the rhythm is REGULAR and MONOMORPHIC ***Amiodarone IV/IO** • 5 mg/kg (max 150 mg) in 100 mL of NS over 20 minutes *Requires online medical control approval **UNSTABLE – Narrow OR Wide Complex** • Perform immediate synchronized cardioversion • Begin with 0.5-1 J/kg; if not effective, increase to 2 J/kg. Sedate if needed, but don't delay cardioversion. ***If time permits, consider sedation with Midazolam prior to cardioversion*** **Midazolam (Versed) IV/IM** • Midazolam 0.1 mg/kg to max dose 2.5 mg • May repeat once in 10 minutes • Maximum total pre-hospital IM dose is 5 mg	**STABLE PATIENT** • Normal mental status • Strong peripheral pulses • Normal capillary refill and skin color **UNSTABLE PATIENT** • Hypotension – defined as SBP < 60 mmHg (age 0 – 1 mo.), SBP < 70 mmHg (age 1 – 12 mo.), SBP < [70 + (child's age x 2)} mmHg (age 1 – 10 yrs.), or SBP < 90 mmHg (age > 10 yrs.) • Prolonged capillary refill • Respiratory distress • Cyanosis, pallor, cold / mottled extremities • Altered mental status / lethargy * Verify that "SYNC" mode is utilized before each synchronized cardioversion attempt to prevent accidental defibrillation **Do not delay cardioversion to administer medication in an unstable patient
TRANS PORT	

Pediatric Tachycardia with a Pulse

Treatment		Notes		
	Consider transportation to specialty cardiac care center, if available and consider on-line medical control		**Effective Date 1 Jan 2022**	**P-CA3**

Newly Born

Treatment

EMT

Initiate Universal Patient Care
Request ALS assistance

Clamp the cord about 7 and 10 inches from the infant with 2 clamps after 1-3 minutes, cut between the clamps

Wrap in blankets and cover newborn's head

Record APGARs at 1 and 5 minutes
If patient is in respiratory distress (meconium, apnea) and secretions are obstructing the airway

- Suction the mouth first, then suction the nose
- DO NOT routinely suction unless presence of respiratory distress – gasping, labored breathing, or heart rate < 100 bpm

If apnea, or gasping, heart rate less than 100 bpm or central cyanosis is present:

- Ventilate with BVM at the rate of 40-60 breaths per minute
- Utilize a PEEP valve set to 5 cm H_2O, if available
- For infants ≥ 35 weeks start with 21% FiO_2 (room air)
- For infants < 30 weeks start with 30% FiO_2 via a blender
- Be careful with ventilations – give only enough volume to cause chest rise.
- Continue ventilations for heart rate < 100 bpm

If heart rate remains less than 60 bpm after 30 seconds of ventilation:

- Initiate chest compressions (hands encircling chest wall with thumbs over sternum) at 120 events per minute (compression to ventilation ratio is 3:1)
- Reassess every 60 seconds

ADVANCED EMT

Establish IV/IO normal saline KVO, if necessary – umbilical vein catheterization is the preferred method of vascular access

Give 10 mL/kg normal saline bolus over 5 to 10 minutes if hypovolemia suspected

Check blood glucose level, treat per Diabetic Emergency Protocol

PARAMEDIC

Monitor EKG
Manage airway if achieving inadequate ventilations with BVM

Perform endotracheal intubation using a 3.0 cuffed or 3.5 uncuffed tube. If < 28 weeks, use a 2.5 uncuffed tube

If heart rate fails to improve with adequate ventilations / chest compressions:

Epinephrine (1 mg/10 mL) IV/IO

- 0.01 – 0.03 mg/kg

TRANSPORT

If available, transport to a labor and delivery MTF and contact on-line medical control

Notes

Patient Presentation: This protocol applies to an infant that has just been delivered.

APGAR Test Scoring

	Score 0	Score 1	Score 2
Appearance	Blue all over	Blue only at extremities	No blue coloration
Pulse	No pulse	<100 beats/min.	>100 beats/min.
Grimace	No response to stimulation	Grimace or feeble cry when stimulated	Sneezing, coughing, or pulling away when stimulated
Activity	No movement	Some movement	Active movement
Respiration	No breathing	Weak, slow, or irregular breathing	Strong cry

Pulse oximetry is not routinely indicated for well appearing, vigorous infants, but could be applied for:

- During resuscitation
- When using positive pressure ventilation
- Persistent cyanosis
- When administering supplemental O_2

Anticipated SpO2 levels after delivery at sea level:

- 1 min – 60 to 65%
- 2 min – 65 to 70%
- 3 min – 70 to 75%
- 4 min – 75 to 80%
- 5 min – 80 to 85%
- 10 min – 85 to 95%

Sudden Infant Death Syndrome (SIDS)

Treatment		Notes
EMT	Initiate Universal Patient Care Request ALS assistance If indicated, initiate CPR and strongly encourage moving patient to the unit. Treat according to Pediatric Cardiac Arrest If rigor mortis is present continue with the Presumed Dead-on Arrival Procedure	**Patient Presentation:** The unexpected arrest of an apparently healthy infant in which resuscitation is unsuccessful and there is no attributable cause of death. The infant is often discovered by a caretaker in the early morning hours after having been uneventfully laid down to sleep the night before. **NOTE**: SIDS is one of the leading causes of death in the 1–12-month age group and seems to peak at 2 to 4 months of age. How you interact with the family may have a significant impact on how they deal with the loss of the infant. Be cautious of statements or actions that may be judgmental. Consider notification of local authorities. Special attention should be paid to the condition of the infant, including the presence of any marks or bruises, and to the preservation of the environment, including any bed clothing and the condition of the room.
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary	
PARAMEDIC	Monitor EKG	
TRANSPORT	Transport and consider on-line medical control	

Childbirth

Treatment

EMT

Initiate Universal Patient Care

Request ALS assistance

If patient in labor but no signs of impending delivery, transport to appropriate receiving facility

NORMAL DELIVERY

- Delivery should be controlled so as to allow a slow controlled delivery of infant
- Support the infant's head
- Check for cord around the infant's neck and, if present, reduce by slipping over the infant's head
- Clamp the cord about 7 and 10 inches from the infant with 2 clamps after 1-3 minutes, cut between the clamps
- Dry and warm infant
- Position and stimulate infant
- Record APGAR (1 & 5 min)
- Initiate resuscitation, if required
- If evidence of airway obstruction due to secretions, suction the airway (first mouth, then nares) and consider initiating positive pressure ventilation

ABNORMAL DELIVERY

- For all abnormal deliveries, transport immediately.

PROLAPSED CORD

- Place mother in knee-chest position
- Do not attempt to push cord back in vagina
- For cases of umbilical cord prolapse, place gloved fingers under presenting part and lift pressure off the umbilical cord.

BREECH PRESENTATION

- Do not pull on newborn
- Allow delivery to proceed normally while supporting the newborn
- Call on-line medical control for assistance

LIMB PRESENTATION

- Place mother in knee-chest position

POST PARTUM

- If uncontrolled post-partum bleeding perform uterine massage from pubis toward umbilicus
- Do not pack vagina to stop bleeding

ADVANCED EMT

Establish IV/IO normal saline KVO, if necessary

For active vaginal bleeding initiate fluid therapy: Normal Saline

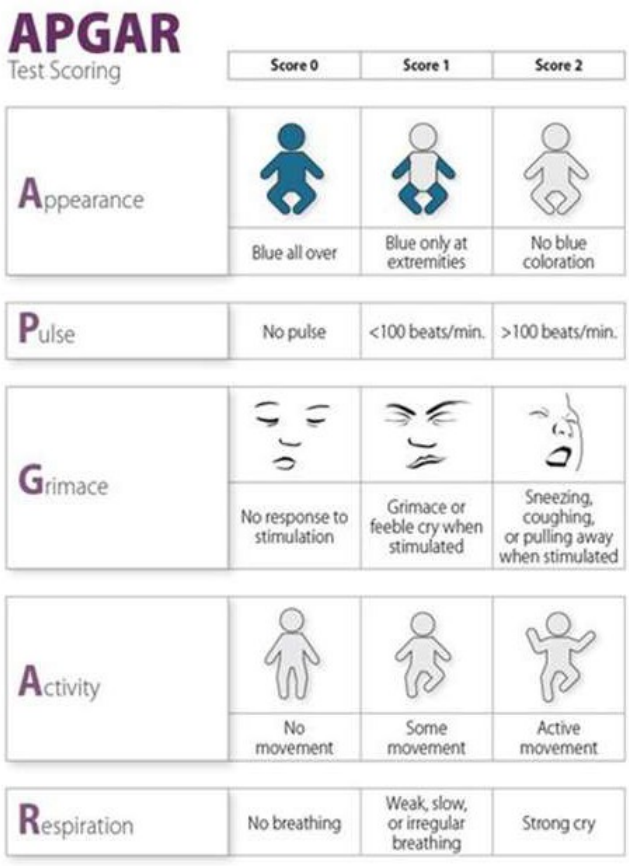
- Administer 20mL/kg bolus NS
- Titrate to a systolic BP of 90 mmHg
- May repeat one time

PARAMEDIC

Monitor EKG

TRANSPORT

If available, transport to a labor and delivery MTF and contact on-line medical control



Obstetrical

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of > 94% Place patient in a left lateral recumbent position Reduce external stimuli Treat patient according to one of the following presentations: **VAGINAL BLEEDING** • Place absorbent pads underneath patient • If uncontrolled post-partum bleeding perform uterine massage from pubis toward umbilicus **ECLAMPSIA (seizing)** • If patient is still seizing refer to Seizures Protocol • When seizure activity has stopped identify and treat injuries • Check BGL, if less than 60mg/dL, follow Diabetic Emergency Protocol	**Patient Presentation:** The patient may present with unusually heavy vaginal bleeding because of possible pregnancy, miscarriage, postpartum bleeding, or sexual assault. Patient may exhibit the signs and symptoms of hypoperfusion (shock). **Eclampsia**: new onset, generalized, tonic-clonic seizures OR coma in pregnant women with pre-eclampsia or gestational hypertension. Symptoms preceding the onset of seizures may include: • Hypertension • Headache • Visual disturbances • RUQ or epigastric abdominal pain Most post-partum eclamptic seizures occur within 1 week of delivery
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary Manage the airway as needed per the Airway Management/Failed Airway Protocol **VAGINAL BLEEDING** • Initiate fluid therapy • Normal Saline -Administer 20mL/kg bolus NS • Titrate to a systolic BP of 90 mmHg	
PARAMEDIC	Monitor EKG **ECLAMPSIA** If in late pregnancy or post-partum period, treat with: **Magnesium Sulfate 4g IV/IO** • Dilute in 100mL of D5W and infuse over 15 to 20 minutes	
TRANSPORT	Transport and consider on-line If available, transport to a labor & delivery MTF and consider on-line medical control contact control	

Hypoperfusion/Shock

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of >94% Remove immediate life threats/control major bleeding following the Tourniquet procedure /discover underlying cause Anticipate vomiting - refer to Abdominal Pain/Nausea/Vomiting Protocol Manage the airway as needed per the Airway Management/Failed Airway Protocol Remove any previously applied dermal medication delivery systems (patches) Warm patient Maintain spinal immobilization if indicated Treat/stabilize any associated injuries according to presentation	**Patient Presentation:** As a result of inadequate blood flow to meet oxygen demands, the patient may present with an altered mental status, cool/clammy skin, diaphoresis, rapid weak pulse, shallow/labored respirations and/or general weakness, decreased distal pulses and internal or external bleeding. **Shock may develop insidiously. Especially in pediatrics and young, healthy adults, tachycardia may be the only manifestation. Consider all possible causes of shock and treat per appropriate protocol.** **Hypovolemic Shock:** Hemorrhage, trauma, GI bleeding, severe dehydration, ruptured aortic aneurysm, or pregnancy-related bleeding. **Distributive Shock:** Includes sepsis, anaphylaxis, and neurogenic shock. Adults with sepsis often present with warm shock (hyperdynamic cardiac activity, bounding pulses, diaphoresis, and rapid capillary refill) whereas pediatrics present more commonly with cold shock (cool, clammy, delayed capillary refill, weak peripheral pulses). **Cardiogenic Shock:** Myocardial infarction, Cardiomyopathy, Myocardial contusion, cardiac toxins (e.g. digitalis toxicity). **Obstructive Shock:** Pericardial tamponade. Pulmonary embolus. Tension pneumothorax. Signs may include hypotension with jugular vein distention, tachycardia, unilateral decreased breath sounds or muffled heart sounds. *Tranexamic acid use limited to patients with significant hemorrhage, risk of significant hemorrhage, or moderately severe TBI (GCS between 8 – 13)
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary If lungs are clear initiate fluid therapy: **Normal Saline** • Administer 20 mL/kg bolus NS • Titrate to a systolic BP of 90 mmHg • May repeat one additional dose of 20mL/kg bolus NS	
PARAMEDIC	Monitor EKG For cardiogenic or distributive shock (excluding anaphylaxis), if SBP remains < 90 mmHg or MAP < 65 mmHg after > 30 mL/kg of IV fluids, administer: **Norepinephrine (Levophed)** • Initiate 0.05 - 0.3 mcg/kg/minute • Titrate to SBP > 90 mmHg or MAP > 65 mmHg • Max dose 30 mcg/min • See Norepinephrine Drip Chart (M-NE1) **Utilize the weight-based medication charts to confirm dosage calculations** For Tension Pneumothorax • 10 gauge 3.5 in hollow bore needle into 4th or 5th intercostal space, anterior axillary line (preferred) or 2nd intercostal space, midclavicular line (alternative) • May repeat as needed if tension physiology redevelops For hemorrhagic shock: **Tranexamic Acid (TXA)*** • 2 g IV or IO slowly over 10 minutes within 3 hours of injury	
TRANSPORT	Transport and consider on-line medical control	

Burns

Treatment

EMT

Initiate Universal Patient Care
Request ALS assistance
Maintain SpO_2 of > 94%
Move patient to a safe environment
Treat any associated trauma
Remove rings, bracelets and other constricting items- leave blisters intact

THERMAL BURNS

- Burns < 10% Total Body Surface Area (TBSA): stop burning with non-chilled water or saline
- Burns greater than 10% body surface area: cover with dry dressing and keep patient warm
- Do not allow the patient to become hypothermic

CHEMICAL BURNS

- Brush off dry chemicals
- Flush with copious amounts of water

TAR BURNS

- Cool with water, transport. Do not remove tar

ADVANCED EMT

Establish IV/IO normal saline KVO, if necessary
Manage the airway as needed per Airway Management/Failed Airway Protocol

- Consider early airway intervention if burn occurred in an enclosed space with evidence of singed nasal hairs, respiratory distress, or stridor

If the patient is in shock, treat according to the Shock / Hypoperfusion Protocol
If the patient has a significant burn without signs of shock due to concomitant trauma:

- Estimate TBSA using rule of 9's
- Consider fluid therapy **Lactated Ringers**
- Initiate treatment utilizing the Rule of 10s (weight 40 – 80 kg):
  TBSA(%) x 10 = initial fluid rate
- For every 10 kg > 80 kg, add an additional 100 mL/hr. to the initial rate

For patients < 40 kg, initiate fluid rate using the modified Parkland formula = 3 x TBSA(%) x weight (kg)

PARAMEDIC

Monitor EKG

Consider Pain Management Protocol

Notes

Differential

- Superficial (1st Degree) – red, painful, looks like a sunburn (Do not include in TBSA)
- Partial Thickness (2nd Degree) – blistering, red, painful, weeping, blanch with pressure; deep 2nd degree burns may be mottled and have a waxy appearance and do not blanch with pressure
- Full Thickness (3rd Degree) - painless/charred or leathery skin, dry, inelastic, does not blanch with pressure
- Thermal injury
- Chemical – Electrical injury
- Radiation injury
- Blast injury

Chemical Burns:

- Decontamination Procedure
- Normal Saline or Sterile Water is preferred, however if not available, do not delay irrigation and use tap water
- Other water sources may be used based on availability
- Flush the area as soon as possible with the cleanest readily available water or saline solution using copious amounts of fluids

Electrical Burns:

- DO NOT contact patient until you are certain the source of the electrical shock is disconnected
- Attempt to locate contact points (generally there will be two or more) A point where the patient contacted the source and a point(s) where the patient is grounded
- Sites will generally be full thickness
- Do not refer to as entry and exit sites or wounds

Indications for referral to a Burn Center:

- Second- or third-degree burns
- Greater than 10% total body surface area (TBSA) in patient
- Burns to the face, hands, feet, or perineum
- Electrical burns, including lightening or contact with high voltage (110 volts or greater)
- Chemical burns
- Suspected inhalation injury when carbon monoxide is not suspected
- Circumferential burns

For pediatric patients, a weight-based assessment tool (length-based tape or other system) should be used to provide a more accurate estimate of the patient's weight.

Burns

	Treatment	Notes
TRANSPORT	Transport – consider trauma or burn center Consider on-line medical control	Effective Date 1 Jan 2022 TR2

Head and Spinal Cord Trauma

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO2 of > 94% Treat/stabilize any associated injuries according to presentation Follow Spinal Precautions Apply Cervical Immobilization Device **AMBULATORY Patients:** Allow patient to move to stretcher with minimal spinal movement then secure to stretcher **NONAMBULATORY Patients:** Use Long Spine Board (OR any of the multiple equivalent devices) to TRANSFER patient to stretcher with minimal spinal movement, remove the device, then secure to stretcher. May use multiple providers to transfer patient to stretcher using in-line spinal techniques such as log roll / straddle slide to maintain spinal precautions without a device, then secure to stretcher	**Consider spinal protection If:** • Neuro Exam: Any focal deficit (weakness or sensory)? • Significant mechanism of injury? • Alertness: Alteration in mental status? • Intoxication: Any evidence? • Distracting Injury: Any painful injury that might distract the patient from the pain of a c-spine injury? • Spinal Exam: Point tenderness or deformities over the spinous process(es) or • Pain with back range of motion?
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary Manage the airway as needed per the Airway Management/Failed Airway Protocol If patient is in shock, treat according to the Shock / Hypoperfusion Protocol	
PARAMEDIC		
TRANSPORT	Transport and contact on-line medical control. Consider a specialty center, if available	

Extremity Trauma

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of > 94% **FRACTURE** • Splint neurologically stable fractures as they are found • For suspected isolated mid-shaft femur fractures without evidence of pelvic fracture: use traction splint as indicated • Grossly angulated long bone fractures with neurovascular compromise may be reduced with gentle unidirectional traction for splinting with on-line medical control **UNCONTROLLED / LIFE THREATENING BLEEDING** • Apply direct pressure over the site of injury, preferably with 1 or 2 fingers • If the wound is amenable to packing, pack tightly with a hemostatic gauze dressing and apply firm pressure continuously for 3 minutes. If bleeding is controlled, secure with a pressure dressing. • If the wound is no amenable to packing, apply an extremity tourniquet using a commercially approved device. Place high on the extremity and tighten until the bleeding has stopped. • If properly tightened and bleeding still not controlled, apply a 2nd tourniquet directly above or below the initial tourniquet. Do not take down or remove the initial tourniquet. **AMPUTATION** • Apply a tourniquet on severely injured extremity when direct pressure or pressure dressing with hemostatic dressing fails to control life-threatening hemorrhage • Place severed extremity in a dry; sterile dressing in a sealed plastic bag and place on top of ice	**Patient Presentation:** The patient may exhibit skeletal or soft tissue injuries to the upper or lower extremities including complete/incomplete amputations, crush or degloving, or other trauma. Clean amputated part, wrap part in sterile dressing soaked in normal saline and place in air tight container. Place container on ice if available Mark the time the tourniquet was applied on the tourniquet and on a visible location on the patient (e.g. forehead). Tourniquets can be left in place upwards of 2 hours without causing long-term complications.
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary If patient is hypotensive, treat according the Hypoperfusion / Shock Protocol Consider Pain Management Protocol	
PARAMEDIC	Monitor EKG	
TRANSPORT	Transport and consider on-line medical control Consider a specialty center, if available	

Eye Trauma

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO2 of > 94% Treat/stabilize any associated injuries according to patient's presentation **Foreign objects not embedded in the eye(s)** Flush with copious amounts of water (preferably sterile) or normal saline from the bridge of the nose outward **Injury to orbits (area around the eye)** Stabilize and immobilize the patients head and spine; apply cold packs if the eyeball is not injured **Lacerations/injuries to the eyeball or globe** Shield affected eyeball and dress other eye to reduce movement; protect globe to minimize loss of ocular fluids: immobilize the patients head and spine and elevate the head to reduce intraocular pressure **Impaled objects** Stabilize object, shield affected eyeball and dress other eye to reduce movement	**Patient Presentation:** The patient may present with profuse bleeding, avulsions, lacerations, foreign objects, impaled objects, and/or soft tissue damage to the eye(s) and/or surrounding facial areas. NOTE: Never apply pressure to the eyeball or globe. If the patient has other associated trauma or burns, transport the patient to the appropriate trauma or burn center. If no other associated trauma, transport to the nearest specialty eye trauma center, if available.
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary Consider Pain Management Protocol	
PARAMEDIC	Monitor EKG	
TRANSPORT	Transport and consider on-line medical control	

Multi System/Severe Trauma

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of > 94% Refer to the Trauma Decision Tree Maintain spinal immobilization, if indicated Treat/stabilize any associated injuries according to presentation – refer to the Extremity Trauma Protocol for any amputations or signs of life-threatening bleeding Assess/treat for signs of shock	**Patient Presentation:** The patient may present with hypovolemic or neurogenic shock, hypotension, hypertension, rapid or slow heart rate, unequal pupils, and shallow or absent respirations, decreased distal pulses, decreasing motor and sensory function in extremities, internal or external bleeding, fractures or lacerations. **Trauma in Pregnancy:** Providing optimal care for the mother = optimal care for the fetus. After 20 weeks gestation (fundus at or above umbilicus) transport patient on left side with 10 – 20° of elevation.
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary Refer to the Hypoperfusion / Shock Protocol for management of hypotension Manage the airway as needed per the Airway Management/Failed Airway Protocol Consider Pain Management Protocol	**Pediatric Trauma:** **Normal age-specific blood pressure** • **0 – 30 days SBP > 60 mmHg** • **1 month - 1 year > 70 mmHg** • **1 - 10 years > 70 + (2 x age) mmHg and** • **11 years and older > 90 mmHg**
PARAMEDIC	Monitor EKG	**Geriatric Trauma:** • Evaluate with a high index of suspicion. • Often occult injuries are more difficult to recognize and patients can decompensate unexpectedly with little warning. • Risk of death with trauma increases after age 65. • SBP < 110mmHg may represent shock / poor perfusion in patients over age 65. • Low impact mechanisms, such as ground level falls might result in severe injury especially in age over 65.
TRANSPORT	Transport, consider a specialty center, and consider on-line medical control **See Regional Trauma Guidelines when declaring Trauma Activation.**	

	Infant <1 yr	Child 1-4yrs	Age 4–Adult
EYES			
4	Open	Open	Open
3	To voice	To voice	To voice
2	To pain	To pain	To pain
1	No response	No response	No response
VERBAL			
5	Coos, babbles	Oriented, speaks, interacts, social	Oriented and alert
4	Irritable cry, consolable	Confused speech, disoriented, consolable	Disoriented
3	Cries persistently to pain	Inappropriate words, inconsolable	Nonsensical speech
2	Moans to pain	Incomprehensible, agitated	Moans, unintelligible
1	No response	No response	No response
MOTOR			
6	Normal, spontaneous movement	Normal, spontaneous movement	Follows commands
5	Withdraws to touch	Localizes pain	Localizes pain
4	Withdraws to pain	Withdraws to pain	Withdraws to pain
3	Decorticate flexion	Decorticate flexion	Decorticate flexion
2	Decerebrate extension	Decerebrate extension	Decerebrate extension
1	No response	No response	No response

Abuse/Neglect/Sexual Assault

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Stabilize and treat injuries according to presentation Dress wounds, but do not attempt to clean The patient may feel more comfortable talking to someone of the same sex Maintain non-judgmental, but caring attitude Preserve crime scene and clothing articles, if practical Consult with law enforcement on scene regarding evidence collection Maintain strict confidentiality Do not perform genital examination Discourage self-treatment (shower, washing, changing clothes etc.) Document the following on PCR: • All verbatim statements made by the patient, parent or caregiver regarding manner of injuries • Be objective with your documentation. Do not make subjective or judgmental statements • Any abnormal behavior of patient, parent, or caregiver • Condition of environment and other residents present • Time the police/welfare agency was contacted and notified • Name of the receiving health care provider and any statements made	**General Information:** Upon entering any scene, EMS providers may suspect or observe evidence supporting abuse, neglect, and an unsafe environment. Such circumstances may be related to geriatrics, adults, children, infants, mentally challenged patients. Regardless of the circumstances, pre-hospital providers must always demonstrate professionalism. The patient may present with no overt evidence of trauma, or may present with bruising, bleeding, or associated physical and/or emotional trauma. • **Geriatric (Elder) Abuse Definition:** Infliction of physical abuse or injury, sexual abuse, pain, mental anguish, confinement or deprivation, or any other circumstances (resource, financial, neglect) that impairs the ability of the elderly to maintain physical or psychological health. Such abuse may occur in a domestic or institutional environment. • **Adult (Spousal) Abuse Definition:** Domestic violence in the form of battering, inflicting injuries, or neglect to a significant other or spouse. Battering includes inflicting control or fear over another by means of violence, intimidation, threatening behavior, psychological abuse, isolation, or other forms of abuse. • **Pediatric (Child and Infant) Abuse Definition:** Physical or emotional impairment as a result of physical injury, emotional negligence, sexual exploitation, or neglect. **In all States, any healthcare professional is a mandatory reporter for suspected pediatric abuse. In most States, the same is true for suspected elder abuse. Be aware of your local reporting requirements and involve law enforcement early if abuse is suspected.** **National Child Abuse Hotline:** • **(800) 422-4453 (800-4-A-CHILD)** • **https://www.childwelfare.gov**
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary	
PARAMEDIC		
TRANSPORT	Transport and consider on-line medical control	

Sepsis

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Obtain Blood Glucose Level Maintain SpO_2 of > 94%	**Adult Sepsis Alert Criteria: TWO of the following** • Tachycardia (HR >120 bpm) • Systolic BP <90mmHg or MAP <65mmHg • Temperature >100.4°F or <96.8°F • Respiratory Rate >20 RPM or EtCO2 <30mmHg Common presentation of sepsis includes elevated body temperature (>100.4°F), however providers should be aware that sepsis can also present with decreased body temperature (<98.6°F), especially in pediatric patients. Septic shock is severe sepsis accompanied by hypotension Heart failure patients may show signs of fluid overload (pedal edema, pulmonary edema), but still require fluid resuscitation. In these patients, consider CPAP if patient is hypoxic or in respiratory distress. Hypotensive septic patients are primarily hypotensive from relative hypovolemia due to third spacing, not cardiogenic shock. When aggressively treating blood pressures, fluid is the necessity and vasopressors are secondary to adequate fluid therapy. **Mean Arterial Pressure (MAP) Calculation:** SBP x 0.33 + DBP x 0.66 = MAP Round decimal numbers to closest whole number *Ex: Blood Pressure 120/80* *120 x .033 = 39.6, rounded to 40* *80 x 0.66 = 52.8, rounded to 53* *40 + 53 = MAP of 93*
ADVANCED EMT	Establish IV/IO normal saline – Consider 2 large bore IVs if possible Administer **Lactated Ringers** at a 30mL/kg bolus  **Pediatric: (use ideal body weight)** **Administer Normal Saline 20mL/kg bolus – for infants and young children consider administration using a "push-pull" method with a three-way stopcock** **May repeat additional 20 mL/kg bolus if persistent evidence of inadequate perfusion.** **Contact Online Medical Control for additional fluid boluses** Consider CPAP for pulmonary edema/hypoxia Obtain 12-Lead EKG	
PARAMEDIC	****SEPSIS ALERT PATIENT**** *If patient meets local Sepsis Alert Criteria* **Pediatrics –** if persistent evidence of shock in spite of 40 – 60 mL/kg of IV fluid boluses. Titrate rate to clinical evidence of adequate end-organ perfusion (monitor for hepatomegaly and rales / crackles on pulmonary exam)  **Epinephrine (1 mg/10 mL or 0.1 mg/mL) IV/IO (for cold shock)** • **0.1 - 1 mcg/kg/min IV** • See Epinephrine Drip Chart (M-EP4) **OR**  **Norepinephrine IV/IO (for warm shock)** • **0.05 – 0.1 mcg/kg/min up to max of 2 mcg/kg/min** **Adults –** if persistent evidence of shock or MAP < 65 mmHg or SBP < 90 mmHg **Norepinephrine (Levophed)** • Initiate 0.05 - 0.3 mcg/kg/minute (typical dosing 5 – 15 mcg/min for 80 kg person) • Titrate to SBP > 90 mmHg or MAP > 65 mmHg • Max dose 30 mcg/min • See Norepinephrine Drip Chart (M-NE1)	

Sepsis

	Treatment	Notes
TRANSPORT	Transport and consider on-line medical control Notify incoming facility of a **SEPSIS ALERT PATIENT**	**Pediatric Sepsis** May develop insidiously. Patients more commonly have "cold shock" with weak pulses, mottling, and prolonged capillary refill, but may present with "warm shock" with hyperdynamic precordium, bounding pulses, and flash capillary refill. Changes in mental status – irritability, drowsiness, inappropriate crying, lethargy, inappropriate interactions with caregiver, or confusion – are important clues as well. Pediatric patients develop hypotension LATE in the disease process. Hypotension is not required to diagnose shock in pediatrics. Evidence of purpura or petechiae below the nipple line are important clues for invasive bacterial infections Pediatric patients with sepsis are at risk of developing hypoglycemia. Early blood sugar measurement should be performed.

Hazardous Materials Exposure

Treatment		Notes
EMT	Ensure the scene is safe Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of >94% Triage and decontaminate if indicated Protect the patient from the environment and ensure the patient is not /does not become hypothermic Consider use of **ATNAA/MARK 1** if indicated	**Differential** • Nerve agent exposure (e.g., VX, Sarin, Soman, etc.) • Organophosphate exposure • (pesticide) • Vesicant exposure (e.g., Mustard • Gas, etc.) • Respiratory Irritant Exposure (e.g., • Hydrogen Sulfide, Ammonia, Chlorine, etc.) **Signs and Symptoms** • Salivation • Lacrimation • Urination; increased, loss of control • Defecation / Diarrhea • GI Upset; Abdominal pain / cramping • Emesis • Muscle Twitching • Seizure Activity • Respiratory Arrest **Notes** Patient may present with a wide array of signs and symptoms due to the variables of substance exposure. Any patient who is exposed to a hazardous material is considered contaminated until the patient is decontaminated thoroughly. All emergency response personnel who come into close contact with hazardous materials should receive an appropriate medical examination post-incident.
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary Manage the airway as needed per the Airway Management/Failed Airway Protocol	
PARAMEDIC	Monitor EKG	
TRANSPORT	Transport and consider on-line medical control Notify MTF of possible exposer to patient	

Nerve Agent Exposure

Treatment

EMT

Ensure the scene is safe

Initiate Universal Patient Care

Request ALS assistance

Maintain SpO_2 of >94%

Triage and decontaminate if indicated

Isolate the area and notify dispatch of possible Mass Casualty Incident (MCI) with possible Nerve Agent involvement. Declare yourself a casualty, if exposed

- Blot off agent
- Strip off all clothing, avoiding contact with outer surfaces
- Flush area(s) with copious amounts of water
- Cover affected areas

Protect the patient from the environment and ensure the patient is not /does not become hypothermic

Consider use of **ATNAA/MARK 1** kit, if indicated

ADVANCED EMT

Establish IV/IO normal saline KVO, if necessary

- Do not initiate IV in injured extremity
- Consider Fluid Therapy
- **Normal Saline** Administer 20 mL/kg

Titrate to a systolic BP of 90 mmHg

PARAMEDIC

Monitor EKG

For continuous symptoms in spite of administration of 3 antidote kits:

Atropine

- Atropine 2-4 mg IV/IO
- Repeat every 5 min until secretions are cleared

- **Atropine 0.05 mg/kg IV/IM**
- **If no response (excess secretions not diminished) repeat Atropine 0.05 mg/kg IV/IM in 20 minutes**

Manage the airway as needed per the Airway Management/Failed Airway Protocol if needed

Consider Pain Management Protocol if needed

Consider Seizures Protocol if needed

TRANSPORT

Transport and consider on-line medical control

Notify MTF of possible Never Agent Exposer

Notes

MILD SYMPTOMS

Runny nose, cough, pinpoint pupils, lacrimation

MODERATE SYMPTOMS

Runny nose, cough, sweating, nausea, abdominal pain, trouble seeing, wheezing, dyspnea

SEVERE SYMPTOMS

Moderate symptoms, PLUS vomiting, diarrhea, drooling, copious secretions, weakness, seizures, altered mental status, apnea

Signs and Symptoms

- Salivation
- Lacrimation
- Urination; increased, loss of control
- Defecation / Diarrhea
- GI Upset; Abdominal pain / cramping
- Emesis
- Muscle Twitching
- Seizure Activity
- Respiratory Arrest

Differential

- Nerve agent exposure (e.g., VX, Sarin, Soman, etc.)
- Organophosphate exposure
- (pesticide)
- Vesicant exposure (e.g., Mustard
- Gas, etc.)
- Respiratory Irritant Exposure (e.g.,
- Hydrogen Sulfide, Ammonia,
- Chlorine, etc.)

Specialty Care Patients

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of >94% **PREVIOUSLY ESTABLISHED ELECTROLYTE AND/OR GLUCOSE CONTAINING PERIPHERAL IV LINES:** • Turn off when directed (either by trained caregiver or on-line medical control) **PREVIOUSLY APPLIED DERMAL MEDICATION DELIVERY SYSTEMS:** • Remove dermal NTG when indicated (CPR, shock) **PREVIOUSLY ESTABLISHED IV MEDICATION DELIVERY SYSTEMS AND/OR OTHER PREEXISTING TREATMENT MODALITIES WITH PRESET RATES:** • If the person responsible for operating the device is unable to continue to provide this function during transport, contact MTF • BLS providers shall only leave the device as found or turn it off • Transport and rendezvous with ALS Transports to another facility or home • No wait period is necessary for routine oral/dermal medications or completed aerosol treatments • Check for prior IV, IM, SQ and nonroutine PO medication delivery to assure minimum wait period of 30 minutes • If there is a central line, the tip of which lies in the central circulation, the catheter MUST be capped with a device that occludes the end.	**Patient Presentation:** The patient may present with pre-existing medical interventions such as IV (may be medicated), monitors, or patient controlled medication pumps. When encountered, the patient and caregiver (person trained to operate/monitor the intervention) shall be transported. Existing settings/rates shall be maintained unless on-line medical control directs changes.
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary	
PARAMEDIC	Monitor EKG **PREVIOUSLY ESTABLISHED ELECTROLYTE AND/OR GLUCOSE CONTAINING IV SOLUTIONS:** • Adjust rate • Turn off when directed (either by trained caregiver or on-line medical control) **PRE-EXISTING EXTERNAL VASCULAR ACCESS (CONSIDERED TO BE IV KVO):** • To be used for definitive therapy ONLY **PREVIOUSLY ESTABLISHED AND LABELED IV MEDICATION DELIVERY SYSTEMS WITH PRESENT RATES AND/OR OTHER PREEXISTING TREATMENT MODALITIES:** • Maintain at preset rates • Discontinue or take a caregiver with you **IF NO MEDICATION LABELED OR NO IDENTIFICATION OF INFUSING SUBSTANCE:** • Discontinue	
TRANSPORT	Transport and consider on-line medical control	

Poisoning Overdose

Treatment

EMT

Ensure the scene is safe

Initiate Universal Patient Care

Request ALS assistance

Establish safe perimeter, don personal protective gear as needed or directed

Triage and perform gross decontamination, if indicated

Special attention should be directed at airway protection, place patient in recovery position (lateral recumbent position)

Inhaled toxins should be treated with supplemental oxygen to maintain Sp02 of 94% unless specifically contraindicated

Confirm blood glucose level

If suspected opioid overdose and Sp02 is < 94% administer

Naloxone IN

- Naloxone 2 mg IN (1 mg per nares)
- If no response in 5 minutes, may repeat Naloxone 2 mg IN
- Maximum pre-hospital dose is 4 mg. Call medical control for additional dosing

ADVANCED EMT

Establish IV/IO NS KVO

Obtain a 12-lead EKG for all suspected poisonings

For suspect opioid overdose:

Naloxone IV/IM

- Administer 2 mg slow IV until the patient is breathing spontaneously and can maintain a pulse oximetry reading of 94%. May repeat once in 5 minutes
- Maximum total dose in 4 mg. Call medical control for additional dosing

- **0.1 mg/kg IV/IM/IN (max 1 mL per naris)**
- **Maximum dose of 2 mg IV/IM**
- **Maximum dose of 4 mg IN**

PARAMEDIC

SUSPECTED ORGANOPHOSPHATE POISONING

- Consider Nerve Agent Exposure Protocol

SUSPECTED TRICYCLIC ANTIDEPRESSANT (TCA) OVERDOSE

- Obtain 12-lead EKG. Look for – QRS > 100 msec, R wave in aVR > 3 mm, deep S wave in I or aVL
- Treat hypotension per Shock / Hypoperfusion Protocol
- **Sodium Bicarbonate** 1 mEq/kg IV/IO – check for QRS narrowing

SUSPECTED CALCIUM CHANNEL BLOCKER OVERDOSE

- 20 mL/kg IV bolus of **Normal Saline**
- For hypotension - **Calcium Gluconate 10%** 20 mg/kg IV/IO (max 3 g) over 5 to 10 min
- For bradycardia - **Glucagon** 1 to 5 mg IV push, repeat 10 min to max of 15 mg
- For persistent hypotension – Norepinephrine per Shock / Hypoperfusion protocol

SUSPECTED ASPIRIN OVERDOSE

- Push **Sodium Bicarbonate** 1-2 mEq/kg (max 100 mEq) over 3-5 minutes
- Administer **Dextrose 10%** 250 mL for altered LOC regardless of finger stick blood glucose

Notes

Differential Diagnosis

- **Tricyclic (TCA)**: sedation, confusion or delirium, hallucinations, cardiac conduction delays, arrhythmias, hypotension, hyperthermia, flushing, mydriasis (dilated pupils), dry mouth, urinary retention
- **Acetaminophen**: initially normal or nausea/vomiting. If not detected and treated, causes irreversible liver failure
- **Aspirin**: Tinnitus, hyperpnea (rapid, deep breathing), vertigo, nausea, vomiting, diarrhea, altered mental status, and coma. Early signs consist of abdominal pain and vomiting. Tachypnea and altered mental status may occur later.
- **Anti-depressants**: SSRIs rarely cause significant toxicity in isolated ingestions. May cause serotonin syndrome – hyperthermia, diaphoresis, eye twitching, tremors, hypertonia, hyperreflexia, ankle clonus. Citalopram is associated with seizures – treat with benzodiazepines per Seizure protocol – and QT prolongation, which can lead to Torsades – treat with Magnesium per V Fib / V Tach protocol
- **Opiates:** drowsiness, sedation, decreased respiratory drive, miosis, constipation
- **Stimulants**: tachycardia, hypertension, hyperthermia, diaphoresis, delirium, agitation, mydriasis, seizures
- **Anticholinergic**: tachycardia, hyperthermia, flushing, mydriasis, dilated pupils, altered mental status / hallucinations, dry skin, urinary retention
- **Cardiac Medications**: dysrhythmias, bradycardia, hypotension, and mental status changes
- **Solvents**: nausea, coughing, vomiting, and mental status changes
- **Organophosphate / cholinergic**: increased or decreased HR, increased secretions, nausea, vomiting, diarrhea, pinpoint pupils – treat with atropine per Nerve Agent exposure protocol

Poisoning Overdose

	Treatment	Notes
TRANSPORT	Transport and consider on-line medical control	POISON Help 1-800-222-1222

Effective Date 1 Jan 2022 | TE1

Hyperthermia/Heat Related Emergencies

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of >94% Remove patient from hot environment Cool patient to room temperature If suspected heat stroke, e.g., seizures, altered mental status, LOC, then aggressively cool patient and place in a semi-fowlers position • Wet patient with water or IV solution (evaporation process) • Ice packs should be applied to axilla, neck, and groin regions If patient is fully conscious and NOT nauseated, allow patient to drink electrolyte rich fluids.	**Patient Presentation:** The patient may exhibit some of the following: 1. Heat Cramps: Moist, cool skin temperature, cramps, normal to slightly elevated temperature. 2. Heat Exhaustion: Moist, cool skin, cramps, weakness, dizziness, normal to elevated temperature, nausea. 3. Heat Stroke: Hot, dry skin (25% of patients will still be moist), seizures, altered mental status, dilated pupils, rapid heart rate or arrhythmia. **NOTE:** Do not give anything by mouth to a patient with altered mental status. Minor heat stress patients require only supportive care, monitoring and movement from the environment.
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary Consider Fluid Therapy: • **Normal Saline**- Administer 20 mL/kg bolus • Titrate to a systolic BP of 90 mmHg • May repeat one time	
PARAMEDIC	Monitor EKG	
TRANSPORT	Transport and consider on-line medical control	

Hypothermia/Cold Exposure

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of >94% Remove the patient from the cold environment. Insulate from ground/shield from wind & water Remove wet clothing to prevent further heat loss, replace with dry blankets Use a thermal type blanket with special attention to covering the patient's head Passively re-warm the patient in a warm environment (warm blankets, heat packs to neck, axilla, and inguinal areas). For patients with severe hypothermia, rewarm the trunk prior to rewarming the extremities to minimize temperature after drop Handle potentially frostbitten areas gently Protect from further heat loss Core temperatures can be approximated through measurement of rectal temperatures	Patient Presentation: The patient may exhibit the following: • **Mild hypothermia 90-95° F (32-35°C)**: Patient may present with a history of exposure to cold, is alert but with altered level of consciousness, shivering, loss of gross motor function. • **Moderate hypothermia 82-90° F (28-32°C)**: Has decreased level of consciousness – may be unconscious – and may or may not be shivering • **Severe hypothermia < 82° F (< 28°C)**: Unconscious and not shivering CPR: Severe hypothermia may cause cardiac instability and rough handling of the patient theoretically can cause ventricular fibrillation. This has not been demonstrated or confirmed by current evidence. Intubation and CPR techniques should not be with-held due to this concern. Intubation can cause ventricular fibrillation so it should be done gently by most experienced person. Below 86°F (30° C) antiarrhythmics may not work and if given should be given at increased intervals. Contact medical control for direction. Epinephrine / Vasopressin can be administered. Below 86° F (30°C) pacing should not utilized. Consider withholding CPR if patient has organized rhythm or has other signs of life. Contact Medical Control. If the patient is below 86° F (30° C) then defibrillate 1 time if defibrillation is required. Deferring further attempts until more warming occurs is controversial. Contact medical control for direction. Hypothermia may produce severe bradycardia so take at least 60 seconds to palpate a pulse.
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary Monitor EKG and oxygen saturation If available administer warmed (40-42°C) crystalloids During re-warming initiate Pain Management Protocol as necessary	
PARAMEDIC	Manage the airway as needed per the Airway Management/Failed Airway Protocol	
TRANSPORT	Transport and consider on-line medical control	

Bites and Envenomation

Treatment

EMT

Initiate Universal Patient Care

Request ALS assistance

Maintain SpO2 of >94%

Identify markings (insects, bites, needle stick, etc.)

Immobilize extremity

Consider the application of cold packs for pain relief – **NOT indicated for pain related to snakebites**

If patient exhibits signs/symptoms of moderate/severe allergic reaction:

Epinephrine Auto-Injector

- Epinephrine Auto-Injector (0.3mg) IM
- May repeat dose (0.3mg) IM once in 10 minutes

- **Weight < 30kg - administer one dose (0.15 mg) IM into the outer mid-thigh**
- **Weight > 30kg - administer one dose (0.3 mg) IM into the outer mid-thigh**

Insect Stings

Remove stinger if visible: See Insect Stinger Removal

Snakebites

- Remove all jewelry/constricting items from affected limb
- Mark area of envenomation to track progression
- Maintain extremity level with heart
- Do not apply tourniquets or constricting bands
- Splint affected area in neutral position
- Opioids preferred for pain management rather than NSAIDs

Jellyfish/Man-o-War

- Remove visible tentacles with forceps
- Avoid self-contamination
- Rinse with salt water
- Rinse with normal saline and scrape with tongue depressor to remove remaining tentacles
- Immerse affected body part in hot water (113°F/45°C)

ADVANCED EMT

Establish IV/IO normal saline KVO, if necessary

- Do not initiate IV in injured extremity
- Consider Fluid Therapy
- **Normal Saline** Administer 20 mL/kg
- Titrate to a systolic BP of 90 mmHg

PARAMEDIC

Monitor EKG

Manage the airway as needed per the Airway Management/Failed Airway Protocol

Consider Pain Management Protocol

TRANPORT

Transport and consider on-line medical control

Notes

Differential

- Animal bite
- Human bite
- Snake bite (venomous)
- Spider bite (venomous)
- Insect sting / bite (bee, wasp, ant, tick)
- Infection risk
- Rabies risk
- Tetanus risk

POISON Help™ 1-800-222-1222

Near Drowning

	Treatment	Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of > 94% Remove wet clothing and wrap patient in blankets Protect from and/or treat hypothermia as per Hypothermia/Cold Exposure protocol Consider Head and Spinal Cord Trauma protocol	**Patient Presentation:** The patient may present with an altered level of consciousness, dyspnea, cyanosis, vomiting, seizures, or cardiopulmonary arrest. **NOTE**: Enter water only if trained and as a last resort (Reach, Throw, Row and Go with assistance). All near-drowning victims should be transported even if they appear uninjured or appear to have recovered.
ADVANCED EMT	Establish IV/IO NS KVO if possible, with warm IV fluids Manage the airway as needed per the Airway Management/Failed Airway Protocol	
PARAMEDIC	Monitor EKG	
TRANSPORT	Transport and consider on-line medical control	

Dive Depressurization Injuries

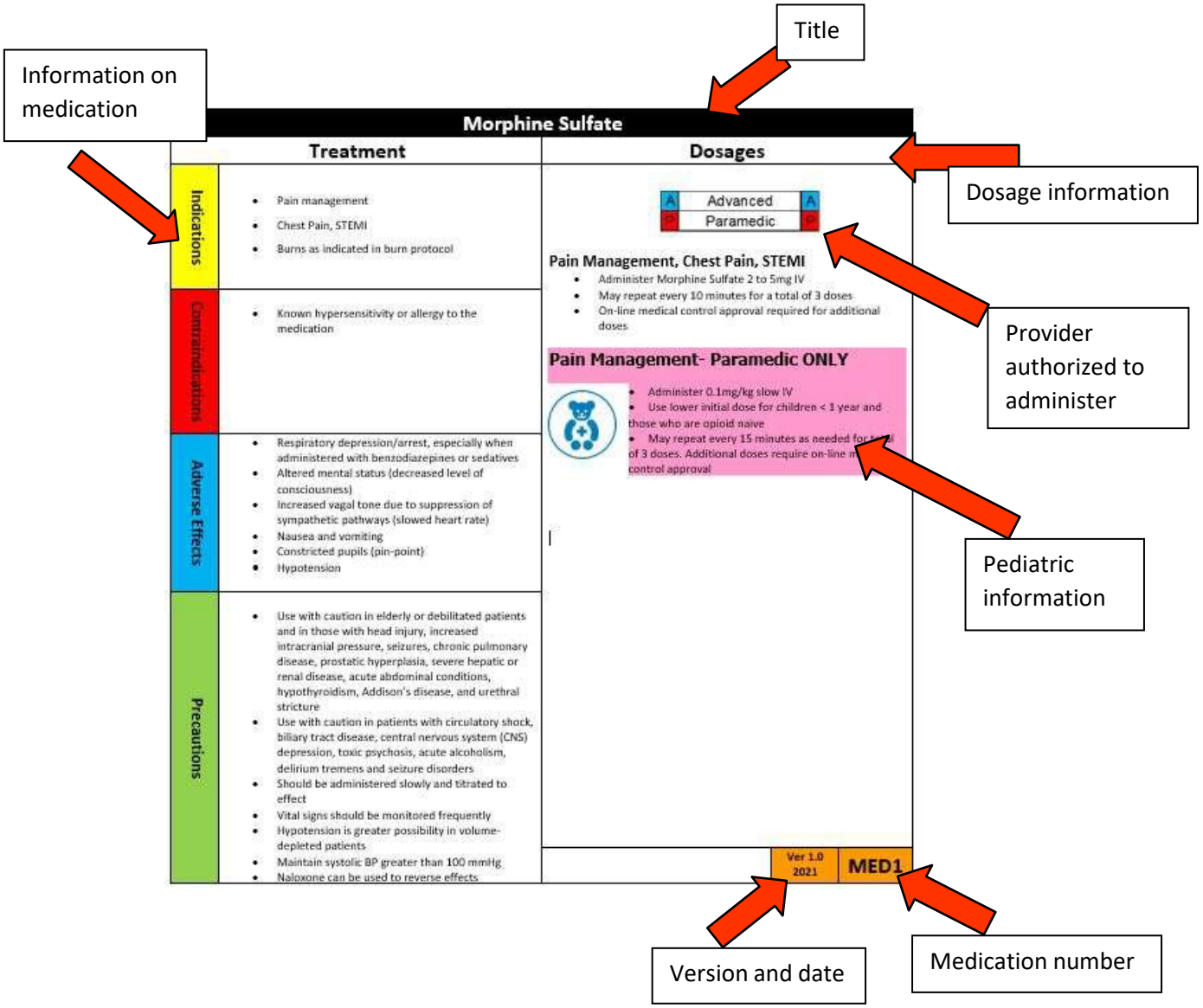
Treatment		Notes
EMT	Initiate Universal Patient Care Request ALS assistance Maintain SpO_2 of > 94% Remove wet clothing and wrap patient in blankets Protect from and/or treat hypothermia per Hypothermia/ Cold Exposure protocol Administer high-flow oxygen at the highest rate available via a non-rebreather Treat associated traumatic injuries Place patient with the head of the bed angled downward, have suction n ready	**Patient Presentation:** The patient may present with a history of Self-Contained Underwater Breathing Apparatus (SCUBA) use, breathing in a pressurized environment, or altitude chamber usage with sudden depressurization. Patients may present with any of the following symptoms: fatigue, itching, pain, vertigo, focal weakness, visual disturbances, speech difficulty, marbled rash, numbness, tingling, confusion, seizure and/or cardiac arrest. **1. Navy Diving Personnel:** For Navy diving personnel, contact on-duty Navy Dive Medical Officer (DMO) at the numbers listed below for consultation and transportation destination determination IAW U.S. Navy Dive Manual, Revision 7. Emergency consultation is available 24 hours a day. **Primary**: Navy Experimental Diving Unit (NEDU) Commercial (850) 230-3100 or (850) 235-1668, DSN 436-4351 **Secondary:** Navy Diving Salvage and Training Center (NDSTC) Commercial (850) 234-4651, DSN 436-4651 **2. Civilian Diving Personnel:** For civilian diving personnel contact the Diver's Alert Network (DAN) at (919) 684-9111 for consultation and transport destination determination. **3. Resuscitation of a Pulseless Diver:** CPR must begin immediately and an AED should be placed on the victim as soon as possible. All efforts should be made to immediately transport the patient to the highest level of medical care available while continuing basic life support (BLS) measures. If the pulseless diver regains vital signs, continue or begin transport to the nearest critical care facility prior to recompression. Effective rescue breathing, chest compressions, and immediate evacuation to a medical facility is the most viable treatment for drowning victims. Delays in access to a critical care facility will most likely result in an unfavorable outcome for the victim. A pulseless diver should not be recompressed unless there is no possibility of evacuation. **4. Medical Treatment During Transport:** Always have the patient breathe 100 percent oxygen during transport if available. If symptoms of decompression sickness or arterial gas embolism are relieved or improve after breathing 100 percent oxygen, the patient should still be recompressed as if the original symptom(s) were still present. Always ensure the patient is adequately hydrated. Give fluids by mouth if the patient is alert and able to tolerate them. Otherwise, an IV should be inserted and intravenous fluids should be started before transport. If the patient must be transported, initial arrangements should have been made well in advance of the actual diving operations. These arrangements, which would include an alert notification to the recompression chamber and determination of the most effective means of transportation, should be posted on the Job Site Emergency Assistant Checklist for instant referral. **5. Transport by Unpressurized Aircraft:** If the patient is moved by helicopter or other unpressurized aircraft, the aircraft should be flown as low as safely possible, preferably less than 1,000 feet. Exposure to altitude results in an additional reduction in external pressure and possible additional symptom
ADVANCED EMT	Establish IV/IO normal saline KVO, if necessary Consider **Normal Saline** 20 mL/kg; May repeat one additional dose	
PARAMEDIC	Monitor EKG For painful injuries, refer to Pain Management Protocol	
TRANSPORT	Contact on-line medical control for transport decisions: ED vs. Hyperbaric Chamber	

SECTION 4

Pharmacology

Section 4: Pharmacology

A pharmaceutical drug, also called a medication or medicine, is a chemical substance used to treat, cure, prevent, or diagnose a disease or to promote well-being. These medications are part of the official policy of the EMS system and are approved by representatives of the medical advisory committee. The EMS treatment medications are implemented as standing orders.



Acetaminophen (Tylenol)

Treatment

Indications

- Antipyretic (Reduce Fever)
- Seizures in Pediatric Patients
- Pain Relief

Contraindications

- Known hypersensitivity
- Severe hepatic disease

Adverse Effects

- Skin rashes

Precautions

- Patients with known liver disease
- History of alcohol use / abuse

Dosages

E	EMT
A	Advanced
P	Paramedic

Adult

- Administer 1 (one) 500 mg tab PO (extra strength) OR 2 (two) 325 mg tabs PO (regular strength)

Pediatric (liquid formulation – 160 mg/5 mL)

- **Administer 15 mg/kg PO for fevers ≥ 100.4°F or for acute pain. Max dose as described for adults**

	Effective Date 1 May 2022	**M-AC1**

Adenosine

Treatment

Indications

- Conversion to sinus rhythm in patients with supraventricular tachycardia (SVT)

Contraindications

- Known hypersensitivity
- 2nd or 3rd degree heart block
- Atrial fibrillation or flutter
- Sick sinus syndrome

Adverse Effects

- Conduction disturbances - 1st, 2nd, or 3rd degree heart block
- Prolonged sinus pause
- Transient arrhythmias - atrial fibrillation, PVCs
- Chest pressure
- Headache
- Dizziness
- Facial Flushing
- Dyspnea
- Nausea
- Hypotension

Precautions

- Effects antagonized by theophylline
- Effects enhanced by dipyridamole (persantine), digitalis, calcium channel blockers, and benzodiazepines such that dose of adenosine must be reduced for patients on these medications
- Be prepared for prolonged period of asystole after administration followed by potential transient arrhythmias
- Use with cause in elderly, who may be more likely to develop hypotension, bradycardia, or AV block after administration

Dosages

P Paramedic ONLY P

Adult

- Administer 6mg rapid IV followed by rapid 20 mL NS flush
- Administer 12mg rapid IV followed by 20 mL NS flush if no response with initial dose within 2 minutes
- Administer second dose of 12mg rapid IV if no response within 2 minutes
- On-line medical control approval required for additional doses

Pediatric

- **On-line medical control approval is required**
- **Administer 0.1 mg/kg rapid IV (maximum dose 6mg) followed by rapid flush with 5 mL NS (infants) to 10 mL NS (children)**
- **If no response within 2 minutes, administer 0.2 mg/kg rapid IV (maximum dose 12mg)**
- **On-line medical control approval required for additional doses**

Albuterol Sulfate (Metered Dose Inhaler)

Treatment

Indications

- Relief of bronchospasm with reversible obstructive airway disease and acute attacks of bronchospasm

Contraindications

- Known hypersensitivity

Adverse Effects

- Tachycardia
- Palpitations
- Peripheral vasodilatation
- Tremors
- Nervousness
- Headache
- Sore throat
- PVCs
- Nausea and vomiting

Precautions

- Bronchospasm may worsen in rare situations due to patient tolerance or hypersensitivity
- If respirations worsen, consider discontinuing use
- Should be used with caution in patients with hyperthyroidism or coronary artery disease
- Use with caution when administering to patients taking MAO inhibitors or tricyclic antidepressants which may be potentiated by albuterol

Dosages

E	EMT	E
A	Advanced	A
P	Paramedic	P

Adult

- Administer two puffs (90 mcg each) via metered dose inhaler
- May repeat dosage of two puffs (90 mcg each) once in 5 minutes

Pediatric

- **Administer two puffs (90 mcg each) via metered dose inhaler**
- **May repeat dosage of two puffs (90 mcg each) in five minutes**
- **On-line medical control approval required for additional doses**

Effective Date	
1 Jan 2022	**M-AS1**

Albuterol Sulfate - Nebulizer

Treatment

Indications

- Acute asthma attack
- Bronchospasm associated with asthma or COPD that does not respond to first dose of MDI albuterol
- Bronchospasm in chronic bronchitis and emphysema

Contraindications

- Known hypersensitivity

Adverse Effects

- Tachycardia
- Palpitations
- Peripheral vasodilatation
- Tremors
- Nervousness
- Headache
- Sore throat
- PVCs
- Nausea and vomiting

Precautions

- Bronchospasm may worsen in rare situations due to patient tolerance or hypersensitivity
- If respirations worsen, consider discontinuing use
- Should be used with caution in patients with hyperthyroidism or coronary artery disease
- Use with caution when administering to patients taking MAO inhibitors or tricyclic antidepressants which may be potentiated by albuterol

Dosages

E	EMT	E
A	Advanced	A
P	Paramedic	P

Adult

- Albuterol Sulfate 2.5 mg to 5 mg
- If no improvement, may administer two (2) additional doses at 5-minute intervals.

Pediatric

- **Albuterol Sulfate 2.5 mg**
- **If no improvement, may administer two (2) additional doses at 5-minute intervals.**

Effective Date 1 Jan 2022	M-AS2

Amiodarone

Treatment

Indications

- Antidysrhythmic for the management of Ventricular Fibrillation / Ventricular Tachycardia without pulse
- Management of regular and irregular wide complex tachycardia in stable patients

Contraindications

- Hypersensitivity
- 2nd or 3rd degree heart block or bradycardia causing syncope
- Cardiogenic shock

Adverse Effects

- Severe hypotension
- Profound bradycardia

Precautions

- Rapid infusion may lead to hypotension
- Sympathomimetic toxidromes (i.e. cocaine or amphetamine overdose)
- NOT to be used to treat ventricular escape beats or accelerated idioventricular rhythms

Dosages

P Paramedic ONLY P

Adult

Ventricular Fibrillation / Ventricular Tachycardia:

- Administer 300 mg IV/IO
- May administer one additional dose 150 mg IV/IO in 4 minutes

Regular and irregular wide complex tachycardia in stable patients:

- Amiodarone 150 mg IV over 10 minutes

Pediatric

Ventricular Fibrillation / Ventricular Tachycardia:

- **Administer 5 mg/kg IV/IO**
- **May repeat up to s doses**
- **MAX 15 mg/kg IV total**

Aspirin

Treatment

Indications

- Suspected cardiac related chest pain
- Acute Coronary Syndrome
- ST Elevated Myocardial Infarction (STEMI)

Contraindications

- Known hypersensitivity, including allergy to aspirin
- Not indicated in children < 18 years of age

Adverse Effects

- Increased risk of bleeding
- Heartburn
- Nausea and vomiting

Precautions

- May cause an increased risk of GI bleeding or hemorrhagic CVA. Is uncommon at low doses and risk depends on individual patient susceptibility
- The use of anticoagulants does not preclude a patient from the administration of aspirin

Dosages

E	EMT	E
A	Advanced	A
P	Paramedic	P

Adult

- Administer 325mg or 324mg (4 chewable oral 81 mg tablets)

Effective Date 1 May 2022

M-ASA

ATNAA/MARK 1

Treatment

Indications

- Nerve agent exposure or organophosphate (pesticide) poisoning
- Use for self-aid or buddy aid for public safety personnel
- Use on exposed patients (public) only if local community EMS ChemPack is available

Contraindications

- None with the presence of life-threatening exposure to nerve agents or organophosphate insecticides

Adverse Effects

- Pain at injection site
- Dryness of mouth
- Dizziness
- Blurred vision

Precautions

- Reassess symptoms after administration
- If symptoms persist or worsen after the administration of three (3) ATNAA/MARK 1 kits, obtain on-line medical control approval before administration of additional doses

Dosages

E	EMT	E
A	Advanced	A
P	Paramedic	P

Adult Mild Exposures

- Administer one (1) ATNAA/Mark 1 kit (2 mg atropine/600 mg pralidoxime)

Adult Severe Exposures

- Administer three (3) ATNAA Mark 1 kits (total of 6 mg atropine/1800 mg pralidoxime)
- On-line medical control approval required for additional doses

Pediatric Mild Exposures

- **Administer one (1) ATNAA/MARK 1 kit (2 mg atropine/600 mg pralidoxime)**

Pediatric Severe Exposures

- **Administer three (3) ATNAA MARK I kits (total of 6 mg atropine/1800 mg pralidoxime)**
- **On-line medical control approval required for additional doses**

Atropine

Treatment

Indications

- Symptomatic bradycardia
- Organophosphate (Nerve Agent) poisoning- extremely large doses may be needed

Contraindications

- Known hypersensitivity
- Dysrhythmias in which enhancement of conduction may accelerate ventricular rate and cause decreased cardiac output (e.g., atrial fibrillation, atrial flutter, or PAT with block)
- Relative contraindications (weigh risk/benefits.):
  - AV block at His- Purkinje level (second-degree Type II AV Block and third-degree AV Block)
  - Suspected acute myocardial infarction or ischemia
  - Glaucoma

Adverse Effects

- Excessive doses of atropine can cause delirium, restlessness, disorientation, tachycardia, coma, flushed and hot skin, ataxia, blurred vision, dry mucous membranes.
- Ventricular fibrillation and tachycardia have occurred following IV administration of atropine

Precautions

- Use with caution in presence of myocardial ischemia and hypoxia

Dosages

P Paramedic ONLY P

Adult

Bradycardia*:*

- Administer 0.5 mg IV
- May repeat every 3 to 5 minutes to a total prehospital dose of 3 mg

Organophosphate *poisoning*:

- Administer 2 - 4 mg IV or IM every 5 minutes until clearing of secretions

Pediatric

Symptomatic Bradycardia:

- **Administer 0.02 mg/kg IV, minimum dose 0.1 mg**
- **May repeat once in 3-5 min**
- **Max pre-hospital dose for child is 1 mg**

Organophosphate poisoning:

- **If <12 years, administer 0.05 mg/kg IV or IM every 10 minutes until excess secretions are diminished**

Effective Date 1 Jan 2022	M-AT1

Calcium Gluconate

Treatment

Indications

- Cardiac arrest with highly suspected hyperkalemia, calcium channel toxicity beta blocker toxicity
- Renal Failure, Dialysis

Contraindications

- Known hypercalcemia
- Suspected digoxin toxicity (i.e. digoxin overdose)

Adverse Effects

- Hypotension
- Bradycardia
- Ventricular Fibrillation
- Cardiac arrest
- Abdominal Pain
- Nausea/vomiting

Precautions

- Use with caution on digitalized patients taking digitalis, may cause serious cardiac arrhythmias
- Will cause precipitate to form if given with sodium bicarbonate

Dosages

P Paramedic ONLY P

Adult

Suspected hyperkalemia with EKG changes:

- Administer 1 to 2 grams IV/IO over 2 to 3 minutes

Cardiac Arrest with suspected hyperkalemia:

- Administer 1 to 2 grams IV/IO over 2 to 3 minutes

Calcium Channel Blocker Overdose:

- Administer 2 to 4 grams IV/IO over 5 minutes
- On-line medical control approval required for additional doses (can be given every 10 – 20 min)

Pediatric

Cardiac Arrest with suspected hyperkalemia:

- **Administer 60 mg/kg in 50 mL NS slow IV over 2 to 3 minutes (max dose 3 g)**

Effective Date 1 Jan 2022	M-CG1

Dextrose

Treatment

Indications

- Adults with symptomatic hypoglycemia (blood glucose level < 60 mg/dL)
- Pediatrics - altered mental status with hypoglycemia (blood glucose < 60 mg/dL)

Contraindications

- Known hyperglycemia

Adverse Effects

- May cause hyperglycemia (high blood sugar)

Precautions

- May worsen pre-existing hyperglycemia
- Tissue necrosis if extravasation occurs

Dosages

A	Advanced	A
P	Paramedic	P

Adult

- Administer D50W 25 grams IV/IO
- May repeat in 10 minutes if repeat blood glucose level is < 60 mg/dL and continued altered level of consciousness

Pediatric

- **Administer D10W 0.5 g/kg IV/IO – 5 mL/kg**
- **Re-check blood glucose in 10 minutes. May repeat if blood glucose < 60 mg/dL with persistent altered level of consciousness**

Diphenhydramine (Benadryl)

Treatment

Indications

- Mild/moderate allergic reactions

Contraindications

- Known allergy to diphenhydramine

Adverse Effects

- Drowsiness
- Dizziness
- Loss of coordination
- Blurred vision
- Headache
- Hypotension
- Tachycardia
- Chest tightness
- Palpitations
- Thickening of bronchial secretions
- Wheezing

Precautions

- Severe vomiting
- Alcohol intoxication
- Asthma patients
- Nursing mothers

Dosages

A	Advanced	A
P	Paramedic	P

Adult

- Administer 25 to 50 mg IV/IM/IO
- IV route slow over two (2) minutes

Pediatric (Not for < 1 year of age)

- **Administer 1 mg/kg IV/IM/IO (maximum single dose 50 mg)**
- **Administer IV route slowly over two (2) minutes**

Effective Date 1 Jan 2022

M-DY1

Epinephrine Auto-Injector

Treatment

Indications

- Moderate to severe allergic reaction with respiratory distress

Contraindications

- None in the presence of anaphylaxis

Adverse Effects

- Tachycardia
- Palpitations
- Angina
- Headache
- Nausea/Vomiting
- Dizziness
- Hypertension
- Nervousness/Anxiety
- Tremors

Precautions

- Unless in severe allergic reaction or severe asthma, on-line medical consultation should be obtained before administering to pregnant or cardiac patients

Dosages

E	EMT	E
A	Advanced	A
P	Paramedic	P

Adult (> 5 years of age or > 30kg)

- Administer one dose (0.3 mg) IM
- May repeat one dose (0.3 mg) IM in 10 minutes
- Preferred site of administration is the lateral thigh

Pediatric (< 5 years of age or < 30kg) – Pediatric Auto-Injector

- **Administer one dose (0.15 mg) IM for**
- **Preferred site of administration is the lateral thigh**

Epinephrine 1 mg/mL

Treatment

Indications

- Severe allergic reaction / anaphylaxis
- Bronchial asthma
- Bronchospasm unresponsive to inhaled beta-agonists

Contraindications

* No absolute contraindications when administered for a life-threatening emergency

- Hypersensitivity / allergy to epinephrine
- Preexisting tachydysrhythmias with a pulse (ventricular and supraventricular)
- Use with pregnant women should be avoided whenever possible

Adverse Effects

- Tachydysrhythmias (supraventricular and ventricular)
- Hypertension
- Chest pain
- Headache
- Anxiety
- Nervousness
- Dizziness
- Diaphoresis
- Nausea & vomiting
- Rebound edema may occur 20 to 30 minutes after administration to croup patients

Precautions

- Give cautiously in patients (especially elderly patients) with hypertension, tachycardia, diabetes, uncontrolled hyperthyroidism or pregnancy
- Do not mix with sodium bicarbonate
- Epinephrine causes dramatic increase in myocardial oxygen consumption
- Keep solution protected from light prior to usage

Dosages

A	Advanced	A
P	Paramedic	P

Allergic Reaction / Anaphylaxis / Asthma

- Administer: 0.3-0.5mg IM
- May repeat once every 5 minutes up to 3 doses

- **Weight < 30 kg: administer 0.15 mg IM to the lateral thigh**
- **Weight > 30 kg: administer 0.3 mg IM to the lateral thigh**
- **May repeat every 5 minutes up to 3 doses for persistent symptoms**

Croup

Administer via nebulizer

- **Dose < 1 year: 2.5 mg / 2.5 mL**
- **Dose > 1 year: 5 mg / 5 mL**

Epinephrine 1 mg/10 mL

Treatment

Indications

- Cardiac arrest / pediatric cardiac arrest
- Moderate to severe allergic reaction/ anaphylaxis
- IV epinephrine should be reserved for cardiac arrest patients and for impending cardiac arrest due to anaphylactic shock

Contraindications

*No absolute contraindications when administered for a life-threatening emergency

- Hypersensitivity / allergy to epinephrine
- Preexisting tachydysrhythmias with a pulse (ventricular and supraventricular)
- Use with pregnant women should be avoided whenever possible

Adverse Effects

- Tachydysrhythmias (supraventricular and ventricular)
- Hypertension
- Chest pain
- Headache
- Anxiety
- Nervousness
- Dizziness
- Diaphoresis
- Nausea and vomiting

Precautions

- Give cautiously in patients (especially elderly patients) with hypertension, tachycardia, diabetes, Parkinson's disease, pheochromocytoma, uncontrolled hyperthyroidism, or pregnancy
- Do not mix with sodium bicarbonate
- Epinephrine causes an increase in myocardial oxygen consumption
- Keep solution protected from light prior to usage

Dosages

A	Advanced	A
P	Paramedic	P

Cardiac Arrest

- Administer 1 mg (1 mg/10 mL) IV/IO every 3 to 5 minutes

Anaphylaxis

- Administer 0.3 mg (1 mg/10 mL) slow IV/IO

Pediatric Cardiac Arrest

- **Administer 0.01 mg/kg (1 mg/10 mL) IV/IO every 3 to 5 minutes**
- **Maximum dose 1 mg**

Pediatric Bradycardia

- **Administer 0.01 mg/kg (1 mg/10 mL) IV/IO every 5 minutes**
- **Maximum dose 1 mg**

Epinephrine

Treatment

Indications

- Unstable bradycardia
- Pediatric sepsis (cold shock)

Contraindications

*No absolute contraindications when administered for a life-threatening emergency

- Hypersensitivity / allergy to epinephrine
- Preexisting tachydysrhythmias with a pulse (ventricular and supraventricular)
- Use with pregnant women should be avoided whenever possible

Adverse Effects

- Tachydysrhythmias (supraventricular and ventricular)
- Hypertension
- Chest pain
- Headache
- Anxiety
- Nervousness
- Dizziness
- Diaphoresis
- Nausea and vomiting

Precautions

- Use in patients with mesenteric or peripheral vascular thrombosis may increase ischemia and extend the area of infarction.
- Gangrene of the extremities has occurred in patients with occlusive or thrombotic vascular disease or who received prolonged or high dose infusions. Monitor for changes to the skin of the extremities in susceptible patients
- Extravasation may cause necrosis and sloughing of surrounding tissue. To reduce the risk of extravasation, infuse into a large vein, check the infusion site frequently for free flow, and monitor for signs of extravasation

Dosages

P Paramedic ONLY P

Adult Bradycardia

- Initiate 10 mcg/min
- Titrate to SBP > 90 mmHg or MAP > 65 mmHg
- Max dose 30 mcg/min

Epinephrine Infusion Preparation

1) Add 1mg (1mg/mL) to a 250mL bag of NS or D5W to make a 4microgram/milliliter solution of epinephrine.

2) Connect and prime a 60 gtts/mL IV set for medication administration.

Mix 1mg of epinephrine 1:1,000 in 250ml = 4 mcg/ml	
1 mcg drip = 15 gtt/min	6 mcg drip = 90 gtt/min
2 mcg drip = 30 gtt/min	7 mcg drip =105 gtt/min
3 mcg drip = 45 gtt/min	8 mcg drip=120 gtt/min
4 mcg drip = 60 gtt/min	9 mcg drip=135 gtt/min
5 mcg drip = 75 gtt/min	10 mcg drip=150 gtt/min

*Based on a micro drip calibration of 60 drops equal to 1.0 milliliter.

Pediatric Sepsis

- **Epinephrine 1 mg/10 mL (0.1 mg/mL) IV at a rate of 0.1 - 1 mcg/kg/min**
- **Titrate to SBP appropriate for age (minimum SBP = 70 + (2*age in years) up to age 10), normal mental status, and normal perfusion / capillary refill**
- **Follow preparation guidelines described for Adult Bradycardia (above)**

Fentanyl

Treatment

Indications

- Injuries requiring pain management
- Burns

Contraindications

- Trauma with hypotension
- COPD with compromised respiratory effort.
- Hypotension
- Known hypersensitivity

Adverse Effects

- Respiratory depression
- Altered mental status
- Constricted pupils

Precautions

- Naloxone (Narcan) reverses effects
- Should be administered slowly and titrated to effect
- Elderly patients and those with impaired renal function may be more sensitive to medication's effects

Dosages

P Paramedic ONLY P

Pain Management:

- 1 mcg/kg IV/IO/IM slow IVP with a maximum initial does of 100 mcg.
- 1 mcg/kg IN to a maximum dose of 100 mcg (administer equally between each nostril) to a maximum of 1ml per nostril.
- After 10 minutes, may repeat 25 mcg every 10 minutes as needed until improvement

- **PEDS: 1 mcg/kg IV/IO/IM/IN**
- **May Repeat 0.5 mcg/kg every 10 minutes**
- **MAX 2 mcg/kg**

Glucagon

Treatment

Indications

- Hypoglycemia – Blood Glucose Level <60mg/dL
- Calcium channel blocker or beta blocker overdose

Contraindications

- Known hypersensitivity
- Known pheochromocytoma - A tumor originating in cells of the adrenal gland that causes overproduction of certain hormones (produces hypertensive reaction)

Adverse Effects

- Nausea and vomiting
- Hypotension
- Bronchospasm
- Respiratory distress

Precautions

- Administer cautiously to patients with cardiovascular disease and patients with kidney or liver dysfunction
- Glucagon only works if liver has significant glycogen stores

Dosages

A	Advanced	A
P	Paramedic	P

Hypoglycemia without IV access:

- Administer 1 mg IM
- Recheck blood glucose in 10 minutes – if continued altered level of consciousness and blood glucose is < 60 mg/dL, may repeat once

Suspected calcium channel blocker or beta-blocker overdose:

- Administer 1 mg IV/IO/IM (slow over 2 minutes)
- May administer up to 5 mg

Hypoglycemia without IV access:

- **If < 20 kg, administer 0.5 mg IM**
- **If > 20 kg administer 1 mg IM**
- **Recheck blood glucose after 10 minutes**

Suspected calcium channel blocker or beta blocker dose:

- **Administer 1 mg IV/IO/IM (slow over 2 minutes)**
- **May require up to 5 mg**

Glucose (Oral)

Treatment

Indications

- Altered mental status with known diabetic history
- Hypoglycemia with BGL less than 60 mg/dL

Contraindications

- Unconscious/Unresponsive
- Inability to swallow
- Inability to maintain own airway

Adverse Effects

- Hyperglycemia

Precautions

- None

Dosages

E	EMT	E
A	Advanced	A
P	Paramedic	P

Hypoglycemia

- Administer 10-15 grams of glucose paste buccally (between gum and cheek). Repeat as needed for persistent or recurrent hypoglycemia.

- **Administer 10-15 grams of glucose paste buccally (between gum and cheek). Repeat as needed for persistent or recurrent hypoglycemia.**

Haloperidol

Treatment

Indications

- For the management of acute psychosis or agitated/violent behavior refractory to non-pharmacologic interventions

Contraindications

- CNS depression
- Coma
- Documented Hypersensitivity

Adverse Effects

- Dose – related extrapyramidal reactions
- Hypotension
- Higher risk of QT-prolongation and Torsades de Pointes

Precautions

- Other CNS depressants may potentiate effects
- Monitor respiratory effort closely
- Elderly and debilitated patients
- Patients with history of seizures or EEG abnormalities
- Severe cardiovascular disorders
- Patients taking anticonvulsants, antiparkinsonian RX or lithium

Dosages

P Paramedic ONLY P

Behavioral Emergencies:

- Haloperidol 5mg IV or 10mg IM
- If the patient develops dystonia or sudden jerking movements, administer Diphenhydramine 25 mg IV or 50 mg IM

- **Pediatrics (age 5 - 14 years)**
- **0.05 mg/kg IM (max dose 2.5 mg)**

Ipratropium Bromide (Atrovent)

Treatment

Indications

- Acute asthma attack
- Bronchospasm associated with asthma or COPD that does not respond to first dose of metered dose inhaler (MDI) albuterol
- Bronchospasm in chronic bronchitis and emphysema

Contraindications

- Known hypersensitivity to the drug
- Hypersensitivity to atropine
- Younger than 1 year of age

Adverse Effects

- Tachycardia
- Palpitations
- Peripheral vasodilatation
- Tremors
- Nervousness
- Headache
- Sore throat
- PVCs
- Nausea and vomiting
- Dry mouth / unpleasant taste
- Vision changes
- Eye pain / burning
- Dizziness

Precautions

- Use with caution in patients with narrow angle glaucoma, prostatic hypertrophy, nursing mothers
- Use with caution in patients with congestive heart failure, heart disease, hypertension and elderly patients
- Use of a nebulizer with a mouthpiece may be preferable to a facemask, to reduce the likelihood of the nebulizer solution coming into direct contact with the eyes. Having patient close their eyes during nebulization may prevent this.
- Bronchospasm may worsen in rare situations due to patient tolerance or hypersensitivity
- Should be used with caution in patients with hyperthyroidism or coronary artery disease
- Use with caution when administering to patients taking MAO inhibitors or tricyclic antidepressants which may be potentiated by albuterol
- Hypersensitivity to soy and peanuts

Dosages

E	EMT	E
A	Advanced	A
P	Paramedic	P

Airway Management, Asthma:

- Ipratropium bromide 0.5 mg with Albuterol Sulfate 2.5 mg combined
- If no improvement, may administer two additional doses at 5-minute intervals.

• Ipratropium bromide 0.5 mg with Albuterol Sulfate 2.5 mg combined
• If no improvement, may administer every 5 minutes for maximum 2 doses

Ketamine

Treatment

Indications

- Combative / Uncooperative Patients that pose a significant threat of harm to self and others
- Patients exhibiting signs / symptoms of excited delirium
- Pain management

Contraindications

- Known hypersensitivity
- Patients with known history of hypertension

Adverse Effects

- Hypersalivation
- Vomiting with aspiration
- Tachycardia with hypertension
- Bradycardia with hypotension
- Respiratory depression may occur
- Laryngospasm

Precautions

- Vomiting with aspiration
- Incompatible with diazepam in the same syringe

Dosages

P Paramedic ONLY P

Excited Delirium

- Ketamine 4 mg/kg IM
- Max dose of 400 mg

Pediatrics (age > 13 years): 4mg/kg IM
Max dose 400 mg

Pain Management

IV/IO

- Ketamine 0.25 mg/kg IV / IO
- Infuse or IV push over 10 minutes
- May repeat every 20 minutes
- Maximum 25 mg single dose
- Maximum 4 total doses

IN

- Ketamine 1 mg/kg IN
- Maximum 1 total dose

Ketorolac

Treatment

Indications

- Pain management

Contraindications

- Known hypersensitivity to Ketorlac, aspirin, or other NSAIDs.
- Patients with known gastrointestinal hemorrhage/active bleeding
- Active wheezing
- Age <18 years old or >65 years old
- Current anticoagulation therapy
- Current steroid use
- Head or multisystem trauma
- History of upper GI bleeding or peptic ulcer disease
- History of renal disease or kidney transplant
- Known or suspected pregnancy

Adverse Effects

- Bleeding
- The most common ones are abdominal pain, nausea, heart burn, headache, pain at injection site, prolonged bleeding times, and elevated liver enzymes. GI bleeding is more commonly seen in patients over age 65 years.

Precautions

- Do not give if the patient has an allergy to any NSAID (Ibuprofen, naproxen, celecoxib)
- May lead to fluid retention – avoid use in heart failure
- Avoid use in patients with recent myocardial infarction.
- In uncommon cases, can lead to serious skin reactions such as Stevens Johnson Syndrome or hematologic effects leading to anemia and low platelet counts

Dosages

P Paramedic ONLY P

Pain Management

IV/IO

Ketorolac 15 mg

- Slow IV push over 2 minutes
- Maximum 1 dose

IM

Ketorolac 30 mg

- Maximum 1 dose

Effective Date 1 Jan 2022	M-KL1

Lactated Ringers

Treatment

Indications

- Burn management
- Sepsis

Contraindications

- Fluid overload states

Adverse Effects

- Rare in therapeutic doses

Precautions

- Patients receiving Lactated Ringers should be monitored to prevent circulatory overload.
- Lactated Ringers should be used with caution in patients with congestive heart failure or renal failure.

Dosages

A	Advanced	A
P	Paramedic	P

Burn Management

- Initial Rate (mL/hr.) - Total Body Surface Area (TBSA) x 10
- Increase rate by 100 mL/hr. for every 10 kg > 80 kg

- **Initial Rate: 3 mL x TBSA (%) x body weight (kg)**
- **Give half in first 8 hours, give remaining over subsequent 16 hours**

Sepsis

- 30 mL/kg IV/IO bolus
- **20 mL/kg IV/IO bolus**
- **Repeat 20 mL/kg IV/IO bolus for persistent hypoperfusion. Contact online medical control for additional boluses**

Lidocaine 2%

Treatment

Indications

- Pain management for IO access in conscious patients
- Ventricular tachycardia with a pulse

Contraindications

- Atrioventricular (AV) blocks
- Sensitivity to lidocaine
- Idioventricular escape rhythms
- Accelerated idioventricular rhythm
- Sinus bradycardia or arrest or block
- Hypotension
- Shock
- Ventricular conduction defects

Adverse Effects

- Lidocaine may cause clinical evidence of toxicity usually related to the central nervous system
- Early toxicity: muscle twitching, slurred speech, altered mental status, decreased hearing, paresthesia (pins and needles), anxiety, apprehension, visual disturbances, nausea, numbness, difficulty breathing or swallowing, decreased heart rate
- Late toxicity: convulsions, hypotension, coma, widening of QRS complex, prolongation of the P-R interval, hearing loss, hallucinations

Precautions

- Reduce dosage in patients with decreased cardiac output, liver dysfunction and elderly (age greater than 70)
- Bolus doses should be administered over a 1 minute period, except in ventricular fibrillation/ventricular tachycardia, when they are administered IV

Dosages

P Paramedic ONLY P

Ventricular Tachycardia:

- Administer 1 to 1.5 mg/kg IV or IO
- Subsequent dosing 0.5 to 0.75 mg/kg IV or IO
- If successful conversion, consider starting an infusion at 2 to 4 mg/min using premixed 2 g/250 mL in D5W
- Maximum dose of 3 mg/kg IV

Cardiac Arrest:

- Initial dose: 1-1.5 mg/kg
- Second dose: 0.5-0.75 mg/kg

IO pain management:

- Administer 40 mg IO over 2 minutes prior to saline flush (one dose only)
- On-line medical control approval required for additional doses

IO pain management:

- **Administer 0.5 mg/kg IO (max dose 40 mg) over 2 minutes prior to saline flush (one dose only)**
- **On-line medical control approval required for additional doses**

Lorazepam (Ativan)

Treatment

Indications

- Seizures
- Management of Behavioral Emergencies

Contraindications

- Hypersensitivity
- Acute narrow angle glaucoma
- Severe respiratory depression
- Sleep Apnea

Adverse Effects

- Drowsiness
- Dizziness
- Muscle Weakness
- Blurred Vision
- Headache
- Nausea & Vomiting
- Constipation
- Difficulty concentrating
- Amnesia
- Skin Rash

Precautions

- **REQUIRES REFRIGERATION** MAY ONLY BE STORED AT ROOM TEMPERATURE FOR MAX OF 30 DAYS
- Use with caution in patients with compromised respiratory function (COPD, sleep apnea)
- Do NOT administer to mothers who are breast feeding
- Use with caution in depression patients who do not have adequate antidepressant therapy

Dosages

P Paramedic ONLY P

Seizures:

- Administer 4 mg IV/IM/IO
- May repeat 2 mg dose every 5 minutes
- Maximum total pre-hospital dose is 10 mg

	Effective Date 1 May 2022	**M-LO1**

Magnesium Sulfate

Treatment

Indications

- Eclampsia
- Torsades de Pointes / Polymorphic Ventricular Tachycardia
- Severe asthma attacks

Contraindications

- Renal disease
- Heart block
- Hypermagnesemia

Adverse Effects

- Hypotension
- Respiratory depression
- Bradycardia
- Dysrhythmias
- Cardiac arrest
- CNS depression
- Flushing
- Sweating

Precautions

- Caution should be used in patients receiving digitalis – may cause severe hypotension or cardiac arrest

Dosages

P Paramedic ONLY P

Adult

Polymorphic VT /Torsade's de pointes:

- Administer 2gm IV/IO in 50mL of D5W over 5 to 10 minutes

Eclampsia:

- Administer 4gm IV/IO in 100mL of D5W over 15 to 20 min

Asthma – severe

- Administer 2gm IV/IO in 50mL of D5W over 10 to 15 minutes

Asthma – Severe

- **Administer 50mg/kg IV/IO (maximum dose 2gm) over 10-15 minutes**

Methylprednisolone (Solu-Medrol)

Treatment

Indications

- Refractory bronchospasm and status asthmaticus
- Bronchial asthma
- Other bronchospastic disorders

Contraindications

- Pre-term infants
- Untreated serious Infections
- Known hypersensitivity

Adverse Effects

- Alkalosis
- Congestive heart failure
- Headache
- Hypertension
- Hypokalemia
- Seizures
- Nausea and vomiting

Precautions

- Methylprednisolone (Solu-Medrol) is an adjunct to, not a substitute for bronchodilator therapy in acute asthma exacerbation
- Safety in pregnancy is unclear – administer to gravid females, nursing mothers, and women of childbearing potential only when the anticipated benefits outweigh the known risks

Dosages

P Paramedic ONLY P

Asthma

- Administer 125 mg IV/IO
- **On-line medical control approval required**
- **Administer 2 mg/kg IV/IO**
- **Maximum dose is 125 mg**

Effective Date 1 Jan 2022

M-MT1

Midazolam (Versed)

Treatment

Indications

- Control of active seizure/status epilepticus or seizure related to eclampsia
- Sedation of excited delirium or combative patients
- Post airway management if needed for compliance

Contraindications

- Known hypersensitivity

Adverse Effects

- Cardiorespiratory depression
- CNS depression
- Variations in blood pressure and pulse rate
- Temporary amnesia
- Drowsiness

Precautions

- Rapid administration may cause seizures and/or severe hypotension
- Decreased doses for patients greater than 60
- Decreased doses for patients receiving concomitant medications

Dosages

P Paramedic ONLY P

Behavioral Emergencies

- Midazolam 5 mg IV/IO/IM/IN
- Max dose 10 mg
- IV slow push over 2 minutes
- Administer ½ dose for patients > age 65 years
- Maintain systolic greater than 100 mmHg

- **Pediatrics: 0.1 mg/kg IV IM OR 0.2 mg/kg IN**
- **Max dose 5 mg**

Seizures, Sedation IV/IM

- 5 mg IV
- May repeat every 3- 5 minutes as needed
- Max pre-hospital dose s 10 mg IV

- **0.1 mg/kg IV/IM to max 2.5 mg**
- **May repeat 0.1 mg/kg**
- **Maximum 5 mg**
- **IM Preferred for seizures when IV/IO access not readily available**

Seizures IN

- 10 mg IN
- Use 5 mg/ml concentration and administer half the dose in each nostril using a mucosal atomizer device
- Maintain systolic greater than 90 mmHg

- **0.2 mg/kg IN divided between each nostril**

Airway Management

- 5 mg IV/IM/IO
- Administer IV/IO routes slowly (over 2 minutes)
- Systolic BP must be greater than 100 mmHg
- May repeat 2.5 mg if resistance continues every 5 minutes to max dose 10 mg

- **Pedi Midazolam 0.1 mg/kg IV/IO to max 2.5 mg**
- **Administer over 2 minutes, repeat every 5 to 10 min. Maximum prehospital dose 5 mg**

Morphine Sulfate

Treatment

Indications

- Pain management
- Chest Pain, STEMI
- Burns as indicated in burn protocol

Contraindications

- Known hypersensitivity or allergy to the medication

Adverse Effects

- Respiratory depression/arrest, especially when administered with benzodiazepines or sedatives
- Altered mental status (decreased level of consciousness)
- Increased vagal tone due to suppression of sympathetic pathways (slowed heart rate)
- Nausea and vomiting
- Constricted pupils (pin-point)
- Hypotension

Precautions

- Use with caution in elderly or debilitated patients and in those with head injury, increased intracranial pressure, seizures, chronic pulmonary disease, prostatic hyperplasia, severe hepatic or renal disease, acute abdominal conditions, hypothyroidism, Addison's disease, and urethral stricture
- Use with caution in patients with circulatory shock, biliary tract disease, central nervous system (CNS) depression, toxic psychosis, acute alcoholism, delirium tremens and seizure disorders
- Should be administered slowly and titrated to effect
- Vital signs should be monitored frequently
- Hypotension is greater possibility in volume-depleted patients
- Maintain systolic BP greater than 100 mmHg
- Naloxone can be used to reverse effects

Dosages

A	Advanced	A
P	Paramedic	P

Pain Management, Chest Pain, STEMI

- Administer Morphine Sulfate 2 to 5mg IV
- May repeat every 10 minutes for a total of 3 doses

Pain Management- Paramedic ONLY

- **Administer 0.1 mg/kg slow IV**
- **Use lower initial dose for children < 1 year and those who are opioid naive**
- **May repeat every 15 minutes as needed for total of 3 doses**

	Effective Date 1 Jan 2022	**M-MP1**

Naloxone (Narcan)

Treatment

Indications

- To reverse respiratory and central nervous system depression induced by opioids, including prescribed medications or illicit drugs
- Coma of unknown origin
- Seizure with suspected narcotic overdose etiology

Contraindications

- Known hypersensitivity to the drug

Adverse Effects

Usually associated with high doses, parenteral administration, or rapid administration

- Acute withdrawal syndrome
- Agitation
- Confusion
- Dizziness
- Headaches
- Irritability
- Shivering
- Tonic Seizures
- Flushing
- Hypertension or hypotension
- Tachycardia, including ventricular tachycardia
- Diaphoresis
- Piloerection
- Abdominal cramps
- Nausea, vomiting, and diarrhea
- Tremors or muscle spasms
- Nasal congestion
- Pulmonary edema and respiratory distress

Precautions

- Naloxone may induce opiate withdrawal (e.g. pain, tachycardia, hypertension, fevers, diaphoresis, nausea vomiting and diarrhea, abdominal cramps, agitation) in patients who are physically dependent
- May cause irritability in neonates born to mothers who are opioid dependent. May be life threatening and include excessive crying, failure to feed, seizures, and hyperactive reflexes
- Certain drugs (e.g. fentanyl and its derivatives) may require much higher doses of naloxone for reversal than typically used for heroin or common prescription opioids
- Should be administered and titrated so respiratory efforts return but not intended to restore full consciousness

Dosages

E	EMT	E
A	Advanced	A
P	Paramedic	P

IN- EMT

IV/IO/IM – AEMT/Paramedic

Overdose

- 2 mg IN up to a dose of 4 mg, divided between both nostrils
- 2 mg IM up to a dose of 4 mg
- 0.4 mg - 2 mg IV, titrated to restoration of spontaneous breathing
- If opiate overdose is highly suspected, Paramedic may continue to administer additional doses if necessary

- **0.1 mg/kg IV/IM/IN (max 1 mL per naris)**
- **Maximum dose of 2 mg IV/IM**
- **Maximum dose of 4 mg IN**

Nitroglycerin

Treatment

Indications

- Chest pain or angina
- Congestive heart failure
- Acute pulmonary edema

Contraindications

- Known hypersensitivity
- Pediatric patient less than 12 years old
- Any patient having taken medication for erectile dysfunction (e.g., Viagra, Levitra, Cialis or OTC medications containing tadalafil and sildenafil) within past 48 hours.
- Patients taking medications for pulmonary artery hypertension (e.g. Adcirca or Revatio). On-line medical control approval is required to override this contraindication.
- Asymptomatic hypertension
- Blood pressure less than 90 mmHg systolic
- Heart rate less than 60

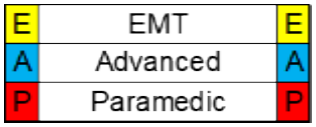
Adverse Effects

- Headache
- Hypotension
- Nausea
- Vomiting
- Dizziness
- Decreased level of consciousness

Precautions

- Severe hypotension, particularly with upright posture, may occur even with small doses of nitroglycerin
- Paradoxical bradycardia and increased angina pectoris may accompany nitroglycerin induced hypotension
- Volume depleted patients may experience exaggerated hypotensive response to nitroglycerin; the spray should not be inhaled
- May be beneficial to administer EMS supplied nitroglycerin tablets due to the patient's tablets being expired or degraded from environmental exposure

Dosages



Patient Prescribed Medication ONLY- EMT

Chest Pain

- Administer nitroglycerin: 0.4 mg SL (may repeat dose twice at 3-to-5 minute intervals)
- May be repeated only if SBP is greater than 90 mmHg
- Maximum total pre-hospital dose is 1.2 mg

Norepinephrine (Levophed)

Treatment

Indications

- Hypotension due to shock (Cardiogenic, hypovolemic, septic)
- Pediatric sepsis (warm shock)

Contraindications

- None

Adverse Effects

- Tissue Ischemia
- Cardia Arrythmias
- Hypertension

Precautions

- Avoid Norepinephrine Bitartrate in Dextrose Injection in patients with mesenteric or peripheral vascular thrombosis, as this may increase ischemia and extend the area of infarction.
- Gangrene of the extremities has occurred in patients with occlusive or thrombotic vascular disease or who received prolonged or high dose infusions. Monitor for changes to the skin of the extremities in susceptible patients
- Extravasation of Norepinephrine Bitartrate in Dextrose Injection may cause necrosis and sloughing of surrounding tissue. To reduce the risk of extravasation, infuse into a large vein, check the infusion site frequently for free flow, and monitor for signs of extravasation

Dosages

P Paramedic ONLY P

Hypoperfusion/Shock

- Initiate 0.05 - 0.3 mcg/kg/minute (typical dosing 5 – 15 mcg/min for 80 kg person)
- Titrate to SBP > 90 mmHg or MAP > 65 mmHg
  - Max dose 30 mcg/min
  - **Pediatrics: 0.05-0.1mcg/kg/min**
  - **2 mcg/kg MAX**

Desired Dose (mcg/min)	Drip Rate (drops/min)
1 mcg/min	4 gtt/min
2 mcg/min	8 gtt/min
3 mcg/min	11 gtt/min
4 mcg/min	15 gtt/min
5 mcg/min	19 gtt/min
6 mcg/min	23 gtt/min
7 mcg/min	26 gtt/min
8 mcg/min	30 gtt/min
9 mcg/min	34 gtt/min
10 mcg/min	38 gtt/min
11 mcg/min	41 gtt/min
12 mcg/min	45 gtt/min
13 mcg/min	49 gtt/min
14 mcg/min	53 gtt/min
15 mcg/min	56 gtt/min
16 mcg/min	60 gtt/min
17 mcg/min	64 gtt/min
18 mcg/min	68 gtt/min
19 mcg/min	72 gtt/min
20 mcg/min	75 gtt/min
21 mcg/min	79 gtt/min
22 mcg/min	83 gtt/min
23 mcg/min	86 gtt/min
24 mcg/min	90 gtt/min
25 mcg/min	94 gtt/min
26 mcg/min	98 gtt/min
27 mcg/min	101 gtt/min
28 mcg/min	105 gtt/min
29 mcg/min	109 gtt/min
30 mcg/min	113 gtt/min

Norepinephrine Infusion Preparation

1) Draw 4mL off and discard from a 250 mL bag of NS or D5W

2) Add 4mg (1mg/mL) resulting in 250mL of a 16 microgram/milliliter solution of norepinephrine.

3) Connect and prime a 60 gtts/mL IV set for medication administration.

Normal Saline (0.9% Sodium Chloride)

Treatment

Indications

- Hypovolemia/Shock
- **K**eep **V**ein **O**pen (KVO)
- Burn management

Contraindications

- Fluid overload states

Adverse Effects

- Rare in therapeutic doses

Precautions

- Patients receiving normal saline should be monitored to prevent circulatory overload.
- Normal saline should be used with caution in patients with congestive heart failure or renal failure.

Dosages

A	Advanced	A
P	Paramedic	P

Fluid Resuscitation

- KVO – Keep Vein Open
- Initiate IV fluid therapy 20mL/kg
- Titrate to a SBP of at least 90mmHg
- May repeat once for a total of 40mL/kg

- **KVO – Keep Vein Open**
- **Initiate IV fluid therapy 20mL/kg, (10mL/kg infant)**
- **Titrate to an age specific systolic BP**
- **May repeat once**

Ondansetron (Zofran)

Treatment

Indications

- Nausea
- Vomiting

Contraindications

- Hypersensitivity

Adverse Effects

- May cause QT prolongation leading to Torsade's de Pointes in patients with prolonged QT on certain types of anti-arrhythmic, congenital long QT syndrome
- May cause serotonin syndrome in patients taking certain SSRIs, MAOIs, fentanyl, tramadol, or lithium (less common outside of the operating room setting)
- Limit doses (no more than 8 mg) to persons with severe liver disease
- Headache
- Fatigue
- Constipation
- Dizziness
- Diarrhea
- Urinary retention
- Constipation
- Fever

Precautions

- Refrain from administering with Amiodarone
- Maintain lower dose with known liver disease
- NOT effective for motion sickness/vertigo

Dosages

E	EMT	E
A	Advanced	A
P	Paramedic	P

EMT – Oral Dissolving Tablet ONLY

Advanced/Paramedic – PO, IV/IM

Nausea – Injectable

- Administer 4mg slow IV/IM
- May repeat once after 15 minutes for a total of 8 mg

- **Administer 0.15 mg/kg slow IV/IM (max 4 mg)**
- **May repeat once in 15 minutes**

Nausea -Oral Dissolving Tablet

- Administer 4mg PO, oral dissolving tablet (ODT)
- May repeat once after 15 minutes for a total of 8 mg

- **Administer 4mg PO, oral dissolving tablet (ODT)**
- **Maximum total pre-hospital dose is 4mg**

Oxygen

Treatment

Indications

- Patient complaint of shortness of breath or patients who have labored respirations, dyspnea, wheezing, or rales with a pulse oximetry reading of under 94% on room air
- As indicated by specific protocol

Contraindications

- Newborns at term with hypoxia in the expected range for their age
- Children with congenital heart conditions where the expected oxygen saturation is anticipated to be low and do not exhibit signs or symptoms of respiratory distress

Adverse Effects

- High concentrations of oxygen may reduce respiratory drive in COPD patients who respond to low oxygen levels to maintain their respiratory drive; these patients should be carefully monitored and their target oxygen concentration adjusted accordingly to 90-92%
- Excessive oxygen administration has been associated with worse outcomes in patients with cardiac arrest, STEMI, and Stroke.
- Use of supplemental oxygen in term newborns has been associated with excess mortality. Excessive supplemental oxygen in premature newborns has been associated with retinopathy

Precautions

- Obtain and monitor pulse oximetry readings
- Oxygen should be given with caution to patients with COPD
  - Observe for depressed ventilation
  - If $EtCO_2$ values rise in response to oxygen therapy, consider decreasing the concentration of supplemental oxygen
- Nasal cannula must be supplied with 2 – 6 LPM
- Simple or partial rebreather masks must be supplied with 6 – 10 LPM
- Nonrebreather masks (NRB) must be supplied with 10-15 LPM, increase O_2 flow if bag deflates
- Bag-valve-mask (BVM) must be supplied with 15 LPM

Dosages

E	EMT	E
A	Advanced	A
P	Paramedic	P

Administer oxygen as appropriate

- Administer sufficient oxygen as needed to maintain an SpO2 of at least 94%
- For patients with STEMI or CVA, administer to maintain an SpO_2 between 90 to 92%
- For patients with acute carbon monoxide poisoning, administer oxygen via a non-rebreather at the highest flow rate available
- COPD with chronic hypoxia (home oxygen): administer (titrate) oxygen flow to maintain SpO_2 of 88% - 92% or to the patient's reported baseline

Sodium Bicarbonate

Treatment

Indications

- Used in cardiac arrest only after more definitive treatments with suspected pre-existing acidosis
- Hyperkalemia
- Aspirin or Tricyclic antidepressant overdose

Contraindications

- Preexisting alkalosis
- Documented Hypersensitivity
- Severe Pulmonary Edema
- Hypernatremia or Hypocalcemia

Adverse Effects

- Worsened intracellular acidosis due to carbon dioxide formation
- Hyperosmolality
- May precipitate congestive heart failure
- Metabolic alkalosis
- Acute hypokalemia
- Exacerbation of central venous acidosis
- Shifting the oxyhemoglobin dissociation curve, inhibiting the release of oxygen to the tissues

Precautions

- Inactivates simultaneously administered catecholamines
- Priorities before use:
  - Intubation
  - Hyperventilation
  - Defibrillation
  - Epinephrine
  - Antiarrhythmics

Flush IV line well between all drugs

Dosages

P Paramedic ONLY P

Cardiac Arrest & Hyperkalemia:

- Administer 1 mEq/kg IV/IO

Aspirin or Tricyclic Antidepressant (TCA) Overdose:

- Administer 1 to 2 mEq/kg IV/IO

Cardiac arrest:

- **Administer 1 mEq/kg IV/IO**

Effective Date 1 Jan 2022	M-SB1

Tranexamic Acid (TXA)

Treatment

Indications

- Hemorrhagic Shock
- Known or suspected hemorrhage after crush, blunt or penetrating trauma
- Sustained hypotension (systolic blood pressure (SBP) < 90mmHg) and sustained tachycardia (>110 beats per minute)

Contraindications

- Time since injury >3 hours
- Known pregnancy
- Known allergy to TXA
- Patients under the age of 18 years old

Adverse Effects

- If patient is taking beta-blocker medications, reflex tachycardia may not be present. These patients, while in traumatic hemorrhagic shock, may present with hypotension and a normal heart rate.

Precautions

- Time of injury must be less than 3 hours from initiation of TXA

Dosages

P Paramedic ONLY P

Adult (patient must be ≥ 18 years old)

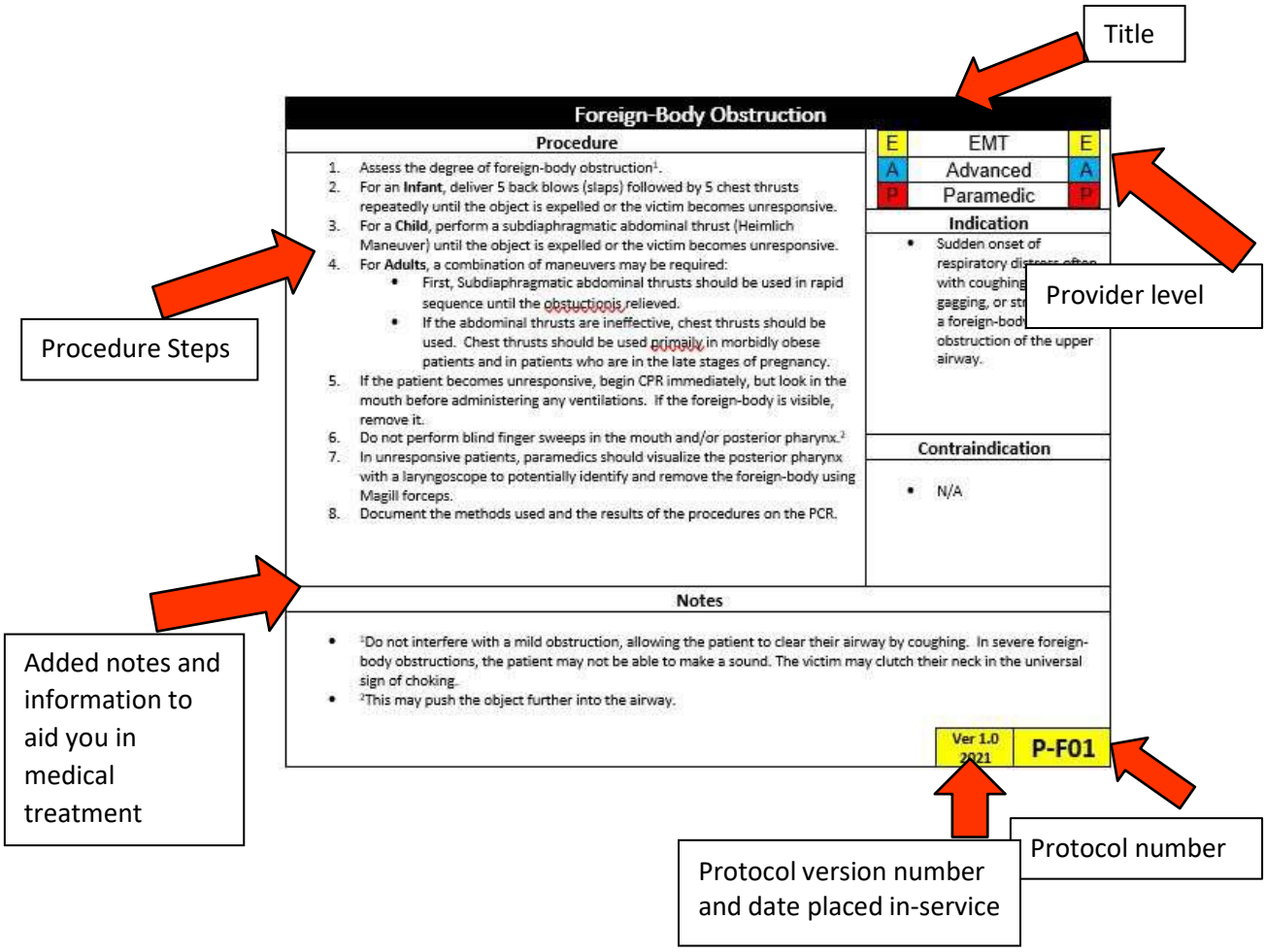
- IV infusion of 2 gram diluted in 100mL normal saline infused over 10 minutes
- On-line medical control required for additional doses

	Effective Date 1 May 2022	**M-TXA**

SECTION 5

Procedures

Section 5: Procedures



Airway Confirmation

Procedure	
1. Complete placement of Endotracheal Tube (ETT), Nasotracheal Tube (NTT), or other Advanced Airway (i.e., King Airway) 2. Follow procedure for specific confirmation device available: **CO_2 Colorimetric Detector**[1] a) Attach the inline $EtCO_2$ detector to the endotracheal tube (ETT) or supraglottic airway device (i.e., King Airway) b) Connect BVM to colorimetric device. c) Note and document the color change of colorimetric device after the initial 6 breaths. d) Continuous waveform capnography shall be used in place of colorimetric device as soon as available e) Document time and results. **Esophageal Bulb** a) Squeeze the bulb to remove air prior to securing the bulb onto the airway device. b) Place the bulb over the proximal end of the airway device. c) Once secured onto the device, release the bulb. d) If the bulb expands evenly and easily; This indicates probable tracheal intubation.[2] e) If the bulb does not expand easily; This indicates possible esophageal intubation and the need to reassess the airway placement. f) Remove the esophageal bulb and begin ventilating the patient as per protocol. g) Continuous waveform capnography shall be placed as soon as available and remain in use with the patient. h) Document time and results **Continuous Waveform Capnography – PREFERRED METHOD** a) Attach the inline capnography sensor to the airway device (ETT, NTT supraglottic airway, etc.) b) Attach a BVM to the inline capnography sensor. c) Connect capnography sensor to the monitor. d) Ventilate the patient. e) If CO_2 level and waveform is noted; This indicates placement of airway device is correct.[2] f) If no $EtCO_2$ level and waveform is noted; This indicates incorrect placement and the need to reassess the airway placement. g) See Continuous Waveform End-Tidal Capnography procedure[3] h) Document time and results. 3. Once the patient is on continuous waveform capnography, continue to monitor $EtCO_2$ levels and waveform frequently to assess patient.	A P Advanced Paramedic A P **Indication** • Assist in determining and documenting placement of Advanced Airway **Contraindication** • Continuous waveform capnography is available.[1]

Notes

- [1]If continuous waveform capnography is available, place the $EtCO_2$ sensor instead of using valuable time attaching/detaching Colorimetric CO_2 detectors or Esophageal Bulbs.
- [2]Auscultation of the patient's breath sounds bilaterally and epigastric should also be performed.
- [3]For further clinical information using capnography in regard to indications other than Airway Confirmation.

Effective Date 1 Jan 2022	S-AC1

Failed Airway/Needle Cricothyrotomy

Procedure

1. Have suction supplies available and ready.
2. Collect supplies including endotracheal adapter from a 3.0mm ET Tube.
3. Place yourself at the head of the patient, so that you are facing toward the patient's feet.
4. If using a commercial cricothyrotomy kit.[3]
5. Use the non-dominant hand to secure the larynx.
6. Prep the area with an antiseptic swab.
7. Using a 5cc syringe with a 10 - 14 gauge catheter-over-needle device. Insert the need through the cricothyroid membrane at a 45° to 60° caudal angle.
8. Aspirate for air with the syringe throughout the procedure.
9. Once air returns easily, stop advancing the needle. Thread the catheter off the needle gently at a 60° caudal angle.
10. Attach the previously sized ET adapter to the end of the catheter, attach continuous waveform end-tidal capnography, and begin ventilation with a BVM connected to high flow oxygen.
11. Assess for bilateral beath sounds. Make certain ample time is used for both inspiration and expiration. A 1:6 ratio is not unreasonable.
12. Secure the needle by best methods available, recognizing that this method may be direct hands-on control of the device throughout the entire transport.
13. If unable to obtain an adequate airway, resume basic airway management and continue transporting the patient to the closest appropriate facility.
14. Regardless of success or failure of needle cricothyrotomy, notify the receiving hospital at the earliest possible time of an airway emergency.
15. Document time, procedure, results/confirmation, and patient response on the PCR.

P Paramedic ONLY P

Indication

- Management of an airway when standard airway procedures cannot be accomplished[1] , or have failed in a patient greater than or equal to 8 years of age.[2]

Contraindication

- Inability to identify landmarks.
- Anatomical abnormalities such as a tumor or goiter.
- Tracheal transection
- Acute laryngeal disease due to infection or trauma.
- Small children.[4]

Notes

- [1]e.g., unable to oxygenate or unable to ventilate the patient.
- [2,3]Follow manufacturer's instruction for specific device.
- [2,3]Follow manufacturers sizing recommendation for age or weight of the patient.
- [4]10 to 14 gauge catheter-over-needle may be used

Foreign-Body Obstruction

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Assess the degree of foreign-body obstruction[1].
2. For an **Infant**, deliver 5 back blows (slaps) followed by 5 chest thrusts repeatedly until the object is expelled or the victim becomes unresponsive.
3. For a **Child**, perform a subdiaphragmatic abdominal thrust (Heimlich Maneuver) until the object is expelled or the victim becomes unresponsive.
4. For **Adults**, a combination of maneuvers may be required:
    - First, subdiaphragmatic abdominal thrusts should be used in rapid sequence until the obstruction is relieved.
    - If the abdominal thrusts are ineffective, chest thrusts should be used. Chest thrusts should be used primarily in morbidly obese patients and in patients who are in the late stages of pregnancy.
5. If the patient becomes unresponsive, begin CPR immediately, but look in the mouth before administering any ventilations. If the foreign-body is visible, remove it.
6. Do not perform blind finger sweeps in the mouth and/or posterior pharynx.[2]
7. In unresponsive patients, paramedics should visualize the posterior pharynx with a laryngoscope to potentially identify and remove the foreign-body using Magill forceps.
8. Document the methods used and the results of the procedures on the PCR.

Indication

- Sudden onset of respiratory distress often with coughing, wheezing, gagging, or stridor due to a foreign-body obstruction of the upper airway.

Contraindication

- N/A

Notes

- [1]Do not interfere with a mild obstruction, allowing the patient to clear their airway by coughing. In severe foreign-body obstructions, the patient may not be able to make a sound. The victim may clutch their neck in the universal sign of choking.
- [2]This may push the object further into the airway.

Effective Date 1 Jan 2022	S-F01

Intubation - Oral

Procedure

1. Gather and prepare equipment.
2. Preoxygenate the patient.
3. Select proper ET Tube (ETT) and stylet.
4. Have suction ready.
5. Have an appropriately sized supraglottic (i.e., King) airway available.[2]
6. Using a laryngoscope, visualize the vocal cords. For anterior airways, BURP maneuver may be helpful.[3]
7. Limit each intubation attempt to 30 seconds with BVM ventilation between attempts.
8. Visualize tube passing through vocal cords.
9. Inflate the cuff with appropriate amount of air.[4]
10. Confirm placement using Airway Confirmation Procedure.[5]
11. Auscultate for bilaterally equal breath sounds and absence of sounds over the epigastrium.
12. Secure ETT with tape or commercial securing device; if available.
13. Attach continuous waveform end-tidal capnography.[6]
14. Consider using a supraglottic airway if intubation efforts are unsuccessful.
15. Consider placing a gastric tube to clear stomach contents after the airway is secured with an ETT.
16. Reassess airway and breath sounds after moving the patient and during transport.
17. Monitor the airway through continuous waveform capnography and pulse oximetry.
18. Document ETT size, time, results, and depth of tube placement using marks at the patient's teeth on the PCR.
19. Document all devices used to confirm tube placement.

P Paramedic ONLY P

Indication

- Unconscious patient without a gag reflex who is apneic.
- Patient demonstrating inadequate respiratory effort.
- Inability to adequately ventilate a patient with a BVM.
- Need for airway protection.
- When longer EMS transport distances require an advanced airway.

Contraindication

- Severe airway trauma or obstruction that does not permit the safe placement of an endotracheal tube.[1]

Notes

- [1]If an endotracheal tube cannot be placed, but an airway needs to be secured, a cricothyrotomy or needle cricothyrotomy is indicated.
- [2]In case of unsuccessful intubation or if unable to ventilate the patient with a BVM.
- [3]BURP maneuver (Backwards, Upwards, and Rightwards Pressure) may assist in bringing the vocal cords in line with the operator's line of sight. This maneuver should be performed by the operator using their dominant hand.
- [4]Appropriate amount of air for specific size tube until pilot balloon is inflated.
- [5]Continuous waveform capnography, Colorimetric device, or Esophageal Detector Device (EDD)
- [6]Look for waveform on the cardiac monitor matching each ventilation. If no wave is visualized, the ETT is likely incorrectly placed.

Intubation - Nasal

Procedure

1. Select the largest and least (usually the right) obstructed nostril and insert a lubricated nasopharyngeal airway (NPA) to help dilate the nasal passage.
2. Preoxygenate the patient. Lubricate the tube.
3. Remove the NPA and gently insert the tube, keeping the bevel of the tube toward the septum.
4. Continue to pass the tube listening for air movement and looking for vapor condensation in the tube. As the tube approaches the larynx, the air movement will get louder.
5. Gently and evenly advance the tube through the glottic opening during inspiration. This facilitates passage of the tube and reduces the incident of trauma to the vocal cords.
6. Upon entering the trachea, the tube may cause the patient to cough, buck, strain, or gag. Do not remove the tube! This is normal but be prepared to control the cervical spine and the patient and be alert for vomiting.
7. Auscultate for bilaterally equal breath sounds and absence of sounds over the epigastrium. Observe for symmetrical chest expansion.
8. Inflate the cuff with appropriate amount of air.
9. Confirm tube placement using Airway Confirmation procedures.[1]
10. Secure the tube.
11. Reassess airway and breath sounds after moving the patient and during transport.[2]
12. Monitor the airway through continuous waveform capnography and pulse oximetry.
13. Document the procedure, time, and results on the PCR

P Paramedic ONLY P

Indication

- Spontaneously breathing patient without evidence of head trauma in need intubation (inadequate respiratory effort)
- Evidence of hypoxia or CO_2 retention.
- Need for airway protection.
- Rigidity or clenched teeth prohibiting other airway procedures.

Contraindication

- Patients under 12 years of age.

Notes

- The use of a Beck Airway Airflow Monitor (BAAM) device is recommended.
- The 15mm adapter usually rest close to the nostril with proper positioning.
- [1]Continuous waveform capnography, Colorimetric device, or Esophageal Detector Device (EDD)
- [2]These tubes are easily dislodged and require close monitoring and frequent reassessment.

Supraglottic Airway

A	Advanced	A
P	Paramedic	P

Procedure

1. Preoxygenate the patient 100% FiO_2 via BVM using an oropharyngeal airway (OPA) and/or nasopharyngeal airway (NPA).
2. Select the appropriate tube size for the patient (King Airway specific sizes)
   - **Size 2** – 12 to 25kg / 35 to 45 inches tall – (Green Connector)
   - **Size 2.5** – 25kg to 35kg / 41 to 51 inches tall (Orange Connector)
   - **Size 3** – 4 foot to 5 foot tall (Yellow Connector)
   - **Size 4** – 5 foot to 6 foot tall (Red Connector)
   - **Size 5** – Greater than 6 foot tall (Purple Connector)
3. Lubricate the tube with water soluble lubricant.
4. Grasp the patient's tongue and jaw with your gloved hand and pull forward.
5. Gently insert the tube, rotated laterally 45°-90° so that the blue orientation line is touching the corner of the mouth.
6. Once the tip is at the base of the tongue, rotate the tube back to midline.
7. Insert the airway until the base of the connector is in line with the teeth and gums.
8. Inflate the pilot balloon with correct amount of air, depending on the size of the device used.
9. If necessary, adjust cuff inflation pressure to maximize seal, each patient is different.
10. Ventilate the patient while gently withdrawing the airway until the patient is easily ventilated.
11. Confirm tube placement using continuous waveform end-tidal capnography.
12. Auscultate for breath sounds and sounds over the epigastrium while also looking for chest rise and fall.
13. Use tape or commercial device to secure tube to the patient's mouth.
14. The airway should be monitored continuously through capnography and pulse oximetry.

Indication

- Inability to adequately ventilate a patient with a bag valve mask (BVM).
- Inability to secure an endotracheal tube in a patient who does not have a gag reflex where at least 1 failed intubation attempt has occurred.
- Patient must be unconscious without gag reflex.

Contraindication

- Responsive patient with intact gag reflex
- Patients with known esophageal disease
- Patients who have ingested caustic substances.
- Device is not proven to protect the airway from the effects of regurgitation and aspiration. The risk of regurgitation and aspiration must be weighed against the potential benefit of establishing an airway.

Notes

Nebulizer Therapy

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Position patient appropriately, allowing optimal ventilation.
2. Gather and prepare equipment.
3. Assemble nebulizer[1].
4. Instill the correct medication/dosage as per protocol (e.g., Albuterol or other approved medication) into the reservoir of the nebulizer.
5. Connect nebulizer to oxygen at 4 – 6 liters per minute[1] or increase flow to produce a steady, visible mist.
6. Instruct the patient to inhale through the mouthpiece of the nebulizer while maintaining a good lip seal around the mouthpiece. If using a nebulizer mask, ensure proper size and fit of the mask. Offer assistance if needed.
7. The treatment should last until the solution is depleted. Tapping the reservoir near the end of the treatment will assist in utilizing all of the solution.
8. Monitor the patient for effects of the medication. This should include the assessment of the patient's response to the treatment and reassessment of vital signs, EKG, and breath sounds.
9. If peak flow meter is available, document reading before and after treatment.
10. Document procedure, treatment, time, dose, and results on PCR.

Indication

- Patient experiencing bronchospasm.

Contraindication

- Unconsciousness
- Sensitivity of medication[2]

Notes

- [1] Follow manufacturers direction for specific nebulizing device.
- [2] See specific medication listing for additional information.

Suctioning

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

Upper Airway[3]

1. Ensure the suction device is in proper working order with appropriate suction tip in place.
2. Provide appropriate supplemental oxygen, if needed.
3. Explain the procedure to the patient if they are coherent.
4. Examine the oropharynx and remove any potential foreign bodies or material which may occlude the airway if dislodged by the suction device.
5. If applicable, remove any ventilation devices from the airway (e.g., oropharyngeal airway)
6. Use the suction device to remove any secretions, blood, or other substances.
7. An alert patient may assist with this procedure.
8. Record the time and result of the suctioning on the PCR.

Advanced Airway

1. Ensure the suction device is in proper working order with appropriate suction tip in place.
2. Provide appropriate supplemental oxygen, if needed.
3. Attach a flexible suction catheter to the suction device, while maintaining the sterile plastic covering over the suction catheter.
4. Using the suprasternal notch and the end of the airway as guides, measure the depth desired for the catheter.[4]
5. With the thumb port of the catheter uncovered, insert the catheter through the airway device.
6. Once the desired depth (measured in step 4) has been reached, occlude the thumb port, and remove the suction catheter slowly.
7. Document the time and result on the PCR.

Indication

- Obstruction of the airway in a patient currently being assisted by an airway adjunct.[1]
- To assist an awake patient with removal of excess secretions to facilitate patient comfort and improve oxygenation and ventilation.[2]

Contraindication

- N/A

Notes

- [1]Such as nasotracheal tube, endotracheal tube, supraglottic (e.g., King LT) airway, tracheostomy tube, or a cricothyrotomy tube.
- [2]e.g. patient with pneumonia in distress due to excessive purulent sputum production.
- [3]EMT limited to suctioning upper airway.
- [4]Judgment must be used regarding the depth of suctioning with cricothyrotomy and tracheostomy tubes.

Tracheostomy Tube Replacement

P Paramedic P

Procedure

1. Gather and prepare all airway equipment for standard airway management, including equipment for tracheal intubation and failed airway.
2. Have airway device (ETT or tracheostomy tube) of the same size as the tracheostomy tube currently in place as well as 0.5mm size smaller available.[1]
3. Lubricate the replacement tube(s) with water-soluble lubricant and check the cuff.
4. Remove the tracheostomy tube from mechanical ventilation devices and use a BVM to pre-oxygenate the patient.
5. Once all equipment is in place, remove any device securing the tracheostomy tube, including sutures and/or supporting bandages.
6. If applicable, deflate the cuff on the tube. If unable to aspirate air with a syringe, cut the pilot balloon off to allow the cuff to lose pressure.
7. Remove the tracheostomy tube.
8. Insert the replacement tube:
    - Insert the obturator airway through the outer cannula of the tube.
    - Gently pass the tracheostomy tube through the stoma, following the natural curvature of the tube so that the tip of the tube is placed caudally.
    - Remove the obturator airway.
    - Place the inner cannula through the out cannula.
    - Inflate the tracheostomy cuff – confirm inflation by checking the pressure of the pilot balloon.
9. Confirm placement using continuous waveform end-tidal capnography. Perform physical exam to check for symmetric breath sounds and chest rise. Document SPO_2 reading.
10. If there is any difficulty placing the tube, re-attempt the procedure with the smaller tube.
11. If difficulty is still encountered, use standard airway procedures such as BVM ventilations with an OPA/NPA, or attempt endotracheal intubation as per protocol.
12. Document procedure, results/confirmation, patient response, and any complications on the PCR.

Indication

- Inability to ventilate with BVM
- Ineffective spontaneous ventilations (poor chest rise, decreased breath sounds bilaterally)
- Hypoxia, cyanosis, or decreased oxygen saturation levels, not relieved by suctioning.
- Increased work of breathing
- Altered mental status, secondary to hypoxia.

Contraindication

- Recently placed tracheostomy – less than 2 weeks old.

Notes

- [1]e.g., If the patient has a size 6.0mm Shiley, then have a 6.0mm and a 5.5mm tube prepared.
- Online medical control must be contacted prior to removal of any tracheostomy device.
- Patients may be very familiar with maintaining the patency of their tracheostomy, patient may just need assistance from EMS.
- Edema at the stoma site may increase the difficulty.
- Once tracheostomy tube is removed, there is potential for inability to reinsert tracheostomy tube.

Effective Date 1 Jan 2022	S-TR1

Ventilator Operation

A	Advanced	A
P	Paramedic	P

Procedure

1. All ventilator settings, including respiratory rate, FiO_2, mode of ventilation[1], and tidal volumes should be recorded prior to initiating transport. Additionally, the recent trends in oxygen saturation experienced by the patient should be noted.
2. Prior to transport, specific orders regarding any anticipated changes to ventilator settings as well as causes for significant alarms should be reviewed with the referring medical personnel as well as medical control.
3. Once in the transporting unit, and during any patient transfers, confirm adequate oxygen delivery to the ventilator.
4. Frequently assess breath sounds to assess for possible tube dislodgment during transfer.
5. Frequently assess the patient's respiratory status, noting any decreases in oxygen saturation or changes in tidal volumes, peak pressures, etc.
6. Note any changes in ventilator settings or patient condition on the PCR.
7. If not already placed, consider placing a NG or OG tube for gastric pressures.
8. The airway must be monitored with continuous waveform end-tidal capnography and pulse oximetry.
9. If there is any significant change in patient condition, including changes in vital signs or oxygen saturation, or if there is a concern regarding ventilator performance or alarms, disconnect the ventilator from the ET tube and manually ventilate the patient using a bag-valve mask with a PEEP valve, if available. Administer sufficient supplemental oxygen to achieve a pulse oximetry reading >94%. Provide a ventilation rate equivalent to that provided by the ventilator, unless patient conditions mandate brief periods of hyperventilation. Continue to monitor the patient with continuous waveform end-tidal capnography and pulse oximetry. Contact medical control immediately.

Indication

- Management of an intubated patient during a prolonged or interfacility transport.

Contraindication

- N/A

Notes

- Patients should be maintained on the ventilator except for the following:
  - Equipment failure.
  - Patient cannot tolerate the mechanical ventilator.
  - Troubleshooting alarms.
- Document the following:
  - [1]Mode; refers to the method of inspiratory support.
  - Tidal volume, Peak Inspiratory Pressure (PIP), Fraction inspired Oxygen (FiO_2), and Positive End Expiratory Pressure (PEEP).
  - Continuous end-tidal CO_2 readings and pulse oximetry readings in 5 minute intervals.
  - Any adjustment in settings must be made in consultation with online medical control.

Effective Date 1 Jan 2022	S-VO1

Continuous Waveform End-Tidal Capnography ($EtCO_2$)

A	Advanced	A
P	Paramedic	P

Procedure

1. Attach the inline capnography sensor between the airway device (e.g., ETT, supraglottic airway, etc.) and the BVM or ventilator.
2. If patient does not need an advanced airway, place a nasal cannula with capnography capabilities on the patient.
3. Connect the capnography sensor to the capnography monitoring device.
4. Note the CO_2 level and waveform changes. These will be documented on each respiratory failure, cardiac arrest, or respiratory distress patient.
5. The capnography device shall remain in place with the airway being monitored throughout prehospital care and transport.
6. Any loss of $EtCO_2$ detection or waveform indicates an airway or ventilator problem and should be properly addressed and documented.
7. The "DOPES" pneumonic can be helpful in troubleshooting any issues:
8. **D**islodgement of endotracheal tube.
9. **O**bstruction (e.g., secretions, kinked tube or tubing)
10. **P**neumothorax
11. **E**quipment Malfunction
12. **S**tacking (breath stacking, Auto-PEEP)
13. Document any changes of capnography reading as procedures are performed to verify the airway problem has been addressed.
14. Document the procedure and the results on PCR.

Indication

- Respiratory Distress
- Respiratory Failure
- Used with all airway procedures:
  - ETT/NTT insertion
  - Supraglottic airway insertion
  - Cricothyrotomy
  - BVM Ventilation
  - NIPPV (e.g., CPAP)

Contraindication

- N/A

Notes

- In general, $EtCO_2$ of 35-45mmHg is considered the "normal" range. However, a number of factors often cause the $EtCO_2$ to be above or below this value (e.g., if the capnography equipment is not properly calibrated) even though the patient's blood gas would show a pCO_2 reading in the normal range. Less important than the value of the $EtCO_2$ is that it remains consistent during the duration of patient care. For example, if the $EtCO_2$ reading started at 30 mmHg during transport but rose to 60 mmHg, that would indicate hypoventilation or worsening airway obstruction or endotracheal tube dislodgment. Alternatively, if the $EtCO_2$ reading dropped to 15 mmHg, that would indicate hyperventilation and prompt the paramedic to decrease the rate or tidal volume being delivered.
- Hyperventilation can be caused from multiple causes, e.g.: iatrogenic (i.e., receiving manual ventilations too rapidly), anxiety, bronchospasm, pulmonary embolus, cardiac arrest, decreased cardiac output, hypotension, hypothermia, and pulmonary edema.
- Hypoventilation can be caused from a decreased level of consciousness from medical or trauma etiologies, severe COPD / asthma exacerbations, or depressed respirations.
- $EtCO_2$ can monitor effective CPR compressions by monitoring cardiac output. In particular, an $EtCO_2$ < 10 mmHg indicates poor chest compressions. High quality chest compressions often achieve an $EtCO_2$ output of 10-20 mmHg.
- During CPR watch for any sudden increase in the $EtCO_2$ – this may indicate the return of spontaneous circulation (ROSC).
- Patients with suspected brain injury should keep $EtCO_2$ levels within normal ranges (i.e., do not hyperventilate or hypoventilate)
- A "shark fin" pattern waveform indicates bronchoconstriction (e.g.: asthma, COPD, obstructed ETT).

Chest Decompression

Procedure

1. Don PPE
2. Administer high flow oxygen.
3. Identify the site for decompression:
   - Preferred – anterior axillary line in the fourth or fifth intercostal space.
   - Secondary – the 2nd intercostal space in the mid-clavicular line on the same side as the pneumothorax.
4. Prepare the site with an antiseptic solution.
5. Insert the catheter or commercial device (at least a 14ga, 10ga preferred if available, 3.5inch angiocath for adults) into the skin over the fifth or sixth rib and direct it just over the top of the rip (superior border)
6. Advance the catheter until a "pop" is felt and air or blood exits under pressure through the catheter, point catheter towards patient's head, then advance along chest wall.
7. Remove the needle, leaving the plastic catheter in place.
8. Secure the catheter hub to the chest wall with dressings and tape.
9. Repeat needle decompressions may need to be performed if the patient's vital signs deteriorate. Placement should be performed as described in steps 3 – 8, with placement occurring adjacent to previously placed catheters.[2]
10. If time permits and equipment is available, consider attaching IV tubing to the hub of the catheter, and place the other end of the tubing into a bottle of water, placed on the floor below the patient. This functionally creates a one-way valve that allows air to escape the chest cavity but does not allow it to enter.

P Paramedic ONLY P

Indication

- History and exam findings that would suggest pneumothorax is the most likely cause of a patient in shock.[1]
- Patients in traumatic arrest with chest or abdominal trauma for whom resuscitation is indicated.[3]

Contraindication

- N/A

Notes

- [1]e.g., gun shot, or stab wound to the chest, history of COPD, ventilated patient with increased resistance/high pressure alarms, prior history of spontaneous pneumothorax. By definition, a tension pneumothorax is present when it impairs venous return to the heart and causes a drop in blood pressure, usually defined as a SBP < 90 mmHg. Clinical exam findings that may be suggestive of a pneumothorax include:
  - Absent or decreased breath sounds or crepitus on the affected hemithorax.
  - Paradoxical chest wall movement
  - Increased resistance to ventilation
  - Jugular vein distension (JVD)
  - Tracheal deviation (late finding)
- [2]Do Not Remove any previously placed catheters.
- [3]Consider the performance of bilateral needle thoracostomy for these patients.

Non-Invasive Positive Pressure Ventilation (NIPPV)

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Ensure adequate oxygen supply to ventilation device.
2. Explain the procedure to the patient.
3. Place the delivery masks over the mouth and nose[1].
4. Secure the mask with provided straps, starting with the lower straps until minimal air leak occurs.
5. If the PEEP is adjustable on the NIPPV device, adjust the PEEP beginning at 5 cmH_2O of pressure and slowly titrate to achieve a positive pressure as follows:
   - 5-15 cmH_2O for pulmonary edema, near drowning, possible aspiration, or pneumonia
   - 5-10 cmH_2O for COPD
6. Evaluate the response of the patient, assessing breath sounds, oxygen saturation, and general appearance.
7. Titrate oxygen levels to the patient's response.[2]
8. Encourage the patient to allow forced ventilation to occur. Observe closely for signs of complications. Consider administration of an anxiolytic (e.g., midazolam) to assist with compliance with the device.[3]
9. Document the time NIPPV was started, the FiO_2 and PEEP, and the patient's response[4].

Indication

- Patients where inadequate ventilation is suspected:
  - Pulmonary Edema
  - Pneumonia
  - COPD
  - Asthma
  - Etc.

Contraindication

- Patients unable to protect their own airway.
- Respiratory distress due to upper airway obstruction.
- Patients without spontaneous respirations.
- Severe facial trauma that makes placing the NIPPV mask difficult or would cause further harm/trauma to the patient.

Notes

- [1]Ensure correct size of mask for the patient.
- [2]Many patients respond to low FiO_2 (30-50%)
- [3]Medication administration by Paramedic
- [4]Before and after; respiratory rate, subjective symptoms, other vital signs including $EtCO_2$, and pulse oximetry on the PCR.

Effective Date 1 Jan 2022	S-PP1

Gastric Tube Insertion

Procedure

1. Estimate insertion length by superimposing the tube over the body from the bottom of the ear to the tip of the nose to the bottom of the sternum/xiphoid process.
2. Flex the neck, if not contraindicated, to facilitate esophageal passage.
3. Liberally lubricate the distal end of the tube with water soluble lubricant and pass through the patient's nostril along the floor of the nasal passage. Do not orient the tip superiorly or into the turbinates. This increases the difficulty of the insertion and may cause bleeding. The tip should be parallel to the floor and directed straight backwards.
4. In the setting of an unconscious, intubated patient or a patient with facial trauma, oral insertion of the tube may be preferred.
5. Continue to advance the tube gently until the appropriate distance is reached.
6. Confirm placement by:
    - Injecting 20mL of air and auscultate for the bubbling of the air over the stomach.
    - Aspirate gastric contents to confirm proper placement.
7. Secure the tube using paper tape.
8. Decompress the stomach by connecting the tube to suction or manually aspirating with the large catheter tip syringe.
9. Document the procedure, time, and results on the PCR.

P Paramedic ONLY P

Indication

- Gastric decompression in intubated patients

Contraindication

- Nasogastric tube insertion in patients with suspected nasal bone or skull fractures

Notes

- Some supraglottic airways have means to insert a gastric tube. Check with manufacturers specs.

Effective Date 1 Jan 2022	S-GT1

Termination of Resuscitation

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. All patients in cardiac arrest who have cardiopulmonary resuscitation initiated will be treated on scene.
2. All available interventions to address the patient's airway, breathing, and circulation, to include advanced airway, vascular access, electrical therapy, and medication administration, will be implemented.
3. In patients with a medical cause of cardiac arrest and no available ALS resources, all the following termination criteria must be met:
    a. Unwitnessed arrest
    b. Age ≥ 18 years
    c. At least 20 minutes of high-quality CPR
    d. Non-shockable rhythm at all pulse / rhythm checks
    e. Online medical control approval to terminate
4. In patients with a medical cause of cardiac arrest and being worked by an ALS team, the following termination criteria must be met:
    a. Age ≥ 18 years
    b. At least 20 minutes of high-quality CPR with all ALS interventions performed
    c. EtCO2 readings < 10 mmHg regardless of underlying rhythm
    d. For patients with a rhythm other than asystole, online medical control approval is required to terminate
5. In patients with a traumatic cause of cardiac arrest[1,2], the following termination criteria must be met:
    a. ALS crew available on scene
    b. Age ≥ 15 years
    c. Patient's initial rhythm is asystole or turns to asystole during resuscitation
    d. At least 10 minutes of high-quality CPR
    e. All ALS interventions performed, including stopping exsanguination, advanced airway management, intravenous access and medication administration, bilateral needle decompressions (if indicated), chest seals (if indicated), and fluid administration
6. Must document the time of death, name of the physician contacted for online medical control, cardiac rhythm, absence of a central pulse, and indications for termination. Rhythm strips from at least two leads must be attached to the patient care report
7. Leave all medical devices attached to the patient
8. Provide appropriate comfort care to any family members who may be present on scene

Indication

- Patients in cardiac arrest who are being resuscitated on scene

Contraindication

- Patients who are hypothermic or are pregnant are excluded from this protocol

Notes

- [1]In patients with traumatic cardiac arrest due to BLUNT injury, patients who are found apneic, pulseless, and without organized electrocardiographic activity on EMS arrival can have resuscitation efforts terminated without further intervention
- [2]In patients with penetrating trauma, look for evidence of life (e.g. pupillary reflexes, spontaneous movement, or organized EKG activity). If present, initiate resuscitation and begin IMMEDIATE transport to a trauma center (if < 15 minutes away) or local emergency department.

Do Not Resuscitate (DNR)

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Once a patient, caregiver, or family member produces a DNR form, device, or order, the Navy F&ES provider shall initiate this protocol.
2. The following are acceptable for implementing the DNR protocol:
   - Original state DNR or POLST (Physician Orders for Life Sustaining Treatment)
   - Medic Alert DNR bracelet or necklace.
   - Oral DNR order from EMS on-line medical control
   - Oral DNR order from other on-site physician who is responsible for the patient's care
3. The following are not acceptable for implementing the DNR protocol:
   - Advance directives without a DNR order.
   - Facility specific DNR orders.
   - Notes in medical records.
   - Prescription pad orders.
   - DNR stickers
   - An oral request from someone other than a physician.
   - An oral order from an attending physician who is not on-site.
   - Copies of the out of hospital DNR form.
   - Any other device or instrument not listed above as acceptable.
4. To be a valid DNR order, the form must contain:
   - The patient's name and all other appropriate patient identifiers.
   - The date of issuance.
   - The signature of the authorizing independent practitioner.
   - The signature and printed name of the patient, guardian, or health care proxy.
   - A date of expiration (if required by the form). A DNR passed the date of expiration will not be considered valid.
5. If there are any questions regarding a DNR form or order, the provider in charge (PIC) will contact on-line medical control.
6. A DNR order may be revoked at any time by either:
   - Physical cancellation or destruction of all DNR order devices.
   - An oral statement by the patient made directly to F&ES personnel requesting only palliative care or resuscitation.[1]

   If the DNR/POLST is confirmed valid, F&ES shall provide care as instructed on the DNR/POLST form.

Indication

- Patients who have decided not to be resuscitated.

Contraindication

- N/A

Notes

- [1]If the patient revokes a DNR order orally, the DNR order notification devices do not need to be destroyed. F&ES personnel should document thoroughly the circumstances of the revocation. An oral revocation by a patient is good for only the single response or transport for which it was issued.
- If CPR is started on a patient with a valid DNR/POLST form, and the form is presented to Navy F&ES, all resuscitative efforts shall be discontinued.

Effective Date 1 Jan 2022	S-DNR

Presumed Dead on Arrival

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Presumption of death in the field (without initiation of patient care) should be considered only in the following instances:
   - Decapitation.
   - Decomposition.
   - Rigor mortis/dependent lividity with: confirmed absence of a carotid pulse or respirations for 30 seconds, non-reactive pupils, and asystole in ≥ 2 leads.
   - Pulseless, apneic patient in a declared multiple casualty incident (MCI) where system resources are required for stabilization of living patients.
   - Pulseless, apneic patient with injury not compatible with life (with the exception of an obviously pregnant female where resuscitation attempts should be initiated, and the patient transported to the nearest appropriate facility)
   - Burned beyond recognition.
   - Traumatic injuries incompatible with life.
2. Death cannot be judged in the hypothermic patient, who may be asystolic, apneic, and stiff. Transport for rewarming in all instances.
3. Navy F&ES provider in charge (PIC) for patient care shall document the incident and all actions on the PCR prior to the end of shift. (including disposition of deceased)
4. The Regional EMS Chief shall review the incident, and make all finding and/or recommendations for mitigation to the Regional BUMED EMS Medical Director, Regional and Installation F&ES Chiefs.
5. Feedback will be provided to the appropriate personnel involved, including the Regional BUMED EMS Medical Director after the incident has been reviewed.

Indication

- Presumption of death in the prehospital setting.

Contraindication

- N/A

Notes

- If CPR has been initiated but all the components above have been subsequently confirmed, CPR may be discontinued after direct medical control has been contacted to request termination of life-saving efforts.
- Any personnel actions taken as a result of the Presumed Dead on Arrival shall be in accordance with Human Resources.

Effective Date 1 Jan 2022	S-PD1

Synchronized Cardioversion

Procedure

1. Ensure the patient is attached properly to a monitor/defibrillator capable of synchronized cardioversion.
2. Ensure proper placement of the defibrillation pads.
    a. If the patient has an implanted pacemaker or AICD, ensure the pads are at least 10 cm from the generator. Anteroposterior pad placement may be preferred
3. Be prepared for defibrillation if the patient becomes pulseless.
4. If time permits, consider pain management, but do not delay cardioversion.
5. Set energy selection to the appropriate setting – for most arrhythmias, 100j is a reasonable starting dose[1]. Refer to the manufacturer's guidelines for more specific information.
6. Set the monitor/defibrillator to synchronized cardioversion mode. You should note arrows or markers above each QRS complex on the monitor once it is in "sync" mode[2].
7. Make certain all personnel are clear of the patient.
8. Press the charge button. Once fully charged, press the shock button to deliver the specified level of electricity. Stay clear of the patient until you are certain the energy has been delivered.
9. Assess the patient response.
    - Proceed to the appropriate ACLS algorithm if the patient becomes pulseless (pulse VT/VF, PEA/Asystole).
    - If the patient's condition is unchanged, repeat steps 4-7 using escalating energy settings.
10. Repeat until delivering the maximum amount of energy (varies by manufacturer) or until efforts succeed. Discuss further care with online medical control if cardioversion is unsuccessful.
11. Note the procedure, results, and time on the PCR

P Paramedic ONLY P

Indication

- Unstable patient with a tachydysrhythmia, either narrow-complex or wide-complex.

Contraindication

- Patient has a pulse – a pulseless patient requires unsynchronized cardioversion (Defibrillation)

Notes

- [1]General energy guidelines include: Atrial fibrillation – 120 to 200 J biphasic; Atrial Flutter – 50 to 100 J biphasic; V Tach with a pulse – 100 J biphasic; V Fib or pulseless V Tach – 120 to 200 J biphasic
- [2]It may take the monitor/defibrillator several cardiac cycles to "synchronize", so there may be a delay between activating the shock and the actual delivery of energy.

Automated External Defibrillation (AED)

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. If multiple rescuers are available, one rescuer should provide uninterrupted chest compressions while the AED is being prepared for use.
2. For witnessed arrests of <2 minutes – recommendations are to attempt defibrillation as soon as possible.
3. For Unwitnessed arrests of > 2 minutes duration – perform 2 minutes or 5 cycles of CPR prior to defibrillation.
4. If sufficient personnel are available, ventilations with a BVM and oropharyngeal airway (OPA) should be provided at a ratio of 30:2[2]. If BVM is not immediately available, an OPA with a non-rebreather face mask giving 100% FiO_2 can be placed until BVM ventilations can be given. At no time should this task compromise or interrupt the delivery of chest compressions or delay the time to defibrillate.
5. Apply the defibrillator pads per manufacturer recommendations.
6. Use alternate placement when implanted devices (pacemakers, automatic implantable cardiac defibrillator [AICD]) occupy the preferred pad positions.[3]
7. Remove any medication patches on the chest and wipe off any residue.
8. If necessary, connect the defibrillator leads: negative to the anterior chest pad and the positive to the posterior pad.
9. Activate the AED for analysis of rhythm.
10. Once prompted to do so, stop CPR and clear the patient for rhythm analysis.
11. Keep CPR interruptions as brief as possible. Defibrillation should be performed as soon as possible after chest compressions are stopped.[4]
12. If a shock is advised, depress the "shock" button. Assertively ask "Are you clear?!?" to other providers, state "I'm clear, we are all clear" while performing a visual confirmation that no one, including yourself, is in contact with the patient prior to defibrillation.
13. Resume CPR (compressions and ventilations) immediately after defibrillation.
14. After 2 minutes of CPR, analyze rhythm and defibrillate if indicated. Repeat this step every 2 minutes or 5 cycles of CPR.
15. If "no shock advised", perform CPR for two minutes and then reanalyze.
16. Transport and continue treatment as indicated.
17. Keep interruption of compressions as brief as possible. Adequate CPR is a key to successful resuscitation.
18. Document the suspected down time, initial rhythm analysis (shockable vs non-shockable), and the response to any interventions on the PCR.

Indication

- Patients in cardiac arrest[1]

Contraindication

- N/A

Notes

- [1]Patients less than 55 pounds, use pediatric pads if available. If adult pads are used, they must not touch each other – consider anterior and posterior placement.
- [2]30 compressions to 2 ventilations.
- [3]Ideally, pads should be placed greater than 10cm away from the AICD.
- [4]Some automatic defibrillators are capable of analysis and energy delivery in less than 10 seconds after chest compressions are held. Other automatic defibrillators, such as those by Physio-Control, allow for chest compressions to be resumed for up to 30 seconds after analysis. This allows the provider to resume chest compressions and increase coronary perfusion pressure immediately prior to shock delivery. This is relevant because the success of defibrillation is related to sufficient coronary perfusion pressure, which drops precipitously following cessation of chest compressions.

Effective Date 1 Jan 2022	**S-AED1**

Manual Defibrillation

P Paramedic ONLY P

Procedure

1. If multiple rescuers are available, one rescuer should provide uninterrupted chest compressions while the AED is being prepared for use.
    - For witnessed/unwitnessed arrests – recommendations are to attempt defibrillation as soon as possible.
    - If sufficient personnel are available, ventilations with a BVM and OPA should be provided at a ratio of 30:2[1] . If this cannot be immediately performed, an OPA with a non-rebreather face mask giving 100% FiO_2 can be placed until BVM ventilations can be given. At no time should this task compromise or interrupt the delivery of chest compressions or delay the time to defibrillation.
2. Clinically confirm the diagnosis of cardiac arrest and identify the need for defibrillation.
3. After application of an appropriate conductive agent (if needed), apply the defibrillation pads or paddles to the patient's chest in the proper position.
    - Paddles – right of the sternum at the 2nd intercostal space and anterior axillary line at the 5th intercostal space.
    - Pads – anterior – posterior position or anterior – apex position. Be sure to avoid placement near any implanted pacemakers or AICDs.
    - Set the appropriate energy level – varies by manufacturers recommendations, but generally, is 200j for a biphasic defibrillator and 360j for a monophasic defibrillator.
    - Charge the defibrillator to the selected energy level. Continue chest compressions while the defibrillator charges.
    - Assertively state, "I'm clear, you're clear, we are all clear" while visualizing that no one, including yourself, is in contact with the patient. At this point, the person delivering chest compressions should hold compressions.
    - Press the SHOCK button.
    - Immediately resume chest compressions for two minutes. After 2 minutes of CPR, analyze the rhythm and check for a pulse.
    - Repeat the defibrillation procedure as described in steps 3-6.
    - Keep CPR interruptions as brief as possible. Defibrillation should be performed as soon as possible after chest compressions are held.[2]
    - $EtCO_2$ can monitor effective CPR compressions by monitoring cardiac output. In particular, an $EtCO_2$<10 mmHg indicates poor chest compression. Hight quality chest compressions often achieve an $EtCO_2$ output of 10-20 mmHg.
4. Document the suspected down time, the initial rhythm analysis (VF, VT, PEA, asystole), $EtCO_2$ readings, and the response of any interventions.

Indication

- Pulseless Ventricular Tachycardia/Ventricular Fibrillation

Contraindication

- Patient presents with a pulse

Notes

- [1]30 compressions to 2 ventilations.
- [2]Coronary perfusion pressure is directly related to the adequacy and consistency of chest compressions and the success of defibrillation is related to sufficient coronary perfusion pressure. Coronary perfusion pressure drops precipitously following the cessation of chest compressions.

	Effective Date 1 Jan 2022	**S-MD1**

Transcutaneous Pacing

Procedure

1. Attach a standard 4 lead EKG to the patient.
2. Apply pacing pads to the patient's chest according to manufacture recommendations.
3. Change selector switch from "Monitor" to "Pacing".
4. Adjust the heart rate to 70bpm for an adult and 100bpm for a child <12 years of age.
5. Note pacer spikes on the cardiac monitor screen.
6. Slowly increase output until capture of electrical rhythm on the monitor, represented by the appearance of a QRS complex after each pacer spike.
7. If unable to capture while at maximum current output, stop pacing immediately.
8. If capture is observed on the monitor, check for a corresponding pulse and re-assess vital signs and mental status.
9. Consider the use of a sedation or analgesia if the patient is uncomfortable, per protocol.
10. Document the dysrhythmia, blood pressure, heart rate, any medications given, and the response to the external pacing with EKG strips on the PCR.

P Paramedic ONLY P

Indication

- Symptomatic bradycardia[1]
- Bradycardia in children with poor perfusion[2]

Contraindication

- Hemodynamically stable bradycardia

Notes

- [1]Less than 60 bpm (in adults) with signs and symptoms of inadequate end organ perfusion such as:
  - Chest pain
  - Hypotension
  - Pulmonary Edema
  - Altered Level of Consciousness
- [2]Follow the symptomatic pediatric bradycardia protocol for care management. For children with a heart rate < 60 bpm and evidence of poor perfusion, initiate ventilations, CPR, and epinephrine administration prior to considering transcutaneous pacing

12 Lead EKG

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Prepare Cardiac Monitor
2. Enter Required Patient Information into Cardiac Monitor. (Age, Sex, Name)
3. Expose the patient's chest. **Modesty of the patient should be respected**
4. Shave, dry, or clean the patient's chest as needed to ensure adequate electrode to skin contact.
5. Apply the electrodes onto the patient in the following locations:
   - RA – Right Arm
   - LA – Left Arm
   - RL – Right Lower[1] (Leg or Lower Torso)
   - LL – Left Lower[1] (leg or Lower Torso)
   - V1 – 4th Intercostal space to the right of the sternum
   - V2 – 4th Intercostal space to the left of the sternum
   - V3 – Directly between V2 and V4
   - V4 – 5th Intercostal space, Midclavicular
   - V5 – Level with V4 at Left Anterior Axillary Line
   - V6 – Level with V5 at Left Midaxillary Line
6. Instruct patient to remain still with legs uncrossed and arms to the side, breathe normal, and do not talk while acquiring EKG.
7. Acquire EKG (follow manufacturers instruction)
8. Notify receiving hospital immediately if EKG is read as "Acute Myocardial Infarction (AMI)"[2]
9. Transmit to EKG to hospital, if capable.
10. Contact hospital to notify that the EKG has been transmitted.
11. Attached copy of EKG to PCR
12. Document procedure, time, and results.

Indication

- In persons > 35 years, an EKG should be obtained within 10 min if Sx. are suggestive of ACS: Chest pain or discomfort, Chest pressure, Non-traumatic shoulder or neck pain, Heartburn or epigastric / upper abdominal pain, Tachycardia or bradycardia, Syncope, Severe weakness > 45 years of age, Difficulty breathing,
- Persons with ACS risk factors (DM, hx of CAD, family hx of CAD, severe obesity, and cocaine use) with the above symptoms
- Suspected Medication Overdose
- Electrical Injuries
- Syncope
- Stroke

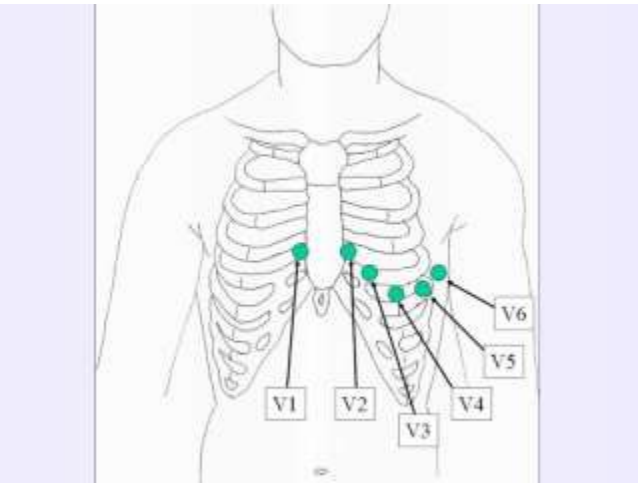
Contraindication

- None

Notes

[1] Follow cardiac monitor directions for placement.

[2] Paramedic acquires, interprets, and transmits the EKG. EMT and AEMT will acquire and transmit EKG when needed



Effective Date	S-EK1
1 Jan 2022	

Decontamination

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. In coordination with HazMat and other Emergency Management personnel, establish “Hot”, “Warm”, and “Cold” zones
2. Ensure that personnel assigned to operate within each zone have proper PPE.
3. In coordination with other public safety personnel, assure each patient from the “Hot” zone, undergoes appropriate initial decontamination. This is specific to each incident. Such decontamination may include:
    - Evacuating patients from the Hot Zone
    - Removal of clothing
    - Irrigation of eyes
    - Passage through high-volume water bath (e.g., between 2 fire apparatus) for patients contaminated with liquids or certain solids.
    - Patients exposed to gases, vapors, and powders often will not require high-volume water bath[1].
4. Initial triage of patients should occur after Step 3. Immediate life threats should be addressed prior to technical decontamination.
5. Assist patients with technical decontamination (unless contraindicated based on Step 3). This may include removal of all clothing and gentle cleansing with soap and water.[2]
6. Place triage identification on each patient.[3]
7. Monitor all patients for environmental illness.
8. Transport patients per appropriate protocol.

Indication

- Patients who have been exposed to significant hazardous materials including; chemical, biological, or radiological weapons.

Contraindication

- N/A

Notes

- [1]May unnecessarily delay treatment and/or increase dermal absorption of the agent(s)
- [2]All body areas should be thoroughly cleansed, although overly harsh scrubbing, which could break the skin should be avoided.
- [3] Match triage information with each patient’s personal belongings that were removed during technical decontamination. Preserve these personnel affects for Law Enforcement if needed.

ATNAA/MARK 1 Kit (Atropine and 2-PAM Auto Injectors)

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Characteristic signs and symptoms may identify nerve agent poisoning:
   - Vapor exposure – early manifestation of poisoning occurring in the eyes, nose, and airway
   - Liquid/dermal exposure – early manifestations occurring in the skin and the GI tract.
   - Consider the mechanism of release and the associated signs and symptoms. Refer to the chart below with the mnemonic SLUDGE-MSR for signs and symptoms.[1]
2. When providers recognize most or all of the symptoms listed below, they must immediately receive treatment (self-aid or buddy aid):
   MILD Symptoms (Self Aid):
   - Unexplained runny nose
   - Unexplained sudden headache
   - Sudden drooling
   - Difficulty in seeing (dimness of vision, constricted pupil)
   - Tightness in the chest or difficulty in breathing
   - Wheezing and coughing.
   - Localized sweating and muscular twitching in the area of the contaminated skin
   - Stomach cramps
   - Nausea without vomiting

   MODERATE Symptoms (self or buddy air) May experience most or all of the **MILD** symptoms and:
   - Diarrhea
   - Moderate to severe difficulty breathing.
   - Skeletal-muscular twitching/fasciculations.
   - Progression of symptoms from mild to moderate indicates either inadequate treatment or continuing exposure to the nerve agent.

   SEVERE Symptoms (buddy aid). May experience most or all of the **MILD** symptoms and:
   - Impaired thinking.
   - Increasing wheezing and difficulty breathing.
   - Severe pinpoint pupils.
   - Red eyes with tearing.
   - Vomiting.
   - Severe muscular twitching.
   - Involuntary defecation.
   - Convulsions
   - Unconsciousness.
   - Respiratory Failure
   - Bradycardia
3. The ABC priorities of prehospital treatment require modification to A-ABCs - “Antidote then ABCs.” The antidote (MARK I Atropine and 2PAM) should be given as soon as possible, because toxic exposure to the nerve agent will make ventilation difficult. If the antidote is not immediately available, prevent further exposure to the nerve agent, provide Airway-Breathing-Circulatory support, and evacuate the patient to an area where the antidote is available.
4. EMTs, AEMTs, and Paramedics may administer MARK I Kits (up to a total of three kits) as self-aid or buddy aid to public safety personnel.
5. Dosage scheme for MARK I auto injector administration:
   - Vapor (mild exposure)
     - Symptoms may include pinpoint pupils, runny nose, and/or mild shortness of breath

Indication

- Nerve agents
- Organophosphates

Contraindication

- N/A

- Onset of symptoms: within seconds
- Treatment should begin with one dose of the MARK I antidote kit initially. This dosage may be repeated in 10 minutes if the patient remains symptomatic.

- Liquid (mild exposure)
  - Symptoms may include sweating, twitching, vomiting, weakness
  - Onset: minutes to hours.
  - Treatment should begin with one dose of MARK I antidote kit initially.
  - Dosage may be repeated in 10 minutes if the patient remains symptomatic.
- Vapor or Liquid (moderate exposure)
  - Symptoms may include more severe respiratory distress, muscular weakness, and/or vomiting and diarrhea
  - Treatment should begin with two doses of MARK I antidote kit initially.
  - Dose of one MARK I kit may be repeated in 10 minutes if the patient remains symptomatic.
- Vapor or Liquid (severe exposure)
  - Symptoms may include copious secretions, unconsciousness, convulsions, and/or apnea
  - Onset: seconds to hours.
  - Treatment should begin with three doses of MARK I antidote kit initially.

6. For patients exhibiting seizure activity, refer to Seizure Protocol.
7. Monitor the effectiveness of treatment:
   - Positive response to treatment includes improvement in initial symptoms and drying of secretions.
   - If neither occurs after initial MARK I administration, then administer additional atropine per protocol until these end points are reached.
   - In this setting the pulse will generally be greater than 90BPM – an additional sign of vagal inhibition by atropine.
   - Pupillary constriction (pinpoint/miosis) usually occurs from direct exposure, will not respond to systemic atropine, and should not be used as a sign of the effect of treatment.
   - The duration of effect of each MARK I kit auto injector is approximately 5 to 15 minutes.
   - If secretions return and the pulse drops below 90BPM, additional treatment should be given.

Notes

- [1]This mnemonic is used for all organophosphate toxicity. Pupillary response occurs only with vapor exposure and will not be seen unless there is direct liquid contact with the eye. Urinary incontinence is also very rare.

Insect Stinger Removal

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Gently scrape the stinger out using a straight edged object[1]
2. If scraping does not work, try using a piece of tape[2] (medical, scotch-type, or duct), gently apply it to the affected area
3. Slowly pull the tape to remove the stinger(s). This process may be repeated 2-3 times.
4. Use a fresh tape each time.
5. Be sure all stinger(s) were removed.
6. Clean and dress the site.
7. Treat for pain and allergic reaction per appropriate protocol.

Indication

- Any patient presenting with an insect sting where the stinger is still embedded in the patient's skin.

Contraindication

- N/A

Notes

- Patients who were recently stung should have the stinger removed. Most venom is injected during the first few seconds after being stung, but there can be a delay in the release of toxins. Removing the stinger quickly is more important than the method of removal.
- [1]Tongue depressor, edge of plastic card, the dull side/edge of trauma shears.
- [2]Tape also works well to remove the spines of stinging caterpillars.
- Do not try to capture the offending marine or terrestrial animal or insect.

Tourniquet

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Place tourniquet proximal to the wound, avoiding placement over any joints. Preferred placement on scene is generally "high and tight" and can placed over clothing.
2. Tighten per manufacturer instruction until hemorrhage stops and distal pulses in the affected extremity cannot be palpated.
3. If the extremity continues to bleed after the effective application of one tourniquet, leave and place and apply a second tourniquet immediately adjacent (above or below) the initial tourniquet.
4. Secure the tourniquet per manufacturer's instructions.
5. Dress the wound with clean dressing.
6. Note the time the tourniquet was applied and communicate this to the receiving facility. The time and location of the tourniquet should be marked in a conspicuous location on the tourniquet and/or patient.
7. If there is a delayed or prolonged transport time, contact online medical control for further guidance[1].

Indication

- Life threatening extremity hemorrhage that cannot be controlled by other means.
- Serious or life-threatening extremity hemorrhage and tactical considerations prevent the use of standard hemorrhage control techniques

Contraindication

- Non-extremity hemorrhage (e.g., truncal, face, or neck)
- Proximal extremity location where tourniquet application is not practical (e.g., groin or axilla)

Notes

[1]The tourniquet should not be removed once placed, unless approved by medical control.

Combat Gauze (Wound Packing)

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Locate source of life-threatening hemorrhage.
2. Open the package and compress the bleeding vessel against bone with gauze, occluding the vessel.
3. Maintain pressure on the vessel and tightly pack the wound with the combat gauze[1].
4. Continue applying pressure for 3 minutes or until bleeding stops.
5. Reassess the wound to ensure bleeding is controlled.
6. The wound may be repacked, or a second gauze applied if the initial intervention failed to provide adequate hemorrhage control[2].
7. Leave Combat Gauze in place.
8. Wrap the wound with a bandage to effectively secure the dressing into the wound.

Indication

- Life threatening non-compressible hemorrhage that cannot be controlled by other means.

Contraindication

- Non-life-threatening hemorrhage

Notes

- [1]4x4, Kling, or other type of gauze may be used if commercial product is not available.
- [2]Keep track of number/amount of gauze that was placed in wound and relay that amount to receiving facility.

Effective Date 1 Jan 2022	S-CG1

Blood Glucose Level (BGL)

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Gather and prepare equipment.
2. Blood samples for performing glucose analysis can be obtained through a finger-stick or, when possible, simultaneously with intravenous access.
3. Sterilize same site with alcohol prep.
4. Pierce skin on the side of fingertip pad using a lancet.
5. Place correct amount of blood on reagent strip or site on glucometer per the glucometer manufacturer's instructions.
6. Wait the required time as instructed by glucometer manufacturer.
7. Document the glucometer reading and treat the patient as indicated by the analysis and protocol.
8. Bandage the sample site to control bleeding.
9. Repeat glucose analysis as indicated for reassessment after treatment and as per protocol.

Indication

Patients with possible hypoglycemia:

- Diabetic Emergencies
- Change in Mental Status
- Seizure Activity
- Abnormal Behavior
- Suspected Stroke

Contraindication

- N/A

Notes

- Perform quality assurance:
  - At recommended intervals as per manufacturer's direction.
  - If any clinically suspicious readings are noted.

Effective Date 1 Jan 2022	S-BGL

Auto-Injector Epinephrine

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Confirm the patient's allergies, sign & symptoms.
2. Select the appropriate Epinephrine Auto-Injector[1].
3. Inform the patient of the procedure.
4. Prepare the lateral thigh for administration.
5. Press the Auto-Injector firmly against the skin at 90° and hold for 10 seconds and then remove.
6. Apply pressure to the injection site.
7. Dispose of the Auto-Injector in an appropriate sharps/biohazard container.
8. Monitor the patient for the desired effects and possible side effects[2].
9. Record the medication, route, dosage, and time of administration on the PCR.

Indication

- Systemic allergic reaction; patient exhibiting 1 or more of the following:
  - Respiratory distress or wheezing
  - Edema – swelling of face, lips, tongue, or throat
  - Hypotension
  - Abdominal pain
  - Rash – usually urticarial

Contraindication

- N/A

Notes

- [1]Dosage
  - Adult (25kg or more) 0.3mg IM in the anterolateral thigh.
  - Pedi (Less than 25kg) 0.15mg in the anterolateral thigh.
- [2]See Epinephrine for specific medication details.

Effective Date 1 Jan 2022	S-AI1

Intranasal Medication Administration

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Prepare syringe[1,2].
2. Attach the Mucosal Atomization Device (MAD) to the syringe.
3. Place the atomizer approximately 1.5cm into a nostril (nares).
4. Briskly depress the syringe to administer ½ of the medication[3].
5. Remove and repeat into the other nostril until all the medication has been administered.
6. If no appropriate response within 3 minutes, proceed as per appropriate protocol.

Indication

- Pain management
- Agitated/Excited delirium
- AMS/Opiate overdose
- Seizures.

Contraindication

- Nasal Trauma
- Obstruction
  - Excessive mucus
  - Bleeding
  - Foreign body
- Known sensitivity or allergy to medication administered via IN.

Notes

- [1]Prepare prefilled syringe or draw specific medication and dosage according to appropriate protocol.
- [2]EMT limited to Unit-dosed, premeasured administration for opioid antagonist for suspected opioid overdose.
- [3]Volume should not be more than 1mL per nares.

Effective Date 1 Jan 2022	S-NMA

Nitroglycerin Spray Administration

A	Advanced	A
P	Paramedic	P

Procedure

*Before using this product for the first time, the pump must be sprayed 5 times into the air (this is known as priming). The pump should be primed every 6 weeks to remain ready for use. If the product has not been used for 6 weeks, a prime of 1 spray is necessary.

1. Place the patient in an upright position, if possible.
2. Remove plastic cap.
3. Do Not Shake.
4. Hold the container upright with forefinger on top of the grooved button.
5. Instruct patient to open mouth and lift their tongue.
6. Position the container near the patient mouth without touching and press the button firmly to release the spray under the tongue.
7. Advise patient, do not inhale the spray.
8. Instruct patient to close their mouth and avoid swallowing immediately after administering the spray.
9. The medication should not be expectorated, nor the patient's mouth rinsed for 5 to 10 minutes after administration.
10. Replace cap.
11. Document vital signs, time of administration, and results on PCR.

Indication

- Acute Coronary Syndrome (ACS)
- Angina
- Cardiogenic Pulmonary Edema

Contraindication

- Hypotension – SBP<90 mmHg
- Use of PDE Inhibitors within 48hrs, 72 hours with Cialis[1]
- Hypersensitivity
- Right Ventricular Infarction, Inferior MI[2]

Notes

- Medications used for erectile dysfunction and pulmonary hypertension e.g., Sildenafil – Viagra, Revatio; Vardenafil – Levitra; Tadalafil – Cialis, Adcirca
- [2] DO NOT Administer to patients with an Inferior STEMI or suspected STEMI with right ventricular involvement because these patients require adequate RV involvement.

Physical Restraint

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Attempt less restrictive means of managing the patient – attempt verbal reassurance and calm the patient prior to use of physical management devices.
2. Request assistance from law enforcement.
3. Contact medical control
4. For the torso of the patient, restrain in a lateral or supine position[1]. Physical management of the patient should never restrict the neck or chest wall, which can lead to asphyxia.
5. Supplemental straps may be necessary to prevent flexion/extension of the torso.
6. Use soft or leather devices for restraining extremities.[2]
7. Secure all four extremities to maximize safety for the patient.
8. Secure all extremities to the stationary frame of the stretcher.[3]
9. Check circulation to the extremities after the restraints have been applied and again at least every 15 minutes. This must be documented.
10. Concurrent administration of medications (i.e., chemical restraint) to prevent further injury to the patient or crew should be considered and is highly recommended.
11. After restraint, the patient must be always under constant observation by EMS personnel.[3]

Indication

- Provision of emergency medical care to patients of all ages who are a danger to themselves or others that are agitated, violent, or uncooperative.
- Maximizing and maintaining safety for the patient, EMS personnel, and others.

Contraindication

- Patients exhibiting agitated or violent behavior due to medical conditions including, but not limited to: head trauma, metabolic disorders (e.g., Hypoglycemia, Hypoxia)

Notes

- Ensure that there are sufficient personnel available to physically restrain the patient safely.
- [1]Never restrain the patient in a prone position or with backboards, splints, or other devices on top of the patient.
- [2]These devices should not require a key to release them.
- [3]This includes direct visualization of the patient, as well as cardiac and SpO2 monitoring.
- [4]The patient should not be transported with hands behind their back as this can lead to hypoventilation and respiratory arrest.

Effective Date 1 Jan 2022	S-PR1

Taser Dart

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

****This Procedure is not for removal of darts****

1. Make sure patient is appropriately secured with assistance of law enforcement to protect the patient and crew members. Consider psychologic management medication.[2]
2. Perform primary and secondary assessment including, but not limited to EKG, 12-Lead EKG, and pulse oximetry.[3]
3. Evaluate patient for evidence of excited delirium manifested by varied combination of agitation, reduced pain sensitivity, elevated temperate, persistent struggling, or hallucination.
4. Cut the Taser dart wire close to the dart using trauma shears.
5. Protect the dart/site from further injury and to keep site clean.
6. Treat any medical issues or traumatic injuries.

Indication

- Taser dart shall be left for removal by physician.[1]

Contraindication

- Taser dart shall be left for removal by physician.[1]

Notes

- [1]All barbed darts are considered foreign body and shall be left in place for a physician.
- [2]Psychologic or chemical restraint medications for Paramedic only.
- [3]Perform assessments after the patient has been appropriately secured or restrained (physically or chemically) with assistance of law enforcement.

Central Venous Catheter Medications

Procedure

Procedure for Ports (Porta-a-Cath, Mediport, Bard, Infuse-a-Port)

1. Explain the procedure to the patient, whenever possible.
2. Obtain assistance as needed.
3. Position the patient supine.
4. Open the right-angle, non-coring (Huber or Gripper) needle package and flush with normal saline. Be sure there is no air in the tubing.
5. Clean the site at the port with cleaning solution from patient/family, or use alcohol or other approved cleansing solution (e.g., povidone-iodine), using a circular motion.
6. Use sterile gloves. Using the non-dominant hand, palpate the area over the port to stabilize the port and locate the center.
7. With the other hand, insert the non-coring needle into the center of the port with firm, steady pressure until you feel the needle reach the back of the port. Do not rock the non-coring needle back and forth in the port.
8. Aspirate 5mL of blood and/or heparinized solution and discard. If unable to aspirate blood, verify needle position by gently pushing the needle farther against the backstop of the port. If you are still unable to aspirate blood or fluid, contact online medical control.
9. Flush with 10mL NS while assessing for swelling at the site. Be sure there is no air in the syringe or tubing. Do not force the flush if resistance is met. Verify the non-coring needle position by gently pushing the needle further against the backstop of the port and attempt to flush again.
10. After assessing patency, clamp the tubing and remove the syringe.
11. Apply the needleless injection cap, if available, and cleanse with alcohol.
12. IV fluids, tubing, and connectors must be assembled and primed in cleanest area possible with all air eliminated prior to connecting to the patient.
13. Attach the completely flushed IV line, unclamp the needle tubing and begin infusion of fluid/medication. IV fluids may not infuse by gravity.
14. Secure the non-coring needle with sterile gauze and tape or occlusive dressing, being careful not to tape over the insertion site.
15. Tape or loop extension tubing to outside of dressing.

Procedure for Tunneled (e.g., Hickman, Groshong, Broviac, Cook) and **Non-Tunneled Lines** (e.g., PICC, Mid-line Catheters)

1. Explain the procedure to the patient, whenever possible.
2. Obtain assistances as needed.
3. Position the patient supine.
4. Use sterile, latex free gloves.
5. If there are multiple lumens or ports, determine from the patient/family which port is most appropriate for use, if possible, or refer to the patient's emergency information form, if available.
6. Clean the existing cap on the port with an antiseptic for 30 seconds.
7. Clamp all lines with special clamps that do not have teeth that may damage the catheter.
8. Access the appropriate catheter port with a 10mL syringe.
9. Unclamp the catheter line to be accessed and aspirate 5mL of blood/heparinized solution to confirm placement and access patency.
10. Discard the blood/heparinized solution.

P Paramedic ONLY P

Indication

- **Life-threatening emergency** – a pre-existing central venous access catheter or device may be accessed by a Paramedic for resuscitation medication administration or fluid volume administration.
- **Non-life-threatening emergency** – The central venous catheter should not be accessed by the Paramedic; however, any infusions that were running prior to the patient encounter may be continued through the central venous catheter.

Contraindication

- Damaged catheter
- Dislodgment of the catheter.
- Trauma to site

11. Clamp the catheter any time you are changing lines or syringes. 12. Attach a prefilled syringe and unclamp the catheter. 13. Flush with 5 to 10mL NS. Be sure there is no air in the syringe or tubing. 14. Clamp the catheter again with the special clamp	

Notes

- **Port** (reservoir) is a disc about an inch in diameter that is just under the skin, usually on the upper chest, that is connected to a catheter line that lies in a large vein (e.g., subclavian vein), just above the heart.
- **Tunneled central line** is a catheter that is inserted under the skin of the chest, and the tip of the catheter terminates in the distal superior vena cava at the junction near the right atrium, a tunneled catheter has a cuff below the skin that the soft tissue grows into, reducing the risk of dislodgement and infection. These can be single or multiple-lumen catheters.
- **Non-tunneled line**, such as a PICC line, is a thin catheter which is inserted into one of the large vein, usually in the arm near the bend of the elbow, but may be in the neck or a lower extremity. The tip of the catheter terminates in a large vein just above or below the heart. A mid-line and PICC are small diameter catheters and are not considered appropriate for volume resuscitation.

Intraosseous (IO) Infusion

A	Advanced	A
P	Paramedic	P

Procedure

Site Selection:

- Humeral Head – If the patient is greater than 40kg, Identify the greater tuberosity of the humerus by having the patient place their hand on their umbilicus and adduct the arm (hold it against their thorax). Palpate the humerus at the mid-shaft and palpate proximally until you feel a "notch" – this is the surgical neck of the humerus. The IO should be placed approximately 1cm above this in the greater tuberosity. Immobilize the arm in the adducted position after placement.
- Proximal tibia – Identify the anteromedial aspect of the proximal tibia (bony prominence below the patella). The insertion location will be 1-2cm (2 finger widths) below this.
- Distal femur – palpate the superior border of the patella and then slide your finger superiorly until able to palpate the femur. Insert just medial to the midline oriented 15° cephalad.

1. Prep the site with an antiseptic solution.
2. Choose appropriate/available IO Device.
   - For **Manual** pediatric devices – hold the IO needle at a 90° angle, twist the needle handle with a rotating grinding motion applying controlled downward force until a "pop" or "give" is felt, indicating loss of resistance. Do not advance the needle any further.
   - For **EZ-IO** device – hold the IO needle at a 90° angle, power the driver until a "pop" or "give" is felt indicating loss of resistance. Do not advance the needle any further past the desired depth of 5mm. The needle is marked every 5mm with a black line.
   - For the **Bone Injection Gun (BIG)** – Find and mark the site. Position the device and pull out the safety latch. Trigger the BIG device at 90° to the skin and remove the injection device.
3. Remove the stylet (be careful – this is VERY sharp) and place in an approved sharps container.
4. For pain relief brought upon by the IO insertion and fluid/medication administration in the conscious patient; administer 40mg (2mL) of 2% Lidocaine over 2 minutes for adult patients and 0.5 mg/kg (up to a maximum of 40mg) of 2% Lidocaine over 2 minutes in pediatric patients. Allow 30-60 seconds before administering fluid.
5. Attach a syringe filled with at least 5mL NS. Attempt to aspirate bone marrow to verify placement. Inject at least 5mL NS to clear the needle.
6. Connect IV tubing and adjust flow rate. A pressure infuser may assist with achieving the desired flow rate
7. Stabilize and secure the needle with dressings and tape or commercial stabilization device; if available.
8. Following the administration of any IO medications, flush the IO line with 10mL of NS.
9. Document the procedure, time, and results on the PCR

Indication

- Patients where rapid, regular IV access is unavailable with any of the following:
  - Cardiac arrest
  - Resp Failure/Arrest
  - Multisystem trauma with severe hypovolemia
  - Severe dehydration with vascular collapse and/or LOC
  - Necessity to administer medication due to AMS

Contraindication

- Fracture proximal to proposed IO site.
- History of Osteogenesis imperfecta.
- Current or prior infection at proposed IO site.
- Previous IO insertion (within 48hrs) or joint replacement at the selected site.

Notes

- [1]Expiration date, cloudiness, discoloration, leaks, or presence of particles.

Effective Date 1 Jan 2022	S-IO1

Intravenous Infusion (IV)

A	Advanced	A
P	Paramedic	P

Procedure

1. Saline locks may be used as an alternative to IV tubing and IV fluid in every protocol at the discretion of the AEMT/Paramedic.
2. Use the largest catheter bore necessary based upon the patient's condition and size of veins.
3. Fluid and drip set choice is preferably: normal saline with macro drip (10 gtts/mL) for medical conditions, and normal saline with micro drip (60 gtts/mL) for medication infusions.
4. Inspect the IV Solution[1]
5. Connect IV tubing to the solution in a sterile manner. Fill the drip chamber half full and then flush the tubing to expel all air bubbles from the line.
6. Place a tourniquet around the patient's extremity to restrict venous flow only.
7. Select a vein and appropriate gauge catheter for the vein and the patient's condition.
8. Prepare the skin with an antiseptic solution.
9. Insert the needle, bevel up, into the skin in a steady, deliberate motion until the bloody flashback is visualized in the catheter.
10. Advance the catheter into the vein, never reinsert the needle through the catheter. Dispose of the needle into the proper biohazard container without recapping.
11. Draw blood samples if appropriate.
12. Remove the tourniquet and connect the IV tubing or saline lock.
13. Open the IV to assure free flow of the fluid and then adjust the flow rate as per protocol or as clinically indicated:

- Keep Vein Open rates:
  - Adult KVO: 60mL/hr. (1 gtts/6 sec for macro drip set
  - Pedi KVO: 30mL/hr. (1 gtts/12 sec for macro drip set

14. Follow appropriate protocol for specific flow rate.
15. Cover the IV site with sterile dressing and secure the catheter and IV tubing.
16. Label the IV with date and time, catheter gauge, and name/ID of the person starting the IV.
17. Document the procedure, time and result (success or not) on the PCR.

Indication

- Any patient where intravenous access is indicated (significant trauma or mechanism, emergent or potentially emergent medical condition.

Contraindication

- N/A

Notes

- [1]Expiration date, cloudiness, discoloration, leaks, or presence of particles.

Effective Date 1 Jan 2022	S-IV1

Inability to Carry Out Physician Orders

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. If physician's order is not carried out, notify the consulting/receiving physician immediately and continue to monitor the patient's condition.
2. Upon return to the station, immediately notify the Installation F&ES Chief and the Installation Medical Director.
3. The Navy F&ES provider responsible for patient care shall document the Inability to Carry Out a Physician's Order and all actions on the PCR prior to the end of shift.
4. The Regional EMS Chief shall Review the incident, and make all findings and/or recommendations for mitigation to the BUMED Medical Director, Regional and Installation F&ES Chiefs of the incident.
5. Feedback will be provided to the appropriate personnel involved after the incident has been reviewed.

Indication

- Situation which a physician's orders cannot be carried out.[1]

Contraindication

- N/A

Notes

- [1]e.g., Navy F&ES personnel believe the administration of an ordered medication would endanger the patient, a medication is not available, or a physician's order is outside the scope of practice.

Effective Date 1 Jan 2022	S-ICP

Physician Orders for Extraordinary Care Not Covered

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. If Navy F&ES personnel receive an order for care that is not covered by these protocols and do not feel comfortable with the order, or does not agree that it is absolutely necessary to maintain the life of the patient, he/she shall proceed with the "Inability to Carry Out a Physician's Order" protocol
2. All of the following criteria must be present for F&ES personnel to proceed with an Extraordinary Care order under this section.
3. During medical consultation, both the consulting physician and F&ES personnel must acknowledge and agree that the patient's condition and Extraordinary Care are not addressed elsewhere within these medical protocols, and that the order is absolutely necessary to maintain the life of the patient.
4. F&ES personnel must feel capable, based on the instructions given by the consulting physician, of correctly performing the care directed.
5. When such an order is carried out, the provider must notify the Installation F&ES Chief and the Installation Medical Director of the Extraordinary Care situation upon return to the station.
6. The Navy F&ES provider responsible for patient care shall document the Extraordinary Care and all actions on the PCR prior to the end of shift.
7. The Regional EMS Chief shall review the incident, and make all findings and/or recommendations for mitigations to the Regional BUMED EMS Medical Director, Regional and Installation F&ES Chiefs.
8. Feedback will be provided to the appropriate personnel involved, including the Regional BUMED EMS Medical Director after the incident has been reviewed.

Indication

- Direction from consulting physician to deliver care that is not explicitly listed within the treatment protocols.

Contraindication

- N/A

Notes

- Extraordinary care situations not within these protocols may occur a handful of times over a span of years. This Extraordinary Care Protocol is intended to address the potential moral/ethical dilemma, which may arise in unanticipated or unforeseen situations not specifically addressed within this document.

Effective Date 1 Jan 2022	S-EC1

Protocol Variation

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. Notify the consulting physician via radio as soon as the error or variance is discovered, if prior to arrival at the receiving facility.
2. Monitor the patient's condition for any changes.
3. Notify the receiving physician, if different than the consulting physician, upon arrival at the facility.
4. Upon return to the station, immediately notify the Installation F&ES Chief and the Installation Medical Director.
5. The F&ES provider responsible for patient care shall document the Protocol Variation and all actions on the PCR prior to the end of shift.
6. The Regional EMS Chief shall review the incident, and make all findings and/or recommendations for mitigation to the Regional BUMED EMS Medical Director, Regional and Installation F&ES Chiefs.
7. Findings and recommendations will be provided to the appropriate personnel involved, including the Regional BUMED EMS Medical Director after the incident has been reviewed.

Indication

- An error or variance of protocol occurs.[1]

Contraindication

- N/A

Notes

- [1]Any act or failure to act in practice or judgement involving patient care that is not consistent with established protocol, whether or not it results in any change in the patient's status or condition.

Effective Date 1 Jan 2022	S-PV1

Patient Refusals

E	EMT	E
A	Advanced	A
P	Paramedic	P

Procedure

1. It is the position of the BUMED EMS Medical Directors that under **no circumstances** should F&ES personnel initiate a refusal discussion with a patient. The expectation is that if F&ES is activated for a medical emergency the patient will receive a thorough medical evaluation, any indicated treatment, and be transported to an appropriate destination for continued care.
2. There may be times where F&ES personnel may respond to medical emergencies where the patient refuses medical evaluation, treatment, and / or transport. In these situations, it is the responsibility of the F&ES AIC to determine a safe disposition.
3. F&ES must first determine that the patient is legally competent to make medical decisions. If deemed competent, F&ES must then assure the patient has medical decision-making capacity.
    a. Online medical control should be contacted if the F&ES clinician is unsure if the patient has capacity.
4. For minors who are not legally emancipated[2], a responsible adult decision maker should be available. Minors are unable to refuse medical treatment.
    a. Treatment should not be delayed or withheld in life-threatening emergencies to obtain consent from the patient's parent or legal guardian.
    b. Contact online medical control for any cases where refusal of medical evaluation or treatment could affect the patient's health or well-being. Consider contacting law enforcement for assistance.
    c. Minors requesting treatment for drug or alcohol abuse, sexually transmitted infections, or who report injuries from a sexual assault or rape should be treated as independent decision makers. Contact law enforcement for any reported cases of sexual assault, rape, or physical abuse.
5. If the patient has capacity to refuse, F&ES shall then inform the patient about their medical condition, the risks of refusing treatment or transport, and any alternative courses of action the patient could pursue (e.g. transport by personally owned vehicle).
    a. This conversation must occur in the patient's preferred / native language.
6. F&ES must inform the patient of their right to call 911 at any point and time and accept treatment and transport.
7. F&ES personnel must make every effort to obtain a patient signature on the patient refusal form or electronic PCR refusal form. If a patient refuses to sign, contact your supervisor, and contact online medical control on a recorded line to document the incident and attempts to obtain a patient signature.
8. A copy of the refusal form must be included in the PCR. A copy should also be provided to the F&ES supervisor & Quality Assurance officer.
9. In the narrative of the PCR, F&ES should document the conversation they had with the patient. It should include an assessment that the person is fully oriented to person, place, time, and situation, and a set of vital signs should be documented. The information conveyed to the patient should also be documented in the narrative – the primary / secondary impression, risks of refusal, recommended treatment and course of action, and information on how to contact F&ES again should the patient decide to accept treatment.
10. Occasionally, patients with high-risk medical conditions may refuse treatment (e.g. ST-elevation myocardial infarction). F&ES should

Indication

- Patients who refuse medical treatment or transport

Contraindication

- Patients without medical decision making capacity[1]

make every effort to treat and transport these patients while respecting the patient's autonomy. F&ES should offer to discuss the patient's care with a spouse or relative, the patient's primary care physician, and / or online medical control. A refusal should not be accepted until after speaking with a physician.

   a. Consultations should be made for any patient with unstable vital signs or if, in the opinion of the F&ES clinician, the patient will have a poor outcome if they refuse transport.
   b. Consultations should also be made for any patient meeting trauma center criteria

11. For patients with active psychiatric illnesses who refuse transport (e.g. suicidal ideation), contact the patient's chain of command to receive assistance with transport decisions. When caring for non-active duty members, F&ES should be familiar with and follow their State's rules and regulations on involuntary patient transport and emergency psychiatric holds.

Notes

- [1]To have capacity to refuse medical care, a patient must: be an adult (age > 18 years) or legally emancipated minor; have sufficient information about their medical condition; understand the risks and benefits of the available options; have the ability to make a decision with the information they have (i.e. cannot be altered, have impaired judgment, acting irrationally, or under the influence); be able to communicate these wishes; and have the freedom to act without undue influence.
- [2]Legally emancipated minors are defined by the State but generally include anyone under the age of 18 years who: are married, enlisted in the Armed Forces, live independently of their parents, or are the legal parents or guardians to other children.

US Navy EMS Treatment Protocols

Appendices

Appendix A-1

Protocol Modification Sheet

Name of Submitting Person:	**Date:**
Official Email:	**Phone Number:**
Location/Installation:	**Protocol Number:**

Provide information for the current protocol that the request is being made for:

Provide NEW information to be added if the protocol modification is granted:

Provide references/supporting documents to justify new request for protocol modification:

Provide training and assessment plan if modification is granted:

Requestor Signature:_____ **Date:** _____

Local Medical Director Signature:_____ **Date:** _____

Please have Department EMS Officer or Fire Chief forward the above information to the following:

- **CNIC EMS Program Manager**
- **BUMED Medical Directors**

Appendix A-2

Acronym List

ACS	Acute Coronary Syndrome
AED	Automated External Defibrillator
AEMT	Advanced Emergency Medical Technician
ALS	Advanced Life Support
AMI	Acute Myocardial Infarction
APGAR	A = Appearance
	P = Pulse
	G = Grimace
	A = Activity
	R = Respiratory
AR	Airway / Respiratory protocol
ASAP	As Soon As Possible
AVPU	A = Alert
	V = Verbal Stimuli
	P = Painful Stimuli
	U = Unresponsive
BGL	Blood Glucose Level
BLS	Basic Life Support
BP	Blood Pressure
BPM	Beats Per Minute
BSA	Body Surface Area
BSI	Body Substance Isolation
BUMED	Bureau of Medicine
BVM	Bag-Valve-Mask
C	Celsius
CA	Cardiac Protocol
CHF	Congestive Heart Failure
CISM	Critical Incident Stress Management
CNIC	Commander Navy Installations Command
COPD	Chronic Obstructive Pulmonary Disease
CPAP	Continuous Positive Airway Pressure
CPR	Cardiopulmonary Resuscitation
DAN	Dive Alert Network
DCAP BTLS	D = Deformity
	C = Contusions
	A = Abrasions
	P = Punctures/Penetrations
	B = Burns
	T = Tenderness
	L = Lacerations
	S = Swelling
DNR	Do Not Resuscitate
EKG	Electrocardiogram

EMS	Emergency Medical Services
EMT	Emergency Medical Technician
EMT-P	Emergency Medical Technician - Paramedic
EOC	Emergency Operations Center
ET	Endotracheal Intubation
ETA	Estimated Time of Arrival
EtCO2	End Title Carbon Dioxide
F	Fahrenheit
F&ES	Fire & Emergency Services
GCS	Glasgow Coma Scale
gm	Gram
HTN	Hypertension
IM	Intramuscular Injection
IAW	In Accordance With
IN	Intranasal
IV	Intravenous
J	Joules
JVD	Jugular Venous Distension
kg	Kilogram
KVO	Keep Vein Open
LOC	Level OF Consciousness
LPM	Liters Per Minute
MCI	Mass Casualty Incident
M	Medication Protocol
MD	Medical Doctor
mg	Milligrams
mg/kg	Milligrams Per Kilogram
ml	Milliliter
mmHg	Millimeter Mercury
MOI	Mechanism of Injury
MPH	Miles Per Hour
MTF	Medical Treatment Facility
NDT	Needle Decompression Thoracostomy
NHTSA	National Highway Traffic Safety Administration
NOI	Nature of Illness
NPO	Nothing By Mouth
NRB	Nonrebreather Mask
NS	Normal Saline
NTG	Nitroglycerin
OB	Obstetrics / Gynecology Protocol
ODT	Orally Disintegrating Tablet
OIC	Officer in Charge
OPQRST	O = Onset P = Provocation Q = Quality R = Radiation S = Severity T = Time
P-AR	Pediatric Airway / Respiratory Protocol

P-CA	Pediatric Cardiac Protocol
P-ME	Pediatric Medical Protocol
PA	Physician's Assistant
PCM	Patient Controlled Medications
PCR	Patient Care Report
PDOA	Presumed Dead On Arrival
PIC	Provider in Charge
PO	By Mouth
PPE	Personal Protective Equipment
Pr	Rectal
PVC	Premature Ventricular Contraction
PSLUDGE-MC	P = Pupils Pinpointed
	S = Salivation Excessive
	L = Lacrimation (Excessive Tearing)
	U = Urination
	D = Defecation
	G = Gastrointestinal Upset
	E = Emesis, Watery Discharges/Runny Nose/ Sweating
	M = Muscular Twitching
	C = Convulsions
QI	Quality Improvement
RN	Registered Nurse
S	Supplemental procedure
SAFER	S = Stabilize
	A = Assess and acknowledge
	F = Facilitate
	E = Encourage
	R = Recovery or referral
SAMPLE	S = Symptoms and signs patient is exhibiting
	A = Allergies
	M = Medications (prescription and nonprescription)
	P = Past medical history
	L = Last oral intake
	E = Events prior to arrival, the history of the current emergency
SART	S = Sexual
	A = Assault
	R = Response
	T = Team
SC	Specialty Care Protocol
SCUBA	Self-Contained Underwater Breathing Apparatus
SIDS	Sudden Infant Death Syndrome
SL	Sublingual
SOP	Standard Operational Procedure
SpO2	Blood Oxygen Saturation
SQ	Subcutaneously
START	S = Simple
	T = Triage
	A = And
	R = Rapid

	T = Treatment
STEMI ST	Elevated Myocardial Infarction
TBSA	Total Body Surface Area
TE	Toxic /Environmental Protocol
TOI	Type of Incident
TR	Trauma Protocol
UM	Universal Medical Protocol
VF	Ventricular Fibrillation
VT	Ventricular Tachycardia

Appendix A-3

Definitions

- APGAR score – A method of scoring to determine the condition of a newborn where “A” stands for Appearance; “P” stands for Pulse; “G” stands for Grimace; “A” stands for Activity; and “R” stands for Respiration.
- Apnea – An absence of spontaneous respirations.
- Aspiration – The act of taking fluid (e.g., vomitus, mucus, or blood) from the body via a suction device. The act of inhaling foreign material such as blood/vomit into the lungs.
- Asymptomatic – The lack of any evidence or indication of illness, disease, or physical disturbance of patient’s condition.
- AVPU – A method of determining and recording a patient’s mental status or level of consciousness where “A” stands for alert; “V” stands for responsive to verbal stimuli; “P” stands for responsive to painful stimuli; and “U” stands for unresponsive.
- Baro-trauma – Injury sustained as a result of exposure to excessive environmental pressure changes (e.g., blast injury or underwater pressure injury).
- Critical – Approaching death or having the nature of a crisis (e.g., time-critical, critical injury).
- Cyanotic – Bluish color of the skin or mucus membranes caused by lack of oxygen to the tissue.
- Defibrillation – Administration of electrical current(s) to the heart in an effort to normalize rhythm.
- Dystonic – Any impairment of muscle tone, which may be manifested by prolonged muscle contractions that may cause twisting and repetitive movements or abnormal posture. These movements may be in the form of rhythmic jerks. Symptoms that “appear” to be of a focal seizure-like nature with an awake and alert person and no history of seizures but who probably has a recent history of anticholinergic medication use (e.g., antipsychotic, antivomiting).
- Erythema – Redness or inflammation of the skin or mucous membranes that is the result of dilatation and congestion of superficial capillaries.
- Extrapyramidal – Pertaining to tissues and structures outside of the cerebrospinal pyramidal tracts of the brain that are associated with movement of the body, excluding stimulation from the motor neurons, the motor cortex, and the corticospinal and corticobulbar tracts. Symptoms that “appear” to be of a focal seizure-like nature with an awake and alert person and no history of seizures but who probably has a recent history of anticholinergic medication use (e.g., antipsychotic, antivomiting).
- Fluid bolus – The administration of a fluid dose as rapidly as possible, usually over 5–20 minutes, to a patient with clinical signs of shock.
- Hemodynamically stable – When a patient’s vital signs (including pulse oximetry or EKG if available) are all within normal for the patient’s age range, the patient does not have active bleeding, and there are no signs of distress (skin conditions or capillary refill are normal) as observed over time.
- Hemodynamically unstable – When a patient exhibits any of the following: abnormal vital signs for age range (including pulse oximetry or ECG if available), active bleeding, or there are signs of distress (skin conditions or capillary refill are abnormal).
- Hypoxia – Too little oxygen in the cells.
- Lividity – Venous pooling in dependent body parts.
- Mass casualty incident – Occurs when the number of victims exceeds the number of medical personnel or resources immediately available and is declared by the local jurisdiction.

- Meconium – The first feces of an infant.
- Medical Treatment Facility (MTF) – A fixed, physical structure, approved by regulatory authority staffed and equipped to provide diagnosis and treatment of medical conditions. In general, this term refers to a hospital with an emergency department.
- Near drowning – A short duration of submersion under water with possible short-term loss of consciousness.
- Neonatal (also neonate) – A term that describes an infant from birth through the first 28 days of life.
- Newly born (also called newborn) – A term that describes an infant during the first few hours after birth.
- Notification – Is an "information only call" directly to the receiving hospital through the Installation EOC or EMS communication system not requiring medical consultation and may follow local standing operational procedures.
- On-line medical control – The direct voice/data communication between a provider and an EMS base station physician or a jurisdictionally affiliated physician, or with an "on-scene physician." This communication is bidirectional and provides the provider with medical direction while providing the physician or receiving hospital with valuable information on the patient. This exchange can take place on-scene, over a telecommunications device, or in the hospital setting.
- On-scene physician – May be the patient's identified private physician or a bystander physician who is physically on location. Care rendered or orders given by the on-scene physician should be documented, including the identification of the physician. All on-scene medical direction shall be consistent with the Navy EMS Treatment Protocols. Any medical procedure not consistent with the protocols shall be rendered only by the on-scene physician who shall accompany the patient to the hospital. Any extraordinary care by EMS providers pursuant to the protocols may be approved only by the EMS base station physician or a system medical director.
- Pallor – An unnatural paleness or absence of color in the skin.
- Patient Care Report (PCR) – Document used to record pertinent patient information regarding assessment, treatment, and transport. This is a confidential medical record.
- Pulse oximetry – A noninvasive measurement of arterial oxygen saturation using infrared absorption frequencies.
- Recovery position – The position (patient flat on left lateral side) or placement of patients to reduce risk of aspiration.
- Sign – Any objective evidence or indication of illness, disease, or physical disturbance of patient's condition.
- Standing orders – Orders, rules, regulations, or procedures prepared as guidelines in the preparation and carrying out of medical and surgical procedures.
- Symptom – Any subjective evidence of disease or of a patient's condition (such as evidence perceived by the patient).
- Symptomatic – The subjective evidence or indication of illness, disease, or physical disturbance of patient's condition.
- Syncope – A fainting spell. It usually follows a feeling of lightheadedness and may often be prevented by lying down.
- Vagal – Pertaining to the vagus nerve (the tenth cranial nerve which is essential for speech, swallowing, and slowing of the heart rate.
- Vulnerable adult – An adult who lacks the physical or mental capacity to provide for the adult's daily needs.

Appendix A-4

Scope of Practice

AIRWAY

Supplemental Oxygen Therapy

Oxygen Delivery Devices	E	A	P	*This would include any type of cannula or mask designed for the delivery of oxygen but does not include high flow nasal cannula.*
Humidified Oxygen	E	A	P	

Basic Airway Management

Manual Maneuvers to Open and Control the Airway	E	A	P	*This would include procedures such as: head-tilt, chin-lift; tongue-jaw lift; jaw thrust; Sellick's maneuver.*
Manual Maneuvers to Remove Obstructions from the Airway	E	A	P	
Insertion of Airway Adjuncts Intended to go into the Oropharynx	E	A	P	
Insertion of Airway Adjuncts Intended to go into the Nasopharynx	E	A	P	

Ventilation Management

Mouth to Barrier Devices	E	A	P	
Bag Valve Mask	E	A	P	
Manually Triggered Ventilators	E	A	P	
Automatic Transport Ventilators Capable of Rate and Tidal Volume Adjustments Only	E	A	P	*EMTs and AEMTs are limited to the initiation of automatic transport ventilators during resuscitative efforts only.*
Chronic-Use Home Ventilators	E	A	P	

Suctioning

Upper Airway Suctioning	E	A	P	
Tracheobronchial Suctioning		A	P	*AEMTs are limited to tracheobronchial suctioning of patients with pre-established airways.*

Advanced Airway Management

CPAP/BiPAP Administration and Management	E	A	P	
Supraglottic Airway Device/BIAD (Blind Insertion Airway Device) Insertion		A	P	*This would also permit the removal of a supraglottic airway under medically appropriate circumstances for the specific levels. AEMTs are limited to the insertion of devices not intended to be placed into trachea.*

Endotracheal Intubation			P	*This includes nasal and oral endotracheal intubation; extubation for medically necessary reasons; initiation of PEEP; and the maintenance and transport of patients who are currently intubated.*
Airway Obstruction Removal by Direct Laryngoscopy			P	
Percutaneous Cricothyrotomy			P	*This would include retrograde intubation techniques and devices that puncture the skin and/or cricothyroid membrane. Paramedics are not permitted to make a surgical incision of the cricothyroid membrane. Paramedics may perform skin incisions with a surgical blade for percutaneous cricothyrotomy.*
Gastric Decompression			P	*Includes NG and OG tubes.*
Pleural Decompression via Needle Thoracostomy			P	
Chest Tube Monitoring and Management			P	
Cardiovascular				
Fundamental Cardiac				
Manual CPR (Cardiopulmonary resuscitation)	E	A	P	
Use of an Automated or Semi – automated External Defibrillator	E	A	P	
Advanced Cardiac				
Use of Mechanical CPR Assist Devices	E	A	P	*e.g., Load-Distributing Band [AutoPulse] or Mechanical Piston [LUCAS] Devices.*
EKG Acquisition and Transmission	E	A	P	*Includes 12-lead EKGs. EMTs and AEMTs may only obtain and transmit a 12-lead EKG for suspected STEMI patients*
EKG Monitoring and Interpretation			P	*Includes 12-lead EKGs*
Manual Cardiac Defibrillation			P	
Emergency Synchronized Cardioversion			P	*Includes Vagal Maneuvers*
Transcutaneous Cardiac Pacing			P	
Transvenous Cardiac Pacing			P	*Monitoring and Maintenance*
Medical				
Child Birth				
Assist in the Normal Delivery of a Newborn	E	A	P	
Assist in the Complicated Delivery of a Newborn	E	A	P	

Behavioral Emergency				
Manual and Mechanical Patient Restraints for Behavioral Emergencies	E	A	P	*Includes soft disposable and leather restraints.*
Chemical Restraints of Combative Patients			P	

Trauma

Spinal/Orthopedic Injuries

Manual Cervical Stabilization	E	A	P	
Cervical Collar Use	E	A	P	
Spinal Motion Restriction (SMR)	E	A	P	Long Spine Boards, Miller Boards, etc.
Seated Spinal Motion Restriction (SMR)	E	A	P	KED, etc.
Pelvic Immobilization	E	A	P	Pelvic Binder, etc.
Extremity Stabilization	E	A	P	Manual
Extremity Splinting	E	A	P	
Traction Splinting	E	A	P	Hare, Sager, etc.

Other Injuries

Fundamental Bleeding Control	E	A	P	
Progressive Bleeding Control	E	A	P	*Includes the use of tourniquets, wound packing and hemostatic agents*
Fundamental Eye Irrigation	E	A	P	
Complex Eye Irrigation			P	*Hands-free irrigation using a sterile eye irrigation device.*
Management of Soft Tissue Injuries	E	A	P	

Moving/Extrication

Emergency Moves for Endangered Patients	E	A	P	
Rapid Extrication of Patients	E	A	P	

Venous Access

Venipuncture/Vascular Access

Peripheral Intravenous (IV) – Initiation		A	P	*This includes an INT/saline lock. Peripheral lines include external jugular veins and placement of umbilical catheters.*
Peripheral Intravenous (IV) – Access		A	P	*Accessing the Venipuncture Site*
Intraosseous (IO)		A	P	*This includes placement in both adult and pediatric patients. This also includes both manual and mechanically assisted devices.*
Access Indwelling Catheters and Implanted Central IV Ports			P	
IV – Maintenance of Non-Medicated IV Fluids		A	P	
IV – Maintenance of Medicated IV Fluids			P	
Obtaining Peripheral Venous Blood Specimens		A	P	*This is either through direct venipuncture or through an existing IV catheter.*
Central Line Monitoring			P	

Pharmacological

Use of Unit Dose Commercial Pre-filled Containers or Auto-Injectors for the Administration of Life Saving Medications for Chemical/Hazardous Material Exposures	E	A	P	
Assist Patient in Taking Their Own Prescribed Medications	E	A	P	
Immunization		A	P	
Medication Administration Routes				
Aerosolized/Nebulized	E	A	P	
Endotracheal Tube			P	
Inhaled	E	A	P	
Intradermal			P	
Intramuscular		A	P	
Intramuscular	E	A	P	*Auto-injector*
Intranasal		A	P	
Intranasal	E	A	P	*Unit-Dosed, Premeasured*
Intraosseous		A	P	
Intravenous		A	P	
Mucosal/Sublingual	E	A	P	
Oral	E	A	P	
Subcutaneous		A	P	
Topical			P	
Transdermal			P	
Medication Formulary				
Acetaminophen	E	A	P	
Adenosine			P	
Albuterol, Proventil, Ventolin Unit Dose Inhaler	E	A	P	*Utilize patient's prescribed, if available*
Albuterol Sulfate	E	A	P	*Nebulized*
Amiodarone			P	
Aspirin	E	A	P	
ATNAA/MARK 1 Kit (Atropine Sulfate/2-Pralidoxime Chloride)	E	A	P	*Auto-injector*
Atropine Sulfate			P	
Calcium Gluconate			P	
Dextrose		A	P	
Diphenhydramine Hydrochloride		A	P	
Epinephrine Auto-injector	E	A	P	
Epinephrine 1 mg/mL		A	P	
Epinephrine 1 mg/10 mL		A	P	
Fentanyl			P	
Glucagon		A	P	
Glucose (Oral)	E	A	P	
Haloperidol (Haldol)			P	

Ipratropium Bromide (Atrovent)	E	A	P	*Nebulized*
Ketamine			P	
Lactated Ringers		A	P	
Lidocaine 2%		A	P	*AEMT - IO Analgesia ONLY*
Lorazepam (Ativan)			P	*Requires refrigeration*
ATNAA/MARK 1 Kit (Atropine Sulfate/2-Pralidoxime Chloride)	E	A	P	*Auto-injector*
Magnesium Sulfate			P	
Methylprednisolone (Solu-Medrol)			P	
Midazolam (Versed)			P	
Morphine Sulfate		A	P	
Naloxone (Narcan)	E	A	P	
Nitroglycerin	E	A	P	*Patients Prescription*
Nitroglycerin		A	P	*Sublingual (tablet or spray)*
Norepinephrine (Levophed)			P	
Normal Saline 0.9% Sodium Chloride	E	A	P	*EMT can only administer nebulized*
Ondansetron	E	A	P	*EMT limited to ODT*
Oxygen	E	A	P	
Sodium Bicarbonate			P	
Tranexamic Acid (TXA)			P	

Patient Assessment/Monitoring

Assessments

Perform Simple Patient Assessments	E	A	P	*Includes Trauma and Medical Assessments*
Perform Comprehensive Patient Assessments	E	A	P	*Includes Trauma and Medical Assessments*
Obtaining Vital Signs	E	A	P	*Manual*
Eye Assessment	E	A	P	

Monitoring Devices

Blood Pressure	E	A	P	
Blood Glucose	E	A	P	
Pulse Oximetry	E	A	P	
CO – Oximetry	E	A	P	
$EtCO_2$ – Colorimetric	E	A	P	
$EtCO_2$ Monitoring and Interpretation of Waveform Capnography		A	P	
Telemetric Monitoring Devices and Transmission of Clinical Data, Including Video Data	E	A	P	*EMT/AEMT obtain and transmit, while Paramedic interpret*

Appendix A-5

CHARTS

Normal Vital Signs

Age	Pulse	Respiratory Rate	Systolic BP
Newborn	120-160	30-60	60-70
Up to 1 year	100-140	30-60	70-80
1-3 years	100-140	20-40	76-90
4-6 years	80-120	20-30	80-100
7-9 years	80-10	16-24	84-110
10-12 years	60-100	16-20	90-120
13-14 years	60-90	16-20	90-120
15 years or older	60-90	14-20	90-130

Trauma Patient	Medical Patient
Evaluate Mechanism of Injury	Evaluate Nature of Illness
Cervical Spine Considerations	Level of Consciousness: AVPU
Control all Life Threats/Bleeding	Chief Complaint
Primary Assessment	Primary Assessment
Obtain Vital Signs	Obtain Vital Signs
Level of Consciousness: AVPU	SAMPLE History
Secondary/Focused Assessment	Secondary/Focused Assessment
Exit to Appropriate Protocol	Exit to Appropriate Protocol

DOCUMENTATION/CHARTS		
Vital Signs If Indicated • Glucose • EKG/12-Lead • Temperature • EtCO2 Monitoring	**Required Vital Signs** • GCS • Blood Pressure • Pulse Rate • Respiratory Rate • SpO2 • Pain Scale • Respiratory Rate • Pulse Oximetry	
SAMPLE History • Signs/Symptoms • Allergies to Medications • Medications Currently Prescribed • Past Medical History • Last Oral Intake • Events Leading to Incident	**DCAPBLSTIC** • Deformities • Contusions • Abrasions • Punctures/Penetrations • Burns • Lacerations • Swelling • Tenderness • Instability • Crepitus	**Focused History** • Onset • Provocation • Quality • Radiation • Severity • Time

Appendix A-6

National Guideline for the Field Triage of Injured Patients

RED CRITERIA

High Risk for Serious Injury

Injury Patterns

- 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

Mental Status & Vital Signs

All Patients
- 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%

Age 0–9 years
- SBP < 70mm Hg + (2 x age in years)

Age 10–64 years
- SBP < 90 mmHg or
- HR > SBP

Age ≥ 65 years
- 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

- High-Risk Auto Crash
  - Partial or complete ejection
  - Significant intrusion (including roof)
    - >12 inches occupant site OR
    - >18 inches any site OR
    - Need for extrication for entrapped patient
  - Death in passenger compartment
  - Child (age 0–9 years) unrestrained or in unsecured child safety seat
  - 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)

EMS Judgment

Consider risk factors, including:

- 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

If concerned, take to a trauma center

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)