FORT LAUDERDALE FIRE RESCUE

EMS Protocols

"We Are More Than Our Mission"

PROTOCOL ACCESS

ENTER

Version 24-3 (Released 12/9/2024)

STATEMENT OF PURPOSE

This document describes the methods by which the Fort Lauderdale Fire Rescue will continue to provide the highest quality pre-hospital patient care. We have incorporated evidence-based guidelines with historically proven practices to produce this document. While it is impossible to address every possible variation of disease or traumatic injury, these policies, procedures, and protocols do provide a foundation for treating the vast majority of patients we encounter. We will continue to rely on our education, experience, and clinical judgment to assist as we strive to provide the highest quality prehospital care to those we serve.

SCOPE

These protocols apply to all Certified First Responders (CFRs), Emergency Medical Technicians (EMTs) and Paramedics certified by the Florida State Department of Health and approved by the Fort Lauderdale Fire Rescue Medical Director.

RESPONSIBILITIES

It is the responsibility of all those utilizing these protocols to provide a "Standard of Emergency Care" that is in the best interest of the patient and as indicated by their complaint and/or condition without exceeding the limitation of their training.

AUTHORIZATION

These protocols are granted under the authority of Chapter 401 of the Florida Statutes, and 64J-1.004 of the Florida Administrative Code. The Medical Director for Fort Lauderdale Fire Rescue shall be the only one authorized to make changes to these protocols. Any deviation from these protocols as described above must be with sound clinical "Paramedic Judgement" and brought to the immediate attention of the Medical Director for post Continuous Quality Improvement (CQI) and review of the deviated protocol and patient follow-up.

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Table of Contents

Quick Access Table

MEDICAL Protocols

TRAUMA CARE Protocols

CARDIAC ARREST Protocols

OBSTETRICAL CARE Protocols

CARDIAC CARE Protocols

OVERDOSE CARE Protocols

AIRWAY/RESPIRATORY Protocols

HAZMAT Protocols

ENVIRONMENTAL Protocols

PHARMACOLOGY Section

ASSESSMENTS/ PROCEDURES

MEDICATION Tool

REFERENCE Section

General Information

MAIN MENU

Section 1 | General Information

Key to Protocol Utilization

GI-1
Published: 3/1/2021
Reviewed:
Updated: 1/15/2024

SYMBOL	MEANING
	Skill or information related to advanced life support providers.
	Information related to section, procedure, protocol, medication, etc.
	Information related to patient rights and/or HIPAA requirements.
	Information related to legal context.
	Important information related to subject matter, take note. Pharmacology = Contraindications.
	Information related to pediatric patients and/or patient care. Pharmacology = Pediatric Dosage
	Information related to Obstetrical patients and/or patient care.
	Information related to Cardiac/STEMI Alert patients and/or patient care.
	Information related to pharmacology. Pharmacology = Drug Dosages
	Pharmacology = Indications
	Pharmacology = Side Effects
	Pharmacology = Warnings
	Web page, procedure, or protocol under construction and/or review.
>	Greater Than
<	Less Than
≥	Greater Than or Equal To
≤	Less Than or Equal To

Definition:
Explanation of medical terms or S/S not often used.

Medication:
How to mix and administer medication infusion or bolus.

Red Box:
Highlights vital signs that are required or as needed (PRN).

Blue Box:
Highlights a vital sign that may require consultation with another protocol.

Alert Checklist or Procedure Hyperlink

Online Medical Direction
Direction from Department MD may be required.

Protocol or Section Hyperlink

PEDIATRIC TREATMENT PROCEDURES

REFERENCE/PEARLS Specific to Protocol

Pharmacology Hyperlink

Related to HAZMAT
Decontamination Instructions

Complaint / Injury / Signs / Symptoms
CONSULT: Additional Protocols May Be Required

Guidelines for the Use of Protocols

GI-2
Published: 3/1/2021
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INFORMATION

In general, the protocols are divided into sections, including medical, trauma, and other special groupings. For pediatric patients, the appropriate pediatric-specific treatment should be utilized if it exists (designated by the PEDIATRIC hyperlink).

1. If there is not a pediatric specific treatment plan for a given pediatric patient situation, utilize the adult protocol for guidance, but always use pediatric weight-based dosing for medications. Pediatric medication dosages will **never exceed** individual and/or maximum adult dosages.
2. When confronted with an emergency or situation that does not fit into an existing patient care protocol, the patient should be treated by the Universal Patient Care Protocol and **Online Medical Direction (Department Medical Director)** should be contacted for further instructions.

It is not expected that every historical element or sign/symptom be recorded for every patient. It is expected that those elements pertinent to your patient will be included in the patient evaluation and documentation. Virtually every patient should receive the care suggested within the applicable protocol(s), usually in the order described. Exceptions will exist and the rationale for any deviation from the recommended course should be clearly explained/documented in the narrative of the electronic patient care report (ePCR). It is impossible to condense emergency medicine to a single page flow chart. The Pharmacology and Reference sections within allow for expanded medication advice, dosages, and description of special situations. These sections should be studied along with the rest of the protocols.

Guidelines for the Use of Protocols

There may be occasions that a patient's condition warrants the consult/utilization of multiple protocols. During these occasions, the protocols used must be documented within the ePCR. The provider shall use caution with multiple medications administration that may potentiate their desired effects. **Remember, total maximum dose warnings are not protocol specific, they are patient specific.**

If at any moment during patient care the desired effect of a treatment modality and/or medication administration is achieved, continuation within that protocol should be as needed (PRN). Example – management of chest pain during a suspected cardiac event and the complaint of pain has subsided prior to administration of an analgesic.

These protocols describe the proven practices that are the foundation of our care. The additional information coupled with your experience and education will allow us to provide pre-hospital patient care that is second-to-none. Lastly, the way we carry ourselves and the customer service we provide is often as important as the care we provide. For many of our less critically ill or injured patients, the human interaction has more of a healing effect than any of our proven practices.

Criteria for Protocol Deviation

GI-3
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INFORMATION

Recognizing that it is impossible to address every possible variation of disease or traumatic injury, these EMS protocols do provide a foundation for treating the vast majority of patients we encounter. Therefore, two concurring paramedics are given the authority to deviate as required. Good "Paramedic Judgment" and the patient's best interest must be considered at all times.

When deviating from the protocols, the reason MUST be clearly documented within the electronic patient care report (ePCR) narrative.

Definition of a Patient

GI-4
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Updated: 11/15/2021

INFORMATION

A patient is an individual requesting or potentially needing medical evaluation or treatment. The patient-provider relationship is established via telephone, radio, or personal contact. It is the provider's responsibility to ensure all potential patients, regardless of the size of the incident, are offered the opportunity for evaluation, treatment, and/or transport.

Once contact is made with a patient, every effort will be made to document patient demographics, complaint, history of current and past medical/surgical conditions, treatments and care administered, outcomes, and final disposition MUST be documented within the electronic patient care report (ePCR).

DEFINITION OF A PEDIATRIC PATIENT

- EMS: Puberty is defined as breast development in females and underarm, chest, or facial hair in males. Once a child reaches puberty, use the indicated adult protocol.
- Medical Emergencies – Pediatric is defined as 17 years old and younger (18 y/o and older = ADULT).
- Trauma Alert - Pediatric is defined as 15 years old and younger (16 y/o and older = ADULT).

PATIENT RIGHTS

Once we have begun collecting information regarding a patient encounter, it is important for us to take every precaution to protect patient confidentiality. While we certainly have HIPAA issues to consider, we also have ethical obligations to protect a patient's confidential information. This applies not only to the sharing of written information but also requires us to monitor our speech so as not to inadvertently share patient information.

Consent to Treat/Transport

INFORMATION

Consent to treatment and/or transport is needed in nearly every healthcare situation so long as the patient is conscious and without a life-threatening emergency. If a patient is unconscious and at immediate risk, then consent is waived since it cannot be provided, and the patient might otherwise die.

There are three situations regarding consent that deserve special consideration:

1. Minors
2. Life-threatening situations without ability to communicate
3. Potentially life-threatening situations

MINORS

In general, patients under the age of 18 may not consent to medical treatment or transport. The following groups may consent for the treatment of a minor:

1. Mother or Father or a Legal Guardian
2. An individual standing in *loco parentis*. A person stands in *loco parentis* when he or she takes on the responsibilities of a parent of the child (e.g., a step-parent).
3. The leader of a group of children in possession of written permission from the parent authorizing emergency medical treatment (e.g., a school field trip, a child at school where the parent is not present).

Consent to Treat/Transport

MINORS (cont.)

In the following circumstances, no consent is required prior to initiating treatment:

1. The parent, guardian, or person standing in loco parentis cannot be reached and the minor needs to receive medical treatment.
2. The identity of the child is unknown and a delay in giving treatment would endanger the life of the child.
3. The effort to contact the child's parents, guardian, or a person standing in loco parentis would result in a delay that would seriously worsen the condition of the child.

In Florida, under the following circumstances, a minor may consent to treatment without the knowledge of the parent:

1. Emancipated Minor
2. Pregnancy
3. Treatment for sexually transmitted diseases
4. Alcohol or drug abuse
5. Emotional disturbance
6. Use of Safe Haven for Newborns Law

The "Safe Haven for Newborns" law allows parents to leave their unharmed newborn less than seven days old at any Fort Lauderdale Fire Rescue station anonymously and without fear of prosecution. The parent(s) have the absolute right to remain anonymous in accordance with the law. Any information that may possibly identify the parent(s) will not be shared with anyone. The Safe Haven helpline 1-877-767-2229 (4/7).

https://safehavenlaws.uslegal.com/florida-safe-haven-law/

Consent to Treat/Transport

Life-threatening situations without ability to communicate (Implied)

1. A patient of any age who is unable to communicate because of an injury, accident, illness, or found to be unconscious and is suffering from what reasonably appears to be a life-threatening injury or illness. This patient is treated on the principle of **implied** consent.
2. The principle of **implied** consent presumes that if the individual with the illness or injury were conscious and able to communicate, he or she would consent to emergency treatment.
3. In these situations, patients may be transported without their consent. Law enforcement, physical restraint, and/or chemical restraint may be required.

Potentially life-threatening situations

Patients in this category generally fall into one of two groups: the alert patient who has a concerning presentation and refuses treatment and/or transport (e.g., the patient with chest pain and EKG changes) or the patient who may be intoxicated but does not have what reasonably appears to be a life-threatening injury (e.g., the patient who has consumed alcohol with a small laceration). In these situations, the following steps should be taken:

1. Determine orientation to person, place, time, and capacity. You must document results.
2. Determine what factor(s) is/are influencing the patient to refuse medical care. Resolve the ones in your power (e.g., patient refuses IV – offer transport without an IV).

Consent to Treat/Transport

Potentially life-threatening situations (cont.)

3. Attempt communication with spouse, significant other, other family members if available.
4. If patient continues to refuse, consider requesting additional resources, for example - respective Engine Captain and/or Department of Law Enforcement representative (DLE). Additionally, resources may also include your respective Assistant or Battalion Chief and/or online Medical Direction (Department Medical Director).
5. Offer transportation to an Emergency Department (ED) of their choice within reason. Contact with your respective Assistant or Battalion Chief is required.
6. If patient continues to refuse, clearly explain risks of refusal and have the patient repeat these concerns back to you. Document your results in the patient care report.
7. During incidents with likelihood of refusal of transport, remain courteous and assure the patient that they can call back for treatment and/or transport at any time.

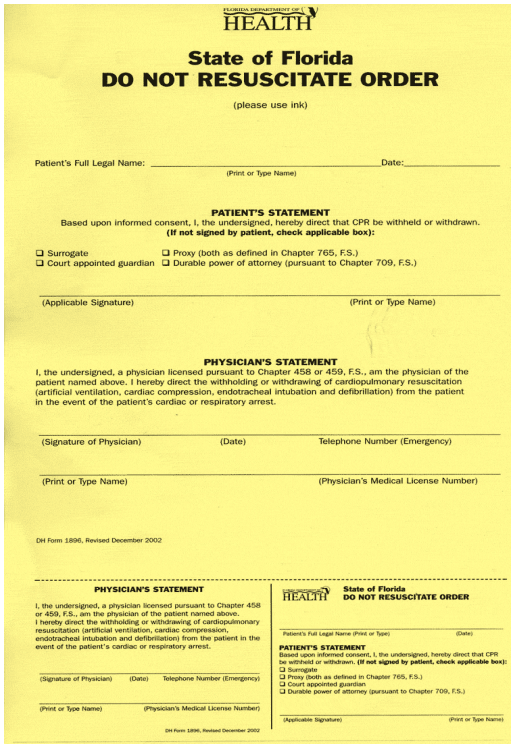
Do-Not-Resuscitate Order in Florida

INFORMATION

The **Florida do not resuscitate order form (DNR or DNRO)** is a document that is used by citizens of the State who suffer from incurable or irreversible medical conditions. This form states that the requester does not wish to be resuscitated in the event of respiratory or cardiac arrest. Although not always reserved for patients with terminal illnesses, it is the most common reason for a physician to sign off on a DNR order. A DNR must be honored in any health care setting by all medical personnel, including EMTs and paramedics outside of a medical facility. For a Florida DNR to be legally valid, the form must **present on scene,** printed on yellow paper, and filled out by the patient or authorized representative and physician.

DNR orders do not take effect until the patient is in cardiac or respiratory arrest. Prior to either arrest, care should be initiated that is in the best interest of the patient and if required, transport the patient to the closest appropriate facility.

Do not delay care waiting for the DNR to be presented. Once presented, a ranking crew member must confirm validity. Once confirmed, resuscitation efforts can be discontinued, and the patient pronounced. A picture copy of the DNR must be attached to the patient care report (ePCR).



FLORIDA DEPARTMENT OF HEALTH

State of Florida
DO NOT RESUSCITATE ORDER

(please use ink)

Patient's Full Legal Name: _____ Date: _____
(Print or Type Name)

PATIENT'S STATEMENT
Based upon informed consent, I, the undersigned, hereby direct that CPR be withheld or withdrawn.
(If not signed by patient, check applicable box):

❑ Surrogate ❑ Proxy (both as defined in Chapter 765, F.S.)
❑ Court appointed guardian ❑ Durable power of attorney (pursuant to Chapter 709, F.S.)

(Applicable Signature) (Print or Type Name)

PHYSICIAN'S STATEMENT
I, the undersigned, a physician licensed pursuant to Chapter 458 or 459, F.S., am the physician of the patient named above. I hereby direct the withholding or withdrawing of cardiopulmonary resuscitation (artificial ventilation, cardiac compression, endotracheal intubation and defibrillation) from the patient in the event of the patient's cardiac or respiratory arrest.

(Signature of Physician) (Date) Telephone Number (Emergency)

(Print or Type Name) (Physician's Medical License Number)

DH Form 1896, Revised December 2002

PHYSICIAN'S STATEMENT
I, the undersigned, a physician licensed pursuant to Chapter 458 or 459, F.S., am the physician of the patient named above. I hereby direct the withholding or withdrawing of cardiopulmonary resuscitation (artificial ventilation, cardiac compression, endotracheal intubation and defibrillation) from the patient in the event of the patient's cardiac or respiratory arrest.

(Signature of Physician) (Date) Telephone Number (Emergency)

(Print or Type Name) (Physician's Medical License Number)

DH Form 1896, Revised December 2002

FLORIDA DEPARTMENT OF HEALTH
State of Florida
DO NOT RESUSCITATE ORDER

Patient's Full Legal Name (Print or Type) (Date)

PATIENT'S STATEMENT
Based upon informed consent, I, the undersigned, hereby direct that CPR be withheld or withdrawn. **(If not signed by patient, check applicable box):**
❑ Surrogate
❑ Proxy (both as defined in Chapter 765, F.S.)
❑ Court appointed guardian
❑ Durable power of attorney (pursuant to Chapter 709, F.S.)

(Applicable Signature) (Print or Type Name)

Regarding bracelets and/or necklaces. The DNR must be located prior to discontinuing resuscitation.

See **Determination of Death in the Field Protocol:** Page 74

On-Scene Physician Direction

GI-7
Published: 3/1/2021
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Updated:

INFORMATION:

The issue of non-EMS system physicians on scene or in clinics and offices is a complex one. Conflicts with physicians (and other health care providers) at scenes come in many varieties. Many physicians are not well informed of the law or regulations regarding the State EMS system and often of the abilities and skills of EMT's of all levels. Do Not get into an argument with a physician at a scene. Keep in mind that your job is to care for the patient. If the situation allows, provide the physician with information regarding "Physicians On Scene."

Scenario: Physician caring for their patient, who subsequently calls for EMS transport. If the physician wishes to stay with the patient during transport, they may do so. However, advise the physician on "Notification of Responsibility," and make sure they are clear on guidelines that apply:

1. Assist in patient care only if your participation is within your Scope of Practice and based on protocols.
2. If any conflict over the patient's care arises it will be addressed through on-line medical control.
3. The highest level EMT/Paramedic will always ride in the back with the physician and be in position to provide patient care and monitoring.
4. Document the attending physician and their understanding of Patient Responsibility on the ePCR.

Scenario: If the physician releases the patient to you and chooses not to accompany them during transport, the following guidelines apply: (doctors office or clinic)

1. In essence the physician has transferred the physician-patient relationship to the EMS Physician Medical Director temporarily. You act as the physician delegate in this regard, as you do in all patient care.
2. Once the transfer of patient care is complete, you are to follow the appropriate EMS Protocols here within.

On-Scene Physician Direction

GI-7
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Scenario: An unknown physician or similar health care provider appears at a scene and offers their help.

1. You have no authority or responsibility to allow another health care provider to participate in patient care.
2. They should be courteously thanked and denied access.
3. Do not hesitate to ask law enforcement assistance to remove such an individual from the scene if they become aggressive or insistent on assuming care of the patient.

Scenario: A known physician or similar health care provider appears on-scene and offers their help the following guidelines apply:

1. You have no authority or responsibility to allow another health care provider to participate in patient care. However, if this provider is a physician, is known to you, and in the unusual situation could provide a service not otherwise available (i.e., an anesthesiologist appears when you are unable to intubate), they may participate in the patient's care.
2. Known to the provider and their credentials are confirmed.
3. The orders are consistent with your Scope of Practice.
4. They seem reasonable and medically prudent for the patient.
5. There is no change in the patient's condition that would warrant a deviation from the orders.
6. The physician must accompany the patient to the hospital.
7. If the physician does not agree to accompany the patient to the hospital, they should be courteously thanked and denied access to the patient.

If you have any concerns, contact your respective Battalion Chief and have respond, and/or Online Medical Direction (Department Medical Director) for guidance. If required, have the on-scene physician discuss his/her concerns with the Department Medical Director.

Florida Incapacitated Persons Act

GI-8
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FLORIDA INCAPACITATED PERSONS ACT : 401.445

Patient who have a medical emergency and lack capacity to refuse transport shall be transported to the appropriate Emergency Department for evaluation.

Emergency examination and treatment of incapacitated persons.—

1) No recovery shall be allowed in any court in this state against any emergency medical technician, paramedic, or physician as defined in this chapter, any advanced registered nurse practitioner certified under s. 464.012, or any physician assistant licensed under s. 458.347 or s. 459.022, or any person acting under the direct medical supervision of a physician, in an action brought for examining or treating a patient without his or her informed consent if:
    a) The patient at the time of examination or treatment is intoxicated, under the influence of drugs, or otherwise incapable of providing informed consent as provided in s. 766.103;
    b) The patient at the time of examination or treatment is experiencing and emergency medical condition; and
    c) The patient would reasonably, under all the surrounding circumstances, undergo such examination, treatment, or procedure if he or she were advised by the emergency medical technician, paramedic, physician, advanced registered nurse practitioner, or physician assistant in accordance with s. 766.103(3).
    d) Examination and treatment provided under this subsection shall be limited to reasonable examination of the patient to determine the medical condition of the patient and treatment reasonably necessary to alleviate the emergency medical condition or to stabilize the patient.
2) In examining and treating a person who is apparently intoxicated, under the influence of drugs, or otherwise incapable of providing informed consent, the emergency medical technician, paramedic, physician, advanced registered nurse practitioner, or physician assistant, or any person acting under the direct medical supervision of a physician, shall proceed wherever possible with the consent of the person. If the person reasonably appears to be incapacitated and refuses his or her consent, the person may be examined, treated, or taken to a hospital or other appropriate treatment resource if he or she is in need of emergency attention, without his or her consent, but unreasonable force shall not be used.

Refusal of Treatment or Transport

GI-9
Published: 3/1/2021
Reviewed: 2/20/2021
Updated:

INFORMATION

Patients with mental capacity retain the right to accept or refuse medical care and/or transport. All refusals MUST be clearly documented within the electronic patient care report (ePCR).

REFUSAL OF SPECIFIC TREATMENT

In the event a patient attempts to refuse medical care, it is important to recall that we should:

1. Remain courteous.
2. Offer treatment w/o some (or all) of the recommended treatment(s) if that is what the patient will allow. Clearly advise the patient of the possible complications of their decision.
3. Accurately document all components of the patient encounter, elected course of treatment, and obtain the patient's signature for refusal of specific treatment.
4. Upon ED arrival, relay refusal of specific treatment to the receiving ED during transfer of patient care.

REFUSAL OF CLOSEST APPROPRIATE FACILITY

Every attempt to honor the request of the patient and/or family member to be transported to a hospital emergency department (ED) other than the closest appropriate should be made only if the mechanism of illness/injury and/or historical/physical findings DO NOT indicate the following:

1. Level I or Level II Trauma Alert
2. Stroke Alert
3. STEMI Alert (or NSTEMI, Cardiac Alert)
4. Sepsis Alert
5. A high likelihood of decreased patient stability

Other exclusion criteria:

1. Operational limitations (high call volume vs. available units)
2. States of emergency (e.g. – hurricane, civil unrest, etc.)
3. Need/use of lights and sirens to transport (Code 3)
4. Refusal by respective Assistant or Battalion Chief
5. Requested hospital is known to not provide services required (e.g. – obstetrics, psychiatric, etc.)

Refusal of Treatment or Transport

REFUSAL OF CLOSEST APPROPRIATE FACILITY (cont.)

In the event the closest appropriate facility is bypassed, it is important to recall that we should:

1. Remain courteous.
2. Clearly advise the patient of the possible complications of their decision.
3. Obtain a patient or requesting person signature prior to initiating transport.
4. Obtain a witness signature to the encounter. Remember, crew signature as witness is the least preferred.
5. Notify your respective Assistant or Battalion Chief for all transport requests outside the city of Fort Lauderdale.

In the rare event of patient deterioration and/or need to expedite transport for any reason (upgrade from code 1 to code 3), the request to be transported to a hospital emergency department (ED) other than the closest appropriate should be cancelled unless the requested hospital is now the closest hospital.

If the request is cancelled, the patient should be transported to closest appropriate facility at that moment of active transport. Notification shall be made to your respective Assistant or Battalion Chief, Fire Communications, Medical Control (new receiving emergency department), and family if applicable.

Refusal of Treatment or Transport

REFUSAL TRANSPORTATION

Once contact is made with a patient and they choose to refuse transportation to an Emergency Department (ED), with courtesy, make a second attempt to convince the patient to consider transport for continued medical care/treatment. Offer transportation to an Emergency Department (ED) of their choice within reason. Contact with your respective Assistant or Battalion Chief is required if willing to be transported outside the city.

After a patient repeatedly refuses treatment and transport, then under Florida law, EMS personnel cannot forcibly restrain a patient and force transport against their wishes. If problems arise, contact your respective Assistant or Battalion Chief as required.

If you feel that the patient's condition truly requires continued medical care/treatment, consider requesting additional resources to facilitate transport, for example - respective Engine Captain and/or Department of Law Enforcement representative (DLE). Additionally, resources may also include your respective Assistant or Battalion Chief and/or Online Medical Direction (Department Medical Director).

If refusal of transport is inevitable, it is important to remember:

1. Remain courteous.
2. Determine orientation to person, place, and time. You must document results.
3. Clearly advise the patient of the possible complications of their decision (further injury/illness, possible death).
4. Obtain a patient.
5. Obtain a witness signature to the encounter. Remember, crew signature as witness is the least preferred.

Transport Decisions & Destinations

GI-10
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Reviewed: 2/20/2021
Updated:

PRIORITY ONE MEDICAL PATIENTS

- All cardiac arrest patients will be transported to the closest approved Cardiac Catheterization Facility.
- All other patients shall be transported to the closest appropriate hospital emergency department.
- Pediatric patients who have regained pulses post resuscitation shall be transported to a comprehensive pediatric emergency department (Broward Health Medical Center).
- Pulseless pediatric patients undergoing an active resuscitation shall be transported to closest appropriate emergency department with pediatric admission.

PRIORITY TWO AND THREE PATIENTS

- Shall be transported to the closest appropriate emergency department.
- Pediatric patients shall be transported to the closest pediatric receiving emergency department.
- Patients requesting an appropriate alternative hospital to the closet appropriate.
- See **General Information:** *Refusal of Closest Appropriate Facility.*

Transport Decisions & Destinations

TRAUMA PATIENTS

- All adult and pediatric trauma alert patients meeting trauma alert criteria, shall be transported to the closest appropriate (Pediatric or Adult) Trauma Center.
- Trauma patients who arrest in the presence of Fire Rescue personnel, shall be transported to the closest Trauma Center.
- All pregnant (visibly or by history of gestation >20 weeks) patients meeting Trauma Alert criteria shall go to closest **Trauma/OB Facility** (Broward Health Medical Center or Memorial Regional).
- ***Broward County Uniform Trauma Transport Protocols (Revised 8-2018)***
- See **Trauma Care Protocols:** *Index Page*

STEMI ALERTS

- Once a *STEMI Alert* has been determined, the patient should have transport expedited to the closest approved Cardiac Catheterization Facility and the 12 Lead ECG must be transmitted to said facility.
- See **General Information:** *Hospital Categorization Chart*

SEPSIS ALERTS

- Once a *Sepsis Alert* has been determined, the patient should have transport expedited to the closest appropriate facility. These patients have a high likelihood of decompensation and should not be allowed to choose an alternative hospital.

Transport Decisions & Destinations

STROKE ALERTS

- All Stroke Alerts shall be transported to either Broward Health Medical Center (BHMC), Holy Cross Hospital (HCH), Florida Medical Center (FMC) or Westside Regional Medical Center (WRMC).
- All Pediatric Stroke Alerts shall be transported to a Pediatric Comprehensive Stroke Center (Broward Health Medical Center or Memorial Regional Hospital – Joe DiMaggio). Pediatric stroke patients are defined as less than 18 years old.

OBSTETRICAL PATIENTS

Obstetrical (OB) Patients are defined as pregnancy @ 20 weeks or greater. Patients less than 20 weeks are classified as *Gynecological Emergencies* and can be transported to closest emergency department (ED).

Obstetrical (OB) Patients:

- Minor concern (not pregnancy related) can go to the closest ED.
- Stable patients may go to the OB hospital of their choice within reason.
- With any "Constitutional Symptoms," transport to the OB hospital of their choice within reason.
- With any abdominal/pelvic pain, transport to the closest OB hospital.
- In cardiac arrest transport to closest OB Hospital.
- Trauma, transport to Trauma Center/OB Hospital.
- See **Obstetrical Emergency Protocols:** *Index Page*

Transport Decisions & Destinations

PSYCHIATRIC PATIENTS

- Stable psychiatric patients shall be transported to the closest psychiatric receiving facility.
- Pediatric psychiatric patients with no underlying medical complaint/condition shall be transported to either Memorial Reginal Hospital or Florida Woodmont Hospital (formerly – University Hospital, Tamarac).

HELICOPTER OPERATIONAL CRITERIA

The guidelines for air ambulance transport include, but are not limited to the following:

- Level I Trauma patient that meet the trauma scorecard set forth in the Broward County Uniform Trauma Transport Protocols.
- Pre-hospital ground transport to a Trauma Center is greater than 20 minutes; or,
- Pre-hospital scene extrication time of a trauma patient is greater than 15 minutes; or,
- Pre-hospital ground response time to the scene is greater than 10 minutes; or,
- Mass Casualty Incidents (MCI) involving multiple patients with traumatic injuries; or,
- To augment or expedite pre-hospital ground transport, or
- To transport a patient upon request by the EMS provider.

Exclusions: Any patient the pilot or crew determines is not safe to transport. Bariatric patient weight - as per pilot's judgement. Patient who is combative and cannot be physically and/or chemically restrained. Hazmat contaminated patient.

Hospital Categorization Chart

GI-11
Published: 1/15/2024
Reviewed: 12/4/2024
Updated: 12/9/2024

*Provided by Broward County Regional EMS Council (8/2024)
MD Approved (see IB 24-215 regarding FMC)

HOSPITAL CATEGORIZATION

HOSPITAL NAME	TRAUMA CENTER	PEDIATRIC ADMISSION	OBSTETRICS	PSYCH ADMISSION	STROKE FACILITY	CATH CENTER	LVAD CENTER
Broward County							
Broward Health Coral Springs	N	Y	Y	N	Primary	Y	N
Broward Health Imperial Point	N	N	N	ADULT	Primary	N	N
Broward Health Medical Center	ADULT/PED	Y	Y	ADULT	Comprehensive	Y	N
Broward Health North	ADULT	N	N	N	Comprehensive	Y	N
Cleveland Clinic Hospital	N	N	N	N	Thrombectomy Capable	Y	Y
Florida Medical Center	N	N	N	ADULT	Thrombectomy Capable	Y	N
HCA Florida Northwest Hospital	N	N	Y	N	Primary	Y	N
HCA Florida Plantation Freestanding ER	N	N	N	N	N	N	N
HCA Florida University Hospital	N	N	Y	N	Primary	N	N
HCA Florida Westside Hospital	N	N	N	N	Thrombectomy Capable	Y	N
HCA Florida Woodmont Hospital	N	N	N	PED Only	Primary	N	N
Holy Cross Hospital	N	N	N	N	Thrombectomy Capable	Y	N
Memorial Hospital Miramar	N	N	Y	N	N	N	N
Memorial Hospital Pembroke	N	N	N	N	Primary	N	N
Memorial Hospital South	N	N	N	N	N	N	N
Memorial Hospital West	N	N	Y	N	Comprehensive	Y	N
Memorial Regional Hospital	ADULT/PED	Y	Y	ADULT/PED	Comprehensive	Y	Y
West Boca Freestanding ER (Coconut Creek)	N	N	N	N	N	N	N
Palm Beach County							
Boca Raton Regional Hospital	N	N	Y	N	Comprehensive	Y	N
Delray Medical Center	ADULT/PED	Trauma Only	N	Y	Comprehensive	Y	N
West Boca Medical Center	N	Y	Y	N	N	N	N
Miami Dade County							
Aventura	ADULT	N	N	Y	Thrombectomy Capable	Y	N

BURN CENTERS	HYPERBARIC RECOMPRESSION CHAMBER CENTERS
Kendall Regional Medical Center	HCA Florida Mercy Hospital - (3663 S Miami Ave, Miami, FL 33133)
University of Miami / Jackson Memorial Burn Center	St. Mary's Medical Center - (901 45th Street, West Palm Beach, FL 33407)

Hospital Status Hyperlink – https://bchc.readyop.com/fe/8kiJ3LI

Broward Health Imperial Point	**Broward Health Medical Center**	**Broward Health North**
6401 North Federal Highway Fort Lauderdale, Florida 33308	1600 South Andrews Avenue Fort Lauderdale, Florida 33316	201 East Sample Road Deerfield Beach, Florida 33064
Florida Medical Center	**Florida University Hospital (Davie)**	**Florida Westside Hospital**
5000 W Oakland Park Blvd. Lauderdale Lakes, FL 33313	3476 South University Drive Davie, Florida 33328	8201 West Broward Blvd. Plantation, Florida 33324
Florida Woodmont Hospital	**Holy Cross Hospital**	**Jackson Memorial (Miami-Burn)**
7201 North University Drive Tamarac, Florida 33321	4725 North Federal Highway Fort Lauderdale, Florida 33308	1611 NW 12th Avenue Miami, Florida 33136
Joe DiMaggio's Children's Hosp.	**Memorial Regional Hospital**	**Northwest Medical Center**
3501 Johnson Street Hollywood, Florida 33021	3501 Johnson Street Hollywood, Florida 33021	2801 North State Road 7 Margate, Florida 33063

Medical Control Notifications

GI-12
Published: 3/1/21
Reviewed: 2/20/21
Updated:

Priority One:

Patients in cardiac or respiratory arrest or imminent failure.
Patients with advanced airways placed in the field.
Patients categorized as *CRITICAL or UNSTABLE.*

Priority Two:

Patient categorized as *POTENTIALLY UNSTABLE.*
Patient with IV access, medication administration, 4 and/or 12 ECG monitoring.
Patients requiring a higher priority status when requesting a radio channel for encoding.

Priority Three:

Stable patients with no life-threatening conditions.

ALERTS:

Level I Trauma
Level II Trauma
S.T.E.M.I.
Cardiac
Stroke
Sepsis
P-36

CUPS Status:

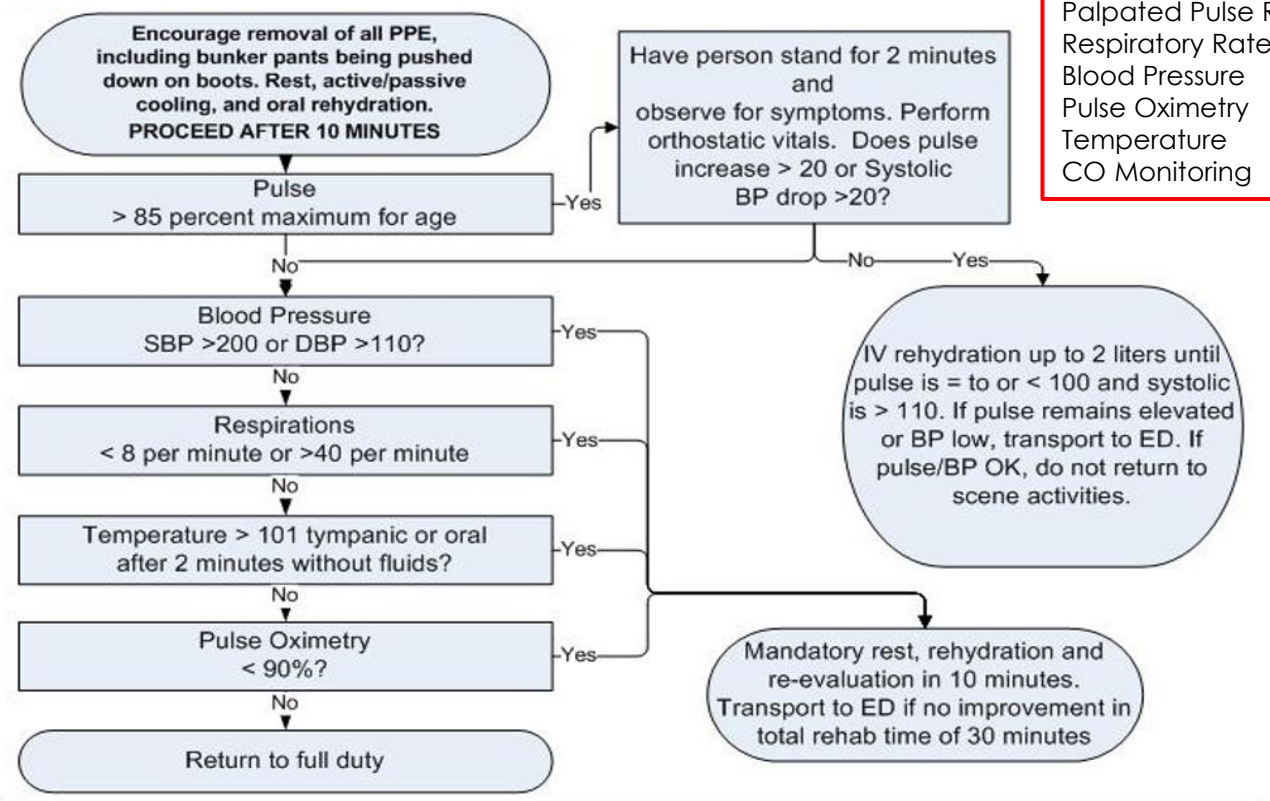
Critical
Unstable
Potentially Unstable
Stable

Hospital Notifications (Encode) – will be attempted during all transportations to emergency departments (ED) when possible. They are mandatory for all Level I and II, STEMI, Cardiac, Stroke, Sepsis, and P-36 Alerts.

On-Scene Rehabilitation/ Extended Operations

GI-13
Published: 3/1/21
Reviewed:
Updated: 11/15/21

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
CO Monitoring



Indications (not limited to this list):

- When used for on-scene rehabilitation, personnel should report to Rehab for evaluation after 45 minutes of operational work and/or after (2) thirty-minute or (1) sixty-minute air bottle.
- Any person complaining of shortness of breath, confusion, combativeness or headache will be treated with high-flow oxygen and should be transported to the hospital immediately.

Automatic Transport Criteria:

- Chest Pain
- Shortness of Breath (unresolved after 10 minutes w/ oxygen administration)
- Heart Rhythm other than NSR or Sinus Tachycardia
- Syncopal Episode / Disorientation / Confusion
- Vital signs that have not returned to normal after 30 minutes of rest.
- Inability to hold fluids down or an episode of vomiting.
- Request made by person to be transported.

Cooling Techniques:

- Remove all firefighting equipment.
- Apply wet clothes to body cooling points, only after the individual has cooled from IDLH environment temperatures.
- Use of cooling fans, ambient evaporative cooling, and cooling chairs.
- Promote consumption of water and/or electrolyte replenishment (2:1 ratio).

Patient Safety

GI-14
Published: 3/1/21
Reviewed: 2/20/21
Updated:

Morning Vehicle/Equipment Check-Out
Document at least once per shift the presence of all equipment, medications, and supplies as noted within the vehicle inventory.
Check/Document medication temperatures @ 0800 and 1600 hours.
Restock supplies, as necessary.
Check all equipment and confirm working in proper order.
Reboot MDT and send test-strip via Lifepak 15.
Check vehicle emergency lighting, sirens, and vehicle radios.

NO → Call for additional resources PRN. Stage if necessary.

YES →

SCENE SAFE

Universal Patient Care Protocol
Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.
Bring all necessary equipment to the patient. Approach with caution (outer circle – inner circle).
For Adult Patients, Manage life-threatening injuries immediately.
 For Pediatric Patients, Use Length-Based Tape or other System.
Follow the Applicable Protocols

Patient doesn't fit a protocol? **Contact Medical Director**

Transport Decision (Closest Appropriate)
Notification to Receiving ED
Patient Care Transfer Demographics, Personal Property, Summery of care and response to care.

Post Transport Decontamination
Crew, Equipment, and Unit (OOS – PRN)
Restock Supplies (PRN)
If massive depletion of supplies (e.g., post cardiac arrest) remain out of service until resupplied at the nearest appropriate location.

Medication Administration (The "5" Rights)
RIGHT: Patient
RIGHT: Medication
RIGHT: Time (within Protocol)
RIGHT: Dose
RIGHT: Route
Document Administration

***Document medication errors using SOP Article 1120.**

MEDICAL DIRECTOR NOTIFICATION POLICY:
If any adverse clinical outcomes that cause harm to the patient, notify the EMS Bureau and Medical Director as soon as possible via email and/or cell phone.

Universal Patient Care

GI-15
Published: 3/1/21
Reviewed: 2/20/21
Updated:

SCENE SAFE

NO → Call for additional resources PRN. Stage if necessary. → YES

- Bring all necessary equipment to the patient. Approach with caution (outer circle – inner circle).
- Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.
- Initial Assessment, BLS Maneuvers, **Apply O2 (PRN)** Rapid removal from scene?
- For Adult Patients, Manage life-threatening injuries immediately.
- For Pediatric Patients, Use Length-Based Tape or other System.
- **TRAUMA or MEDICAL?**

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)

If Indicated:
4 Lead ECG
12 Lead ECG
Pain Scale
EtCO2 Monitoring
CO Monitoring

TRAUMA

Evaluate MOI

- Significant MOI → Primary Assessment → Manage **Airway** (PRN)
- No Significant MOI → Primary and Secondary Assessment as needed. Focused assessment on specific complaint.

Spinal Motion Restriction (as indicated)

Transport Decision Level I Trauma Center

Secondary Assessment

MEDICAL

Mental Status

- Unresponsive → Primary Assessment → Manage **Airway** (PRN) → Obtain history of present illness from an available source. Scene survey
- Responsive → Obtain Chief Complaint → Primary and Secondary Assessment as needed. Focused assessment on specific complaint.

Application of Appropriate Protocols

- Transport Decision (Closest Appropriate)
- Monitor VS During Transport
- Continue On-Going Assessment Treat as Needed & Re-Evaluate Interventions
- Notification to Receiving ED
- Patient Care Transfer Demographics, Personal Property, Summery of care and response to care.

Notify Destination (Online Medical Control)
Patient does not fit specific protocol.

Post Transport Decontamination
Crew, Equipment, and Unit (OOS – PRN)

Well Person Check

GI-16
Published: 3/1/21
Reviewed: 2/20/21
Updated:

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment and BLS Maneuvers

Establish History / Onset of Symptoms (if any?)

Trauma or Medical?

CAPACITY to make medical decisions?

YES → **Based on Injuries or Complaint**

CONSULT: Appropriate Protocol PRN

Can Self-Manage Injury?

YES → **Refusal of Transport (GI-9)**

NO → Transport Decision (Closest Appropriate)

NO → Transport Decision (Closest Appropriate)

YES →

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)

If Indicated:
4 Lead ECG
12 Lead ECG
Pain Scale
EtCO2 Monitoring
CO Monitoring

Abnormal Vital Signs?

Pulse Rate: >110 or <50 B/Min

Systolic BP: >200 or <85

Diastolic BP: >120

Respiratory Rate: >24 or <6

Blood Glucose: <60 or >400

(YES) Recommend Transport → Transport Decision (Closest Appropriate)

NO → Reconfirm, Offer Alternate Hospital within Reason.

NO → **Refusal of Transport (GI-9)**

Transport Decision (Closest Appropriate)

Continue On-Going Assessment, Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer
Demographics, Personal Property, Summery of care and response to care.

SEEK ASSISTANCE:
Call for additional resources PRN to facilitate transport with difficult patients.

Post Refusal Requirements / Documentation

- Advise patient to call 911 if they develop any symptoms or change mind.
- Complete ePCR (2 sets of VS for BLS types or 3 sets of VS w/ ECG for ALS types).
- Obtain signature from patient & witness (Crew member witness as last resort.)

Medical Emergency Protocols

MAIN MENU

Section 2 | Medical Emergencies Protocols

Abdominal Pain and GI Emergencies

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
4 Lead ECG
Pulse Oximetry
Temperature
Blood Glucose (BGL)

If Indicated:
Pain Scale
12 Lead ECG
EtCO2 Monitoring
CO Monitoring

Perform - 4 Lead ECG
Consider - 12 Lead ECG

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient).
Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment, BLS Maneuvers, **Apply O2 (PRN)**

Establish History/Timeline of Present Illness

Orthostatic Blood Pressure Reading
Notable Change?

Serious Signs/Symptoms
Hypotension, Poor Perfusion, or Shock

YES → **Establish IV Access**
Consider Large Bore or 2 Access Sites

Normal Saline 500mL Bolus
REPEAT as needed, Titrate to SPB ≥ 90 mmHg
Maximum of 1L
*Assess Lung Sounds and BP every 500ml.

Nausea and/or Vomiting
Ondansetron 4mg IV/IO/IM

Pain (Severe) PRN
Fentanyl 50-100mcg SIVP/IO

REPEAT – Fentanyl
(1) Time, (5) Min - PRN

YES → **Establish IV Access**
Consider Large Bore or 2 Access Sites

Normal Saline 500mL Bolus
REPEAT as needed, Titrate to SPB ≥ 90 mmHg
Maximum of 1L
*Assess Lung Sounds and BP every 500ml.

Nausea and/or Vomiting
Ondansetron 4mg IV/IO/IM

Pain (Severe) PRN
Fentanyl 50-100mcg SIVP/IO

REPEAT – Fentanyl
(1) Time, (5) Min - PRN

NO → **Establish IV Access TKO / Saline Lock**

Nausea and/or Vomiting
Ondansetron 4mg IV/IO/IM

Pain (Severe) PRN
Fentanyl 50-100mcg SIVP/IO

REPEAT PRN – Fentanyl
(1) Dose, (5) Min - PRN

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer
Demographics, Personal Property,
Summery of care and response to care.

Fentanyl | Ondansetron

MAIN MENU | REFERENCE/PEARLS | PEDIATRIC | MEDICAL

Abdominal Pain and GI Emergencies References

Information:

Severe, sudden abdominal pain manifests, it's often a warning sign of a significant health problem that may require emergency treatment. Severe abdominal pain that comes on quickly, almost always indicates a significant problem.

Pediatric Vomiting and Diarrhea:

NORMAL SALINE 20mL/kg IV/IO. Repeat as needed. Maximum – follow Medication Tool.
Assess lung sounds and blood pressure often.
Weighing less than 30kg (65 lbs.), ZOFRAN 0.1 mg/kg slow IV/IO (Max dose of 4mg).
Weighing greater than 30kg, ZOFRAN adult dose, 4mg slow IV/IO.

PEARLS:

- **A 12-lead ECG should be performed on these patients, consider *Cardiac Ischemia.***
- Orthostatic vital signs: supine to sitting BP then to standing BP, drop of SBP of > 20 mm hg or increase HR > 20 bpm at any time.
- Abdominal pain in women of childbearing age should be treated as an ectopic pregnancy until proven otherwise.
- **Caution:** vague complaints often include abdominal discomfort/disturbances that could be masking a significant medical emergency (MI, Aneurysm). A 12 Lead ECG should be performed.
- Appendicitis presents with rebound tenderness or vague, peri-umbilical pain which migrates to the RLQ over time.
- The diagnosis of abdominal aneurysm should be considered with abdominal pain in patients over 50.
- Nothing-by-mouth (NPO) for any patient with abdominal pain.
- Repeat vital signs after each bolus. May give fluid bolus PRN based on vitals and patient condition.
- Consider Hypotension Protocol for SBP <90.
- Blood Glucose Level (BGL), if <60 or >350, go to the *Diabetic Emergencies* protocol.
- Nitrous Oxide can be used as an option prior to administration of Morphine or Fentanyl.

DIFFERENTIAL DIAGNOSIS:

Liver (Hepatic disease), Peptic Ulcer disease, Gastritis, Gallbladder disease, Myocardial Infarction, Pancreatitis, Kidney Stone, Abdominal Aneurysm, Appendicitis, Bladder / Prostate disorder, Pelvic (PID, Ectopic Pregnancy, Ovarian Cyst), Spleen Enlargement, Diverticulitis, Bowel Obstruction, or Gastroenteritis (Infection)

Allergic Reaction

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient).
Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment, BLS Maneuvers, **Apply O2 (PRN)**

Establish History/Timeline of Present Illness/Allergen

Assess Symptom Severity
Shorter the onset, the more severe the reaction.

Auscultate Lung Sounds

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)

If Indicated:
4 Lead ECG
12 Lead ECG
Pain Scale
EtCO2 Monitoring
CO Monitoring

MILD - *Skin Only*

Rash/Hives? (YES)
NO Respiratory Component

Establish IV Access

Diphenhydramine
25-50mg IV/IO/IM

MODERATE - *Skin & Respiratory*

Rash/Hives? (YES)
Respiratory Distress w/ Wheezing? (YES)

Epinephrine 1:1000, 0.3mg IM

Albuterol Nebulizer
REPEAT – Albuterol (10) Min - PRN

Establish IV Access

Diphenhydramine 25-50mg IV/IO/IM

Methylprednisolone 125mg Slow IV/IO

Symptoms Persist? (YES)

Epinephrine 1:10,000
0.3mg Nebulizer

SEVERE - Skin/Respiratory Distress *or* Hypotensive? (YES)

Normal Saline 500mL Bolus
REPEAT as needed,
Titrate to SPB ≥ 90 mmHg
Maximum of 1L
*Assess Lung Sounds and
BP every 500ml.

Hypotension Persists? (YES)

Push Dose Epi 1:100,000
0.01mg IV/IO
Administer slowly 1ml
every 30 seconds
Titrate to SBP ≥ 90 mmHg

REPEAT – Push Dose Epi
(2) Times (PRN)
Total Maximum Dose – 0.3mg

Airway Compromise? (YES)

CONSULT: Airway Protocol

Intubated? (YES)

Rapidly Transport

Notify Receiving Facility

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer: Demographics, Personal Property,
Summery of care and response to care.

Albuterol | Diphenhydramine | Epinephrine | Methylprednisolone

MAIN MENU | REFERENCE/PEARLS | PEDIATRIC | MEDICAL

Allergic Reaction References

Information:

Signs and Symptoms:

- Itching or Hives
- Respiratory Distress
- Difficulty Swallowing
- Edema
- Coughing/Wheezing
- Chest and/or Throat Constriction
- Hypotension or Shock
- Nausea/Vomiting

Pediatric Allergic Reaction:

Mild – Skin Only (No Respiratory Component – Normal B/P and Perfusion):

No IV Access – DIPHENHYDRAMINE 1mg/kg IM Injection (DO NOT Dilute)
IV/IO Access Established – DIPHENHYDRAMINE 1mg/kg IV/IO (Diluted)
Dose not exceed 50mg Total Max Dose.

Moderate – Skin & Respiratory Distress (Wheezes) – Normal B/P and Perfusion:

No IV Access – EPINEPHRINE 1:1000, 0.01mg/kg IM Injection
No IV Access – DIPHENHYDRAMINE 1mg/kg IM Injection (DO NOT Dilute)
Dose not exceed 50mg Total Max Dose.
ALBUTEROL Nebulizer, Repeat ALBUTEROL (10) – PRN.
IV/IO Access Established – DIPHENHYDRAMINE 1mg/kg IV/IO (Diluted)
Dose not exceed 50mg Total Max Dose.
METHYLPREDNISOLONE 2mg/kg Slow IV/IO
Symptoms Persist – EPINEPHRINE 1:10,000, 0.3mg Nebulized

Severe – Skin, Respiratory Distress, and Hypotension:

NORMAL SALINE 20mL/kg IV/IO. Repeat as needed. Maximum – follow Medication Tool.
Assess lung sounds and blood pressure often.
Push Dose EPINEPHRINE 1:100,000, 0.01mg IV/IO.
REPEAT – Push Dose Epi (2) Times – PRN. Total Maximum Dose – 0.3mg
Administer slowly 1ml every 30 seconds Titrate to SBP > 90 mmHg

PEARLS:

- Epinephrine is the first drug of choice that should be administered in moderate and severe anaphylaxis.
- IM Epinephrine should be administered is a priority before or during attempts at gaining IV or IO access.
- Diphenhydramine and steroids should NOT delay repeated Epinephrine administration.
- ALL patients require a 4 Lead ECG throughout Epinephrine administration. Patients > 50 y/o should have a 12 Lead ECG to rule out ischemia and/or myocardial infarction (MI) during treatment.
- Allergic reactions may occur with only respiratory and gastrointestinal symptoms and have no rash/skin involvement.
- Be aware of AMS as presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety.

DIFFERENTIAL DIAGNOSIS:

Urticaria (Rash Only), Anaphylaxis (Systemic Effect), Shock (Vascular Effect), Angioedema (Drug Induced), Aspiration, Airway Obstruction, Vasovagal Event, Asthma, COPD, or CHF.

Altered Mental Status

ME-3
Published: 3/1/21
Reviewed: 3/31/21
Updated: 11/15/21

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment, BLS Maneuvers, **Apply O2 (PRN)**

Establish History/Timeline of Present Illness

Complete VS and additional diagnostics will help rule out and/or identify cause for AMS.

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)
4 Lead ECG

If Indicated:
12 Lead ECG
Pain Scale
EtCO2 Monitoring
CO Monitoring

Traumatic Injury? (YES)
CONSULT: Appropriate Trauma Protocols PRN
→ TRAUMA

NO

Seizures? (YES)
EXIT TO: Seizure Protocol
*New onset seizure, investigate cause.
→ SEIZURE

NO

Signs of CVA? (YES)
EXIT TO: Suspected Stroke Protocol
COMPLETE: RACE Assessment and document.
→ STROKE

NO

Suspected Overdose? (YES)
EXIT TO: Overdose Emergencies
CONSULT: Substance Specific Protocol
→ OVERDOSE EMERGENCIES

NO

Arrhythmia / STEMI / CP? (YES)
CONSULT: Appropriate Cardiac Protocols PRN
COMPLETE: 12 Lead ECG (consider V4R).
→ CARDIAC

NO

Serious Signs/Symptoms
Hypotension, Poor Perfusion, or Shock

Normal Saline 500mL Bolus
REPEAT as needed, Titrate to SPB ≥ 90 mmHg
Maximum of 1L
*Assess Lung Sounds and BP every 500ml.
→ SHOCK

NO → **Consider Environmental Toxin**
EXIT TO: HAZMAT Protocols

BLOOD GLUCOSE LEVEL:
Glucose < 60mg/dL
Or
Glucose > 350mg/dL
CONSULT: Diabetic Emergencies Protocols PRN
→ DIABETIC

NO

Signs of Fever / SEPSIS? (YES)
EXIT TO: Suspected SEPSIS Protocol
CONSULT: SEPSIS Alert Checklist
→ SEPSIS

NO

Back Pain

ME-4
Published: 3/1/21
Reviewed:
Updated: 11/15/21

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient).
Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment, BLS Maneuvers, **Apply O2 (Post)**

Establish History/Timeline of Present Illness
New Onset (Acute) vs. Chronic?

Injury or Trauma Related?

Pain Scale Assessment?

Orthostatic Blood Pressure Reading
Notable Change?

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)
4 Lead ECG
Pain Scale

If Indicated:
4 Lead ECG
12 Lead ECG
EtCO2 Monitoring
CO Monitoring

YES → **Spinal Immobilization Protocol**

CONSULT: Additional Protocols PRN

Signs of Shock?
Poor Perfusion?

YES → **Establish IV Access**
Consider Large Bore

Normal Saline 500mL Bolus
REPEAT as needed, Titrate to SPB ≥ 90 mmHg
Maximum of 1L
*Assess Lung Sounds and BP every 500ml.

YES → **Moderate to Severe**

CONSULT: Pain Control / Management Protocol

Pain Management Administered? (YES)

MANDATORY: Apply O2

NO

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment,
Reassess Pain Scale,
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer
Demographics, Personal Property, Summery of care and response to care.

PEARLS:

- Abdominal aneurysms are a concern in patients over the age of 50 y/o.
- Kidney stones typically present with an acute onset on flank pain which radiates around and down to the groin.
- Patient with midline pain over the spinous processes should be placed in *Spinal Motion Restriction.*

DIFFERENTIAL DIAGNOSIS:

Muscle Spasm/Strain, Herniated Disc w/ Nerve Compression, Exacerbation of Sciatic Nerve, Spinal Fracture, Kidney Stone, Pyelonephritis (Kidney Infection), Aneurysm, Pneumonia, or Cardiac related Event.

Behavioral/Hyperactive Delirium

SCENE SAFE

NO → Call for additional resources PRN. Stage if necessary.

YES →

Universal Patient Care Protocol

- Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.
- Verbal Tactics – Limit Stress Exposure
- Initial Assessment, BLS Maneuvers, **Apply O2 (Post)**
- Physical Restraint Procedure (If Required) **Supine ONLY** with Airway Monitoring
- For Adult Patients, **Determine Underlying Medical (If Cause?)**

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)
4 Lead ECG

If Indicated:
12 Lead ECG
Pain Scale
EtCO2 Monitoring
CO Monitoring

If Possible - Document Patient Temperature Prior to and After Treatment

TRAUMA

Manage Injuries

CONSULT: Additional Protocols PRN

MEDICAL

Appropriate Protocol (if necessary)

Aggressive or Agitated, may be very anxious, possible psychosis, possible threat to self / others

YES

Chemical Restraint (If Required)

History of Psychiatric Disorders/Psychosis
Haldol 5mg IM/IN
Diphenhydramine 50mg IM
Midazolam 2-4mg IM/IN

Hyperactive Delirium – Drug Induced
Ketamine 2mg/kg IM *Do Not Dilute* (200mg Max)
UNSUCCESSFUL REPEAT – Ketamine
(1) Dose, (15) Minutes

Combative or Unclothed, Not Responding to Verbal Commands, Superhuman Strength, or Wide Complex Tachycardia is present.

Sodium Bicarbonate 50meq in 100ml of NS over 15 minutes

Temperature 104° F (40° C) and Above
BEGIN RAPID COOLING

(CHILLED) Normal Saline 500mL Bolus
*Assess Lung Sounds and BP
Repeat x 1, Maximum of 1L

NO

- Transport Decision (Closest Appropriate)
- DLE Escort (Voluntary/Involuntary Baker Act)
- Monitor VS During Transport
- Continue On-Going Assessment Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer
Demographics, Personal Property, Summery of care and response to care.

Notify Destination (Online Medical Control)

Combative Patient

Post Administration/Sedation? (YES)

MANDATORY: Apply O2

Diphenhydramine | Haldol | Ketamine | Midazolam | Sodium Bicarbonate

Behavioral/Hyperactive Delirium References

Physical/Chemical Restraint Guidance:

- Non-medical personnel requests or opinions should not be used as a factor when implementing chemical restraint treatments.
- All patients who receive either physical or chemical restraint must be continuously observed by ALS personnel.
- Basic and advanced airway equipment must be on hand prior to administration of Ketamine.
- Do not position or transport any restrained patient in such a way that could impact the patient's respiratory or circulatory status.

Post Ketamine Administration (Chemical Restraint):

- Continuous direct patient observation throughout transport and transfer to ED staff.
- Continuous monitoring: pulse oximetry, 4-Lead ECG, and end-tidal CO2 monitoring.
- Supine patient positioning with elevation of head of bed at 30°.

Law Enforcement Involved Patient Care:

- Any patient who is handcuffed or restrained by Law Enforcement and transported by EMS, must be accompanied by law enforcement during transport.
- Patient should **not** be transported with upper extremities hand-cuffed behind back as this prevents proper assessment and could lead to injury.
- Consider multidisciplinary coordination with law enforcement to approach verbal de-escalation and restraint.

Diabetic Emergencies

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment, BLS Maneuvers, **Apply O2 (PRN)**

Establish History/Timeline of Present Illness

Complete VS and additional diagnostics will help rule out and/or identify other causes for AMS.

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)
4 Lead ECG

If Indicated:
12 Lead ECG
Pain Scale
EtCO2 Monitoring
CO Monitoring

Document Patient Initial and Post Treatment BGL

Normal BGL Reading? (YES)

CONSULT: Altered Mental Status Protocol

Conscious/Control of Airway? (YES)
Blood Glucose Level < 60mgdL

Oral Glucose 1-2 Tubes

Reassess BGL @ 10 minutes

AMS/Unconscious? (YES)
Oral Glucose Ineffective? (YES)
Blood Glucose Level < 60mgdL

Establish IV Access (2 Attempts)

No IV – Establish IO Access – Proximal Humerus

D10W 100ml Infusion/Bolus – Macro Drip Set (Wide Open)

Reassess BGL @ 10 minutes. If patient remain < 60mgdL, **REPEAT** – 100ml Infusion/Bolus

Blood Glucose Level > 350mgdL
Signs of Dehydration or Hypotensive

Establish IV Access

Normal Saline 500mL Bolus
REPEAT as needed,
Titrate to SPB ≥ 90 mmHg
Maximum of 1L
*Assess Lung Sounds and BP every 500ml.

Refusal of Transport? (YES)

Reassess – Vital signs and post administration BGL.

Strongly Recommended – Patients taking oral diabetic medications should be transported.

Assist Patient with eating/drinking small amount of food.

Follow *Refusal of Transport Policy (Page 24)*
Witness - Family Member/Friend Preferred

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer
Demographics, Personal Property,
Summery of care and response to care.

Dextrose | Glucagon | Oral Glucose

Diabetic Emergencies References

Information:

Symptoms of DKA/Hyperglycemia :

- Nausea/Vomiting
- Altered Mental Status
- Tachycardia
- Acetone Smell on Breath (Fruity Odor)
- Hypotension
- Abdominal Pain
- General Weakness
- Kussmaul Respirations

Symptoms of Hypoglycemia:

- Altered Mental Status
- Focal Neurological Deficits
- Diaphoresis
- Abnormal Breathing Patterns

Consider: Severe Systemic Illness

Pediatric Diabetic Emergencies:

Hypoglycemia:

ORAL GLUCOSE (15g) may be given to conscious patients with an intact gag reflex.
Not recommended for patients less than 2 years old.
D10W - 5ml/kg IV/IO (max of 100 mL), retest glucose. May repeat (1) time prn.

Hyperglycemia:

NORMAL SALINE 20mL/kg IV/IO. Repeat as needed. Maximum – follow Medication Tool.
Assess lung sounds and blood pressure often.

Nausea/Vomiting:

Weighing less than 30kg (65 lbs.), ZOFRAN 0.1 mg/kg slow IV/IO (Max dose of 4mg).
Weighing greater than 30kg, ZOFRAN adult dose, 4mg slow IV/IO.

In the presence of hypoglycemia and unable to provide treatments via IV/IO:

ADULT:

GLUCAGON: 1mg IM if available.

ZOFRAN: 4mg IM for nausea/vomiting.

PEDIATRIC:

GLUCOGON: Weighing less than 20kg (45 lbs.), administer 0.5mg IM.
GLUCOGON: Weighing greater than 20kg, administer adult dose, 1mg IM.
ZOFRAN: Follow the Medication Tool, IV and IM doses are the same.

PEARLS:

- If altered mental status persists, consider other causes and consult *Altered Mental Status* protocol.
- Be aware of AMS as presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety.
- Poison Control 1-800-222-1222.
- Consider restraints if necessary for patient's and/or personnel's protection per the restraint procedure.

DIFFERENTIAL DIAGNOSIS:

Head Trauma, CNS (stroke, tumor, seizure, infection), Cardiac (MI, CHF), Infection, Thyroid Disorder (hyper/hypo), Shock (septic, metabolic, traumatic), Toxicologic, Acidosis / Alkalosis, Environmental Exposure, Pulmonary (Hypoxia), Electrolyte Abnormality, or Psychiatric Disorder.

Epistaxis

ME-7
Published: 3/1/21
Reviewed:
Updated: 11/15/21

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment, BLS Maneuvers, **Apply O2 (PRN)**

Establish History/Timeline of Present Illness

Hypotension, and/or Tachycardia?

Hypertensive?

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)

If Indicated:
4 Lead ECG
12 Lead ECG
Pain Scale
EtCO2 Monitoring
CO Monitoring

NO

YES

YES

BLS Maneuvers

Position: Sit Patient Upright

Ice Packs (Bridge of Nose/Forehead)

Instruct Patient to Breath in/out from their mouth.

Compress Nostrils & Tilt Head Forward

Prevent: Nose Blowing and Throat Clearing

Bleeding Controlled? (NO)

Gently Pack Nose (Bilateral Nares) w/ Hemostatic Gauze

Establish IV Access
Consider Large Bore

Normal Saline 500mL Bolus
REPEAT as needed, Titrate to SPB ≥ 90 mmHg
Maximum of 1L
*Assess Lung Sounds and BP every 500ml.

Establish IV Access TKO / Saline Lock

CONSULT: Hypertensive Protocol

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer
Demographics, Personal Property,
Summery of care and response to care.

PEARLS:

- It is very difficult to quantify the amount of blood loss with epistaxis.
- Bleeding may also be occurring posteriorly. Evaluate by examining the posterior pharynx for blood.
- Anticoagulant medications and Anti-Platelet agents may worsen the severity.

DIFFERENTIAL DIAGNOSIS:

Trauma, Infection (Viral URI or Sinusitis), Allergic Rhinitis, Lesions (Polyps, Ulcers), Hypertension, or OTC Nasal Spray Reaction/Over-Use.

Fever and Infection Control

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient).
Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment, BLS Maneuvers, **Apply O2 (PRN)**

Establish History/Timeline of Present Illness

Remove From Heat Source
Remove Clothing (Maintain Patient Modesty)

PRN - Apply Room Temperature Water to Skin and Increase Air Flow Around Patient. **Avoid Shivering!**

Assess Vital Signs
TEMPERATURE REQUIRED / Obtain Prior to Cooling

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)

If Indicated:
4 Lead ECG
12 Lead ECG
Pain Scale
EtCO2 Monitoring
CO Monitoring

Document Patient Temperature Prior to and After Treatment

Temperature Below 100.4° F (38° C)

Monitor Vital Signs
Treat with ALS care as needed.

Temperature Above 100.4° F (38° C)

Acetaminophen 325-1000mg PO
Patient with self-control of airway only.

ADULTS ONLY – Patient Unable to Tolerate PO.
Ketorolac 15mg IV/IO/IM

Temperature 104° F (40° C) and Above
BEGIN RAPID COOLING

Apply ICE PACKS to axilla and groin area.
Do not cool to the point of shivering.

Acetaminophen 325-1000mg PO
Patient with self-control of airway only.

ADULTS ONLY – Patient Unable to Tolerate PO.
Ketorolac 15mg IV/IO/IM

(CHILLED) Normal Saline 500mL Bolus
*Assess Lung Sounds and BP
Repeat x 1, Maximum of 1L

Hypotensive? (YES)
Establish IV Access / Consider Large Bore

Normal Saline 500mL Bolus
REPEAT as needed, Titrate to SPB ≥ 90 mmHg
Maximum of 1L
*Assess Lung Sounds and BP every 500ml.

Actively Seizing? (YES)

CONSULT: Seizure Protocol

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer
Demographics, Personal Property,
Summery of care and response to care.

CONSIDER: Post Transport Decontamination
Crew, Equipment, and Unit (OOS – PRN)

Acetaminophen | Ketorolac

Fever and Infection Control References

Information:

Signs and Symptoms:
- Warm
- Flushed
- Sweaty
- Chills/Rigors

Associated Signs and Symptoms (Helpful to localize source.)
- Cough
- Chest Pain
- Headache
- Rash
- Mental Status Changes
- Abdominal Pain
- Dysuria (Painful Urination)
- Myalgias (Muscle Aches and Pains)

Pediatric Fever and Infection Control - Temperature Above 100.4° F (38° C):

Fever Control:

TYLENOL 15mg/kg PO may be given to conscious patients with an intact gag reflex.

Use of a syringe (w/o needle) to assist with administration is recommended.

Fluid Resuscitation:

NORMAL SALINE 20mL/kg IV/IO. Repeat as needed. Maximum – follow Medication Tool.

Assess lung sounds and blood pressure often.

Nausea/Vomiting:

Weighing less than 30kg (65 lbs.), ZOFRAN 0.1 mg/kg slow IV/IO (Max Dose – 4mg).

Weighing greater than 30kg, ZOFRAN adult dose, 4mg slow IV/IO.

PEARLS:

- Febrile seizures are more likely in children with a prior history and with a rapid elevation in temperature.
- **UTILIZE STANDARD UNIVERSAL PRECAUTIONS FOR ALL PATIENTS WITH SUSPECTED INFECTION.**
- Rehydration with fluids increases the patient's ability to sweat and improves heat loss.
- Sweating generally disappears (shuts down) as body temperature above 104° F (40° C), begin RAPID COOLING.
- Avoid shivering but remain limited with heavy patient coverings (multiple sheets and/or blankets).

DIFFERENTIAL DIAGNOSIS:

Infections/Sepsis, Cancer/Tumors/Lymphomas, Medication or Drug Reactions, Connective Tissue Disease (Arthritis, Vasculitis), Hypothyroidism, Heat Stroke, Meningitis.

Gynecological Emergencies

ME-9
Published: 3/1/21
Reviewed:
Updated: 8/28/2023

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient).
Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment, BLS Maneuvers, **Apply O2 (PRN)**

Establish History/Timeline of Present Illness

Hypotension, and/or Tachycardia?

Orthostatic Blood Pressure Reading
Notable Change?

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)

If Indicated:
4 Lead ECG
12 Lead ECG
Pain Scale
EtCO2 Monitoring
CO Monitoring

BLS Maneuvers

Control Bleeding - PRN

Position Patient – Left Lateral Recumbent

Abdominal Pain? (YES)

CONSULT: Abdominal Pain and GI Emergencies Protocol

Known Pregnancy/Missed Period? (YES)

EXIT TO: Obstetrical Emergency Protocols

Complaint of Labor/On-Off Cramps? (YES)

EXIT TO: Obstetrical Emergency Protocols

YES

Establish IV Access
Consider Large Bore

Normal Saline 500mL Bolus
REPEAT as needed, Titrate to SPB ≥ 90 mmHg
Maximum of 1L
*Assess Lung Sounds and BP every 500ml.

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer
Demographics, Personal Property,
Summery of care and response to care.

PEARLS:

- Respect patient privacy (female care provider preferred, if available).
- Attempt to quantify the amount of blood loss, number of feminine pads used.
- It you suspect that the patient may be a victim of abuse, especially if the injury/illness is not consistent with the reported history, immediately report findings to the receiving hospital during patient care transfer.

DIFFERENTIAL DIAGNOSIS:

Pre-Eclampsia, Eclampsia, Placenta Previa, Placenta Abruptio, Spontaneous Abortion, Ectopic Pregnancy (Rupture), Cervical/Endometrial/Ovarian/Vaginal Cancer, Infection, or Trauma.

Pain Control/Management

ME-10
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Reviewed:
Updated: 8/28/2023

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient).
Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment and BLS Maneuvers

MANDATORY: Application of O2

Pulse Oximetry, EtCO2, and ECG
Must be monitored @ all times during administration.

Trauma or Medical?

Pain Scale Assessment?

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)
4 Lead ECG
EtCO2 Monitoring
Pain Scale

If Indicated:
12 Lead ECG
CO Monitoring

Based on Injuries or Complaint

CONSULT: Appropriate Protocol PRN

Pain Scale Assessment

Mild Pain (Scale 1-3)

- Position of Comfort
- Apply Ice Pack or Cold Compress (PRN)
- Elevate (PRN)
- Verbal Distraction
- Consider: Nitrous Oxide If Patient Requests Relief.

Moderate Pain (Scale 4-6)

- Nitrous Oxide
- Ketorolac 15mg IV/IO/IM
- Elevate (PRN)
- Verbal Distraction

Severe Pain (Scale 7-10)

- Ketorolac 30mg IV/IO or 60mg IM
- Fentanyl 50-100mcg SIVP/IO
- **REPEAT** – Fentanyl (1) Time, (10) Min - PRN
- **Nausea – Post Pain Management (PRN)** Ondansetron 4mg IV/IO/IM

Continued Pain Management (Severe)
Post Fentanyl Max? (YES)
10 Min Since Last Fentanyl Dose? (YES)

- Ketamine 25mg SIVP/IO
- **REPEAT** – Ketamine (2) Times, (5) Min – PRN 75mg Total Max Dose

- Transport Decision (Closest Appropriate)
- Monitor VS During Transport
- Continue On-Going Assessment, **Reassess Pain Scale** Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer
Demographics, Personal Property, Summery of care and response to care.

MEDICATION

Gray	Pink	Red	Purple	Yellow	White	Blue	Orange	Green	Green	Green	Infusions	Normal Pediatric Vital Signs
3-5 KG	6-7 KG	8-9 KG	10-11 KG 1 Year	12-14 KG 2 Years	15-18 KG 3 Years	19-23 KG 5 Years	24-29 KG 7 Years	30-36 KG 9 Years	45 KG	55 KG		

TOOL

Fentanyl | Ketamine | Ketorolac | Nitrous Oxide | Ondansetron

Seizure

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment and BLS Maneuvers

MONITOR AIRWAY: Insert NPA (unconscious)
Application of O2 via NRB or BVM

Establish History/Timeline of Present Illness

ANY/ALL WITNESSED Seizure Activity by FLFR?

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)

If Indicated:
4 Lead ECG
12 Lead ECG
Pain Scale
EtCO2 Monitoring
CO Monitoring

YES

NO

DIFFERENTIAL DIAGNOSIS:

Traumatic Injuries? (YES)

CONSULT: Appropriate Protocol

Temperature ≥ 100.4° F (38 C)

CONSULT: Fever and Infection Control

Pregnant? (YES)

CONSULT: OB - Eclampsia

Blood Glucose < 60mg/dL

CONSULT: Diabetic Emergencies

Consider other causes.

Immediately Administer
(DO NOT wait for IV/IO access)

Midazolam 5mg IM

Cardiac Monitor

Establish IV/IO Access

Still Actively Seizing? (YES) → **NO**

Midazolam 5mg IV/IO
Total Maximum Dose – 10mg

Still Actively Seizing (YES) → **NO**

Ketamine 100mg IV/IO

Manage Airway w/ BVM (PRN)

Need for Advanced Airway? (YES)

EXIT TO: Airway

REPEAT (PRN) – Ketamine 100mg IV/IO
Total Maximum Dose – 200mg

Begin BLS/ALS Care

Focused Exam

Cardiac Monitor

Establish IV Access

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment, **Reassess Airway Patency**
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer
Demographics, Personal Property, Summery of care and response to care.

Ketamine | Midazolam

MAIN MENU | PEDIATRIC | MEDICAL

Seizure References

Information:

Signs and Symptoms:
- Decreased Mental Status
- Sleepiness
- Incontinence
- Evidence of Trauma
- Unconscious

HOW TO ADMINISTER: Ketamine Options

1. Dilute full 500mg/5ml vial with 50ml D5W, Or
2. Remove 1ml of Normal Saline from Prefilled Syringe and then pull 1ml from vial (100mg/ml).

Concentration will now equal 10mg/ml.

Administer SIVP and continuously monitor vial signs.

Observed Seizure Activity:

Focal Motor - symptoms involve muscle activity, such as jerking, loss of muscle tone or repeated movements.

Tonic-Clonic (formerly Grand Mal) - causes a loss of consciousness and violent muscle contractions.

Jacksonian - a type of focal partial seizure, also known as a simple partial seizure. This means the seizure is caused by unusual electrical activity that affects only a small area of the brain. The person maintains awareness during the seizure.

Pediatric Seizure:

Seizure Control:

No IV Access – MIDAZOLAM 0.2mg/kg IN/IM ***(Do not wait for IV/IO access.)***
IV/IO Access Established – MIDAZOLAM 0.1mg/kg IV/IO

Continued Seizures (No control after the first dose.):

If the first medication dose was administered IN/IM, repeat dose must be given IV/IO.
REPEAT – MIDAZOLAM 0.1mg/kg IV/IO (1) Time

Prolonged Seizure Control:

If no effect with MIDAZOLAM x 2 doses (IM and/or IV), administer KETAMINE 1mg/kg IV/IO
Be prepared to manage the airway. (Pediatric Airway Protocol)

Fever and Infection Control – Temperature Above 100.4° F (38° C):

TYLENOL 15mg/kg PO may be given to conscious patients with an intact gag reflex.
Use of a syringe (w/o needle) to assist with administration is recommended.

PEARLS:

- Status Epilepticus is defined as two or more successive seizures without a period of consciousness or recovery. This is a true emergency requiring rapid airway control, treatment, and transport.
- Seizures may also cause "Control Disorder of Breathing," airway monitoring/maintaining is paramount.
- Hypoxia should be suspected in all patients having prolonged and/or successive seizures, never withhold oxygen.
- **Maximum total dose of KETAMINE 200mg when MIDAZOLAM 10mg has been previously administered.**
- Febrile seizures are more likely in children with a prior history and with a rapid elevation in temperature.
- **UTILIZE STANDARD UNIVERSAL PRECAUTIONS FOR ALL PATIENTS WITH SUSPECTED INFECTION.**

DIFFERENTIAL DIAGNOSIS:

CNS (Head) Trauma, Tumor, Metabolic, Hepatic, or Renal Failure, Hypoxia, Electrolyte Imbalance (Na, Ca, Mg), Medications (non-compliance or accidental overdose), Infection/Fever/Hyperthermia, Alcohol or Illicit Drug (use or withdraw), Eclampsia, Stroke, or Hypoglycemia.

Septic Shock

Universal Patient Care Protocol

- Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.
- Initial Assessment, BLS Maneuvers, **Apply O2 (PRN)**
- Establish History / Onset of Symptoms
- **Pulse Oximetry, EtCO2, and ECG required.**

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)

If Indicated:
4 Lead ECG
12 Lead ECG
Pain Scale
EtCO2 Monitoring
CO Monitoring

Vitals Signs – ANY THREE Present/Noted?

- GCS < 15 (Altered Mentation)
- Heart rate ≥ 90/min
- SBP < 90 mmHg
- Respiratory rate ≥ 20/min
- EtCO2 < 25 mmHg (Consider sever SEPSIS)
- Temperature ≥ 100.4° F or ≤ 96.8° F
- Presence of Rigors?

Document Patient Temperature

Rigors
A sudden feeling of cold with shivering accompanied by a rise in temperature, often associated with heavy sweating.

YES → **Establish IV Access**
Consider Large Bore

Normal Saline 500mL Bolus
REPEAT as needed, Titrate to SPB ≥ 90 mmHg
Maximum of 1L
*Assess Lung Sounds and BP every 500ml.

NO → **CONSULT:** Appropriate Protocol

YES → **Suspected Infection – ANY ONE Required?**

- Documented Infection
- High Risk / Recent Surgery
- Indwelling Catheter / Device
- Paramedic Judgement / Suspicion

Symptoms – Severe? (YES)

YES → **Transmit SEPSIS Alert**

SEPSIS Alert Checklist

- Transport Decision (Closest Appropriate)
- Monitor VS During Transport
- Continue On-Going Assessment
  Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer
Demographics, Personal Property, Summery of care and response to care.

CONSIDER: Post Transport Decontamination

- Crew, Equipment, and Unit (OOS – PRN)

Septic Shock

Fort Lauderdale Fire Rescue - SEPSIS ALERT (Systemic Inflammatory Response Syndrome)

CRITERIA REQUIRED (ANY THREE)			
Vital Signs	Temperature:	≥ 100.4 or ≤ 96.8 F	☐ YES
		Presence of Rigors (A sudden feeling of cold with shivering accompanied by a rise in temperature, often with copious sweating.)	☐ YES
	Heart Rate:	≥ 90 Beats per minute	☐ YES
	Perfusion:	Systolic B/P < 90 mmHg	☐ YES
	Respiratory Rate:	≥ 20 Breaths per minute	☐ YES
	Pulse Oximetry:	≤ 90% on Room Air	☐ YES
	Neurologic:	Presence of any alteration of mental status	☐ YES
SUSPECTED INFECTION (ANY ONE)			
Suspected Infection	Documented Infections:	Pneumonia/UTI/Sepsis/Skin Infections/Decubitus Ulcers	☐ YES
	High Risk Criteria:	Nursing Home resident/Recent surgery/Immunosuppressed/Bed Confined/ Indwelling Device (i.e.: feeding tube, Foley catheter)	
	Symptoms:	Cough/Increased effort to breath/Stiff neck/Urinary pain or frequency/Inflamed Joint/Abdominal Pain with distension or firmness/Foul smelling wound	
Pre-Hospital Treatment Determination (ANY ONE)			
Severe Sepsis	Cardiovascular:	Mean Arterial Pressure < 65 mmHg (see blood pressure display on monitor)	☐ YES
	Neurologic:	ACUTE Change in Mental Status	
	Ventilation:	ETCO2 < 25 mmHg	
***Hypotensive (YES)** - Fluid Bolus - Titrate to goal MAP of ≥ 70 mmHg (max of 1L Normal Saline).			

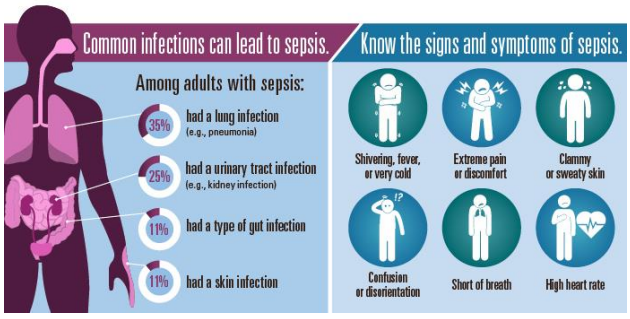
Documentation

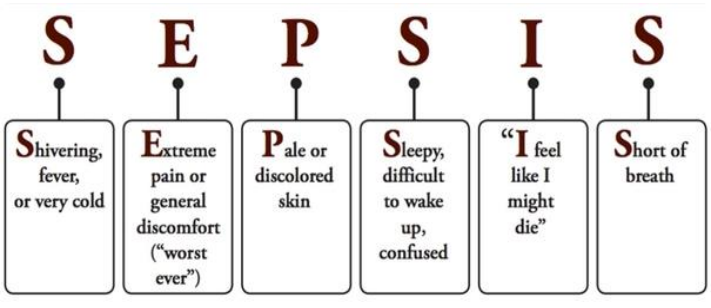
Does the patient meet minimum criteria from each section above? (YES) Transmit a SEPSIS ALERT.

HOSPITAL NOTIFICATION: "This is Rescue ____ coming in with a **SEPSIS ALERT**. The patient is a ____ year old (male/female) that meets criteria for ***suspected sepsis***. Vital signs are as follows (state vital signs). Patient (has or has not) received a fluid challenge of ____ mls. of Normal Saline. We (are/are not) requesting further orders. ETA is ____ minutes."

Revised 1/03/22

Patients with a history of renal failure or CHF may not tolerate fluids. These patients should be monitored carefully for the development of rales.





Suspected Stroke

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment and BLS Maneuvers

Establish History / Onset of Symptoms

Trauma or Medical?

RACE Scale / Assessment?

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)
4 Lead ECG
12 Lead ECG

If Indicated:
Pain Scale
EtCO2 Monitoring
CO Monitoring

Based on Injuries or Complaint

CONSULT: Appropriate Protocol PRN

RACE Alert Checklist

If Positive and Symptoms ≤ 24 hours

Wake-Up Stroke

YES

Transmit STROKE Alert

Limit scene time to 10 minutes.

Administer O2 – Titrate ≥ 94%

12 Lead ECG and Transmission to ED with **NAME/DOB/SOCIAL**

Elevate Head to 30° / Semi-Fowlers

BGL < 60mg/dL

Positive RACE

High Suspicion of Stroke

Administer Glucagon 1 unit IM/IV/IO

Improvement?

NO

Administer 10ml of D10W IV/IO **SLOWLY**

Hypotensive < 90mmHg

Normal Saline 500mL Bolus
One Time Administration

Rapid Transport to Comprehensive Receiving ED

Monitor VS During Transport, 2nd IV ≥ 18 gauge

Continue On-Going Assessment, Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED w/ RACE SCORE
BHMC – HCH – FMC - Westside

Patient Care Transfer
Demographics, **Onset, Medications,** Personal Property, Summery of care and response to care.

Right AC IV Access
Preferred by ED Staff.

Transport ALL Pediatrics to BHMC

Dextrose

Glucagon

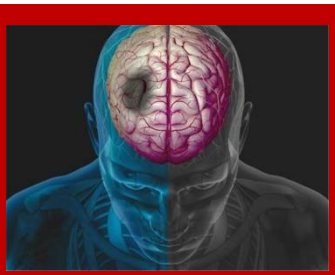
Suspected Stroke

Fort Lauderdale Fire Rescue - *Stroke Alert* RACE (Rapid Arterial Occlusion Evaluation)

	Assessment	Instructions	Findings	Score
MOTOR SIGNS	Facial Palsy	Ask patient to: "Smile and show teeth."	**Absent** - equal with symmetrical movement/smile	☐ 0
			Mild - weakness with slight asymmetrical smile	☐ 1
			Severe - weakness with completely asymmetrical smile (facial droop)	☐ 2
	Arm Motor Function	Extend the arms of the patient: 90 degrees (sitting) or 45 degrees (lying supine), with eyes open and palms up. Ask to hold out for 10 seconds.	**Normal** to **Mild** - arm upheld more than 10 seconds	☐ 0
			Moderate - arm upheld for less than 10 seconds	☐ 1
			Severe - patient unable to raise/maintain arm against gravity	☐ 2
	Leg Motor Function	Extend leg of the patient 30 degrees, while lying supine. Ask to hold out for 10 seconds. Repeat exam using the other leg.	**Normal** to **Mild** - leg upheld more than 5 seconds	☐ 0
			Moderate - leg upheld for less than 5 seconds	☐ 1
			Severe - patient unable to raise/maintain leg against gravity	☐ 2
CORTICAL SIGNS	Head/Gaze Deviation	**Eyes or head deviated** to one side after requesting patient to look forward.	**Absent** - head/eyes movement normal to both sides	☐ 0
			Present - head/eyes deviated to one side was observed	☐ 1
	APHASIA "Right sided deficits only"	**Difficulty following commands, i.e.** - Close your eyes - Make a fist (test normal side) **Difficulty talking, i.e.** - Name two objects (pen, watch) - Repeat phrase, "It is sunny today."	**Normal** - no difficulty following commands or talking	☐ 0
			Moderate - difficulty following commands **OR** speaking (one finding)	☐ 1
			Severe - unable to follow commands **AND** speak (two findings)	☐ 2
	AGNOSIA (neglect) "Left sided deficits only"	Inability to **recognize** arm: Showing the patient's weak arm, ask: "Who's arm is this?" **Unaware** of impairment: Showing the patient's weak arm, ask: "Does your arm feel weak?"	**Normal** - recognizes arm and aware of impairment	☐ 0
			Moderate - does not recognize arm **OR** denies impairment (one finding)	☐ 1
			Severe - does not recognize arm **AND** denies impairment (two findings)	☐ 2
	*Report to hospital scoring breakdown and **ANY CORTICAL SIGNS (+)** during encoding.		**TOTAL**	

Revised 3/01/21

Score above a "0" transmit a "STROKE ALERT"
Maximum Score "9"



TIME IS TISSUE (BRAIN)

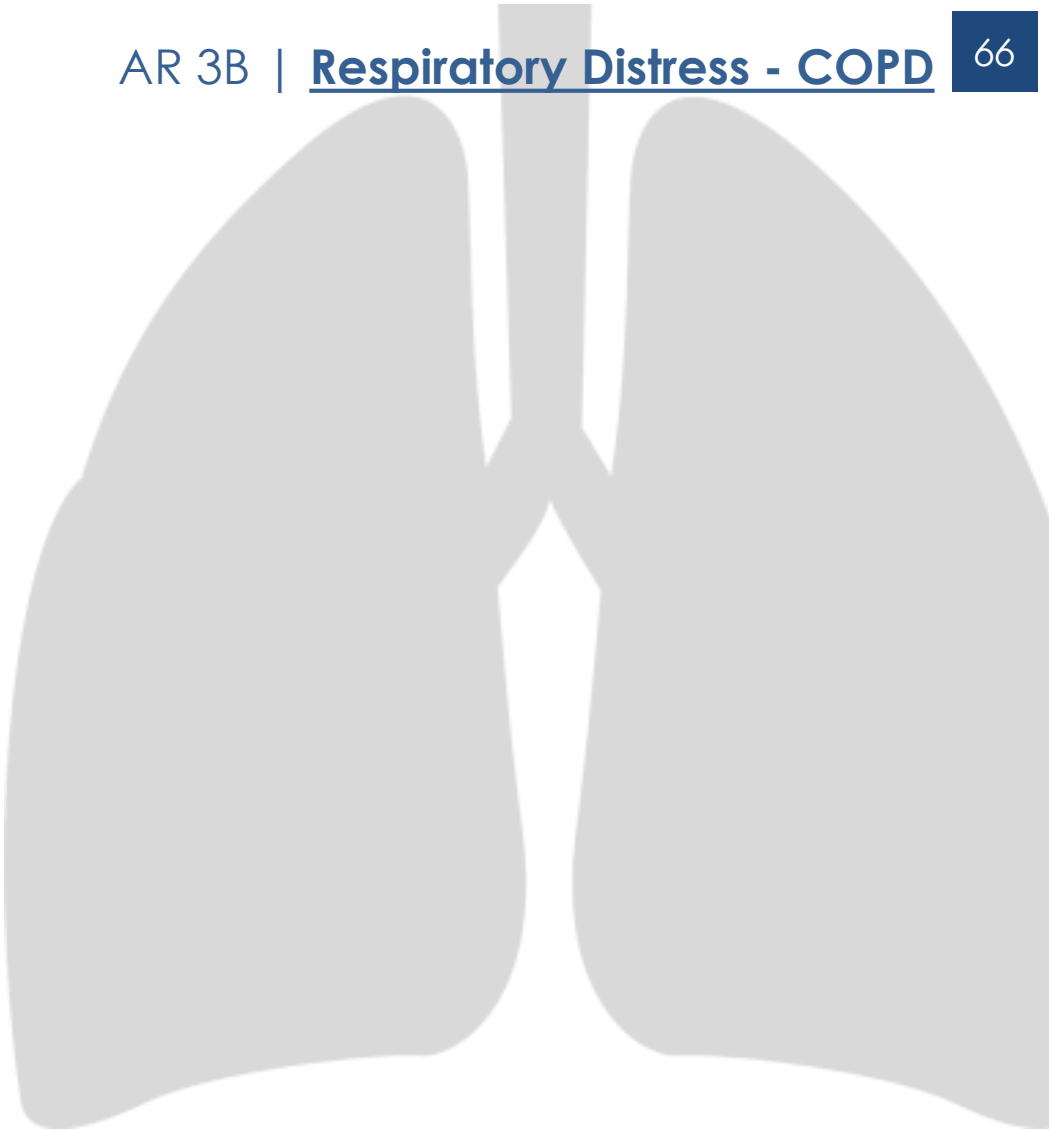
The R.A.C.E. is a universal quantitative tool that is needed to determine the severity of a stroke and to identify strokes with emergent large vessel occlusions (ELVO) which would benefit going to a Comprehensive Stroke Center (CSC). This is like a 12-lead EKG identifying a STEMI and being transported to a PCI Cardiac Center for intervention.

Consider differential diagnosis: Must check BGL, Inspect for Head Trauma, Bell's Palsy, etc.

Airway/Respiratory Protocols

MAIN MENU

Section 3 | Airway/Respiratory Protocols



Airway

AR-1A
Published: 3/1/21
Reviewed:
Updated: 10/23/2023

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment / Establish History / MOI - NOI

Assess Consciousness/Mentation

Airway Control, Intact Gag Reflex?

Respiratory – Rate/Effort/Adequacy?

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
EtCO2 Monitoring
Temperature
Blood Glucose (BGL)
4 Lead ECG

If Indicated:
12 Lead ECG
Pain Scale
CO Monitoring

Adequate? (YES)

Monitor Pulse Oximetry

Monitor End Tidal CO^2

Apply O2 (PRN)

Maintain $SaO^2 \geq 94\%$

Injuries or Complaint?

CONSULT: Appropriate Protocol PRN

Adequate? (NO)

BLS Maneuvers:
Oral/Nasal/Deep Suctioning (PRN)
OPA / NPA Placement
Bag-Valve-Mask with **Oxygen**

Monitor Pulse Oximetry / End Tidal CO^2

Maintain $SaO^2 \geq 94\%$

Assess for Difficult Airway

Patient with GCS ≤ 8 Require Airway Management

Obstructed Airway? (YES)

Clear Airway

Direct or Video Laryngoscopy (PRN)

Difficult Airway Evaluation

Induction Required? (NO)

Orotracheal Intubation
Three (3) Attempts by the Most Proficient Provider

Ventilate at 10 Breaths/min

Induction Required? (YES)

Etomidate 20-30mg SIVP/IO (30mg Max) or

Ketamine 200mg SIVP/IO

Orotracheal Intubation
Three (3) Attempts by the Most Proficient Provider

Ventilate at 10 Breaths/min

Continued Sedation Required? (YES)

***Etomidate** facilitated Intubation **MUST BE FOLLOWED** by the administration of **Ketamine 200mg** to maintain continued sedation.

REPEAT – Ketamine x 1 Time @ (5) Min – PRN
Total Maximum Dose – 400mg

Intubated Successfully? (NO)

Re-Apply O2 via BVM (Failed Procedure)

Consider BIAD or Surgical Airway (PRN)

Notify Receiving Facility

Etomidate | Ketamine

Pediatric Airway

AR-1B
Published: 3/1/21
Reviewed:
Updated: 7/15/2022

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment / Establish History / MOI - NOI

Assess Consciousness/Mentation

Airway Control, Intact Gag Reflex?

Respiratory – Rate/Effort/Adequacy?

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
EtCO2 Monitoring
Temperature
Blood Glucose (BGL)
4 Lead ECG

If Indicated:
12 Lead ECG
Pain Scale
CO Monitoring

Adequate? (YES)

Monitor Pulse Oximetry

Monitor End Tidal CO^2

Apply O2 (PRN)

Maintain $SaO^2 \geq 94\%$

Injuries or Complaint?

CONSULT: Appropriate Protocol PRN

Adequate? (NO)

BLS Maneuvers:
Oral/Nasal/Deep Suctioning (PRN)
OPA / NPA Placement
Bag-Valve-Mask with **Oxygen**

Monitor Pulse Oximetry / End Tidal CO^2

Maintain $SaO^2 \geq 94\%$

Assess for Difficult Airway

Patient with GCS ≤ 8 Require Airway Management

Obstructed Airway? (YES)

Clear Airway

Direct or Video Laryngoscopy (PRN)

Difficult Airway Evaluation

Induction Required? (NO)

Orotracheal Intubation
Two (2) Attempts by the Most Proficient Provider

Ventilate at 10 Breaths/min

Intubated Successfully? (NO)

Re-Apply O2 via BVM (Failed Procedure)

Consider BIAD or Surgical Airway (PRN)

Notify Receiving Facility

Induction Required? (YES)

Etomidate: 0.3mg/kg SIVP/IO (20mg Max) or

Ketamine 1mg/kg SIVP/IO - Wt. Based Admin.

Orotracheal Intubation
Two (2) Attempts by the Most Proficient Provider

Ventilate at 10 Breaths/min

Continued Sedation Required? (YES)

***Etomidate** facilitated Intubation **MUST BE FOLLOWED** by the administration of **Ketamine 1mg/kg** to maintain continued sedation.

REPEAT – Ketamine x 1 Time @ (5) Min – PRN
Total Maximum Dose – (2) Wt. Based Admin.

Etomidate | Ketamine

Airway References

AR-1A/B
Published: 3/1/21
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Updated: 8/28/2023

Failed Airway: In ADULT patients with a pulse, If a definitive airway cannot be secured within **three (3) intubation attempts**, a BIAD should be inserted.

Pediatrics: Emphasis should be placed on aggressive BLS airway maneuvers, using a second provider if needed. If airway is manageable at this level, continue with higher priority treatment items and defer advanced airway placement to later treatment time.

BIAD: Once a supraglottic airway has been successfully placed, be sure to secure the device and continue to monitor airway patency throughout patient care.

Airway Stack:

1. ET-Tube or BIAD
2. Res-Q-Pod
3. 90° Elbow/Extension Set (Optional)
4. ETCO2 Circuit
5. Inline Filter
6. BVM or Vent Circuit Connection

HOW TO ADMINISTER IV: Ketamine Options

1. Dilute full 500mg/5ml vial with 50ml D5W, Or
2. Remove 1ml of Normal Saline from Prefilled Syringe and then pull 1ml from vial (100mg/ml).

Concentration will now equal 10mg/ml.

Administer SIVP and continuously monitor vial signs.

PEARLS:

- **Capnography and/or** colorimetric device is mandatory **with all methods of intubation, document results.**
- If GCS ≤ 8 and in the absence of a correctable cause (i.e., diabetic emergency, OD, etc.), control of the airway must be considered.
- Consider a Flex-Guide ET Tube Introducer for all intubations.
- BURP maneuver may be used to assist with difficult intubations by applying backward, upward, rightward, and posterior pressure on the larynx.
- Pre-Oxygenation - the use of high flow O2 via nasal cannula prior to and during airway placement is recommended.
- Oxygenation - continuous pulse oximetry should be utilized in all patients with an inadequate respiratory function.
- Ventilation - continuous EtCO2 monitoring is required for all intubated patients.
- C-Spine immobilization for patients with suspected spinal injury MUST be always maintained.
- BVM rate should be 10 breaths per minute to maintain pCO2 of 30-35 (use caution with confirmed head trauma).
- **COPD or Asthma** patients who develop poor bag compliance or hypotension during ventilations should have positive pressure ventilations discontinued. If intubated, disconnect the BVM from ETT for 20-40 seconds (10-20 seconds for pediatrics) to allow the patient to completely exhale before resuming ventilations.
- **Nasogastric/Orogastric tube** should be placed in ALL patients receiving ventilation assistance via BVM/vent.
- Use c-collar to maintain ET Tube placement for all intubated patients.
- **Recommended –** use of inline HEPA filter between oxygen delivery device and advanced airway adjunct.
- **Recommended –** use of exhalation filter on all bag valve mask devices (BVM's).
- **Notify MEDICAL CONTROL early as possible about the patient's difficult or failed airway.**
- If an airway cannot be secured by any other means, and the patient can not be effectively oxygenated or ventilated, a cricothyrotomy should be performed on adult patients (or needle cricothyrotomy for pediatrics).

Pulmonary Edema (CHF)

Universal Patient Care Protocol

- Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.
- Initial Assessment and BLS Maneuvers
  Position Patient – Fowlers (As Tolerated)
- Establish History/Timeline of Present Illness
- Assess Consciousness / Lung Sounds x 6 (All Fields)

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
EtCO² Monitoring
Temperature
Blood Glucose (BGL)
4 Lead ECG

If Indicated:
12 Lead ECG
Pain Scale
CO Monitoring

Unresponsive?
CONSULT: Adult Airway Protocol

Wheezes/Stridor? (YES)
CONSULT: Respiratory Distress Protocol

Rales and/or Cardiac Asthma? (YES)
- Nitroglycerin Tablet 0.4mg SL
  REPEAT – Nitroglycerin Tablet
  (2) Times, (5) Min – PRN & SPB > 110mmHg
- Nitroglycerin Paste 1inch (Upper Chest)
- Furosemide 40mg SIVP/IO
  Use Judgement – See Temperature Note

Patient Meets Criteria for CPAP? (YES)
START: 10cm PEEP

Tolerating CPAP? (NO)
- Use Verbal Tactics - Calm/Assist Patient
- 2mg Midazolam SIVP/IO

Improvement? (NO) - Tolerating CPAP? (NO)
REMOVE CPAP (Failed Procedure)
Apply O2 via NRB (Continue Verbal Tactics)
CONSULT: Adult Airway Protocol

Document Pulse Oximetry / EtCO2 Prior to Treatments

Temperature ≥ 100.4° F
CONSIDER: Infection
Do Not Administer Furosemide

COPD Patient
Maintain SaO² ≥ 92%

All Other Patients
Maintain SaO² ≥ 94%

Cardiac Asthma
Wheezes, cough, and shortness of breath due to inflamed lung passages caused by fluid backup in the left side of the heart (CHF).

- Transport Decision (Closest Appropriate)
- Monitor VS During Transport
- Continue On-Going Assessment
  Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

Furosemide | Midazolam | Nitroglycerin

MAIN MENU | REFERENCES/PEARLS | AIRWAY/RESPIRATORY

Pulmonary Edema References

Information: Pulmonary edema is a condition caused by excess fluid in the lungs. This fluid collects in the numerous air sacs in the lungs, making it difficult to breathe. In most cases, heart problems cause pulmonary edema. But fluid can collect in the lungs for other reasons, including pneumonia, exposure to certain toxins and medications, trauma to the chest wall, and traveling to or exercising at high elevations.

Pulmonary edema signs and symptoms may appear suddenly or develop over time. The signs and symptoms you have depends on the type of pulmonary edema:

1. Sudden (Acute)
2. Long-Term (Chronic)
3. High Altitude (HAPE) - Occur in adults and children who travel to or exercise at high altitudes. Signs and symptoms are like those that occur with acute pulmonary edema.

The causes of pulmonary edema vary. Pulmonary edema is grouped into two categories, depending on where the problem started:

1. If a heart problem causes the pulmonary edema, it's called cardiogenic pulmonary edema.
2. If pulmonary edema is not heart related, it's called noncardiogenic pulmonary edema.

Continuous Positive Airway Pressure

O2 Max C-PAP w/ Nebulizer:

1. Mask
2. Nebulizer (First O2 Source Required)
3. O2 Max Generator (Second O2 Source Required)
4. Built-in HEPA filter.

https://www.youtube.com/watch?v=7ULhlRE2KFc

PEARLS:

- **A 12-lead ECG should be performed on these patients and evaluate for Myocardial Infarction.**
- **Avoid Nitroglycerin in any patient who's used Viagra, Levitra, or Stendra in the past 24 hours or Cialis in the past 48 hours due to possible severe hypotension.**
- If patient condition precludes use of indicated NTG spray, proceed to NTG paste.
- Withhold Lasix administration if patient has an elevated temperature or there is a high suspicion of Pneumonia.
- Assess for “Cardiac Asthma,” wheezing without any respiratory history. Depending on how severe your symptoms are, this wheezing is a true medical emergency. Heart failure can cause fluid to build up in your lungs (pulmonary edema) and in and around your airways.
- Diabetics and geriatric patients often have atypical pain, or only generalized complaints.
- Continually reassess vitals and re-evaluate the need for intubation
- Additional oxygen maybe required to achieve 10cm of PEEP if using an inline filer (see picture above).
- If there is no improvement in the patient’s pulse oximetry, work of breathing and/or mental status with CPAP assist ventilations with BVM and consider intubation.

DIFFERENTIAL DIAGNOSIS:

Cardiac (MI or CHF), Anaphylaxis, Aspiration, Asthma, COPD (Emphysema or Bronchitis), Pleural Effusion, Pneumonia, Pulmonary Embolus, Pericardial Tamponade, Hyperventilation Syndrome, or Inhaled Toxin.

Respiratory Distress - ASTHMA

AR-3A
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Updated: 11/15/2021

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient).
Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment and BLS Maneuvers
Position Patient – Fowlers (As Tolerated)

Establish History/Timeline of Present Illness

Assess Consciousness / Lung Sounds x 6 (All Fields)

Document Pulse Oximetry/EtCO2 Prior to Treatments

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
EtCO² Monitoring
Temperature
Blood Glucose (BGL)
4 Lead ECG
12 Lead ECG

If Indicated:
Pain Scale
CO Monitoring

Unresponsive?

CONSULT: Adult Airway Protocol

Rales and/or Cardiac Asthma? (YES)

CONSULT: Pulmonary Edema (CHF) Protocol

ASTHMA/Bronchospasms? (YES) - MILD

Albuterol 2.5mg (Nebulized w/ O2 @ 6 LPM)

REPEAT – Albuterol (10) Min - PRN

Methylprednisolone 125mg Slow IV/IO

ASTHMA/Bronchospasms? (YES) - SEVERE

10cm PEEP w/ Nebulized Treatments

Albuterol 2.5mg (Nebulized w/ O2 @ 6 LPM)

REPEAT – Albuterol (10) Min - PRN

Methylprednisolone 125mg Slow IV/IO

Epi 0.3mg IM (1:1000)

Magnesium Sulfate 2g IVD over 10-20 min

Improvement? (NO)

REPEAT – Albuterol (10) Min – PRN &
REPEAT – Epi 0.3mg IM (1:1000)
(2) Time, (5) Min - PRN

COPD Patient

Maintain SaO² ≥ 92%

All Other Patients

Maintain SaO² ≥ 94%

Tolerating CPAP? (NO)

Use Verbal Tactics - Calm/Assist Patient

2mg Midazolam SIVP/IO

Improvement? (NO) - Tolerating CPAP? (NO)

REMOVE CPAP (Failed Procedure)

Apply O2 via NRB (Continue Verbal Tactics)

CONSULT: Adult Airway Protocol

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

Albuterol | Epinephrine | Magnesium Sulfate | Methylprednisolone | Midazolam

MAIN MENU | REFERENCES/PEARLS | PEDIATRIC | AIRWAY/RESPIRATORY

Respiratory Distress - COPD

AR-3B
Published: 3/1/21
Reviewed:
Updated: 11/15/2021

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient).
Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment and BLS Maneuvers
Position Patient – Fowlers (As Tolerated)

Establish History/Timeline of Present Illness

Assess Consciousness / Lung Sounds x 6 (All Fields)

Document Pulse Oximetry/EtCO2 Prior to Treatments

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
EtCO² Monitoring
Temperature
Blood Glucose (BGL)
4 Lead ECG
12 Lead ECG

If Indicated:
Pain Scale
CO Monitoring

Unresponsive?

CONSULT: Adult Airway Protocol

Rales and/or Cardiac Asthma? (YES)

CONSULT: Pulmonary Edema (CHF) Protocol

COPD/Bronchospasms? (YES)

Albuterol 2.5mg (Nebulized w/ O2 @ 6 LPM)

REPEAT – Albuterol (10) Min - PRN

Patient Meets Criteria for CPAP? (YES)

10cm PEEP w/ Nebulized Treatments

Methylprednisolone 125mg Slow IV/IO

COPD Patient

Maintain SaO² ≥ 92%

All Other Patients

Maintain SaO² ≥ 94%

Tolerating CPAP? (NO)

Use Verbal Tactics - Calm/Assist Patient

2mg Midazolam SIVP/IO

Improvement? (NO) - Tolerating CPAP? (NO)

REMOVE CPAP (Failed Procedure)

Apply O2 via NRB (Continue Verbal Tactics)

CONSULT: Adult Airway Protocol

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

Albuterol | Methylprednisolone | Midazolam

Respiratory Distress References

AR-3A/B, Page 1 of 2
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Updated: 11/15/2021

Information: CPAP (10cm H2O) is indicated for moderate/severe respiratory distress, including COPD, asthma, complications of pneumonia, and near drownings.

Patients with **COPD & Asthma** have prolonged exhalation secondary to bronchospasm, which causes air trapping. This results in hypercapnia (high levels of CO2) and therefore, EtCO2 guidelines should be disregarded. **It is more important to maintain SpO2 levels at 92%.** Trying to maintain normal EtCO2 levels in these patients puts them at risk for developing Auto PEEP, which may result in a pneumothorax or hypotension. Auto-PEEP occurs during assisted ventilations when air goes in before the patient is allowed to fully exhale. This causes the lungs to expand like a balloon, putting the patient at risk for a pneumothorax. In addition, increasing intrathoracic pressure decreases venous return to the heart which may result in hypotension. If this occurs, remove CPAP and allow the patient to breath on their own in order to exhale trapped air and then re-attach CPAP mask.

Continuous Positive Airway Pressure

O2 Max C-PAP w/ Nebulizer:

1. Mask
2. Nebulizer (First O2 Source Required)
3. O2 Max Generator (Second O2 Source Required)
4. Built-in HEPA filter.

https://www.youtube.com/watch?v=7ULhlRE2KFc

ADULT PEARLS:

- **A 12-lead ECG should be performed on these patients.**
- Pulse oximetry and waveform capnography should be monitored for any patient with respiratory distress.
- A silent chest in respiratory distress is a pre-respiratory arrest sign, aggressive management is required.
- Continually reassess vitals and re-evaluate the need for intubation
- Additional oxygen maybe required to achieve 10cm of PEEP if using an inline filer (see picture above).
- If there is no improvement in the patient's pulse oximetry, work of breathing and/or mental status with CPAP assist ventilations with BVM and consider intubation.

DIFFERENTIAL DIAGNOSIS:

Cardiac (MI or CHF), Anaphylaxis, Aspiration, Asthma, COPD (Emphysema or Bronchitis), Foreign Body, Infection, Pleural Effusion, Pneumonia, Pulmonary Embolus, Pericardial Tamponade, Hyperventilation Syndrome, or Inhaled Toxin.

Respiratory Distress References

Information:

Signs and Symptoms:

- Wheezing and/or Stridor
- Sternal Retractions
- Abdominal "Belly" Breathing
- Altered Level of Consciousness
- Cyanosis
- Nasal Flaring
- Increased Heart and Respiratory Rate
- Anxious Appearance

Pediatric Respiratory Distress Emergencies:

Age less than 1 Year Old:

Mild: ALBUTEROL 1.25mg mixed with 2ml NORMAL SALINE nebulized.

Moderate: METHYLPREDNISOLONE 2mg/kg Slow IV/IO.
EPINEPHRINE (1:10,000) .3mg (3ml fluid) nebulized.

Age greater than 1 Year Old:

Mild: ALBUTEROL 2.5mg nebulized.

Moderate: METHYLPREDNISOLONE 2mg/kg Slow IV/IO.
MAGNESIUM SULFATE 40mg/kg IV/IO Drip over 20 minutes.
EPINEPHRINE (1:10,000) .3mg (3ml fluid) nebulized.

Severe: EPINEPHRINE (1:1000) 0.01mg/kg IM.

Croup/Epiglottitis:

Humidified O2, using nebulizer with NORMAL SALINE and OXYGEN.
ALBUTEROL 2.5mg nebulized.
EPINEPHRINE (1:10,000) .3mg (3ml fluid) nebulized @ any time.
METHYLPREDNISOLONE 2mg/kg Slow IV/IO.

PEDIATRIC PEARLS:

- **Use of CPAP in Pediatrics:** Patients must be < 30 kg and 12 years of age and older.
- For younger patients, consider using nebulizer with normal saline and oxygen to administer via "Blow-By."
- **Pulse oximetry** and waveform capnography should be monitored for any patient with respiratory distress.
- A silent chest in respiratory distress is a pre-respiratory arrest sign.
- Do not force a child into a position. They will protect their airway by their body position.
- Bronchiolitis is a viral infection typically affecting infants which results in wheezing that may not respond to albuterol.
- Croup typically affects children < 2 years of age. It is viral, possible fever, gradual onset, no drooling is noted.
- Epiglottitis typically affects children > 2 years of age. It is bacterial, with fever, rapid onset, possible stridor. The patient may want to sit up to keep airway open, drooling is common. Airway manipulation may worsen the condition.

DIFFERENTIAL DIAGNOSIS:

Asthma, Aspiration, Foreign body, Infection (Pneumonia, Croup, Epiglottitis), Congenital Heart Disease, Medication or Toxin, or Trauma.

Cardiac Arrest Protocols

MAIN MENU

Section 4 | Cardiac Arrest Protocols

Cardiac Arrest

CA-1
Published: 3/1/21
Reviewed:
Updated: 1/9/2023

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient).
Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment and BLS Maneuvers

Establish History/Timeline of Downtime/Bystander CPR?

Medical or Trauma Related?

Working Code or Signal 7 (DOA)?

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
EtCO² Monitoring
Temperature
ECG via Pads Mode

If Indicated:
12 Lead ECG
Blood Glucose (BGL)
CO Monitoring

FEEDBACK DEVICE: Lifepak 15 - EtCO² Monitoring

Signal 7 / DOA?

CONSULT: Determination of Death in the Field Protocol

Traumatic Injury? (YES)

CONSULT: Trauma Arrest Protocols

Working Code? (YES)

CONSULT: Adult High-Performance CPR Protocol

Patient Care:
- Continuous Chest Compressions
- No Interruptions
- Oral/Nasal/Suctioning (Deep) (PRN)
- OPA / NPA Placement
- Bag-Valve-Mask with **Oxygen**
- iGel and IO Insertion

6 Minutes (3 cycles) - Manual Chest Compressions

Assess Rhythm

CONSULT: Appropriate Cardiac Arrest Protocol

- **Ventricular Fibrillation / Pulseless Ventricular Tachycardia**
- **Pulseless Electrical Activity**
- **Asystole**

At Anytime ROSC? (YES)

CONSULT: Post Resuscitation (ROSC) Protocol

Transport to Cardiac Cath Receiving ED

PEARLS:

- **In general, and when the scene is safe, ALL cardiac arrest resuscitation attempts should be worked on scene.**
- **Continued compressions, no interruptions, and early defibrillation (when indicated) are paramount.**
- **Use a coordinated team approach.** Success is based on proper planning and execution.
- If witnessed (Adult), administer a pre-cordial thump and defibrillate immediately as indicated.
- IO Access should be established in conjunction with compressions and airway (Adult) (Left Humeral – most preferred).
- Pediatric Arrest, a cause should be determined and corrected (if possible).

Adult High-Performance CPR

ESTABLISH RESPONSIVENESS
No Respirations or Gasping (Agonal)
Check Pulse (Present?)

YES

Continue Assessment
CONSULT: Appropriate Protocol

AIRWAY
Insert NPA or OPA
BVM - 1 breath every 6 seconds
Ventilatory Support > 2 Minutes
and
Irreversible Cause? (NO)
Place Advanced Airway

Pulses Present? (NO)
Begin 220 Chest Compression
No Interruptions
Place Defib Combo Pads
Charge Monitor (200 joules)
@ 200 Compressions (or 1:45)
Analyze Rhythm
MUST PRESS "PRINT" ON ECG
Shock if indicated (or dump)
REPEAT Above Steps
2 Minute Cycles

Signal 7 / DOA?
Assess Quickly
Do not delay CPR

Assess Rhythm
CONSULT: Appropriate Protocol

AIRWAY
Insert NPA or OPA
BVM – 2 Large/Full Ventilations
Airway Patent?

Obstructed Airway? (YES)
Clear Airway (Suction PRN)
Direct or Video
Laryngoscopy (PRN)

Continued Obstruction? (YES)
Perform Surgical Cricothyrotomy

Airway Secure? (YES)
Continue Appropriate Protocol

Establish IO Access
Left Humeral Head (Preferred)
Remember: Patient contact to first dose EPI administration.

Airway Clear? (YES)
Insert iGel (BIAD)
BVM - 1 breath every 6 seconds,
Asynchronous w/ Compressions
Place NG/OG Tube (or via iGel)
Secure Tube - Build Stack

Stack Order
Patient
iGel / ET-Tube
Res-Q-Pod
End Tidal CO^2 Circuit
Inline Filer (PRN)
BVM / Vent Circuit

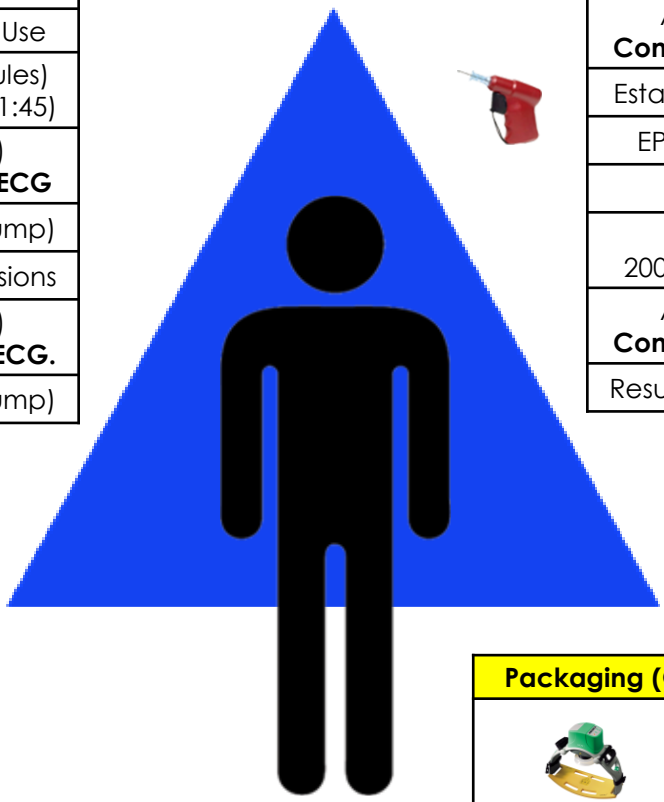
REMEMBER: 5 seconds off the chest equals 30 seconds of NO cerebral and coronary perfusion.

Airway and IO Access should be established in the first or second 2-minute cycle and during chest compressions.

Adult High-Performance CPR

AIRWAY
Insert NPA or OPA
BVM – 2 Large/Full Ventilations
Airway Patent (YES)
Insert iGel (BIAD)
BVM - 1 breath every 6 seconds, Asynchronous w/ Compressions
Place NG/OG Tube (or via iGel)
Secure Tube - Build Stack

RIGHT SIDE
Monitor On (Paddles)
Place Defib Combo Pads
Prepare IO for Left Side Use
Charge Monitor (200 joules) @ 200 Compressions (or 1:45)
Analyze Rhythm (#1) **MUST PRESS "PRINT" ON ECG**
Shock if indicated (or dump)
Resume Chest Compressions
Analyze Rhythm (#2) **MUST PRESS "PRINT" ON ECG.**
Shock if indicated (or dump)



LEFT SIDE
Begin 220 Chest Compression **No Interruptions**
Analyze Rhythm (#1) **Confirm Rhythm with Partner**
Establish IO – Humeral Head
EPI Administration (Flush)
Connect IO Drip Set
Charge Monitor @ 200 Compressions (or 3:45)
Analyze Rhythm (#2) **Confirm Rhythm with Partner**
Resume Chest Compressions

Packaging (ONLY - After Priority Care)
 
Removal to rescue.
Transport to Cardiac Cath Receiving ED

PEARLS:

- **In general, and when the scene is safe, ALL cardiac arrest resuscitation attempts should be worked on scene.**
- **Continued compressions, no interruptions, and early defibrillation (when indicated) are paramount.**
- **Use a coordinated team approach.** Success is based on proper planning and execution.
- **Remember:** Patient contact to first dose Epinephrine administration is very important.
- Video: HIGH PERFORMANCE CPR v1 (vimeo.com)

Determination of Death in the Field

CA-3
Published: 3/1/21
Reviewed:
Updated: 11/15/2021

Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.

Patient Access?

NO → Access Denied by DLE

YES → Make every attempt possible to have one person gain access to verify DOA.

NO → Advise Respective Battalion Chief

Document DLE: Name, Rank, Badge, Reason

YES → **Limited Access Granted**
- PD Escort
- Maintain Scene Integrity
- Determine Death

Bring ALL required equipment to the patient.

DNRO – Medical Cause Only – See Below
Apneic or Pulseless

MEDICAL **TRAUMA**

SCENE SAFE

NO → Call for additional resources PRN. Stage if necessary.

YES

PRESUMPTIVE SIGNS OF DEATH
(**ALL** signs must be present)
- Unresponsive
- Apneic
- Pulseless
- Fixed/Dilated Pupils

NO

YES YES

CLINICAL SIGNS OF DEATH
(**ONE** sign must be present)
- Rigormortis
- Lividity
- Tissue Decomposition
- Incineration
- Decapitation

YES

NO

TRAUMA: Injuries Incompatible with life?
- Obvious Broken Neck
- Severe Crush Injury
  Badly Deformed Torso/Head
- Traumatic Displacement of Brain Matter Outside Cranial Cavity

YES

NO

Pronounce Patient via FIRECOM, document time, and coordinate with DLE.

DNRO – Medical Cause Only
- Document on scene?
- Determine Validity (printed on yellow paper)
- Confirmation Enforcement of Order
- Pronounce Patient, Document Time
- Assist Those on Scene - Bereavement (PRN)

If the family rescinds the order and want all measures taken, start resuscitation efforts and transport the patient.

Resuscitation (YES) –
CONSULT: Appropriate Protocols PRN

Asystole

CA-4
Published: 3/1/21
Reviewed:
Updated: 1/9/2023

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient).
Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment and BLS Maneuvers

Establish History/Timeline of Downtime/Bystander CPR?

Working Code or Signal 7 (DOA)?

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
EtCO² Monitoring
Temperature
ECG via Pads Mode

If Indicated:
12 Lead ECG
Blood Glucose (BGL)
CO Monitoring

FEEDBACK DEVICE: Lifepak 15 - EtCO² Monitoring

Signal 7 / DOA?

CONSULT: Determination of Death in the Field Protocol

NO

Working Code? (YES)

CONSULT: Adult High-Performance CPR Protocol

Patient Care:
- Continuous Chest Compressions
- No Interruptions
- Oral/Nasal/Suctioning (Deep) (PRN)
- OPA / NPA Placement
- Bag-Valve-Mask with **Oxygen**
- iGel and IO Insertion

6 Minutes (3 cycles) - Manual Chest Compressions

Asystole Reversable Causes

Epinephrine – Administer Immediately upon IV/IO Access

Epinephrine 1mg IV/IO (1:10,000)
REPEAT – Epinephrine 1mg IV/IO (1:10,000)
Unlimited, (3-5) Min – PRN

CONSIDER: Identifying Correctable Causes

External Transcutaneous Pacing (Last Resort)

At Anytime ROSC? (YES)

CONSULT: Post Resuscitation (ROSC) Protocol

Transport to Cardiac Cath Receiving ED

High Suspicion of Acidosis

CONSIDER: Early Administration of Sodium Bicarbonate
1meq/kg IV/IO Push
Do not mix with any other medications.

Transport Decision (Avoid Non-Cardiac Cath ED's)

Continue On-Going Assessment and Resuscitation
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

CONSIDER: Criteria for Discontinuation

Contact Medical Control – Receiving ED

Epinephrine | Sodium Bicarbonate

Pulseless Electrical Activity (PEA)

CA-5
Published: 3/1/21
Reviewed:
Updated 1/9/2023

Universal Patient Care Protocol

- Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.
- Initial Assessment and BLS Maneuvers
- Establish History/Timeline of Downtime/Bystander CPR?
- Working Code – Consider Early Reversable Causes

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
EtCO² Monitoring
Temperature
ECG via Pads Mode

If Indicated:
12 Lead ECG
Blood Glucose (BGL)
CO Monitoring

FEEDBACK DEVICE: Lifepak 15 - EtCO² Monitoring

Working Code? (YES)

CONSULT: Adult High-Performance CPR Protocol

Patient Care:
Continuous Chest Compressions
No Interruptions
Oral/Nasal/Suctioning (Deep) (PRN)
OPA / NPA Placement
Bag-Valve-Mask with **Oxygen**
iGel and IO Insertion

6 Minutes (3 cycles) - Manual Chest Compressions

PEA Reversable Causes

Epinephrine – Administer Immediately upon IV/IO Access

Epinephrine 1mg IV/IO (1:10,000)
REPEAT – Epinephrine 1mg IV/IO (1:10,000)
Unlimited, (3-5) Min – PRN

CONSIDER: Identifying Correctable Causes

External Transcutaneous Pacing (Last Resort)

At Anytime ROSC? (YES)

CONSULT: Post Resuscitation (ROSC) Protocol

Transport to Cardiac Cath Receiving ED

High Suspicion of Acidosis

CONSIDER: Early Administration of Sodium Bicarbonate
1meq/kg IV/IO Push
Do not mix with any other medications.

- Transport Decision (Avoid Non-Cardiac Cath ED's)
- Continue On-Going Assessment and Resuscitation Treat as Needed & Re-Evaluate Interventions
- **Notification to Receiving ED**
- Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

CONSIDER: Criteria for Discontinuation

Contact Medical Control – Receiving ED

Epinephrine | Sodium Bicarbonate

PEA/Asystole Reversable Causes

CA-4/5
Published: 3/1/21
Reviewed:
Updated:8/25/2023

Early recognition, 911 notification, bystander care, and public access defibrillation save lives.

SURVIVAL FROM PEA OR ASYSTOLE is based on identifying and correcting the cause. Consider all differential diagnoses, with early and aggressive treatment of possible causes.

Use Pit-Crew Approach; assign incoming responders to pit crew positions. Success is based on proper planning and execution.

Efforts should be directed at high quality and continuous compressions with limited interruptions and early defibrillation when indicated.

DO NOT HYPERVENTILATE: Ventilate 10 breaths per min with continuous, uninterrupted compressions.

Do not interrupt compressions to place endotracheal tube or BIAD.

Reassess and document BIAD and/or endotracheal tube placement and EtCO2 frequently, after every move, and at transfer of care.

End Tidal CO2 (EtCO2) If EtCO2 is < 10 mmHg, improve chest compressions.

IV/IO access/drug delivery is secondary to high-quality chest compressions and defibrillation.

Placement and use of the LUCAS III Device should only occur after initial treatment priorities have been met. This usually coincides with 4-6 minutes of working cardiac arrest time if all positions are filled.

Return of spontaneous circulation after Asystole / PEA requires continued search for underlying cause of cardiac arrest. Treatment of hypoxia and hypotension are important after resuscitation from Asystole / PEA.

Consider Early in ALL PEA Patients	
Hypovolemia	Normal Saline – Fluid Bolus
Hypoglycemia	D10W IV/IO Infusion
Hyperkalemia	Calcium Chloride IV/IO
Renal Failure Hyperkalemia Tricyclic Overdose	Sodium Bicarbonate IV/IO
Beta Blocker Overdose	Glucagon IV/IO
Organophosphate Poisoning	Atropine Sulfate IV/IO
Chest Decompression	Tension Pneumothorax
For Heart Rates < 60 BPM	Pacing

Reversable Causes (H's and T's)
Hypoxia
Hypovolemia
Hydrogen ION (Acidosis)
Hypothermia
Hypo/Hyperkalemia (ESRD)
Hypoglycemia
Toxins / Overdose
Tension Pneumothorax
Tamponade / Trauma
Thrombosis – Pulmonary (PE), Coronary (MI)

Atropine | Calcium Chloride | Dextrose | Glucagon | Sodium Bicarbonate

MAIN MENU

CARDIAC ARREST

Ventricular Fibrillation / Pulseless Ventricular Tachycardia

CA-6
Published: 3/1/21
Reviewed:
Updated 10/6/2023

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient).
Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment and BLS Maneuvers

Establish History/Timeline of Downtime

Witnesses/Bystander CPR?

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
EtCO² Monitoring
Temperature
ECG via Pads Mode

If Indicated:
12 Lead ECG
Blood Glucose (BGL)
CO Monitoring

FEEDBACK DEVICE: Lifepak 15 - EtCO² Monitoring

Witnessed by Crew? (YES)

Administer Precordial Thump

Defibrillate Immediately (PRN)

Defibrillation Sequence

Initial – 200 Joules
2 Minutes of CPR
Second – 300 Joules
2 Minutes of CPR
Third – 360 Joules
2 Minutes of CPR
4 or More Shocks? (YES)
Use New Defib Pads
Place A/P - Chest/Back
Continue @ 360 Joules

Working Code

CONSULT: Adult High-Performance CPR Protocol

Patient Care:
Continuous Chest Compressions
Limit Interruptions
Oral/Nasal/Deep Suctioning (PRN)
OPA / NPA Placement
Bag-Valve-Mask with **Oxygen**
iGel and IO Insertion
Defibrillation @ 200 Joules

Immediately Resume Chest Compressions

Establish IV/IO Access

Epinephrine 1mg IV/IO (1:10,000)
REPEAT – Epinephrine 1mg IV/IO (1:10,000)
Unlimited, (3-5) Min – PRN

Amiodarone 300mg IV/IO
REPEAT – Amiodarone 150mg IV/IO
(1) Time, (4-6) Min – PRN

High Suspicion of Acidosis

CONSIDER:
Early Administration of Sodium Bicarbonate
1meq/kg IV/IO Push
Do not mix with any other medications.

Torsades de Pointes or Refractory V-Fib

Magnesium Sulfate 2g within 50ml D5W Rapid Infusion

ROSC @ Anytime? (YES)

CONSULT: Post Resuscitation (ROSC) Protocol

Transport to Cardiac Cath Receiving ED

Transport Decision (Cardiac Cath ED's ONLY)

Continue On-Going Assessment and Resuscitation
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

Amiodarone | Epinephrine | Magnesium Sulfate | Sodium Bicarbonate

MAIN MENU

CARDIAC ARREST

Post Resuscitation (ROSC)

CA-7
Published: 3/1/21
Reviewed:
Updated 8/25/2023

Transport Decision (Cardiac Cath ED's ONLY)

Continue On-Going Assessment and Re-Evaluate Interventions

Continue to Address Reversable Causes

Monitor Vital Signs

ALL PROVIDERS MUST BE VIGILANT, re-arrest is likely.

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
EtCO² Monitoring
Temperature
ECG via Pads Mode

If Indicated:
12 Lead ECG
Blood Glucose (BGL)
CO Monitoring

FEEDBACK DEVICE: Lifepak 15 - EtCO² Monitoring

Monitor ECG

Perform 12 Lead ECG

Transmit 12 Lead ECG To Receiving ER

Optimize Ventilation and Oxygen

Maintain SpO2 = 94-99%
EtCO² Ideally 35-45mmHg
Do not hyperventilate to correct EtCO²
BVM (Respiratory Rate) 10 Breaths/Min
DO NOT Hyperventilate – REMOVE Res-Q-Pod

Significant Ectopy? (YES)

CONSULT: Appropriate Protocol

Hypotensive? (YES)

CONSULT: Hypotensive Shock (Non-Trauma) Protocol

Bradycardic? (YES)

CONSULT: Bradycardia Protocol

TWO or MORE (2+) TOTAL Defibrillations? (YES)

Amiodarone 150mg IVD over 10 minutes

Re-Arrest? (YES)

CONSULT: Appropriate Cardiac Arrest Protocol or Initial Successful Treatment

Notification to Receiving ED

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

Dysrhythmias

Dysrhythmias are common and usually self limiting after ROSC and may not need further treatment, especially atrial dysrhythmias.
Providers SHOULD treat worsening bradycardia, it may lead to re-arrest.

If Dysrhythmia Persists? (YES)

CONSULT: Appropriate Protocol

Asystole Reversable Causes

PEA Reversable Causes

Amiodarone

Cardiac Emergency Protocols

Section 5 | Cardiac Emergencies Protocols

Chest Pain / Suspected Cardiac Event

CE-1
Published: 3/1/21
Reviewed: 3/14/2022
Updated: 11/15/2021

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient).
Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment and BLS Maneuvers

Establish History/Timeline of Cardiac Event

Apply O2 if the pulse oximetry is ≤ 96% or the patient is tachypneic (>20 minute).

Immediate Interpretation of 4 and 12 Lead ECG's

ST Elevation or Abnormal ECG w/ Pain

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)
4 Lead ECG
12 Lead ECG
Pain Scale

If Indicated:
CO Monitoring
$EtCO^2$ Monitoring

Cardiac Dysrhythmia? (YES)

CONSULT: Appropriate Protocol

NO

YES

Inferior Infarct?

YES

Perform V4R 12 Lead

Hypotensive? (YES)

Normal Saline 500mL Bolus
REPEAT as needed,
Titrate to SPB ≥ 90 mmHg
Maximum of 1L

High Level of Suspicion Transmit CARDIAC Alert

Transmit STEMI Alert

Establish IV Access TKO / Saline Lock

Aspirin 324mg Chewed/PO

Nitroglycerin Tablet 0.4mg SL
REPEAT – Nitroglycerin Tablet
(2) Times, (5) Min – PRN & SPB > 110mmHg

Nitroglycerin Paste 1inch (Upper Chest)

Continued Pain - PRN
Fentanyl 50-100mcg SIVP/IO

REPEAT PRN – Fentanyl
(1) Dose, (10) Min (Total Max Dose 200mcg)

Nausea and/or Vomiting
Ondansetron 4mg IV/IO/IM

***Do not delay pharmacological treatments for IV access unless B/P is a concern.**

Transport Decision (Cardiac Catherization Lab)

12 Lead ECG and Transmission to ED with **NAME/DOB/SOCIAL**

Monitor VS During Transport - Repeat ECG's

Continue On-Going Assessment
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer
Demographics, Personal Property,
Summery of care and response to care.

Aspirin | Fentanyl | Nitroglycerin | Ondansetron

Call for Orders, and Transport to BHMC

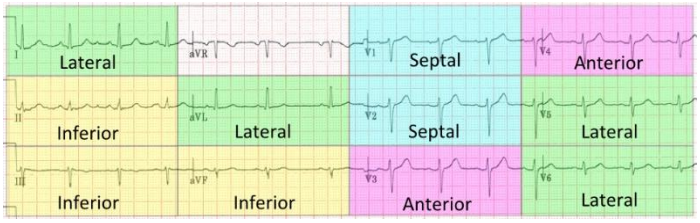
STEMI Alert References

CE-2
Published: 3/1/21
Reviewed: 3/14/2022
Updated: 11/15/2021

Information:

Signs and Symptoms:

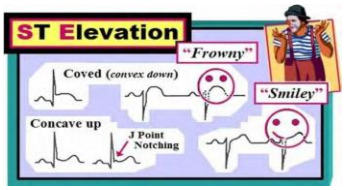
- Chest Pain (Pressure, Aching, Vice-Like Tightness)
- Location (Substernal, Epigastric, Unexplained – Thoracic Back Pain)
- Radiation of Pain (Arm, Shoulder, Jaw, Neck)
- *Painless with Syncope/Near Syncope
- Skin – Pale, Diaphoresis
- Shortness of Breath
- Nausea/Vomiting
- Dizziness/Headache
- General Weakness/Fatigue



STEMI ALERT:

Confirmed ST elevation by 12-Lead ECG:

- Transmit STEMI ALERT (Fire Communications)
- Limit Scene Time
- Perform ALS treatments while transporting.
- Transmit 12-Lead ECG to the receiving ED.
  (NAME/DOB/SOCIAL within ECG Notes)



Criteria:

ST-Segment Elevation in two or more contiguous leads (2mm or greater in V2 and V3 or 1mm or greater in all other leads) with a "convex" (frown face) or "straight" morphology.
ST-Segment Elevation in two or more contiguous leads of 2mm or greater in any lead with a "concave" (smiley face).

PEARLS:

- **Avoid Nitroglycerin in any patient who has used Viagra (sildenafil) or Levitra (vardenafil) in the past 24 hours or Cialis (tadalafil) in the past 36 hours due to potential severe hypotension.**
- If unable to administer Nitroglycerin (SL), immediately go to Nitro Paste as replacement.
- Nitroglycerin Paste can be administered after first dose of Nitroglycerin (SL) if blood pressure is above 110 systolic.
- Second dose of Fentanyl if needed, not to exceed a maximum total dose of 200mcg SIVP/IO. Continuous monitoring of patient is mandatory.
- For cocaine or methamphetamine induced chest pain, consider Versed 2mg if pain not relieved by Fentanyl.
- If patient has taken his own nitroglycerin without relief, consider potency of the medication.
- Monitor for hypotension after administration of nitroglycerin and opioids.
- If positive ECG changes, establish a second IV access while transporting to the hospital.
- All patients with suspected Acute Coronary Syndrome (ACS) or cardiac related chest pain without ECG changes should be transported to a Cardiac Catheterization Facility.
- Diabetic, geriatric, and female patients often have atypical pain and/or generalized complaints. Have a low threshold to perform a 12-Lead ECG in these patients.

DIFFERENTIAL DIAGNOSIS:

Trauma vs. Medical, Angina vs. Myocardial Infarction, Pericarditis, Pulmonary Embolism, Asthma/COPD, Pneumothorax, Aortic Dissection or Aneurysm, Gastroesophageal Reflux or Hiatal Hernia, Esophageal Spasm, Chest Wall Injury or Pain (Contusion), Pleural Pain, or Overdose (Cocaine).

Hypotension/Shock (Non-Trauma)

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Reviewed: 3/14/2022
Updated: 11/15/2021

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient).
Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment, BLS Maneuvers, **Apply O2 (PRN)**

Establish History/Timeline of Present Illness

Orthostatic Blood Pressure Reading
Notable Change?

Serious Signs/Symptoms
Hypotension, Poor Perfusion, or Shock

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)
4 Lead ECG
12 Lead ECG

If Indicated:
Pain Scale
EtCO2 Monitoring
CO Monitoring

Traumatic Injuries? (YES)
CONSULT: Appropriate Protocol

Temperature ≥ 100.4° F (38 C)
CONSULT: Fever and Infection Control

OB/GYN Related? (YES)
CONSULT: Appropriate Protocol

Blood Glucose < 60mg/dL
CONSULT: Diabetic Emergencies

Consider other causes.

Cardiac Related? (YES)
CONSULT: Appropriate Protocol

YES

NO

Perform - 4 Lead ECG
Perform - 12 Lead ECG

Establish IV Access TKO / Saline Lock
Question, Observe, and Reassess

Establish IV Access
Consider Large Bore or 2 Access Sites

Normal Saline 500mL Bolus
REPEAT as needed, Titrate to SPB ≥ 90 mmHg
Maximum of 1L
*Assess Lung Sounds and BP every 500ml.

Nausea and/or Vomiting
Ondansetron 4mg IV/IO/IM

Improvement? (NO)

Push Dose Epi 1:100,000 0.01mg IV/IO
Administer slowly 1ml every 30 seconds
Titrate to SBP ≥ 90 mmHg
REPEAT – Push Dose Epi (2) Times
Total Maximum Dose – 0.3mg

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer
Demographics, Personal Property,
Summery of care and response to care.

Epinephrine | Ondansetron

Hypotension/Shock (Non-Trauma) References

Information: Cardiogenic shock is a condition in which the heart suddenly can't pump enough blood to meet the body's needs. This condition is most often caused by a severe heart attack, **perform a 12-Lead ECG**. Cardiogenic shock is rare, but often fatal if not treated immediately.

Pediatric Hypotension/Shock (Non-Trauma) Emergencies:

Hypotension - Fluid Resuscitation:

NORMAL SALINE 20mL/kg IV/IO. Repeat as needed. Maximum – follow Medication Tool.

Assess lung sounds and blood pressure often.

Nausea/Vomiting:

Weighing less than 30kg (65 lbs.), ZOFRAN 0.1 mg/kg slow IV/IO (Max dose of 4mg).

Weighing greater than 30kg, ZOFRAN adult dose, 4mg slow IV/IO.

ADULT PEARLS:

- Once the blood pressure is above 100mmhg systolic, look for and treat the underlying cause (Rule Out – Cardiac).
- Diabetic, geriatric, and female patients often have atypical pain and/or generalized complaints. Have a low threshold to perform a 12-Lead ECG in these patients.
- Document 12-Lead ECG and transmission status within the patient care report (ePCR).
- Orthostatic hypotension favors hypovolemia.
- Consider GI complaints – Persistent Diarrhea, Coffee Ground-Like Emesis, or Dark Tarry Stools.

PEDIATRIC PEARLS:

- Get a good history from parent/care-taker.
- Input (food/drinking) vs. Output mismatch is a good indicator.
- Question the number of diaper changes (over saturated, loose stools).

DIFFERENTIAL DIAGNOSIS:

Ectopic Pregnancy, Cardiac Dysrhythmias, Pulmonary Embolus, Tension Pneumothorax, Medication, Vasovagal, Effect/Overdose, Physiologic (pregnancy), or Sepsis

Left Ventricular Assist Device (LVAD's)

Information:

Ventricular Assist Devices (VADs), also known as Heart Pumps, are surgically implanted circulatory support devices designed to assist the pumping action of the heart. The device takes blood from the lower chamber of the heart and helps pump it to the body and vital organs just as a healthy heart would. Caring for these patients is complicated and every effort should be made to contact the patient's primary caretaker (spouse, guardian etc.) and the VAD coordinator during your evaluation.

- Contact the VAD coordinator immediately; the phone number will be on the device. Patients and their family members have been well trained in the care of themselves and the devices. LISTEN TO THEM!
- Locate patient's emergency "bag" with backup equipment.
- Treat Non–VAD associated conditions in accordance with the appropriate protocol.
- Determine the type of device, assess alarms, auscultate for pump sounds. if needed, assist patient (caretaker) in replacing the device's batteries or cables.
- Locate the driveline site on the patient's abdomen. BE CAREFUL not to cause any trauma to the site or driveline (wires).

Basic Life Support:

- Establish/confirm a patent airway.
- Supplemental oxygen if any respiratory signs or symptoms are present.
- Auscultate heart sounds. A functioning device will sound like a continuous whirling sound.
- Locate the device usually found at the patient's waist. Look at the controller and identify which device is in place. Locate the colored sticker and match this to the color-coded EMS guide found in the Medical protocol appendices.
- Using this guide, intervene appropriately based on the type of alarm and device.
- If there is bleeding at the site, apply direct pressure.
- Record and monitor vital signs.
- If the patient is unconscious, unresponsive to stimuli, and pulseless listen to the patient's chest. **If you hear the whirling sound of the LVAD, DO NOT PERFORM CPR.** The LVAD device has been surgically placed into the left ventricle and CPR could dislodge this device, causing death. **If you cannot hear the device, then CPR should be performed per cardiac arrest protocol.**

Notes:

In most patients, a pulse will not be palpable. This occurs because the LVAD unloads the ventricle in a continuous fashion and therefore the aortic valve may not open with each contraction.

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

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

Left Ventricular Assist Device (LVAD's)

Advanced Life Support:

- Perform cardiac monitoring.
- Evaluate a 12 lead ECG if chest pain or ischemic equivalent symptoms (i.e., abdominal pain above the umbilicus, nausea, dizziness, chest tightness or shortness of breath.).
- If patient meets STEMI criteria on 12 lead ECG, follow STEMI procedures
- All dysrhythmias should be treated in accordance with appropriate Dysrhythmia Protocol.
- For conscious electrical defibrillation, the patient may be sedated with Versed 1mg if the MAP is greater than 65mmHg.
- Record and monitor continuous O2 saturation, sometimes not obtainable with LVAD patients. In addition, you may utilize End Tidal Co2 capnography.
- IV normal saline, KVO or IV lock.
- If evidence of dehydration, bolus 250 ml of Normal Saline with a max of 500 ml of NS until patient is normotensive, (= or > 65 MAP).

  *If patient shows signs of Congestive Heart Failure (crackles on auscultation of lungs, JVD or peripheral edema) withhold fluid bolus.
- Perform a blood glucose level, if blood glucose is less than 60 mg/dl administer dextrose. Refer to the *Diabetic Emergencies* protocol.

Transport:

- Take all equipment associated with the LVAD system to the ED.
- Minimize on scene time when possible.
- Transport to the closest appropriate facility based on the patient's chief complaint.
- There are only two hospitals in Broward County that can handle LVAD related emergencies:

Cleveland Clinic 954-226-9196, Memorial Regional 954-232-5094

PACKAGING AN LVAD PATIENT: Be aware of the cables, controller, and batteries. It may be best to place the stretcher straps under the LVAD cables, so you are not creating any torque on the device. At a minimum, be aware of this extra hardware.

Reference Material:

The link below will open a guide that was created in 2008 by the innovation of VAD Coordinators from some of the largest and most successful VAD implantation hospitals in the United States. International Consortium of Circulatory Assist Clinicians (ICCAC) has ensured that this document continues to be a current resource for not only emergency medical services but to all healthcare workers providing care to the mechanical circulatory support patient population. The purpose is to be a quick emergency guide and should not replace the manufacturers' Instructions For Use as the primary source of information for each device listed in this guide.

https://iccac.global/media/documents/public/ICCAC_Emergency_Guides_20_21.pdf

Published: 3/1/21
Reviewed: 3/14/2022
Updated: 9/8/2023

Bradycardia

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment, BLS Maneuvers, **Apply O2 (PRN)**

Establish History/Timeline of Present Illness

Confirm Heart Rate
Mechanical (Palpate) and Electrical (ECG)

Asymptomatic vs. Symptomatic
Hypotension, Poor Perfusion, or Shock

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)
4 Lead ECG
12 Lead ECG

If Indicated:
Pain Scale
EtCO2 Monitoring
CO Monitoring

YES

Establish IV Access
Consider Large Bore or 2 Access Sites

Normal Saline 500mL Bolus
REPEAT as needed, Titrate to SPB ≥ 90 mmHg
Maximum of 1L
*Assess Lung Sounds and BP every 500ml.

Electrical Treatment Option

Transcutaneous Pacing (TCP)

High Degree AV Block? (YES)

Immediately Begin Pacing

Sedation Required? (YES)

Preferred - Etomidate 10mg SIVP/IO or

Secondary - Midazolam 5mg SIVP/IO

REPEAT – Etomidate x 1 Time @ (5) Min – PRN

REPEAT – Midazolam x 1 Time @ (5) Min – PRN

Pharmacological Treatment Option

Atropine 0.5mg IV/IO
REPEAT – Atropine (3-5) Min – PRN
Total Maximum Dose – 3mg

Improvement? (NO)

Push Dose Epi 1:100,000 0.01mg IV/IO
Administer slowly 1ml every 30 seconds
Titrate to SBP ≥ 90 mmHg
REPEAT – Push Dose Epi (2) Times
Total Maximum Dose – 0.3mg

NO

Establish IV Access TKO / Saline Lock

Question, Observe, and Reassess

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

Atropine | Epinephrine | Etomidate | Midazolam

Bradycardia References

Information: Bradycardia is generally defined as any rhythm disorder with a heart rate less than 60/min. For assessment and management of a patient with symptomatic bradycardia, it is typically defined as having a heart rate less than 50/min. The key to managing systematic bradycardia is determining which signs and symptoms are due to decreased heart rate. An unstable bradycardia exists clinically when 3 criteria are present: the heart rate is slow, the patient has symptoms, and the symptoms are due to the slow heart rate. *(AHA – ACLS 2020, Page 66.)*

Transcutaneous Pacing Procedure

Pediatric Bradycardia Emergencies:

Stable:

Question, Monitor, Reassess, and Transport.

Unstable (Patient with altered mentation and poor perfusion.):

1. **Immediately manage airway and provide oxygenation/ventilation. If no improvement and heart rate less than 60/min, begin chest compressions.**
2. NORMAL SALINE 20mL/kg IV/IO. Repeat as needed. Maximum – follow Medication Tool.
   Assess lung sounds and blood pressure often.
3. Push Dose Epinephrine 1:100,000 0.01mg IV/IO, Administer slowly 1ml every 30 seconds, Titrate to age-appropriate blood pressure.
   Repeat – Push Dose Epi (2) Times, Total Maximum Dose – 0.3mg.

PEARLS:

- Severity of patient condition will determine the need for early electrical treatment versus pharmacological treatment.
- Once the blood pressure is above 100mmhg systolic, look for and treat the underlying cause (Rule Out – Cardiac).
- Consider treatable causes for bradycardia (Beta Blocker OD, Calcium Channel Blocker OD, etc.)
- Consider hyperkalemia with wide complex, bizarre appearance of QRS complex, and bradycardia.
- Hypoxemia is a common cause of bradycardia. Ensure oxygenation and support respiratory effort.
- In the presence of a High Degree AV Block with Hypotension, immediately begin Transcutaneous Pacing (TCP). Do not wait to establish IV/IO access.
- In pediatrics - hypoglycemia, severe dehydration, and narcotic effects may produce bradycardia**, Investigate Early.**

DIFFERENTIAL DIAGNOSIS:

Acute MI, Hypoxia, Hypothermia, Pacemaker Failure, Head Injury (Elevated ICP), Stroke, Spinal Cord Lesion, Overdose, Sick Sinus Syndrome, Sinus Bradycardia, or Atrio-Ventricular Blocks.

Atrial Fibrillation/Flutter (Rapid)

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment and BLS Maneuvers

Apply O2 (PRN)

Establish History/Timeline of Present Illness

Confirm Heart Rate ≥ 150/min
QRS < .12 Second

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)
4 Lead ECG
12 Lead ECG

If Indicated:
Pain Scale
EtCO2 Monitoring
CO Monitoring

Perform Baseline & Post 12 Lead ECG's

Wolff-Parkinson-White (WPW)

An extra electrical pathway between the heart's upper and lower chambers that can cause a rapid heartbeat. Treat with:

Amiodarone 150mg/50ml D5W over 10 Minutes

***Do Not administer Adenosine or Cardizem.**

YES

YES

Stable? (YES)

Cardizem 10mg SIVP
Or
Amiodarone 150mg IVD over 10 minutes

Improvement within 10 Minutes? (NO)

REPEAT – Cardizem 15mg SIVP
Or
Amiodarone 150mg IVD over 10 minutes

Unstable? (YES) – See Pearls

Normal Saline 500mL Bolus
REPEAT as needed, Titrate to SPB ≥ 90 mmHg
Maximum of 1L
*Assess Lung Sounds and BP every 500ml.

Calcium Chloride 1gram SIVP over 5 minutes

Cardizem 10mg SIVP

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

Amiodarone | Calcium Chloride | Cardizem

MAIN MENU | REFERENCES/PEARLS | PEDIATRIC | CARDIAC

Atrial Fibrillation/Flutter (Rapid)

Information: The most important goal is to assess the type of tachycardia and determine whether the patient is stable or unstable. For asymptomatic patients with normal blood pressure (or those with minimal symptoms, such as palpitations), consider close observation only. Patients with symptoms greater than 48 hours may have formed an atrial clot. These patients run a higher risk of complications if chemical or electrical cardioversion is attempted. If unstable, consult Medical Direction for a treatment plan.

In patients with higher pulse rates, determining a regular rhythm versus irregular rhythm may be difficult. Adenosine may be considered to assist with diagnosis or if patient has a history of Adenosine conversion (regular rhythm SVT), but Adenosine is NOT mandated. Adenosine may not be effective in atrial fibrillation/flutter, yet it is not harmful and may help identify rhythm. Have ECG monitored and be ready to conduct 12 lead ECG.

Pediatric Atrial Fibrillation/Flutter (Rapid):

Stable:

Question, Monitor, Reassess, and Transport.

Unstable (Patient with altered mentation and poor perfusion.):

1. NORMAL SALINE 20mL/kg IV/IO. Repeat as needed. Maximum – follow Medication Tool.

Assess lung sounds and blood pressure often.

PEARLS:

- **UNSTABLE –** hypotension or BP < 90 with signs of shock/poor perfusion, altered mentation, or chest pain with evidence of ischemia (STEMI, T wave inversions or depressions), and/or acute CHF – **per the algorithm, administer both Calcium Chloride and Cardizem.**
- **Only one antiarrhythmic medication can be administered with repeat dose(s), as needed.**
- Stable patients with known history of Wolff Parkinson White (WPW), only use Amiodarone.
- Patients with WPW who present with associated atrial fibrillation, administering AV node blocking agents (Cardizem or Adenosine) will result in ventricular fibrillation – cardiac arrest.
- Continued blood pressure monitoring is required when administering either Cardizem or Amiodarone.
- Document all rhythm changes and therapeutic interventions with ECG tracings.
- Risk of stroke is significantly high with the cardioversion of atrial fibrillation. The benefit of cardioversion of atrial fibrillation does not justify the risk.

DIFFERENTIAL DIAGNOSIS:

Heart Disease (WPW, Valvular), Sick Sinus Syndrome, Acute MI, Electrolyte Imbalance, Fever, Pain, Emotional Stress, Hypoxia, Hypovolemia, Anemia, Drug Effect, Overdose, Hyperthyroidism, or Pulmonary Embolus.

Supraventricular Tachycardia

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment, BLS Maneuvers, **Apply O2 (PRN)**

Establish History/Timeline of Present Illness

Confirm Heart Rate ≥ 150/min
QRS < .12 Second

If patient condition permits, consider attempting Vagal Maneuvers.

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)
4 Lead ECG
12 Lead ECG

If Indicated:
Pain Scale
EtCO2 Monitoring
CO Monitoring

Perform Baseline & Post 12 Lead ECG's

Wolff-Parkinson-White (WPW)

An extra electrical pathway between the heart's upper and lower chambers that can cause a rapid heartbeat. Treat with:

Amiodarone 150mg/50ml D5W over 10 Minutes

***Do Not administer Adenosine or Cardizem.**

Stable? (YES)

Adenosine 12mg Rapid IV Push with NS Flush

Pharmacologic Conversion Successful? (NO)

Cardizem 10mg SIVP

Pharmacologic Conversion Successful? (NO)

REPEAT – Cardizem 15mg SIVP

Unstable? (YES) – See Pearls

Adenosine 12mg Rapid IV Push with NS Flush

Pharmacologic Conversion Successful? (NO)

Synchronized Cardioversion 100J

Sedation Required? (YES)

Etomidate 10mg SIVP/IO

Conversion Successful? (NO)

Synchronized Cardioversion 200J
Repeat – 360J, repeat PRN

Continued Sedation Required? (YES)

REPEAT – Etomidate x 1 Time @ (5) Min – PRN

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

Amiodarone | Adenosine | Cardizem | Etomidate

MAIN MENU

CARDIAC

Supraventricular Tachycardia

Information: Supraventricular Tachycardia (SVT) is defined as a regular, narrow complex tachycardia of 150 BPM or greater without discernable P-waves and/or flutter waves. The most important goal is to assess the type of tachycardia and determine whether the patient is stable or unstable. For asymptomatic patients with normal blood pressure (or those with minimal symptoms, such as palpitations), consider close observation only.

Unstable tachycardia exists when the heart rate is too fast. This excessive heart rate causes symptoms or an unstable condition because the heart is beating so fast that cardiac output is reduced; this can cause pulmonary edema, coronary ischemia, and hypotension with reduced blood flow to vital organs (brain = AMS). Additionally, the heart is beating ineffectively so that the coordination between the atrium and ventricles or ventricles themselves reduces cardiac output.

Pediatric Supraventricular Tachycardia Emergencies:

SVT in Children is considered greater than **180 BPM.**
SVT in Infants is considered greater than **220 BPM.**

Synchronized Cardioversion Procedure

Stable:

1. Vagal Maneuvers: For young children, place a bag of ice water on the patient's face completely obstructing their nose and mouth for 15 seconds.
2. ADENOSINE 0.1mg/kg Rapid IV Push with a simultaneous NS flush (Max dose 6mg).
3. ADENOSINE 0.2mg/kg Rapid IV Push with a simultaneous NS flush (Max dose 12mg).

Unstable (Patient with altered mentation and poor perfusion.):

1. SYNCHRONIZED CARDIOVERSION – 1J/kg.
2. Sedation Required – ETOMIDATE 0.15mg/kg IV/IO over 30 seconds, (max dose 10mg).
3. If not effective, REPEAT SYNCHRONIZED CARDIOVERSION – 2J/kg.

Hypotensive (Age Appropriate):

NORMAL SALINE 20mL/kg IV/IO. Repeat as needed. Maximum – follow Medication Tool.

Assess lung sounds and blood pressure often.

PEARLS:

- UNSTABLE – hypotension or BP < 90 with signs of shock/poor perfusion, altered mentation, or chest pain with evidence of ischemia (STEMI, T wave inversions or depressions), and/or acute CHF.
- Vagal maneuvers may convert up to 25 % of SVT's caused by reentry prior to medication therapy.
- **Only one antiarrhythmic medication can be administered with repeat dose(s), as needed.**
- Stable patients with known history of Wolff Parkinson White (WPW), only use Amiodarone.
- Patients with WPW who present with associated atrial fibrillation, administering AV node blocking agents (Cardizem or Adenosine) will result in ventricular fibrillation – cardiac arrest.
- Continued blood pressure monitoring is required when administering either Cardizem or Amiodarone.
- Continued sedation may be required for prolonged cardioversion times.
- Document all rhythm changes and therapeutic interventions with ECG tracings.

DIFFERENTIAL DIAGNOSIS:

Heart Disease (WPW, Valvular), Sick Sinus Syndrome, Acute MI, Electrolyte Imbalance, Fever, Pain, Emotional Stress, Hypoxia, Hypovolemia, Anemia, Drug Effect, Overdose, Hyperthyroidism, or Pulmonary Embolus.

Wide Complex Ventricular Tachycardia w/ Pulse

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment, BLS Maneuvers, **Apply O2 (PRN)**

Establish History/Timeline of Present Illness

Confirm Heart Rate ≥ 120/min
QRS ≥ .12 Second without discernable P waves.

Monomorphic,
Rhythm pattern remains the same? (YES)

NO

Polymorphic Rhythm? (YES)

CONSULT: Polymorphic Ventricular Tachycardia

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)
4 Lead ECG
12 Lead ECG

If Indicated:
Pain Scale
EtCO2 Monitoring
CO Monitoring

Perform Baseline & Post 12 Lead ECG's

Unstable? (YES) – See Pearls

Synchronized Cardioversion 200J

Sedation Required? (YES)

Etomidate 10mg SIVP/IO

Conversion Successful? (NO)

Synchronized Cardioversion 300J
Repeat – 360J, repeat PRN

Continued Sedation Required? (YES)

REPEAT – Etomidate x 1 Time @ (5) Min – PRN

Conversion Successful? (YES)

Amiodarone 150mg IVD over 10 minutes

Stable? (YES)

Amiodarone 150mg IVD over 10 minutes

*Give the entire dose even if the rhythm converts prior to full administration.

REPEAT – Amiodarone 150mg IVD x 1 Time PRN

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

Amiodarone | Etomidate

Wide Complex Ventricular Tachycardia w/ Pulse

Information: The Wide complex tachycardia (WCT) has a QRS greater than or equal to 0.12 (0.09 for pediatrics) and a heart rate greater than 120BPM without discernible P waves. **DO NOT** cardiovert wide complex tachycardias that are irregularly/irregular, as they are most likely to be A-Fib/A-Flutter with an aberrancy and would put the patient at risk for an embolic stroke.

Pediatric Wide Complex Ventricular Tachycardia Emergencies:

Synchronized Cardioversion Procedure

Stable:

Amiodarone Infusion: #ml (per Med Tool) in 50ml D5W, same as
Amiodarone 5mg/kg (per Med Tool) in 50ml D5W (max dose 150mg).
Administer - 20gtts/min with macro, 1gtt/3 seconds = 2ml/min (Total Admin = 25min).

Unstable (Patient with altered mentation and poor perfusion.):

1. SYNCHRONIZED CARDIOVERSION – 1J/kg.
2. Sedation Required – ETOMIDATE 0.15mg/kg IV/IO over 30 seconds, (max dose 10mg).
3. If not effective, REPEAT SYNCHRONIZED CARDIOVERSION – 2J/kg.
4. For patients who convert after two or more cardioversions, administer Amiodarone Infusion:
   #ml (per Med Tool) in 50ml D5W, same as
   5mg/kg (per Med Tool) in 50ml D5W (max dose 150mg).
   20gtts/min with macro, 1gtt/3 seconds = 2ml/min (Total Admin = 25min.

Hypotensive (Age Appropriate):

NORMAL SALINE 20mL/kg IV/IO. Repeat as needed. Maximum – follow Medication Tool.
Assess lung sounds and blood pressure often.

Really Wide Complex Tachycardia: has a QRS greater than or equal to 0.200 and a heart rate approximately 100-120 BPM without discernable P waves is likely to be HYPERKALEMIA and not a ventricular tachycardia. **DO NOT administer Amiodarone.**

Treatment (Adults Only):

1. Calcium Chloride 1gram slow IV/IO over 2 minutes.
2. Sodium Bicarbonate 50meq, slow IV/IO over 2 minutes.

PEARLS:

- UNSTABLE – hypotension or BP < 90 with signs of shock/poor perfusion, altered mentation, or chest pain with evidence of ischemia (STEMI, T wave inversions or depressions), and/or acute CHF.
- Monitor vital signs during the administration of Amiodarone. Be alert for post administration hypotension.
- Document all rhythm changes and therapeutic interventions with ECG tracings.
- Continued sedation may be required for prolonged cardioversion times.
- All medication that can be given IV/IVP can also be given intraosseous, but do not have to be administered slowly.

DIFFERENTIAL DIAGNOSIS:

Artifact, Device Failure (Monitor or Limb Leads), Endocrine or Metabolic Emergency, Hyperkalemia, Accidental Medication Overdose, Illicit Drug Use, or Pulmonary.

Polymorphic Ventricular Tachycardia (Torsades)

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient).
Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment, BLS Maneuvers, **Apply O2 (PRN)**

Establish History/Timeline of Present Illness

Confirm Heart Rate ≥ 120/min
QRS ≥ .12 Second without discernable P waves.

Polymorphic,
Changing amplitude and "twisting" QRS complexes? (YES)

NO

Monomorphic Rhythm? (YES)

CONSULT: Wide Complex Ventricular Tachycardia

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)
4 Lead ECG
12 Lead ECG

If Indicated:
Pain Scale
EtCO2 Monitoring
CO Monitoring

Perform Baseline & Post 12 Lead ECG's

Unstable? (YES) – See Pearls

Defibrillation 200J

***DO NOT DELAY**
initial defibrillation for IV/IO access.

Sedation Required? (YES)

Etomidate 10mg SIVP/IO

Rhythm Conversion Successful? (NO)

Defibrillation 300J
Repeat – 360J, repeat PRN

Continued Sedation Required? (YES)

REPEAT – Etomidate x 1 Time @ (5) Min – PRN

Regardless of Conversion (Administer)

Magnesium Sulfate 2g IVD over 10-20 min

Stable? (YES)

Magnesium Sulfate 2g IVD over 10-20 min

*Give the entire dose even if the rhythm converts prior to full administration.

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

Etomidate | Magnesium Sulfate

Polymorphic Ventricular Tachycardia (Torsades)

Information: Torsades de Pointes is an uncommon form of ventricular tachycardia characterized by a changing in amplitude or "twisting" of the QRS complexes. Torsades de Pointes is associated with QTc prolongation, which is the heart rate adjusted lengthening of the QT interval. The rhythm may terminate spontaneously or may degenerate into ventricular fibrillation if not treated immediately.

Pediatric Polymorphic Ventricular Tachycardia Emergencies:

Stable:

Magnesium Sulfate Infusion: #ml (per Med Tool) in 50ml D5W, same as
Magnesium Sulfate 40mg/kg (per Med Tool) in 50ml D5W (max dose 2g).
Administer - 60gtts/min with macro, 1gtt/1 second = 6ml/min (Total Admin = 8 min).

Unstable (Patient with altered mentation and poor perfusion.):

1. DEFIBRILLATION – 2J/kg. **DO NOT DELAY** initial defibrillation for IV/IO access.
2. Sedation Required – ETOMIDATE 0.15mg/kg IV/IO over 30 seconds, (max dose 10mg).
3. If not effective, DEFIBRILLATION – 4J/kg.
4. If not effective, DEFIBRILLATION – 10J/kg.
5. Regardless of rhythm conversion, administer Magnesium Sulfate Infusion:
   #ml (per Med Tool) in 50ml D5W, same as
   40mg/kg (per Med Tool) in 50ml D5W (max dose 2g).
   60gtts/min with macro, 1gtt/1 second = 6ml/min (Total Admin = 8 min).

Hypotensive (Age Appropriate):

NORMAL SALINE 20mL/kg IV/IO. Repeat as needed. Maximum – follow Medication Tool.
Assess lung sounds and blood pressure often.

PEARLS:

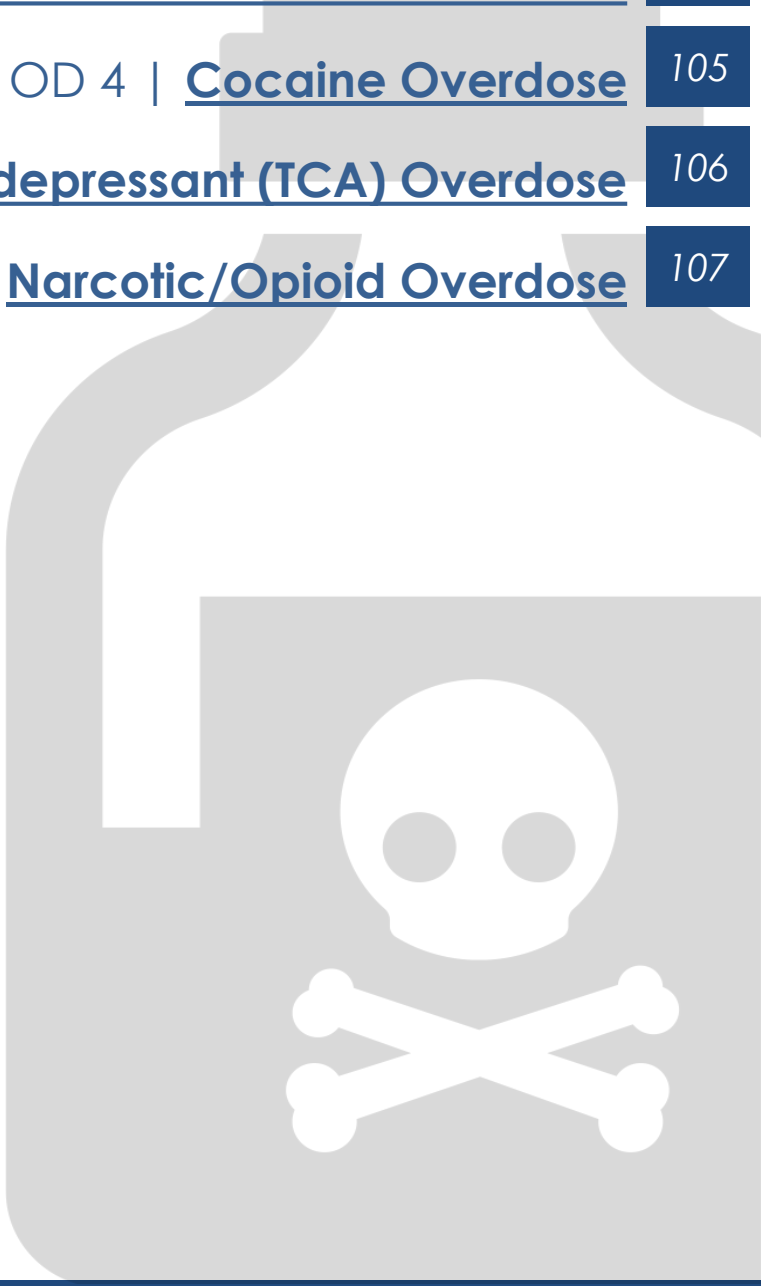
- UNSTABLE – hypotension or BP < 90 with signs of shock/poor perfusion, altered mentation, or chest pain with evidence of ischemia (STEMI, T wave inversions or depressions), and/or acute CHF.
- Document all rhythm changes and therapeutic interventions with ECG tracings.
- Continued sedation may be required for prolonged defibrillation times.
- Synchronized Cardioversion is likely not to work due to inability to clearly mark the R-wave within the QRS complex.
- All medication that can be given IV/IVP can also be given intraosseous, but do not have to be administered slowly.

DIFFERENTIAL DIAGNOSIS:

Artifact, Device Failure (Monitor or Limb Leads), Endocrine or Metabolic Emergency, Hyperkalemia, Accidental Medication Overdose, Illicit Drug Use, or Pulmonary.

Overdose Emergency Protocols

Section 6 | Overdose Emergencies Protocols



Overdose Standing Orders

OD-1
Published: 3/1/2021
Reviewed:
Updated: 1/15/2024

Information:

The goal for effectively managing patients with a suspected overdose and/or poisoning is to support Circulation – Airway – Breathing (CAB), terminate seizures, and reverse the toxic effects of the poison or medication with a specific antidote. The treating paramedic should consider contacting the Florida Poison Control Center at ***1-800-222-1222*** as soon as possible for treatment recommendations. These recommendations are based on the type and severity of the poisoning or overdose and the clinical condition of the patient. Document the treatment and the name of the representative on the ePCR.

Resuscitation of cardiac arrest patients should follow BLS and ACLS algorithms.

Scene Management:

1. Try to identify source of the overdose/poisoning, but not at the risk of having first responders come in contact with the substance without proper personal protective equipment (PPE).
2. If there are several patients with the same complaints, consider HazMat, WMD, or CO poisoning.
3. If contact with HazMat material/substance is suspected, refer to appropriate protocol (link below).
4. Request additional resources as needed.
5. Time of ingestion:
   - Most important aspect is the TIME OF INGESTION, the substance, amount ingested, and if any other substances were ingested.
   - Every effort should be made to elicit this information before leaving the scene.
   - Do not rely on patient history if ingestion, especially in self-harm attempts.
   - Make sure the patient is not carrying other medications or has any weapons (DLE to assist).

Patient Management:

1. Follow *Universal Patient Care* protocol.
2. Actively seizing, refer to *Seizure* protocol.
3. Position the airway. Suction and insert OPA/NPA as needed.
4. Oxygenate/Ventilate:
   - Maintain an SpO2 of 95% and EtCO2 levels between 35-45 mmHg, unless otherwise noted.
   - Ventilate/Intubate as needed.
   - If specific substance overdose suspected and medication **treatments** within that protocol are **failing** (respiratory status does not improve) despite continued administrations, **suspect multiple OD substances** are involved. **Secure an advanced airway.**
5. Circulation:
   - Support blood pressure initially with fluids. Many medications depress myocardial contractility and heart rate, which predispose the patient to heart failure even with boluses as little as 500mL. Assess lung sounds and blood pressure after each 500mL bolus.
6. Assess blood glucose level (BGL). If less than 60 mg/dL and associated with altered mental status, refer to the *Diabetic Emergencies* protocol.
7. If transport from scene is delayed and the patient is unresponsive without a suspected spinal cord injury, place the patient in the recovery position.

Beta Blocker Overdose

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment, BLS Maneuvers, **Apply O2 (PRN)**

Establish History/Timeline & Amount Ingested

Confirm Heart Rate
Mechanical (Palpate) and Electrical (ECG)

Asymptomatic vs. Symptomatic
Hypotension, Poor Perfusion, or Shock

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)
4 Lead ECG
12 Lead ECG

If Indicated:
Pain Scale
EtCO2 Monitoring
CO Monitoring

Transcutaneous Pacing Procedure

YES

NO

Establish IV Access
Consider Large Bore or 2 Access Sites

Normal Saline 500mL Bolus
REPEAT as needed, Titrate to SPB ≥ 90 mmHg
Maximum of 1L
*Assess Lung Sounds and BP every 500ml.

Nausea and/or Vomiting
Ondansetron 4mg IV/IO/IM

Establish IV Access TKO

Question, Observe, and Reassess

Perform Multiple
12 Lead ECG's

Improvement? (NO)
Refractory Hypotension? (YES)

Glucagon 1mg IV/IO
REPEAT – Glucagon
(4) Times, (2) Min – PRN & SPB ≥ 90 mmHg

Improvement? (NO)
Refractory Bradycardia/Heart Blocks? (YES)

Transcutaneous Pacing (TCP)

Sedation Required? (YES)

Preferred - Etomidate 10mg SIVP/IO or

Secondary - Midazolam 5mg SIVP/IO

REPEAT – Etomidate x 1 Time @ (5) Min – PRN

REPEAT – Midazolam x 1 Time @ (5) Min – PRN

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

Beta Blocker Overdose References

Information: Beta-Blockers (BBs) are used mainly in the treatment of hypertension, heart failure, tachydysrhythmias, and angina pectoris. In addition to cardiovascular disorders, beta-blockers are also used in the management of anxiety, migraine headache, glaucoma, tremor, hyperthyroidism, and various other disorders. Beta-blocker overdose is closely related to the epidemiology of depression and the presence of coexisting medical conditions that are treated with beta-blockers. In one study, patients who overdosed on beta-blockers were more likely to be women (3:1) with a mean age of 30 years. Two-thirds of these patients overdosed on someone else's medication or were using beta-blockers for noncardiac indications (e.g., migraine, tremor, thyrotoxicosis).

Common Beta-Blockers include: Atenolol, Carvedilol, Metoprolol, and Propranolol.

Pediatric Beta Blocker Overdose:

Transcutaneous Pacing Procedure

Hypotensive (Age Appropriate):

1. NORMAL SALINE 20mL/kg IV/IO. Repeat as needed. Maximum – follow Medication Tool.
   Assess lung sounds and blood pressure often.
2. GLUCAGON 1mg IV/IO every minute until hypotension resolves. Max dose 4mg.
   0.5mg for patients less than 20kg, if available.

Nausea/Vomiting:

Weighing less than 30kg (65 lbs.), ZOFRAN 0.1 mg/kg slow IV/IO (Max dose of 4mg).
Weighing greater than 30kg, ZOFRAN adult dose, 4mg slow IV/IO.

Refractory Bradycardia:

1. Transcutaneous Pacing – set rate at 100 beat per minute.
2. Sedation Required – ETOMIDATE 0.15mg/kg IV/IO over 30 seconds, (max dose 10mg).

PEARLS:

- **UNSTABLE – hypotension or BP < 90 with signs of shock/poor perfusion and altered mentation.**
- **Bradycardia associated with hypotension may be the first clue to diagnose beta-blocker overdose.**
- **In comparison to calcium channel blocker overdose, which may mimic beta-blocker overdose, patients with BB toxicity present with hypoglycemia and altered mental status.**
- Document all rhythm changes and therapeutic interventions with ECG tracings.
- Assess lung sounds frequently. A decrease in myocardial contractility may cause myocardial depression and limit the amount of fluids the patient can tolerate.
- Check BGL and treat hypoglycemia as needed.
- Be suspect of multiple substance overdose when found to be intentional.
- The Florida Poison Information Center may be contacted at: 1-800-222-1222.

Calcium Channel Blocker Overdose

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment, BLS Maneuvers, **Apply O2 (PRN)**

Establish History/Timeline & Amount Ingested

Confirm Heart Rate
Mechanical (Palpate) and Electrical (ECG)

Asymptomatic vs. Symptomatic
Hypotension, Poor Perfusion, or Shock

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)
4 Lead ECG
12 Lead ECG

If Indicated:
Pain Scale
EtCO2 Monitoring
CO Monitoring

Transcutaneous Pacing Procedure

YES

Establish IV Access
Consider Large Bore or 2 Access Sites

Normal Saline 500mL Bolus
REPEAT as needed, Titrate to SPB ≥ 90 mmHg
Maximum of 1L
*Assess Lung Sounds and BP every 500ml.

Nausea and/or Vomiting
Ondansetron 4mg IV/IO/IM

Improvement? (NO)
Refractory Hypotension? (YES)

Calcium Chloride 1gram Slow IV/IO over 2 minutes

Improvement? (NO)
Refractory Bradycardia/Heart Blocks? (YES)

Transcutaneous Pacing (TCP)

Sedation Required? (YES)

Preferred - Etomidate 10mg SIVP/IO or

Secondary - Midazolam 5mg SIVP/IO

REPEAT – Etomidate x 1 Time @ (5) Min – PRN

REPEAT – Midazolam x 1 Time @ (5) Min – PRN

NO

Establish IV Access TKO or Saline Lock

Question, Observe, and Reassess

Hypoglycemia? (YES)

High suspicion of OD using prescribed medication, think Beta Blocker Overdose.

CONSULT: Beta Blocker Overdose

Perform Multiple
12 Lead ECG's

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

Calcium Chloride | Etomidate | Midazolam | Ondansetron

MAIN MENU | REFERENCES/PEARLS | PEDIATRIC | OVERDOSE

Calcium Channel Blocker Overdose References

Information: Calcium Channel Blockers (CCBs) are among the most used cardiovascular drugs in the adult population. Like most other medications, when calcium channel blockers are taken beyond the appropriate recommended dosage, they can have untoward toxicities with a wide range of complications that can even be fatal. In addition to cardiovascular disorders, Calcium channel blockers treat a wide array of clinical conditions including hypertension, supraventricular tachycardia, vasospasm, and migraine headaches. Poisoning with these agents can have severe hemodynamic effects and be fatal.

Common Calcium Channel Blockers include: Norvasc, Cardizem, Cardene, and Procardia.

Pediatric Calcium Channel Blocker Overdose:

Transcutaneous Pacing Procedure

Hypotensive (Age Appropriate):

1. NORMAL SALINE 20mL/kg IV/IO. Repeat as needed. Maximum – follow Medication Tool.
   Assess lung sounds and blood pressure often.
2. CALCIUM CHLORIDE 10mg/kg Slow IV/IO over 2 minutes – follow Medication Tool.
   Repeat every 5-10 minutes until symptoms resolve.
   (Maximum Combined Dose – 1gram)

Nausea/Vomiting:

Weighing less than 30kg (65 lbs.), ZOFRAN 0.1 mg/kg slow IV/IO (Max dose of 4mg).
Weighing greater than 30kg, ZOFRAN adult dose, 4mg slow IV/IO.

Refractory Bradycardia:

1. Transcutaneous Pacing – set rate at 100 beat per minute.
2. Sedation Required – ETOMIDATE 0.15mg/kg IV/IO over 30 seconds, (max dose 10mg).

PEARLS:

- **UNSTABLE – hypotension or BP < 90 with signs of shock/poor perfusion and altered mentation.**
- **Bradycardia associated with hypotension may be the first clue to diagnose beta-blocker overdose.**
- **In comparison to calcium channel blocker overdose, which may mimic beta-blocker overdose, patients with BB toxicity present with hypoglycemia and altered mental status.**
- Document all rhythm changes and therapeutic interventions with ECG tracings.
- Assess lung sounds frequently. A decrease in myocardial contractility may cause myocardial depression and limit the amount of fluids the patient can tolerate.
- Check BGL and treat hypoglycemia as needed.
- Be suspect of multiple substance overdose when found to be intentional.
- The Florida Poison Information Center may be contacted at: 1-800-222-1222.

Cocaine Overdose

OD-4
Published: 3/1/2021
Reviewed:
Updated: 1/15/2024

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment, BLS Maneuvers, **Apply O2 (PRN)**

Establish History/Timeline & Amount Ingested

Confirm Heart Rate
Mechanical (Palpate) and Electrical (ECG)

Asymptomatic vs. Symptomatic
Tachycardias, SVT, and Ventricular Dysrhythmias, Chest Pain, Seizures, Excited Delirium, and Hyperpyrexia (Elevated Body Temperature)

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)
4 Lead ECG
12 Lead ECG

If Indicated:
Pain Scale
EtCO2 Monitoring
CO Monitoring

Actively Seizing? (YES)

CONSULT: Seizure Protocol

Persistent Chest Pain? (YES)

CONSULT: Chest Pain / Suspected Cardiac Event Protocol

Agitated/Delirium? (YES)

CONSULT: Behavioral/Agitated Delirium Protocol

Temperature 104° F (40° C) and Above
BEGIN RAPID COOLING

If Dysrhythmia Persists? (YES)

CONSULT: Appropriate Protocol

Symptomatic? (YES)
Hypotension? (NO)

Establish IV Access TKO / Saline Lock

Midazolam 5mg IV/IO

REPEAT – Midazolam x 1 Time @ (5) Min – PRN
Total Maximum Dose – 10mg

Presented w/ Chest Pain? (YES)
No Relief/Response After Midazolam? (YES)

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

Tricyclic Antidepressant (TCA) Overdose

OD-5
Published: 3/1/2021
Reviewed:
Updated: 1/15/2024

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment, BLS Maneuvers, **Apply O2 (PRN)**

Establish History/Timeline & Amount Ingested

Confirm Heart Rate
Mechanical (Palpate) and Electrical (ECG)

Asymptomatic vs. Symptomatic
Hypotension, Poor Perfusion, Shock, or Wide QRS

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)
4 Lead ECG
12 Lead ECG

If Indicated:
Pain Scale
EtCO2 Monitoring
CO Monitoring

Perform Multiple 12 Lead ECG's

YES

Establish IV Access
Consider Large Bore or 2 Access Sites

Normal Saline 500mL Bolus
REPEAT as needed, Titrate to SPB ≥ 90 mmHg
Maximum of 1L
*Assess Lung Sounds and BP every 500ml.

QRS Complex > .10 Seconds (2.5 ECG Boxes)

Sodium Bicarbonate 50mEq Slow IV/IO

ECG Changes Resolved? (NO)

REPEAT – Sodium Bicarbonate
(2) Times, (5) Min, PRN until Resolved
Total Maximum Dose – 150mEq

NO

Establish IV Access TKO or Saline Lock

Question, Observe, and Reassess

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

PEARLS:

- **4 major areas of toxicity: seizures, dysrhythmias, hypotension, decreased mental status or coma; rapid progression from alert mental status to death.**
- **TCAs cause death primarily through lethal arrhythmias. A wide QRS is an ominous sign and must be treated with Sodium Bicarbonate.**
- **Pediatric treatment is the same as adult treatment. A wide QRS complex is greater than 2 ECG boxes (.08 seconds). Refer to *Medication Tool,* DO NOT exceed 3 doses or the adult total maximum dose.**
- Common Tricyclic Antidepressants include Amitriptyline, Desipramine, and Doxepin.
- Document all rhythm changes and therapeutic interventions with ECG tracings.
- Be suspect of multiple substance overdose when found to be intentional.
- The Florida Poison Information Center may be contacted at: 1-800-222-1222.

Sodium Bicarbonate

Narcotic/Opioid Overdose

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment / Establish History / Timeline

Assess Consciousness/Mentation

Airway Control, Intact Gag Reflex?

Respiratory – Rate/Effort/Adequacy?

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
EtCO2 Monitoring
Temperature
Blood Glucose (BGL)
4 Lead ECG

If Indicated:
12 Lead ECG
Pain Scale
CO Monitoring

Adequate? (YES)

Monitor Pulse Oximetry

Monitor End Tidal CO^2

Apply O2 (PRN)

Maintain $SaO^2 \geq 94\%$

Adequate? (NO)

BLS Maneuvers:
Oral/Nasal/Deep Suctioning (PRN)
OPA / NPA Placement
Bag-Valve-Mask with **Oxygen**

Monitor Pulse Oximetry / End Tidal CO^2

Maintain $SaO^2 \geq 94\%$ and $EtCO^2$ 35-45 mmHg.

High Suspicion of Narcotic/Opioid OD? (YES)

Narcan Administered Prior to Arrival? (YES)

Establish IV/IO Access TKO / Saline Lock

Narcan 0.5-2.0mg IV/IO

REPEAT – Narcan every 2-3 minutes until respiratory rate is 12 BPM and up.

Total Maximum Dose – 10mg
This includes ALL Narcan administered prior.

Narcan Administered Prior to Arrival? (NO)

Narcan 4mg IN

Establish IV Access TKO / Saline Lock

Narcan 0.5-2.0mg IV/IO

REPEAT – Narcan every 2-3 minutes until respiratory rate is 12 BPM and up.

Total Maximum Dose – 10mg

Improvement? (NO)
Need for Advanced Airway? (YES)

EXIT TO: Airway

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

Naloxone/Narcan

Narcotic/Opioid Overdose References

Information: The goal for managing a narcotic overdose is to maintain adequate respirations, not to fully reverse the sedative effects of the narcotics. Full reversal can cause non-cardiogenic pulmonary edema, and violent behavior.

Every attempt should be made to transports patients whom level of consciousness has improved post treatment (Naloxone administration) while on scene and is refusing transport to hospital ED for further evaluation/care. There is a high level of concern for rebound unconsciousness when the amount taken, or potency of an illicit narcotic is unknown. If needed, request the assistance to DLE to facilitate transport.

Common narcotics include: Codeine, Dilaudid, Heroin, Methadone, Oxycontin, Vicodin, Lorcet, Lortab, and Fentanyl (various derivatives).

Pediatric Narcotic/Opioid Overdose:

Recent department cases of narcotic overdose involving young children have been accidental in nature. Immediately evaluate the patient, get a quick history, and events leading up to 911 call. When questioning, include getting a history and medications proscribed of those living within the location. This may help in determining accidental contact/ingestion.

1. Maintain an SpO_2 of 95% and an $EtCO_2$ between 35-45 mmHg.
2. Narcan IV/IO/IM – follow Medication Tool. **Maximum single dose 0.5mg IV/IO/IM.**
3. Repeat every 2-3 minutes prn for decreased respirations. **Maximum total dose 10mg.**
   - Less than 20 breaths/minute for children
   - Less than 40 breaths/minute for neonates)

Hypotensive (Age Appropriate):

1. NORMAL SALINE 20mL/kg IV/IO. Repeat as needed. Maximum – follow Medication Tool.

Assess lung sounds and blood pressure often.

PEARLS:

- **Crew/responders' safety is the main priority. Wear proper PPE and avoid contact with unknown substances.**
- Opioids and opiates may require higher doses of Naloxone to improve respiration, in certain circumstances up to 10mg. If a patient has not responded to 10mg total of Naloxone, consider another cause of altered mental status.
- Consider physical restraints prior to giving Naloxone.
- Assess respiratory rate and effort frequently.
- Certain Fentanyl analogues (Acrylfentanyl and Tetrahydofuran Fentanyl) are extremely potent and may be resistive to Naloxone administration. If identified, aggressive airway management may be required.
- Be suspect of multiple substance overdose when found to be intentional.
- The Florida Poison Information Center may be contacted at: 1-800-222-1222.

Environmental Emergency Protocols

Section 7 | Environmental Emergencies Protocols

Scuba Diving Emergencies

Information: Barotrauma and decompression sickness/illness are caused by changes in the surrounding atmospheric pressure beyond the body's capacity to compensate for excess gas load. These injuries are most associated with the use of SCUBA (Self-Contained Underwater Breathing Apparatus). SCUBA diving emergencies can occur at any depth, with the most serious injuries manifesting symptoms after a dive. If a patient took a breath underwater, from any source of compressed gas (e.g., submerged vehicle, SCUBA) while greater than three (3) feet in depth, the patient may be a victim of barotrauma.

Barotrauma happens on ascent, while the diver is returning to the surface and the compressed air in their body expands. Signs and symptoms usually present within 10 minutes of returning to the surface. Barotrauma may cause several injuries to occur, including arterial gas embolism (AGE), pneumothorax, pneumomediastinum, subcutaneous emphysema, and the "squeeze."

- The most dangerous is pulmonary barotrauma. This happens when a person takes a breath of compressed air at depth (as shallow as 4 feet) and holds their breath while ascending. Lung tissue would be compromised, leading to several possible resulting injuries: Subcutaneous emphysema, mediastinal emphysema, pneumothorax, or an arterial gas embolus that may end up anywhere in the body, to include the brain.
- Other less deadly barotrauma injuries may result from breathing compressed gas such as: eardrum rupture, sinus issues, middle ear injuries, eye injuries from a mask squeeze, etc.

Decompression Sickness "the bends" happens after a deep or long dive. It is the result of compressed nitrogen that was absorbed by the body being released as gas bubbles in a diver's body. It is very difficult to diagnose or rule out decompression sickness in the field. Signs and symptoms of decompression sickness can present immediately in severe cases, and up to 24 hours after a dive. Any patient with these signs and symptoms who has used SCUBA gear or compressed air within a 48-hour period shall be considered a dive emergency, unless it is certain that the patient has had an unrelated trauma. Signs and Symptoms include:

- Stroke-like (visual disturbances, AMS, paralysis or weakness)
- Numbness/Tingling (pins and needles)
- Bowel/Bladder Dysfunction,
- Itchy Skin or Rash
- Joint Pain
- Neurological Issues (extreme fatigue, vertigo)
- Shortness of Breath or Sudden Onset/Uncontrollable Cough

Other Injuries/Illnesses: Anything that can happen to a person at home can happen underwater. Cardiac, respiratory or diabetic issues, allergic reaction or anaphylactic shock, etc. Follow the appropriate protocols in addition to guidelines suggested by Divers Alert Network (DAN).

Scuba Diving Emergencies

Treatment Guidelines (Adult and Pediatrics):

- All patients must receive high flow oxygen, even with a 100% pulse oximetry. The oxygen will help the patient off gas the nitrogen their body absorbed while diving.
- Maintain the $EtCO_2$ between 35-45 mmHg.
- If patient is apneic or obtunded, assist respirations and intubate prn.
- Place the patient in a supine position.
- Treat arrhythmias as per appropriate protocol.
- Consider a tension pneumothorax.
- Neurological Impairment, preform a RACE Assessment.
- Establish IV/IO Access, administer fluids. Maximum of 1L *Assess Lung Sounds and BP every 500mL.
- If the patient has shortness of breath, decreased breath sounds, or hemoptysis, fluids should be decreased to a KVO rate.

Cardiac Dysrhythmia? (YES)
CONSULT: Appropriate Protocol

RACE Alert Checklist

Needle Decompression

Transport Decision:

- Minor injuries can go to the closest ED.
- Suspected decompression sickness to the nearest ED with a helipad.
- Suspected pulmonary barotrauma, transport to a trauma center.
- Cardiac Arrest should be transported to the closest ED.
- There are only two hospitals that can handle confirmed dive related emergencies:

  HCA Florida Mercy Hospital (Miami) and St. Mary's Medical (Palm Beach)
- Consider Air Rescue transport (500 maximum altitude)

Request Department of Law Enforcement:

In the event that an investigation is required, the patient's personal belongings and dive equipment must be secured. Have a DLE agency or FWC/USCG assist with securing these items.

Dive History:

Try to obtain an accurate history of the day/trip (number of dives, depth of the dive(s), interval between dives and type of air mixture used in SCUBA tanks).

- Was there a dive buddy? (if so, get contact information.)
- Was there a dive plan? (if so, was it followed?)
- Was the diver using a dive computer or dive tables?
- Was the ascent rate controlled? (Need for a safety stop?)

DAN DIVERS ALERT NETWORK
Emergency Hotline (24-7)
919-684-9111

Fatal Drowning/Non-Fatal Drowning

Information: Drowning is the leading preventable cause of non-intentional traumatic death. Guidelines have standardized the definitions related to drowning to ensure a consistent approach to reporting and studying these incidents. Terms such as "near-drowning," "secondary drowning," "wet drowning," and "dry drowning" should not be used, accepted definitions:

- Drowning - The process of experiencing respiratory impairment from submersion in liquid.
- Fatal Drowning - A drowning event with a fatal outcome.
- Non-Fatal Drowning – A drowning event in which the process of respiratory impairment is stopped before death, and the victim survives. These incidents are further classified based on the severity of respiratory impairment immediately after the drowning process has stopped:
  - Mild Impairment: Breathing, involuntary distressed coughing and fully alert.
  - Moderate Impairment: Difficulty breathing and/or disoriented, but conscious.
  - Severe Impairment: Not breathing and/or unconscious.
- Rescue – An intervention that prevents progression to drowning in an individual who is submerged but at no time develops respiratory symptoms or impairment.

Classifications based on type or composition of submersion fluid (salt-water versus fresh water) also have been de-emphasized. Although there are theoretical differences that have been reported in laboratory conditions, these have not been found to be clinically significant.
The composition of the aspirated fluid is less important than the quantity. Aspiration of 1 to 3 mL/kg of liquid compromises the function of pulmonary surfactant and leads to respiratory compromise and hypoxemia. However, there are differences in fluid composition that can affect a patient's course and management. For example, the temperature of the water, tonicity, and the presence of contaminants may affect condition, for example:

- Cold water submersion can cause ventricular dysrhythmias.
- Salt-water drowning that results in cardiac arrest seemingly has worse outcomes, although multiple confounders exist.
- Water with high pathogen load (e.g., sewage) increases risk for infection and sepsis.

Injury of the cervical spine is not common in patients with submersion injuries, but precautions should be taken if there is a concerning history. These circumstances include a history of diving, use of a water slide, signs of injury, or signs of alcohol intoxication. In the absence of such indicators, spinal injury is unlikely. Manual cervical spine stabilization, use of c-collar, and *Selective Spinal Motion Restriction* may impede timely and adequate treatment.

The most important and detrimental consequence of submersion in liquid is hypoxia. Therefore, **oxygenation, ventilation, and perfusion should be restored as rapidly as possible.** This will require immediate CPR and airway management.

All non-fatal drowning victims, despite severity will need hospitalization because of the severity of illness, concern for clinical deterioration, need for supportive care, or treatment of organ-specific complications, and therefore be transported for ED supervision. It is not entirely correct to believe that Florida, a sub-tropical location can not be the location of a drowning involving a hypothermic patient. All patients with the possibility of hypothermia will be transported, unless obvious traumatic injuries incompatible with life are present. Refer to *Determination of Death in the Field protocol.*

Fatal Drowning/Non-Fatal Drowning

Treatment Guidelines (Adult and Pediatrics):

Fatal Drowning:

- Oxygenation, ventilation, and perfusion should be restored as rapidly as possible. Immediate ventilation is a priority.
- Initiate the *High-Performance CPR* protocol and follow the appropriate *Cardiac Arrest* protocol based on initial rhythm.
- Remove patient's wet clothes, dry, and cover with blankets. (Must be saved for DLE.)
- All patients with the possibility of hypothermia will be transported, unless obvious traumatic injuries incompatible with life are present. Refer to *Determination of Death in the Field* protocol.

Non-Fatal Drowning:

- All patients must receive high flow oxygen, even with a 100% pulse oximetry.
- Maintain the EtCO2 between 35-45 mmHg.
- Treat cardiac arrhythmias as needed. Refer to *Cardiac Emergencies* protocols.
- Establish IV/IO Access, if the patient is hypotensive, administer fluids:
  - Adults - Maximum of 1L - Assess Lung Sounds and BP every 500mL.
  - Pediatrics - 20mL/kg IV/IO. Repeat as needed. Maximum – follow Medication Tool.

Assess lung sounds and blood pressure often.

- If the patient has shortness of breath, decreased breath sounds, or hemoptysis, fluids should be decreased to a KVO rate.
- If the patient has shortness of breath with pulmonary edema and found to be hypotensive, refer to *Hypotensive/Shock (Non-Trauma)* protocol and limit fluid administration.
- If the patient has shortness of breath with notable rales upon assessing lung sounds, refer to *Pulmonary Edema (CHF)* protocol and for adults only, consider CPAP @ 10cm PEEP.
- If the patient has shortness of breath with wheezes upon assessing lung sounds, treat bronchospasms with Albuterol and for adults only, consider CPAP @ 10cm PEEP.
- Indications for advanced airway and possible sedation:
  - Respiratory failure or apneic with spontaneous circulation.
  - Signs of neurologic deterioration or inability to protect the airway.
  - Inability to maintain oxygen saturation (SpO2) above 90% despite use of a high-flow oxygen-delivery system or CPAP.
  - Evidence of ventilatory failure with worsening respiratory acidosis (increasing EtCO2) despite use of a high-flow oxygen-delivery system or CPAP.
- If an advanced airway is placed, an orogastric tube should be used to relieve gastric distension, which occurs from passive passage of fluid and is common in drowning patients.
- **All Non-Fatal Drowning patients despite presentation must be transported to the hospital for continued monitoring.**

Heat Emergencies

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient).
Consider Airborne, Contact, or Droplet Isolation.

Initial Assessment, BLS Maneuvers, **Apply O2 (PRN)**

Establish History/Timeline of Present Illness

Remove From Heat Source
Remove Clothing (Maintain Patient Modesty)

PRN - Apply Room Temperature Water to Skin and Increase Air Flow Around Patient. **Avoid Shivering!**

Assess Vital Signs
TEMPERATURE REQUIRED / Obtain Prior to Cooling

Required VS:
Palpated Pulse Rate
Respiratory Rate
Blood Pressure
Pulse Oximetry
Temperature
Blood Glucose (BGL)

If Indicated:
4 Lead ECG
12 Lead ECG
Pain Scale
EtCO2 Monitoring
CO Monitoring

Heat Stroke?

Signs/Symptoms:
Hot, Red-Flushed, Dry Skin
Absence of sweating
Altered Mentation, Slurred Speech
Agitation, Confusion, or Delirium
Unconscious, Coma

Nothing By Mouth (Avoid PO)

Temperature Below 104° F (40° C)

Normal Saline 500mL Bolus
*Assess Lung Sounds and BP
Repeat x 1, Maximum of 1L

Temperature 104° F (40° C) and Above
BEGIN RAPID COOLING

Apply ICE PACKS to axilla and groin area.
Do not cool to the point of shivering.

(CHILLED) Normal Saline 500mL Bolus
*Assess Lung Sounds and BP
Repeat x 1, Maximum of 1L

Actively Seizing? (YES)

CONSULT: Seizure Protocol

Lose of Airway Control? (YES)

CONSULT: Airway Protocol

Heat Cramps/Exhaustion?

Signs/Symptoms:
Cool, moist skin w/ goose-bumps in heat
Heavy Sweating
Feeling Faint and/or Lightheaded
Dizziness and/or Headache
Muscle Cramps

Nausea / Vomiting? (NO)

If Available,
Provide Oral Hydration (Water Preferred)

Nausea / Vomiting? (YES)

Nothing By Mouth (Avoid PO)

Normal Saline 500mL Bolus
*Assess Lung Sounds and BP
Repeat x 1, Maximum of 1L

Ondansetron 4mg IV/IO

Transport Decision (Closest Appropriate)

Monitor VS During Transport

Continue On-Going Assessment
Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

Patient Care Transfer
Demographics, Personal Property,
Summery of care and response to care.

Ondansetron

Heat Emergencies References

Treatment Guidelines (Pediatrics):

- **TEMPERATURE REQUIRED / Obtain Prior to Cooling.**
- Move patient into a shaded or air-conditioned area. Remove excessive clothing while maintaining modesty.

Heat Cramps/Exhaustion:

- If without nausea/vomiting, provide ORAL HYDRATION (preferably water) if available.
- Nausea/vomiting, nothing by mouth (avoid PO). Establish IV access and administer:
  - NORMAL SALINE 20mL/kg IV/IO. Repeat as needed. Maximum – follow Medication Tool.
    Assess lung sounds and blood pressure often.
- Weighing less than 30kg (65 lbs.), ZOFRAN 0.1 mg/kg slow IV/IO (Max dose of 4mg).
- Weighing greater than 30kg, ZOFRAN adult dose, 4mg slow IV/IO.

Heat Stroke:

- All patients must receive high flow oxygen, even with adequate pulse oximetry.
- Maintain the EtCO2 between 35-45 mmHg.
- Establish IV/IO access and administer:
  - NORMAL SALINE 20mL/kg IV/IO. Repeat as needed. Maximum – follow Medication Tool.
    Assess lung sounds and blood pressure often.

Temperature of 104° F (40° C) and Above - BEGIN RAPID COOLING:

Apply ICE PACKS to axilla and groin area. Do not cool to the point of shivering.

CHILLED NORMAL SALINE 20mL/kg IV/IO. Repeat as needed. Maximum – follow Medication Tool.
Assess lung sounds and blood pressure often.

- Treat cardiac arrhythmias as needed. Refer to the *Cardiac Emergencies* protocols.
- Treat active seizing, refer to the pediatric section of *the Seizure* protocol.
- Lose of airway control, refer to the *Pediatric Airway* protocol.

PEARLS:

- Monitor patient for an altered mental status, which may indicate a heat stroke.
- Patients with a heat-related illness associated with an altered mental status should be considered to have heat stroke once all the other possibilities for the AMS have been ruled out (hypoglycemia, drugs/alcohol, trauma, etc.).
- Sweating generally disappears as body temperature rises above 104°F (40°C).
- In exertional heat stroke (athletes, hard labor), the patient may have sweated profusely and be wet on exam.
- When treating athletic related heat emergencies, rapid cooling takes precedence over transport as early cooling decreases morbidity and mortality. If available, immerse in an ice water bath for 5 – 10 minutes. Monitor core temperature and remove patient when temperature reaches 102.5°F (39°C). Your goal is to decrease core temperature below 104°F (40°C) with target of 102.5°F (39°C) within 15 minutes. Stirring the water aids in cooling.

DIFFERENTIAL DIAGNOSIS:

Fever (Infection), Dehydration, Medications, Hyperthyroidism (Thyroid Storm), Delirium Tremens (DT's), CNS Lesions or Tumor.

Bites, Envenomations, and Stings

Venom Response Team
786-331-4443

Venomous Snakes of Florida Guide

Treatment Guidelines (Adult and Pediatrics):

Snake Bites:

- Keep the patient calm and limit movement.
- Remove any constrictive jewelry or clothing.
- Mark area of swelling/edema/redness with a pen and note time.
- Splint any extremity that has received a bite and ensure it remains below the heart.
- DO NOT apply ice packs, tourniquets or constrictive bands.
- Establish IV/IO Access, if the patient is hypotensive, administer:

  Adults:

  1. Normal Saline, Maximum of 1L - Assess Lung Sounds and BP every 500mL.
  2. Diphenhydramine 50mg IV/IO.
  3. Methylprednisolone 125mg Slow IV/IO.

  Pediatrics:

  1. Normal Saline, 20mL/kg IV/IO. Repeat as needed. Maximum – follow Medication Tool.
     Assess lung sounds and blood pressure often.
  2. Diphenhydramine 1mg/kg IV/IO (Diluted).
  3. Methylprednisolone 2mg/kg Slow IV/IO.

MEDICATION	Gray	Pink	Red	Purple	Yellow	White	Blue	Orange	Green	Green	Green	Infusions	Normal Pediatric Vital Signs	TOOL
	3-5 KG	6-7 KG	8-9 KG	10-11 KG 1 Year	12-14 KG 2 Years	15-18 KG 3 Years	19-23 KG 5 Years	24-29 KG 7 Years	30-36 KG 9 Years	45 KG	55 KG			

Dog/Cat/Wild Animal Bites:

- Wound care as appropriate (DO NOT use hydrogen peroxide on deep puncture wounds or wounds exposing fat).
- Clean the wound area with soap and water or sterile water.
- Advise dispatch to contact animal control and the police department for identification and quarantine of the animal if necessary.
- Consider *Pain Control/Management* protocol as needed.

Human Bites:

- Wound care as appropriate (DO NOT use hydrogen peroxide on deep puncture wounds or wounds exposing fat).
- Clean the wound area with soap and water or sterile water.
- Advise dispatch to contact department of law enforcement if appropriate.
- Consider *Pain Control/Management* protocol as needed.

Diphenhydramine | Methylprednisolone

Bites, Envenomations, and Stings

Insect Stings (and Spider Bites):

- Remove the stinger by scraping the patient's skin with the edge of a flat surface (i.e., a sharp edged-card). DO NOT attempt to pull the stinger out, as this action may release more venom.
- Clean the wound area with soap and water or sterile water.
- Apply ice to relieve pain and swelling. DO NOT apply tourniquets or constrictive bands.
- Suspected allergic (anaphylactic) reaction, consult *Allergic Reaction* protocol.
- Consider *Pain Control/Management* protocol as needed.


Black Widow


Brown Recluse

Marine Animal (Envenomations):

- Stingray
- Scorpionfish
- Lionfish
- Zebrafish
- Stonefish
- Catfish
- Weeverfish
- Starfish
- Sea Urchin

- Suspected allergic (anaphylactic) reaction, consult *Allergic Reaction* protocol.
- Remove barb or spine. If in the thorax or abdomen, keep in place and stabilize object.
- Immerse the punctures in non-scalding hot water (if available) to achieve pain relief. May require 30 - 90 minutes. Do not delay transport if indicated.
- Clean the wound area with soap and water. Then irrigate with sterile water (avoid scrubbing).
- Consider *Pain Control/Management* protocol as needed.

Marine Animal (Stings):

- Man O' War
- Jellyfish
- Sea Nettle
- Irukandji
- Anemone
- Hydroid
- Fire Coral

- Suspected allergic (anaphylactic) reaction, consult *Allergic Reaction* protocol.
- Rinse skin with seawater (if available). Gently clean the wound area with soap and water. Then vigorously irrigate with sterile water (avoid scrubbing).
- DO NOT flush with fresh or sterile water, apply ice, or rub the skin. This will cause the nematocysts to fire. Attempting to neutralize with a weak acid may be more therapeutic (vinegar, etc.).
- Lift away tentacles as scrapping or rubbing will cause the nematocysts to firing.
- Immersion in non-scalding hot water (if available) to achieve pain relief. May require 20 - 30 minutes. Do not delay transport if indicated.
- Consider *Pain Control/Management* protocol as needed.

PEARLS:

- Do not put responders in danger attempting to capture an animal or insect for identification purposes.
- Avoid the organism or fragments of the organism as they may impart further sting or injury.
- Priority is removal of the patient from the water to prevent drowning.
- Patients can suffer cardiovascular collapse from both the venom and/or anaphylaxis even if seemingly minor.
- Sea creature stings and bites impart moderate to severe pain.
- Poison Control (1-800-222-1222) or MDFR Venom One Team (786-331-4443) may need to be contacted.

Trauma Care Protocols

MAIN MENU

Section 8 | Trauma Care Protocols

General Trauma Guidelines

TC-1
Published: 3/1/2021
Reviewed:
Updated: 1/15/2024

Information:

Scene Size-Up:

1. Conduct a scene size-up. (Number of patients)
2. Assure the well being of responders.
3. Determine or ensure scene safety before entering. (Utilize DLE if necessary)
4. If there are several patients with the same complaints, consider HazMat, WMD, or CO poisoning.
5. Utilize Triage System if the number of patients requires and consider tracking patient transports.

Scene Management:

- START or JumpSTART (ages 1-8) Triage System to triage multiple patients.
- LEVEL ONE TRAUMA patients shall be transported to closest appropriate Trauma Center,
- On-scene times for LEVEL ONE TRAUMA patients should be **10 minutes or less**. **On-scene times greater than 10 minutes shall have the reason for the delay documented in the ePCR report.**
- A minimum of 1 paramedic and 1 EMT must accompany a LEVEL ONE TRAUMA patient in the back of the rescue, provided it does not cause a significant delay in transport.

Patient Management:

Wound Care / Junctional Injuries

Combat Application Tourniquet (C-A-T)

- **Stop Major Bleeding -** If clotting agent is available, severe junctional hemorrhage (e.g., neck, axillary, thoracic, abdominal, pelvis and groin) and any other severe external hemorrhage that is not able to be easily controlled using a Combat Application Tourniquet (C-A-T) shall be controlled using clotting agent. Pack wound with clotting agent and maintain pressure for a minimum of one minute.
- IV attempts shall not delay transport. IO is acceptable utilizing good clinical judgement.
- One Large Bore IV @ KVO rate is acceptable when patient presents with manageable B/P.
- **Two Large Bore IV or One Large Bore IV/IO Combination – only required to treat Hemorrhagic Shock when mental status is deteriorated, and systolic B/P is less than 80mmHg.**
- The only things that can cause the treating paramedic to interrupt the primary survey are an unsafe scene or airway obstruction. Respiratory arrest, dyspnea, or bleeding control should be delegated to a crew member so that the treating paramedic does not have to interrupt the primary survey.
- **THE FOLLOWING CONDITIONS SHOULD BE MANAGED AS SOON AS THEY ARE DISCOVERED. THESE INTERVENTIONS SHOULD BE COMPLETED BY ANOTHER TEAM MEMBER SO THAT THE PRIMARY SURVEY IS NOT DISRUPTED.**
  1. Maintain airway (positioning, suctioning, ETT/IGEL, cricothyrotomy)
  2. Assist respirations for a respiratory rate less than 10 or EtCO2 greater than 45, SPO2 < 94%.
  3. Apply *Selective Spinal Motion Restriction* for neck tenderness or an AMS with MOI present
  4. Control major bleeding (direct pressure or a C-A-T application)
  5. Tension Pneumothorax (needle decompression)
- **Maintain Body Temperature –** It is understandable that providers will expose the trauma patient to locate and determine the extent/severity of injuries. Once this aspect of the patient assessment is complete, it is extremely important to maintain the patient's body temperature with blankets.

Hemorrhagic Shock Treatment

TC-2
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Reviewed:
Updated: 1/15/2024

Information:

Hemorrhagic Shock is a form of hypovolemic shock due to severe blood loss. Shock refers to the inadequate perfusion of tissues due to the imbalance between oxygen demand of tissues and the body's ability to supply it. **Two Large Bore IV or One Large Bore IV/IO Combination – only required to treat Hemorrhagic Shock when mental status is deteriorated, and systolic B/P is less than 80mmHg.**

ADULTS ONLY - Unless otherwise noted, IV fluids may be withheld to allow permissive hypotension. If the patient's mental status deteriorates and the SBP is less than 80mmHg, then fluid resuscitation must occur in measured increments to maintain a BP high enough for adequate peripheral perfusion (radial pulse). Permissive Hypotension is not allowed with head trauma or when a Traumatic Brain Injury (TBI) is suspected.

Permissive Hypotension is act of maintaining a blood pressure lower than physiologic levels in a patient that has suffered from hemorrhagic blood loss. The practice is employed to maintain adequate vasoconstriction, organ perfusion, and prevent an undesired coagulopathy during initial fluid resuscitation. Not to be practiced if head trauma or TBI is suspected.

Manage Life-Threatening Injuries per Applicable Protocols

Patient Assessment – Vitals Taken (B/P Confirmed)

AMS & Systolic BP < 80mmHg ? (YES)

Establish Large Bore Access x 2
Normal Saline 500mL Bolus
REPEAT as needed, Titrate to SPB ≥ 90 mmHg
Maximum of 1L
*Assess Lung Sounds and BP every 500ml.

FLUID RESUSCITATION (Adult) - Give only enough fluid to maintain a BP high enough for adequate peripheral perfusion (radial pulse). The presence of a radial pulse equates to a **SBP of 90 mmHg,** which is the goal of fluid resuscitation for a patient with suspected internal hemorrhage.

Blunt and/or Penetrating Trauma? (YES)
Injury occurred 3 hours or less? (YES)

Tranexamic Acid 2g in 50ml D5W
RAPID Infusion
10gtts/ml (macro) set – WIDE OPEN

SWAT Medics ONLY

During incidents where immediate patient care is initiated by the entry team,

Tranexamic Acid may be administered via SLOW IV/IO Bolus (Age/Dose Appropriate)

Pediatric Hemorrhage Shock Treatment:

1. Administer Normal Saline Bolus 20mL/kg and repeat to maintain systolic blood pressure normal for age. Maximum – follow Medication Tool.
2. Patients ≥ 5 y/o, administer Tranexamic Acid – RAPID Infusion:
   #ml (per Med Tool) in 50ml D5W, same as
   15mg/kg (per Med Tool) in 50ml D5W (max dose 2g)
   10gtts/ml (macro) set – WIDE OPEN

Tranexamic Acid

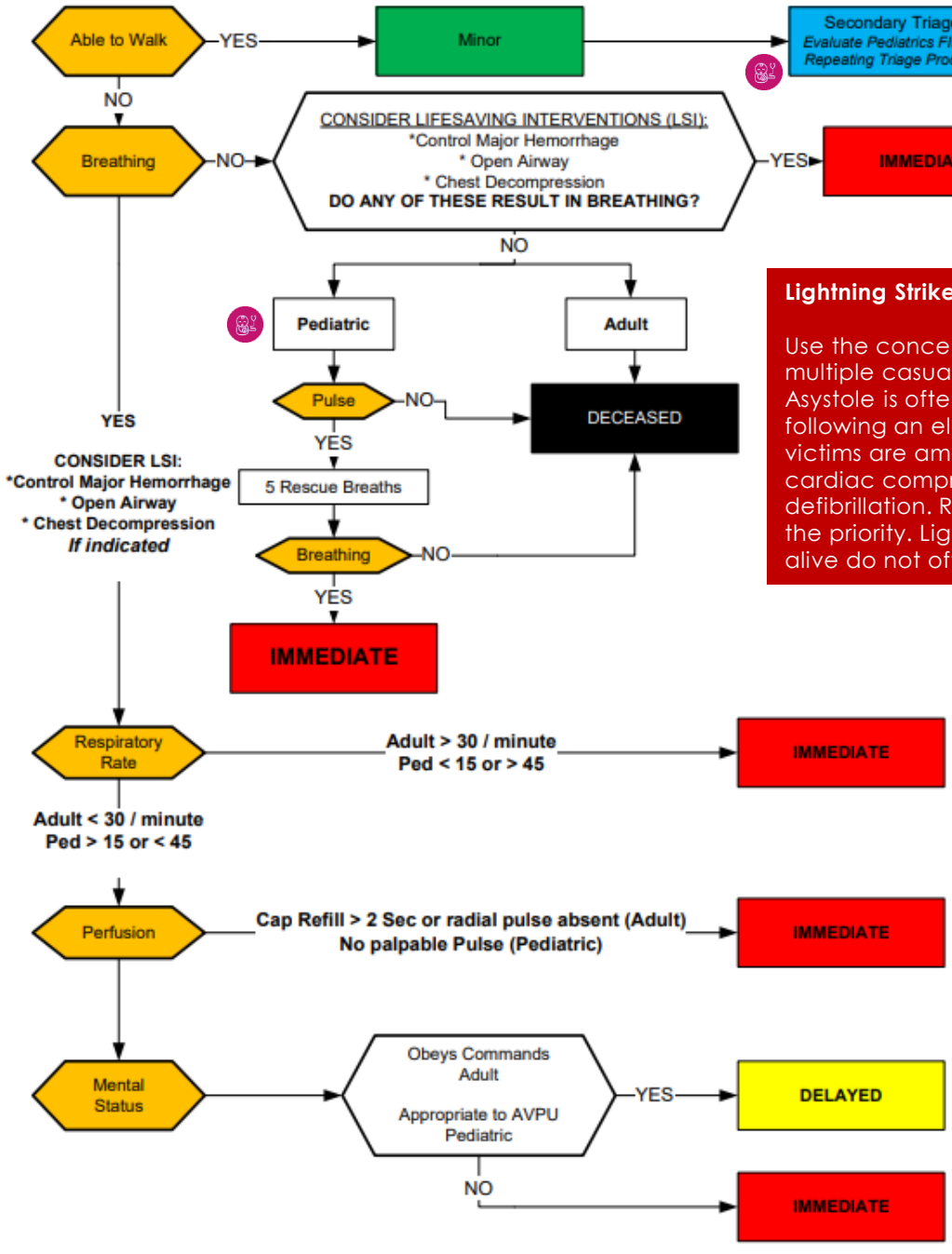
MCI - Modified START/JUMPSTART

TC-3
Published: 3/1/2021
Reviewed: 1/15/2024
Updated:

Information:

When approaching a multiple casualty incident where resources are limited:

- Triage decisions must be made rapidly with less time to gather information.
- Emphasis shifts from ensuring the best possible outcome for an individual patient to ensuring the best possible outcome for the greatest number of patients.



Lightning Strike (Reverse Triage):

Use the concept of reverse triage with multiple casualties of a lightning strike. Asystole is often the most common rhythm following an electrical insult. Lightning strike victims are amenable to airway, breathing, cardiac compressions as well as early defibrillation. Resuscitate lightning strikes as the priority. Lightning strike victims found alive do not often deteriorate quickly.

Mass Casualty Incidents

Level I = 5-10 patients
Level II = 11-20 patients
Level III = 21-100 patients
Level IV = 101-1000 patients
Level V = 1000+ patients

Trauma Telemetry Report

Broward County Unified Trauma Telemetry Report

Rescue Unit #:_____ Trauma Alert Type: Adult _____ OB >20weeks_____ Pediatric ≤15 YOA_____
Mode of Transportation: Ground_____ Air_____ ETA_____
Meets Color Criteria: Red_____ Blue_____ (1 red or 2 blue = Trauma Alert)
Meets Level 2 Criteria: _____

Adult Trauma Alert Criteria		
	Red Criteria (1 Required)	**Blue Criteria (2 Required)**
Airway	_____ Active airway assistance required	_____ Sustained respiratory rate ≥ 30
Circulation	_____ No radial pulse with sustained HR ≥ 120 or BP < 90 systolic	_____ Sustained HR ≥ 120
Fractures	_____ Multiple long bone FX sites	_____ Single long bone FX sites due to MVA or single long bone FX site due to fall ≥ 10 feet.
Cutaneous	_____ 2^0 or 3^0 burns > 15% BSA, electrical burns (high voltage/direct lightning) regardless of surface area, amputation proximal to wrist or ankle, penetrating injury to head, neck, or torso	_____ Major degloving, flap avulsion > 5 inches, or GSW to extremities
Best Motor Response (BMR)	_____ BMR ≤ 4, or exhibits presence of paralysis, suspicion of spinal cord injury, or loss of sensation	_____ BMR = 5
Mechanism of Injury		_____ Ejection from vehicle (excluding open vehicles) or deformed steering wheel
Age		_____ Anticoagulated Older Adult >55
Misc.	_____ Paramedic Judgment (Comment Below) _____ Glasgow Coma Score ≤ 12	_____ Blunt Abdominal Injury

Pediatric Trauma Alert Criteria		
	Red Criteria (1 Required)	**Blue Criteria (2 Required)**
Airway	_____ Assisted or Intubated	
Consciousness	_____ Altered mental status, paralysis, suspected spinal cord injury, or loss of sensation	_____ Amnesia or reliable HX of LOC
Circulation	_____ Faint or non-palpable carotid or femoral pulses, systolic BP < 50	_____ Carotid or femoral pulses palpable; no pedal pulses or systolic BP < 90
Fracture	_____ Any open long bone FX or multiple FX sites or multiple dislocations	_____ Single closed long bone FX site
Cutaneous	_____ Major soft tissue disruption, amputation proximal to wrist or ankle, 2^0 or 3^0 burns to 10% BSA, electrical burns (high voltage/direct lightning) regardless of surface area, penetrating injury to head, neck, or torso	
Misc.	_____ Paramedic Judgment	_____ Blunt Abdominal Injury
Size		_____ Red, Purple <11kg (<24 lbs.)

Level 2 Trauma Alert Criteria (Adult and Pediatric)		
_____ Falls > 12ft. Adult _____ Falls > 6ft. Pediatric	_____ Death of an occupant in the same passenger compartment	_____Any height fall adult >55 on anticoagulant/antiplatelet
_____ Extrication time > 15min.	_____ Major Intrusion into passenger compartment	_____ Paramedic Judgement
_____ Rollover motor-vehicle crash	_____ Separation from Bicycle	
_____ Burns involving the face, eyes, ears, hands, feet, or perineum that may result in functional or cosmetic impairment	_____ Pedestrian struck by vehicle not meeting the preceding automatic criteria (i.e. Adults < 15 mph and pediatrics < 5 mph)	

Paramedic Judgement Comments: _____

Trauma Telemetry Report

Broward County Unified Trauma Telemetry Report

Patient Evaluation

Age:_____ Sex: M or F Glasgow Coma Score (Adult): _____
Mechanism of Injury:_____

Initial Vital Signs: BP:_____/_____ Pulse: _____ Resp. Rate: _____ Skin: _____ Color: _____
Assessed Injuries:

Treatment Interventions: (Check all that apply)
☐ Oxygen ☐ C-Collar ☐ IV x _____ ☐ BVM ☐ Backboard ☐ ETT ☐ CPR

☐ Drug Therapy:
_____

☐ Other:
_____

Current Vital Signs: BP_____Pulse_____ Resp. Rate _____ Glasgow Coma Score _____
Additional Information: (If time permits)

Name:_____ Date of Birth: _____

Address:
_____

Past Medical History:
_____

Medications:
_____

Allergies:
_____

Glasgow Coma Score

Best Eye Response (4)
1 – No eye opening
2 – Eye opening to pain
3 – Eye opening to verbal command
4 – Eyes open spontaneously

Best Verbal Response (5)
1 – No verbal response
2 – Incomprehensible sounds
3 – Inappropriate words
4 – Confused
5 – Orientated

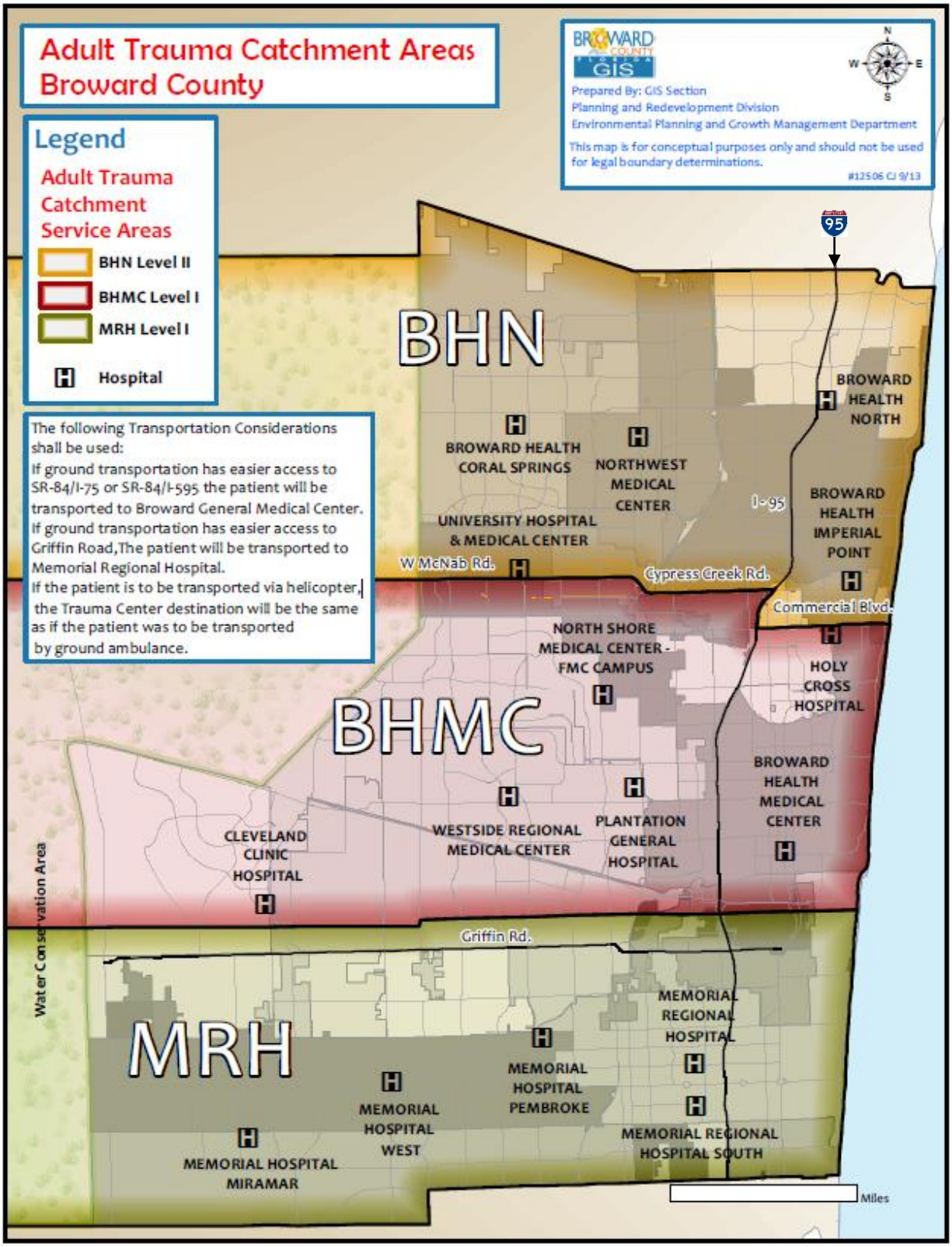
Best Motor Response (6)
1 - No motor response
2 – Extension to pain
3 – Flexion to pain
4 – Withdrawal from pain
5 – Localizing Pain
6 – Obeys Commands

Eye = _____ Verbal = _____ Motor = _____

Total E ( ) V (_) M ( ) = GCS _____

Note the Glasgow Coma Scale measures cognitive ability. Therefore, if injury (chronic or acute) has caused paraplegia or quadriplegia, alternate methods of assessing motor response must be used (e.g., ability to blink eyes = obeys commands).

Adult Trauma Catchment Areas



Pediatric Trauma Alert Criteria

TC-5
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Updated: 1/15/2024

In terms of trauma, all patients 15 y/o and younger are considered pediatrics. All pediatric trauma alert patients will be transported to the nearest appropriate Pediatric Trauma Center.

The EMS personnel shall assess all pediatric trauma patients using the following **"RED"** criteria and if **any one** of the following conditions are identified, the patient shall be considered a pediatric trauma alert patient:

- **Airway:** Active ventilation assistance required due to injury(ies) causing ineffective or labored breathing beyond the administration of oxygen.
- **Consciousness:** Patient exhibits an altered mental status that includes drowsiness; lethargy; inability to follow commands; unresponsiveness to voice or painful stimuli; or suspicion of a spinal cord injury with/without the presence of paralysis or loss of sensation.
- **Circulation:** Faint or non-palpable carotid or femoral pulse or the patient has a systolic blood pressure of less than 50mmHg.
- **Fracture:** Evidence of an open long bone (humerus, radius/ulna, femur, or tibia/fibula) fracture or there are multiple fracture sites or multiple dislocations (except for isolated wrist or ankle fractures or dislocations).
- **Cutaneous:** Major soft tissue disruption, including major de-gloving injury; or major flap avulsions; or 2nd or 3rd degree burns to 10 percent or more of the total body surface area; electrical burns (high voltage/direct lightning) regardless of surface area calculations; or amputation proximal to the wrist or ankle; or any penetrating injury to the head, neck or torso (excluding superficial wounds where the depth of the wound can be determined).

In addition to the criteria listed above in (1) of this section, a trauma alert shall be called when **"Blue"** criteria is identified from **any two** of the components included below:

- **Consciousness:** Exhibits symptoms of amnesia, or there is loss of consciousness.
- **Circulation:** Carotid or femoral pulse is palpable, but the radial or pedal pulses are not palpable, or the systolic blood pressure is less than 100mmHg.
- **Fracture:** Reveals signs or symptoms of a single closed long bone fracture. Long bone fractures do not include isolated wrist or ankle fractures.
- **Size:** Pediatric trauma patients weighing 11 kilograms or less, or the body length is equivalent to this weight on a pediatric length and weight emergency tape (the equivalent of 33 inches in measurement or less).

In the event none of the above criteria is identified in the assessment of the pediatric patient, the paramedic can call a **Trauma Alert** if, in his or her judgment, the trauma patient's condition warrants such action. Where paramedic judgment is used as the basis for calling a trauma alert, it shall be documented as required in the 64J-1.014 F.A.C., on the patient care report and the County Unified Trauma Telemetry Report (CUTT) (see 1.10.1).

Level II Trauma Alert Criteria

TC-6
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Information:

This applies to both adult and pediatric patients. Non-trauma alert patients that present with a **mechanism of injury suggestive of a significant injury** or in **the paramedic's judgment,** present with a **non-significant injury and/or taking an anti-coagulant (i.e., Coumadin) or anti-platelet (i.e., Plavix)**, the EMS unit will be required to triage and transport this patient to the nearest appropriate Trauma Center. LEVEL II Trauma criteria are as follows:

ONE OF THE FOLLOWING:

1. Falls > 12 feet (adults); falls > 6 feet (pediatrics)
2. Extrication time > 15 minutes
3. Rollover
4. Death of occupant in the same passenger compartment
5. Major intrusion into passenger compartment
6. SEPARATION from a bicycle
7. FALL FROM ANY HEIGHT IF ANTICOAGULATED OR ANTIPLATELET (ADULT OVER 55)
8. Paramedic judgment.

ANTIPLATELET (**NOT ASPIRIN**)
- PLAVIX (Clopidogrel)
- BRILINTA (Ticagrelor)
- EFFIENT (Prasugrel)

ANTICOAGULATION
- COUMADIN (Warfarin)
- PRADAXA (Dabigatran)
- XARELTO (Rivaroxaban)
- ELIQUIS (Apixaban)
- LOVENOX (Enoxaparin)

GRAY CRITERIA - (Informational Only)

Patients who do not meet "Trauma Alert" criteria, but meet one (1) or more of the following criteria may be at risk of serious injury and special consideration should be given to them, including bypass of a local hospital and transport to the nearest Trauma Center:

- Blunt head, chest or abdominal trauma on blood thinners with high risk of bleeding or history of a bleeding disorder.
- 65 years or older sustaining blunt trauma exhibiting minimal symptoms or borderline criteria.
- 65 years or older with SBP <110 mmHg.
- MVC > 20 mph, with seatbelt marks on the torso.
- MVC with partial ejection from an automobile.
- End stage renal disease on dialysis.

Trauma Arrest

TC-7
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Updated: 1/15/2024

Universal Patient Care Protocol

Utilize the appropriate PPE (crew & patient)

Survey the Scene / MCI?

Bring ALL required equipment to the patient.

Patient Contact – Clock Starts (10 Minutes)

Patient Assessment – Quick Survey
"Signs of Life" for any Responders, but lost?

SCENE SAFE

NO → Call for additional resources PRN. Stage if necessary.

YES

Signal 7 / DOA?

CONSULT: Determination of Death in the Field Protocol

NO

YES → Pronounce Patient via FIRECOM, document time, and coordinate with DLE.

BEGIN RESUSCITATION EFFORTS

Continuous Chest Compressions - No Interruptions
ECG Determination (Electrocution w/o Delay)
OPA / NPA Placement
Bag-Valve-Mask with **Oxygen**
Apply C-Collar (PRN)

Manage/Treat Immediate Life-Threats
Must Control Major Bleeding

Package/Remove Patient from Scene

Initiate Transport Immediately

CONTINUED CARE – During Transport (Preferred)

iGel or Advanced Airway
Establish Large Bore Access x 2 (Open)
Bilateral Chest Needle Decompression

Epinephrine 1mg IV/IO (1:10,000)
REPEAT – Epinephrine 1mg IV/IO (1:10,000)
Unlimited, (3-5) Min – PRN

Notification to Receiving ED - Level I Trauma (Code)

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

In traumatic arrest, **manual CPR is preferred** over the use of a LUCAS Device.

Under no circumstances is transport to be delayed or interrupted to apply the LUCAS Device. Remain with manual CPR through transport and transfer at ED.

Epinephrine

PEARLS:

- In general, resuscitation should be attempted for traumatic cardiac arrest patients with "signs of life" for any professional responders, especially in cases with short transport times to the trauma center (<15 minutes).
- "Signs of Life" include any pulse or blood pressure, any spontaneous respirations or movement, or reactive pupils.
- Consider medical cardiac arrest protocols if uncertainty exists regarding medical or traumatic cause of arrest.
- **On-scene times for LEVEL ONE TRAUMA patients should be 10 minutes or less. On-scene times greater than 10 minutes shall have the reason for the delay documented in the ePCR report.**

DIFFERENTIAL DIAGNOSIS:

Medical condition preceding traumatic event as cause of arrest., Tension Pneumothorax, Hypovolemic Shock, External Hemorrhage, Unstable Pelvic Fracture, Displaced Long Bone Fracture(s), Hemothorax, Intra-Abdominal Hemorrhage, or Retroperitoneal Hemorrhage.

Burn Injuries

Universal Patient Care Protocol

- Utilize the appropriate PPE (see PEARLS)
- Survey the Scene / Working Fire?
- Bring ALL required equipment to the patient.
- **Patient Assessment – Quick Survey**
- BLS Maneuvers
- Remove jewelry and other constricting items.

SCENE SAFE — **NO** → Call for additional resources PRN. Stage if necessary.

Electrical Burns

- Position of Comfort
- Treat Localized Burns
- 4 and 12 Lead ECG

Cardiac Arrest? (YES)

- Assess Rhythm
- Defibrillate Immediately - PRN
- **CONSULT:** Appropriate Cardiac Arrest Protocol

Chemical Burns

- Remove Clothing
- Brush off any visible dry powder or chemicals.
- Irrigate with copious amounts of water or NS.
- Ensure proper decontamination prior to transport to hospital ED.

Eye Involvement? (YES)

- **CONSULT:** Eye Injures Protocol

Thermal Burns

- Stop Burning Process - Irrigate with copious amounts of water or NS.
- Do not attempt to remove tar, clothing, etc., if adhered to the skin.

1st & 2nd Degree Burns < 15% BSA

- Dry Sterile Dressing or Burn Sheet

2nd Degree Burns > 15% BSA, or 3rd Degree Burns

- Establish IV/IO Access, administer fluids. Maximum of 1L
  *Assess Lung Sounds and BP every 500ml.

Need for Advanced Airway? (YES)

- **EXIT TO:** Airway

Smoke Inhalation? (YES)

- **CONSIDER:** CO and/or Cyanide Poisoning

Moderate to Severe Pain? (YES)

- **CONSULT:** Pain Control / Management Protocol

Pain Scale Assessment

- Transport Decision (Closest Appropriate)
- Monitor VS During Transport
- Continue On-Going Assessment, **Reassess Pain Scale**
  Treat as Needed & Re-Evaluate Interventions

Notification to Receiving ED

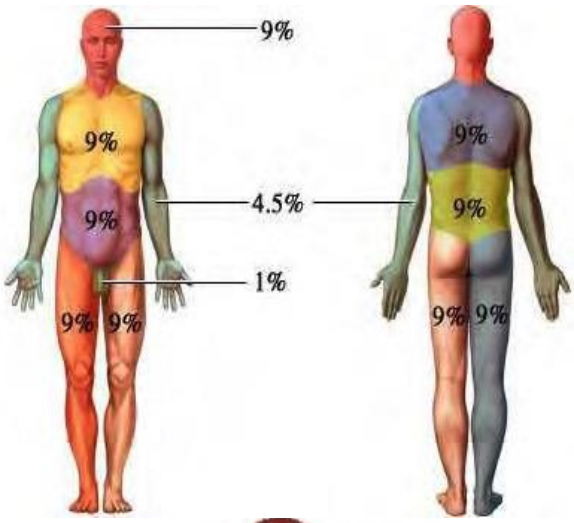
Patient Care Transfer
Demographics, Personal Property, Summery of care and response to care.

Burn Injuries

Information:

Consider whether a patient meets Trauma Alert Criteria. **Critical or Serious** burns should be transported directly to a Level I Trauma Center.

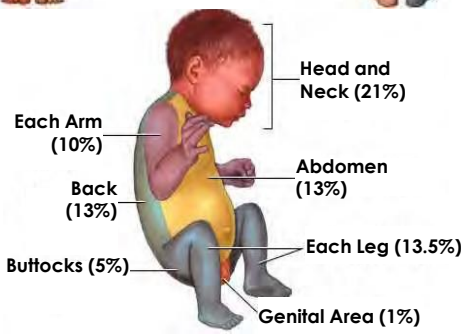
1. 2nd or 3rd degree burns > 15% total body surface area (TBSA) – **Level I**
2. 3rd (full thickness) degree burns > 5% TBSA for any age group
3. Circumferential burns of extremities
4. Electrical or lightning injuries – **Level I**
5. Suspicion of abuse or neglect
6. Inhalation injury
7. Chemical burns
8. Burns of face, hands, perineum, or feet
9. Burns with extremes of age or chronic disease



PEDIATRIC - Thermal Burns
Stop Burning Process - Irrigate with copious amounts of water or NS.
Do not attempt to remove tar, clothing, etc., if adhered to the skin.
1st & 2nd Degree Burns < 15% BSA
Dry Sterile Dressing or Burn Sheet
2nd Degree Burns > 15% BSA, or 3rd Degree Burns
Establish IV/IO Access, administer fluids. **NORMAL SALINE BOLUS** 20mL/kg IV/IO

↓

Respiratory Involvement? (YES)
INTUBATE EARLY - EXIT TO: Airway



PEARLS:

- Do not overlook the possibility of multisystem trauma.
- **Respiratory Involvement? (YES) Consider Intubation Early.** Tripod position/drooling, singed nasal hairs, hoarse voice/stridor and carbonaceous sputum are all indications for early airway intervention. Consider using an ETT 0.5 -1.0 mm smaller to accommodate for swelling.
- Assure whatever has caused the burn is no longer contacting the injury. (Stop the burning process!)
- Circumferential burns to extremities are dangerous, vascular compromise secondary to soft tissue swelling is likely.
- Burn patients are prone to hypothermia - never apply ice or cool the burn, must maintain normal body temperature.
- Evaluate the possibility of geriatric abuse with burn injuries in the elderly, and child abuse with pediatrics.
- Do not administer IM pain injections to a burn patient. IM dosing is variable in burn patients and may result in over or under dose.

Head Trauma

Universal Patient Care Protocol

- Utilize the appropriate PPE (crew & patient).
- Bring all necessary equipment to the patient.
- Evaluate MOI (Significant?)
- **Rapid Assessment, Manage Life-Threatening Injuries**
- Determine Triage Type (Level I, II, etc.)

SCENE SAFE — **NO** → Call for additional resources PRN. Stage if necessary.

MANAGEMENT

Patient Care:
- Ensure a Patent Airway
- Ensure Adequate Oxygenation/Ventilation
- Administer High Flow **Oxygen @ 15LPM**
- **Apply C-Collar (Spinal Motion Restriction?)**
- Control Bleeding (See PEARLS)
- Monitor Vital Signs / BGL / GCS?

GCS ≤ 8 ? (YES)
- Intubate or Advanced Airway
- **CONSULT:** Adult Airway Protocol

Ventilation Rates
- **ADULT:** 10 Breaths/Minute
- Maintain $EtCO_2$ 40 mmHg

Establish IV Access - Consider Large Bore

Normal Saline, Titrate to SPB 110-120mmHg
Maximum of 1L
*Assess Lung Sounds and BP every 500ml.

PREVENT HYPOTENSION & HYPOXIA - *See PEARLS*

Suspected TBI & GCS ≤ 12 ? (YES)
Injury occurred 3 hours or less? (YES)

Tranexamic Acid 2g in 50ml D5W
RAPID Infusion
10gtts/ml (macro) set – WIDE OPEN

Signs of Increased ICP and/or Herniation *See PEARLS*

Place Head of Stretcher @ 30 Degrees

Ventilation Rates
- Mild/Controlled Hyperventilation
  Maintain $EtCO_2$ 35 mmHg
- Advanced Airway Management (PRN)
- **CONSULT:** Adult Airway Protocol

Transmit Level I Trauma Alert

Initiate Transport Immediately

Notification to Receiving ED

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

Tranexamic Acid

Head Trauma

In terms of head injuries, management of pediatric patients is the same as adults. Any differences are noted below:

- **Apply C-Collar**
- Maintain SpO_2 of 95% and $EtCO_2$ levels between 35-45 mmHg.
- GCS ≤ 8 **Intubate or Advanced Airway, EXIT TO:** Airway
- If patient is normotensive, administer Normal Saline at a KVO rate.
- Children with severe TBI should have their SBP maintained at the normal range for their age.
- Administer Normal Saline Bolus 20mL/kg and repeat to maintain systolic blood pressure normal for age. Maximum – follow Medication Tool.
- Patients ≥ 5 y/o and GCS ≤ 12, administer Tranexamic Acid – RAPID Infusion:
  #ml (per Med Tool) in 50ml D5W, same as
  15mg/kg (per Med Tool) in 50ml D5W (max dose 2g)
  10gtts/ml (macro) set – WIDE OPEN

MEDICATION	Gray	Pink	Red	Purple	Yellow	White	Blue	Orange	Green	Green	Green	Infusions	Normal Pediatric Vital Signs	TOOL
	3-5 KG	6-7 KG	8-9 KG	10-11 KG 1 Year	12-14 KG 2 Years	15-18 KG 3 Years	19-23 KG 5 Years	24-29 KG 7 Years	30-36 KG 9 Years	45 KG	55 KG			

PEARLS:

- **PREVENT HYPOTENSION & HYPOXIA -** A single instance of hypotension and/or hypoxia in an adult with a brain injury may significantly increase their mortality rate and even worse in children.
- Anticoagulation medications such as Coumadin, Pradaxa, Xarelto, Eliquis, Edoxaban, Enoxaparin, favor the use of TRANEXAMIC ACID.
- All head injury patients have an increased risk for vomiting and seizures.
- Infants with a bulging fontanelle are considered to have a more severe head injury.
- Bleeding from scalp lacerations can usually be controlled by applying a pressure dressing or by applying direct pressure along the wound edges.
- On-scene times for LEVEL ONE TRAUMA patients should be **10 minutes or less**. **On-scene times greater than 10 minutes shall have the reason for the delay documented in the ePCR report.**
- Signs & Symptoms of Intracranial Bleeds:
  - Headache w/ Increasing Severity
  - Unequal pupils
  - Vomiting
  - Drowsiness and progressive loss of consciousness.
  - Dizziness / Confusion / Slurred Speech
  - Paralysis or weakness on the opposite side from the injury.
- Signs of increased Intracranial Pressure (ICP) and Herniation include:
  - Decline in GCS 2+ points and presence of Cushing's Triad (Adults)
  - Hypertension for patient's age (Pediatrics)
  - Development of a sluggish or non-reactive pupil
  - Bradycardia
  - Abnormal breathing patterns
  - Paralysis or weakness on one side of the body
- Cushing's Triad:
  - Widening pulse pressure (↑↑ Systolic with ↓↓ Diastolic)
  - Cheyne-Stokes Respiratory Pattern (periods of slow, deep breaths followed by periods of apnea)
  - Bradycardia

Selective Spinal Motion Restriction

Information:

This protocol will be applied to all patients sustaining a traumatic injury. **ALL PROVIDERS SHOULD HAVE A LOW THRESHOLD TO PLACE A C-COLLAR, see PEARLS**. All patients are to be moved and or transported in a position of comfort. If extrication is required, i.e., trapped in vehicle, tight space, compromised position, etc., the key objective is to move the patient in the safest, most anatomically neutral position possible.

Use of a long spine board is NOT considered a treatment and/or standard of care for spinal injury. Selective spinal motion restriction while padding all void areas is the MOST appropriate.

Universal Patient Care Protocol
Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.
Bring all necessary equipment to the patient. Approach with caution (outer circle – inner circle).
Evaluate MOI
Rapid Assessment, Manage Life-Threatening Injuries
Determine Triage Type (Level I, II, etc.)

Level I or II Trauma? (YES)
ALL BLUNT INJURIES involving the head must receive a C-Collar.
Decreased GCS? (Yes)
CONSULT: Head Trauma Protocol

Initial Assessment (NSAIDS)	
N	Neuro Exam: Any focal deficit?
S	Significant mechanism of injury?
A	Alertness: Alteration in mental status?
I	Intoxication: Any evidence of alcohol or drug use? Injury: Head trauma caused by LOC (syncope, seizure, etc.)
D	Distracting Injury: ANY painful injury that might distract the patient from pain of a c-spine injury?
S	Spinal Exam: Point tenderness over the spinous process(es) or pain with neck movement?
YES, to any one of the above criteria.	
Apply Cervical Collar - Restrict ALL Spinal Movement	

Ambulatory Patient
Bring stretcher to patient.
Assist patient onto stretcher while maintaining c-spine with minimal patient movement.
Have the patient lie FLAT on the stretcher.
Secure using all straps and upper torso harness.

Non-Ambulatory Patient
Use Long Spine Board (or Scoop Stretcher) to transfer patient to the stretcher.
Once on stretcher, remove device. Multiple providers required to minimize movement.
Secure using all straps and upper torso harness.

Selective Spinal Motion Restriction

PEARLS:

- **A high-level of suspicion should be taken with ALL patients that present with blunt head trauma that either occurred during a medical emergency, without defensive injuries (check hands/wrists/elbows) during a fall, or with the presence of injuries indicating considerable force on the body and/or head.**
- **Manual cervical and spinal stabilization/immobilization must be performed for all patient movement as appropriate.**
- **Selective Spinal Motion Restriction is defined as cervical collar, securing FLAT to stretcher unless anatomy prevents, minimizing movement / transfers and maintenance of in-line spine stabilization during any necessary movement / transfers. This includes the elderly or others with body or spine habitus preventing them from lying flat.**
- **A scoop-type stretcher may be employed to facilitate the lifting or movement of a patient for transit to or from the stretcher. Once the patient has been placed on the stretcher, the scoop-type stretcher is to be removed.**
- If a pregnant patient requires spinal motion restriction, place 4-6 inches of padding under the right side of the patient while maintaining normal anatomical alignment as much as possible.
- In a combative patient, the same selective spinal motion restriction principles apply.
- All obtunded patients must be considered to have a spinal injury. Position patient in the most anatomically neutral position possible while providing emergency medical care.
- **Placing patients in the prone position is contraindicated due to the risks of asphyxiation**. However, impalement or other situations may mandate the prone position. In these instances, clear documentation of justification and attention to airway maintenance is mandatory.
- Patients that are transported in the prone position must have continuous SpO_2 monitoring, $EtCO_2$ monitoring if available, and must be always under constant surveillance.
- Immobilization on a long spine board is not necessary where penetrating trauma to the head, neck or torso with no signs / symptoms of spinal injury. These patients may also require an alternative position of comfort to lying flat on the stretcher.
- Significant mechanism includes high-energy events such as ejection, high falls, and abrupt deceleration crashes and may indicate the need for spinal motion restriction.
- Consider the “change of plane fall” mechanism in which a patient strikes his head while falling, causing sudden deceleration and hyperextension of the cervical spine.

HELMET REMOVAL

- Helmets should be removed for all patients.
- If applicable, protective pads should also be removed.
- Athletic trainers should be consulted in the helmet/protective pad removal process if applicable.
- **C-SPINE should be manually stabilized during the removal process**.
- Video (Football Helmet @ Pad Removal) - https://youtu.be/HdyGMUJfWWw
- Video (Motorcycle Helmet removal) - https://youtu.be/CMH3S_HVvN0

Eye Trauma

TC-11
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Updated: 1/15/2024

Universal Patient Care Protocol

- Utilize the appropriate PPE (crew & patient).
- Bring all necessary equipment to the patient.
- Evaluate MOI (Significant?)
- Determine Triage Type (Level I, II, etc.)
- Confirmed Isolated to Eye(s) - Continue

SCENE SAFE

NO → Call for additional resources PRN. Stage if necessary.

Burn Injuries? (YES)

CONSULT: Burn Injuries Protocol

Chemical Burns? (YES)

- Remove contact lenses if present.
- Irrigate with copious amounts of Normal Saline.
- Continue Irrigation (PRN)
- Cover/Bandage Both Eyes
- **CONSULT:** Pain Control / Management Protocol

Physical Trauma? (YES) In Socket? (YES)

- Assess Orbital Stability
- Assess Visual Acuity & Clarity
- BLS Treatment (PRN)

Penetrating Trauma? (YES)

- Stabilize impaled object.
- Cover/Bandage Both Eyes
- **CONSULT:** Pain Control / Management Protocol

Physical Trauma? (YES) In Socket? (NO)

- Bandage Exposed Eye w/ Sterile-Saline-Moistened Gauze
- Cover/Bandage Both Eyes
- **CONSULT:** Pain Control / Management Protocol

SUDECON® Decontamination Wipes

Sudecon® Decontamination Wipes will neutralize and wash off pepper spray and tear gas when running water is not available. They drastically improve recovery time from exposure to CN and CS tear gasses as well. It strips the chemical agents from the skin instantly and relieves the burn-like sensation on average 7 to 15 minutes after use.

Sudecon®

PEARLS:

- **When irrigating, be careful not to contaminate the unaffected eye with runoff.**
- Normal visual acuity can be present even with severe eye injury
- Remove contact lens whenever possible.
- Any chemical or thermal burn to the face/eyes should raise suspicion of respiratory insult.
- Orbital fractures raise concern of globe or nerve injury and need repeated assessments of visual status.
- Always cover both eyes to prevent further injury.
- Do not remove impaled objects
- Suspected globe rupture or compartment syndromes require emergent in-facility intervention.

DIFFERENTIAL DIAGNOSIS:

Abrasion/Laceration, Globe Rupture, Retinal Nerve Damage/Detachment, Chemical/Thermal Burn or Agent of Terror, Orbital Fracture, Orbital Compartment Syndrome, Neurological Event, Acute Glaucoma, or Retinal Artery Occlusion.

Chest Trauma

TC-12
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Universal Patient Care Protocol

- Utilize the appropriate PPE (crew & patient).
- Bring all necessary equipment to the patient.
- Evaluate MOI (Significant?)
- **Rapid Assessment, Manage Life-Threatening Injuries**
- Determine Triage Type (Level I, II, etc.)

SCENE SAFE

NO → Call for additional resources PRN. Stage if necessary.

MANAGEMENT

Patient Care:
- Ensure a Patent Airway
- Ensure Adequate Oxygenation/Ventilation
- Administer High Flow **Oxygen @ 15LPM**
- Apply C-Collar / Spinal Motion Restriction PRN
- Monitor Vital Signs / GCS?

Ventilation Rates

Maintain SpO_2 of 95% or Greater, and $EtCO_2$ 35-40 mmHg

Package/Remove Patient from Scene

Initiate Transport Immediately

Notification to Receiving ED
Level I Trauma

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

Needle Decompression

Tension Pneumothorax - Signs/Symptoms

- Diminished or Absent Breath Sounds on the affected side.
- Shortness of Breath
- Pleuritic Chest Pain
- Tracheal Deviation (not always present or late sign)
- Hyperresonance on the affected side.
- Distended Neck Veins (see PEARLS)
- Poor BVM Compliance
- Hypotension

Indication for Performing Needle Decompression

(**Two+** Indications must be present with S/S)

- Respiratory Distress
- Cyanosis
- Decreasing Level of Consciousness
- Loss of Radial Pulse (late sign)

Needle Decompression Required? (YES)

The anterior approach (second or third intercostal space, midclavicular line) is the preferred site when performing a needle decompression.

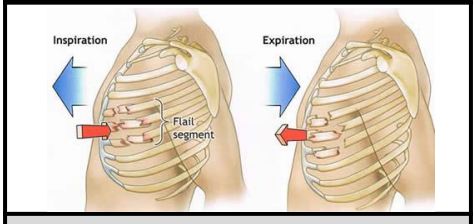
Open (Sucking) Chest Wound

Apply Chest Seal or Occlusive Dressing

Watch for Tension Pneumothorax

Sucking Chest Wound
Hyfin Chest Seal

Flail Chest Wound



Stabilize with Bulky Dressing

Abdominal Trauma

TC-13
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Updated: 1/15/2024

Universal Patient Care Protocol

- Utilize the appropriate PPE (crew & patient).
- Bring all necessary equipment to the patient.
- Evaluate MOI (Significant?)
- **Rapid Assessment, Manage Life-Threatening Injuries**
- Determine Triage Type (Level I, II, etc.)

SCENE SAFE

NO → Call for additional resources PRN. Stage if necessary.

Confirmed Pregnant? (YES)

CONSULT: Trauma in Pregnancy Protocol

MANAGEMENT

Patient Care:
Ensure a Patent Airway
Ensure Adequate Oxygenation/Ventilation
Administer High Flow **Oxygen @ 15LPM**
Apply C-Collar / Spinal Motion Restriction PRN
Monitor Vital Signs / GCS?

Package/Remove Patient from Scene

Initiate Transport Immediately

AMS & Systolic BP < 80mmHg ? (YES)

CONSULT: Hemorrhagic Shock Treatment Protocol

Penetrating Trauma? (YES) Impaled Object? (YES)

- Stabilize impaled object.
- Control Bleeding around object, manual direct pressure. (Avoid Excessive Pressure)
- Do not palpate abdomen.

Evisceration? (YES)

- Do not attempt to replace or move the protruding tissue.
- Protect the tissue from further damage.
- Cover the protruding tissue with a moist sterile dressing.
- Then cover/lightly wrap with dry sterile dressing.
- Keep the patient calm.

Notification to Receiving ED Level I Trauma

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

Extremity Trauma

TC-14
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Updated: 1/15/2024

Universal Patient Care Protocol

- Utilize the appropriate PPE (crew & patient).
- Bring all necessary equipment to the patient.
- Evaluate MOI (Significant?)
- Determine Triage Type (Level I, II, etc.)
- Confirmed Isolated Extremity Injury - Continue

SCENE SAFE — NO → Call for additional resources PRN. Stage if necessary.

Soft Tissue Injury? (YES)
- **CONSULT:** Wound Care / Junctional Injuries
- **CONSULT:** Combat Application Tourniquet (C-A-T)

Suspected Fracture/Dislocation? (YES)
- **CONSULT:** Splinting / Limb Immobilization

Closed Femur Fracture? (YES)
- **CONSULT:** Hare Traction Splint
- **CONSULT:** Sager Traction Splint

Amputation? (YES)
- **CONSULT:** Amputation Management

AMS & Systolic BP < 80mmHg ? (YES)
- **CONSULT:** Hemorrhagic Shock Treatment Protocol

Crush Syndrome? (YES)
- **CONSULT:** Crush Syndrome

Moderate to Severe Pain? (YES)
- **CONSULT:** Pain Control / Management Protocol

Notification to Receiving ED

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

PEARLS:

- **Fractures should be splinted in the position found unless there is no pulse present, or the patient can not be transported due to the extremity's unusual position.** No more than two (2) attempts can be made to place the injured extremity in a normal anatomical position. Discontinue attempts if the patient complains of severe pain or if there is resistance to movement felt.
- Peripheral neurovascular status is important. Document pulse/motor/sensory before and after splinting.
- Gross contamination should be removed if possible.
- In amputations, time is critical. Transport and notify medical control immediately, so that the appropriate destination can be determined.
- Knee and elbow fracture / dislocations have a high incidence of vascular compromise.
- Urgently transport any injury with vascular compromise.
- Blood loss may be concealed or not apparent with extremity injuries.
- Lacerations must be evaluated for repair within 6 hours from the time of injury.
- Multiple casualty incident: Tourniquet Procedure may be considered first instead of direct pressure.

DIFFERENTIAL DIAGNOSIS:

Abrasion, Laceration, Contusion, Sprain, Dislocation, Fracture, or Amputation.

Hip/Pelvic Trauma

TC-15
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Universal Patient Care Protocol

- Utilize the appropriate PPE (crew & patient).
- Bring all necessary equipment to the patient.
- Evaluate MOI (Significant?)
- Determine Triage Type (Level I, II, etc.)
- Confirmed Isolated Hip/Pelvic Injury - Continue

SCENE SAFE — NO → Call for additional resources PRN. Stage if necessary.

MANAGEMENT

Patient Care:

- Limit Movement
- Splint in Position of Comfort
- Use Scoop Stretcher Whenever Possible
- Pad Voids w/ Pillows and Blankets
- Apply C-Collar / Spinal Motion Restriction PRN
- Monitor Vital Signs / GCS?

Package/Remove Patient from Scene

Continue to Monitor Vital Signs (BP)

AMS & Systolic BP < 80mmHg ? (YES)

CONSULT: Hemorrhagic Shock Treatment Protocol

REMEMBER: Hip/Pelvic Fractures can produce at least 1+ liter of blood lose. Providers should have a high suspicion and treat accordingly.

Moderate to Severe Pain? (YES)

CONSULT: Pain Control / Management Protocol

Pain Scale Assessment

Splinting Options:

Option 1: Pelvic Wrap Demo – YouTube

Option 2: Pelvic Binding Demo - Webm

PEARLS:

- Peripheral neurovascular status is important. Document pulse/motor/sensory before and after splinting.
- Hip dislocations and fractures have a high incidence of vascular compromise.
- Urgently transport any injury with vascular compromise.
- Blood loss may be concealed or not apparent with extremity injuries.
- Consider hip fractures in any elderly patient with a fall that complains of pain in the knee, hip or pelvis.
- Posterior hip dislocations most often present with the leg flexed and internally rotated. They will not tolerate having the extremity straightened.
- Anterior dislocations present with lateral rotation and shortening of the affected leg.
- **Suspected Pelvic Fracture** – wrap/tie a sheet around pelvic girdle, if possible. See *Splinting Options* above.

DIFFERENTIAL DIAGNOSIS:

Abrasion, Laceration, Contusion, Sprain, Dislocation, Fracture, or Amputation.

Trauma in Pregnancy

TC-16
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Updated: 1/15/2024

Universal Patient Care Protocol	SCENE SAFE
Utilize the appropriate PPE (crew & patient).	
Bring all necessary equipment to the patient.	
Evaluate MOI (Significant?)	
Rapid Assessment, Manage Life-Threatening Injuries	
Determine Triage Type (Level I, II, etc.)	
Pregnancy Confirmed? How Many Weeks?	

NO → Call for additional resources PRN. Stage if necessary.

MANAGEMENT

Patient Care:
- Ensure a Patent Airway
- Ensure Adequate Oxygenation/Ventilation
- Administer High Flow **Oxygen** PRN
- Apply C-Collar / Spinal Motion Restriction PRN
- Monitor Vital Signs / GCS?

Package/Remove Patient from Scene

Initiate Transport Immediately

Notification to Receiving ED (Broward Health Medical Center or Memorial Regional ONLY)

Patient Care Transfer: Demographics, Personal Property, Summery of care and response to care.

Ventilation Rates

Maintain SpO_2 of 95% or Greater, and $EtCO_2$ 35-45 mmHg

3rd Trimester? (YES) Trauma Related (YES)

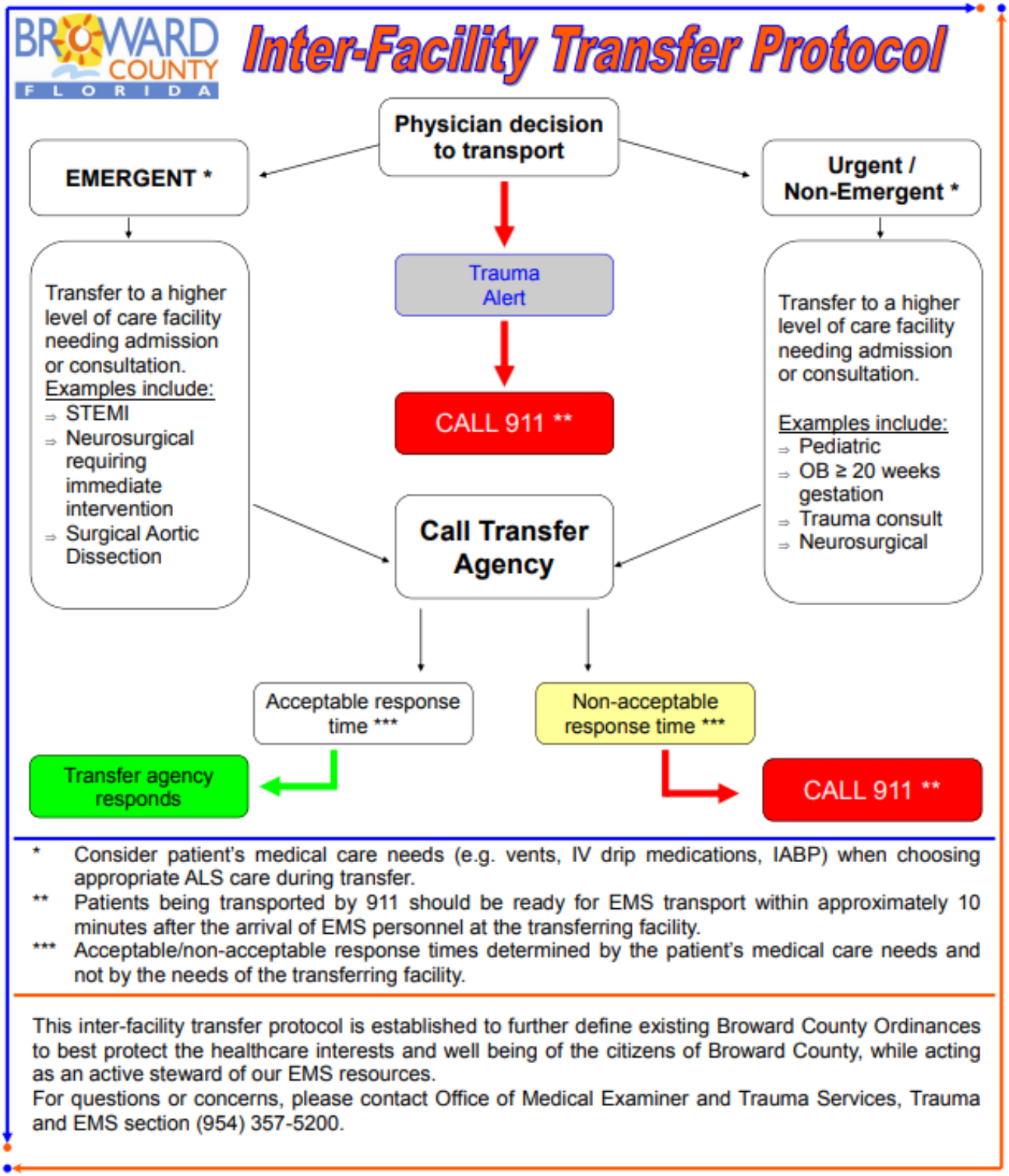
Administer High Flow **Oxygen @ 15LPM**

ALL PREGNANT PATIENTS IN CARDIAC ARREST or SUPINE POSITIONING - manually shift and displace the uterus to the left during care.

Maternal Physiological Changes During Pregnancy:

- **Maternal Heart Rate** increases throughout the pregnancy. By the third trimester, the HR can be 15-20 BPM above normal.
- **Blood Pressure**: Both the systolic and diastolic blood pressures drop 5-15 mmHg during the second trimester and may return to normal at term (36 weeks).
- **Cardiac Output**: The mother's cardiac output and blood volume increases. Therefore, the pregnant patient may lose 30-35% of her blood volume before the signs & symptoms of shock become apparent. Assess and treat for shock accordingly. **CONSULT:** Hemorrhagic Shock Treatment Protocol
- **Supine Hypotension** usually in the third trimester. Pregnant patients not requiring spinal motion restriction shall be transported on their left side. If a pregnant patient requires spinal motion restriction, place 4-6 inches of padding under the right side of the patient while maintaining normal anatomical alignment as much as possible.

Inter-Facility Transfer (Medical)



* Consider patient's medical care needs (e.g. vents, IV drip medications, IABP) when choosing appropriate ALS care during transfer.

** Patients being transported by 911 should be ready for EMS transport within approximately 10 minutes after the arrival of EMS personnel at the transferring facility.

*** Acceptable/non-acceptable response times determined by the patient's medical care needs and not by the needs of the transferring facility.

This inter-facility transfer protocol is established to further define existing Broward County Ordinances to best protect the healthcare interests and well being of the citizens of Broward County, while acting as an active steward of our EMS resources.
For questions or concerns, please contact Office of Medical Examiner and Trauma Services, Trauma and EMS section (954) 357-5200.

Inter-Facility Transfer (Trauma)

Inter-Facility Trauma Transfer Protocol

Head
- GCS ≤ 12 or a decrease of 2 or more points from time of injury
- Open or depressed skull fracture
- Basilar skull fracture
- Brain hemorrhage
- Meningeal hemorrhage
- Presentation of new neurological deficits

Thoracic Injury
- Complex pneumothorax, hemothorax, flail chest or pulmonary contusion with respiratory insufficiency after initial decompression
- Persistent hemorrhage after appropriate thoracostomy tube placement
- Aortic disruption
- Diaphragmatic hernia
- Tracheobronchial tree injury
- Esophageal trauma

Extremity Injuries
- Complex pelvic fractures
- Two or more long bone fractures
- Major vascular injuries documented by arteriogram or loss of distal pulses
- Amputation of extremity proximal to wrist or ankle
- Major degloving injury proximal to wrist or ankle

Spine
- Fractures, unstable or potentially unstable
- Subluxations
- Neurogenic Shock
- Open spinal wounds

Abdominal Injuries
- Conditions requiring celiotomy with concomitant trauma
- Positive diagnostic test demonstrating intra-abdominal injury
- Penetrating wound of the abdomen with suspicion of penetration of the peritoneum
- Ruptured hollow viscus
- Solid organ injury

Burns
- Partial thickness burns greater than 10% total body surface area (TBSA)
- Burns that involved the face, hands, feet, genitalia, perineum, or major joints
- Third degree burns in any age group
- Electrical burns, including lightning injury
- Chemical burns
- Inhalation injury
- Burns in patients with preexisting medical disorders that could complicate management, prolong recovery, or affect mortality

General Instructions
- Identify patients exhibiting the above conditions and immediately initiate the emergency transfer process upon discovery as it is expected that these conditions/diagnosis will be discovered in a timely manner.
- Pediatric trauma patients are defined as 15 years or younger and should be transferred to the closest Level 1 Pediatric Trauma Center.
- Sending Emergency Physician should not postpone the transfer to perform in-depth work-ups (i.e. imaging, consultation) in hospitals with no surgical capability if this could delay the patient from receiving the benefits of appropriate medical treatment at a trauma center.
- Questions or concerns - please contact Trauma Management Agency (954) 357-5234. Disputes and resolutions will be handled through the Trauma Management Agency and all parties involved.

911

Remember 911 should always be called to initiate transport of these patients

Adult Trauma Center
Broward Health North
(954) 786-6967

Adult and Pediatric Trauma Centers
Broward Health Medical Center
(954) 355-5804
Memorial Regional Hospital
(954) 265-6338

Broward County's Trauma System - Saving lives through cooperative care and professionalism

Obstetrical Emergency Protocols

MAIN MENU

Section 9 | Obstetrical Emergency Protocols

Obstetrical Standing Orders

OB-1
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Reviewed:
Updated: 1/15/2024

Universal Patient Care Protocol
Utilize the appropriate PPE (crew & patient). Consider Airborne, Contact, or Droplet Isolation.
Initial Assessment, BLS Maneuvers, **Apply O2 (PRN)**
Trauma or Medical?
Treatment – Refer to appropriate protocol.
Need for immediate removal / transport?
Receiving ED - Refer to criteria below.

Obstetrical Patients are defined as pregnancy @ 20 weeks or greater:

- Minor concern (non-pregnancy related) can go to the closest ED.
- Stable patients may go to the OB hospital of their choice within reason.
- With any "Constitutional Symptoms" only, transport to the OB hospital of their choice within reason. (Fever, Fatigue, Weight Loss, Night Sweats, Loss of Appetite, Malaise, Joint/Muscle Pains, or Skin Issues)
- With any abdominal/pelvic pain, transport to the closest OB hospital.
- In cardiac arrest transport to closest OB Hospital.
- Trauma, transport to Trauma Center/OB Hospital.

Obtain Focused History:

- Expected Due Date, Last Menstrual Cycle.
- Number previous pregnancies (Gravida).
- Number of previous births (living)(Para). Grand Para = five or more (5+).
- Number of miscarriages. Number of abortions.
- Number of vaginal births vs. births by cesarean section.
- High Risk – why? (Gestational Diabetes or Hypertension, Placenta Placement Issues, etc.).

Physical Examination:

- Frequency and length of contractions. Imminent Birth - contractions come every 2 to 5 minutes apart and last about 60 to 90 seconds (check for crowning).
- Water broke - document time, color of water, etc.
- Show of blood - document time, amount, etc.
- If crowning - prepare for a field delivery. Do not delay transport.

Transport Positioning:

- In the absence of trauma requiring spinal motion restriction and not in active labor, transport patients in their third trimester on their left side.
- **ALL PREGNANT PATIENTS IN CARDIAC ARREST or SUPINE POSITIONING -** manually shift and displace the uterus to the left during care.
- Post field delivery, mother and newborn should be transported in the same rescue. A second ePCR is required for all living births and/or neonatal/newborn resuscitations.

Complications of Early Pregnancy

INFORMATION

N/A

ADULT

COMPLICATIONS OF EARLY PREGNANCY

- *ECTOPIC PREGNANCY*
  - Ectopic pregnancies usually occur in the first trimester and may present with sudden onset of severe lower abdominal pain and/or vaginal bleeding.
  - Patients with amenorrhea, vaginal bleeding and abdominal pain are highly suspicious for an ectopic pregnancy.
  - Other signs & symptoms of an ectopic pregnancy include: referred pain to the left shoulder, Cullen's Sign (periumbilical ecchymosis) or Grey Turner's sign (ecchymosis of the flanks), abdominal distention and tenderness.

- *SPONTANEOUS ABORTION*
  - Spontaneous abortions usually occur before 20 weeks of gestation. Signs and symptoms include: abdominal cramping, vaginal bleeding and the passage of tissue or fetus.

- TREATMENT FOR COMPLICATIONS OF EARLY PREGNANCY
  - Assess and treat for shock.
  - Rapid transport to any approved OB or GYN facility.

Complications of Early Pregnancy

THIRD TRIMESTER COMPLICATIONS

- *PLACENTA ABRUPTIO*
  - Sudden onset of severe abdominal pain and tenderness
  - Painful uterine contractions
  - Vaginal bleeding with dark red blood
  - Patient may present in shock

- *PLACENTA PREVIA*
  - Characterized by painless vaginal bleeding (bright red blood)

- *UTERINE RUPTURE*
  - Sudden, intense abdominal pain and vaginal bleeding

- TREATMENT FOR THIRD TRIMESTER COMPLICATIONS
  - Treatment for third trimester bleeding is aimed at the prevention or treatment of shock.
  - Transport patients in their third trimester on left side by elevating the right side of their body
    4-6 inches with towels or pillows or by manually displacing the uterus to the left.
  - All patients with third trimester bleeding shall be transported to approved OB facility.
  - If it is necessary to perform MICCR on a pregnant patient in their third trimester, manually displace the uterus to the left rather that tilting the patient to the left.

Pre-Eclampsia/Eclampsia

OB-3
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INFORMATION

Severe pre-eclampsia occurs and is characterized by HTN, AMS, visual disturbances, HA, and/or pulmonary edema. Eclampsia is characterized by any of the severe pre-eclampsia signs/symptoms associated with seizures or coma. Either condition can occur for up to 30 days postpartum.

ADULT

- Check Blood Glucose

SEVERE PRE-ECLAMPSIA and ECLAMPSIA (Gestational Age over 20 weeks)

Defined as a SBP greater than 160 mmHg *OR* a DBP of greater than 110 mmHg on two consecutive blood pressures, 5 minutes apart, with one of the following signs/symptoms:

- AMS
- Headache
- Visual Disturbances
- Pulmonary Edema

- **Pre-Eclampsia and Eclampsia:**
- **MAGNESIUM SULFATE: As per infusion Protocol**
- **AND MAGNESIUM SULFATE IM: 2GM/IM- 4ml (Lateral Thigh)**

- **SEIZURE: follow Seizure Protocol**

Normal Delivery

OB-4
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Updated: 1/15/2024

ADULT

NORMAL DELIVERY

- Position patient on her back with knees flexed and fee
- Control delivery of the head, with gentle perineal pre
- Do not apply manual pressure to the uterine fundus prior to the birth of the child.
- Do not pull or push on the fetus.
- Do not allow sudden hyperextension of the newborn's head.
- Once the head delivers, support the newborn's head and suction the mouth and then the nose.
- Support the newborn's head as it rotates to align with the shoulders, gently guide the newborn's head downward to deliver the anterior shoulder.
- Once the anterior shoulder delivers, gently guide the newborn's head upward to deliver the posterior shoulder and the rest of the body.

UPON DELIVERY OF THE NEWBORN

- Dry, warm, and stimulate the newborn.
- **Wait until the cord stops pulsating before clamping the cord (usually 3-5 minutes).**
- Clamp the umbilical cord in the following fashion:
    - Place the first clamp 4" away from the newborn's body.
    - Milk the cord away from the newborn and towards the mother (this will minimize splatter).
    - Place the second clamp 2" away from the first, towards the mother.
    - Cut the cord between the two clamps.
- The newborn can be placed on the mother's chest or abdomen. This will keep the newborn's umbilical cord at about the level of the placenta.
- Record an APGAR score at 1 and 5 minutes and document the delivery time.
- **Apply firm continuous pressure, manually massaging the uterine fundus after the placenta delivers**.

  See Diagram below:
- Preserve the placenta in the bag provided with the OBKit or a "Red Bio-Hazard bag" for inspection by the receiving hospital.

APGAR SCORE	0	1	2
Appearance	Blue/Pale	Body pink extremities blue	Completely Pink
Pulse	Absent	Below 100	Above 100
Grimace	No Response	Grimaces	Cries
Activity	Limp	Some flexion of extremities	Active Motion
Respirations	Absent	Slow/Irregular	Good Strong Cry

Breech Birth

OB-5
Published: 3/1/2021
Reviewed:
Updated: 1/15/2024

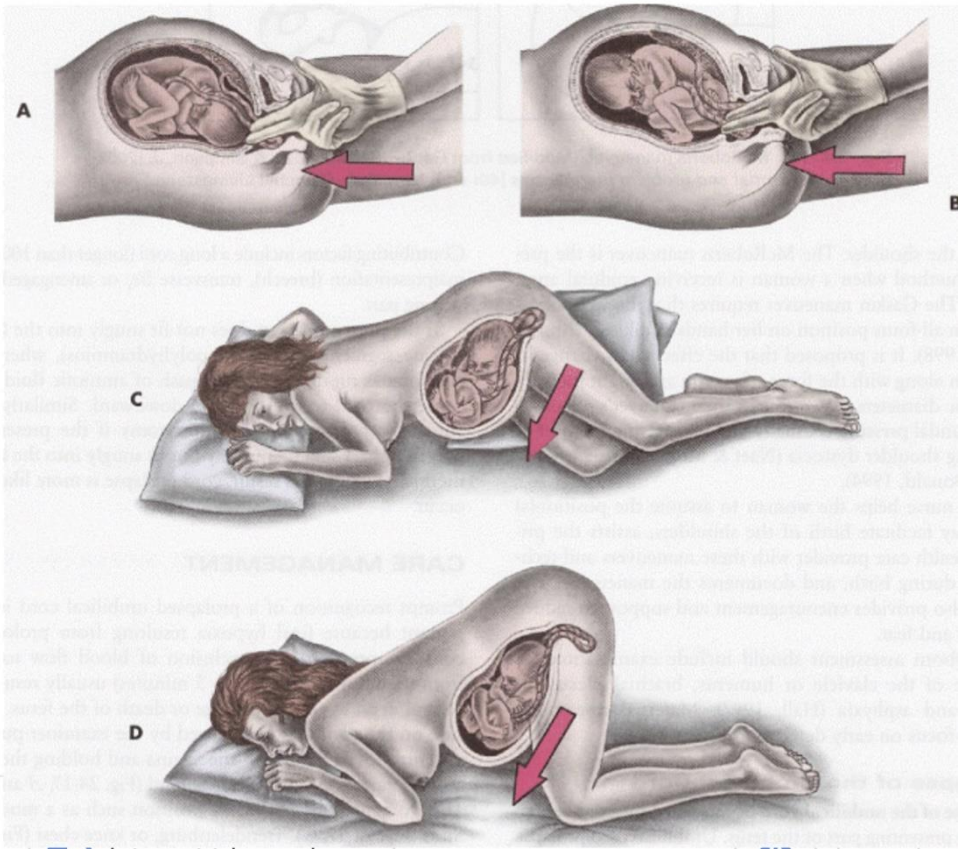
INFORMATION

N/A

ADULT

BREECH BIRTH (FEET OR BUTTOCKS PRESENTATION)

- If the head does not deliver within 3 minutes of the body, elevate the mother's hips (knee to chest position) and insert a gloved hand into the vagina and push the vaginal wall away from the baby's nose and mouth.
- Expedite transport while maintaining the knee to chest position and the baby's airway.
- Administer blow by oxygen to the newborn.



Umbilical Cord Emergencies

OB-6
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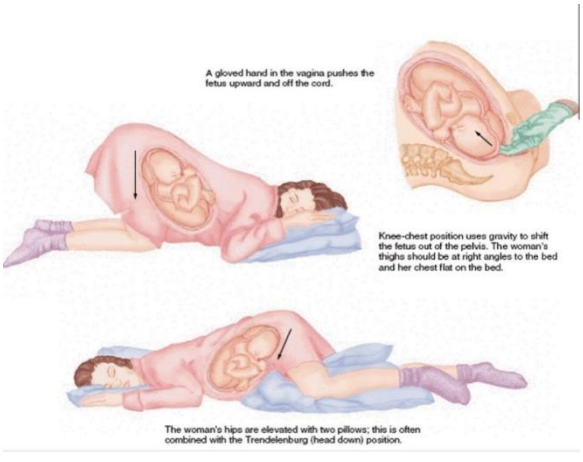
NUCHAL CORD

- Check for the presence of a nuchal cord after delivery of the head.
- If the cord is around the neck, gently hook your finger under the loop and pull it over the newborns head. You may have to repeat this if there is more than one loop present.
- If you are unable to free the cord, clamp the cord in two places and cut the cord between the clamps.

PROLAPSED UMBILICAL CORD

- Place mother in the knee to chest position and manually displace the uterus to the left.
- Insert a gloved hand into the vagina, pushing the newborn up and away from the umbilical cord regardless if there is a pulse present or not. Maintain this position during transport and frequently reassess the umbilical cord for the presence of a pulse, as contractions are likely to compress the umbilical cord.
- Wrap the exposed cord in a moist sterile dressing and expedite transport to closest OB facility.



Meconium Staining

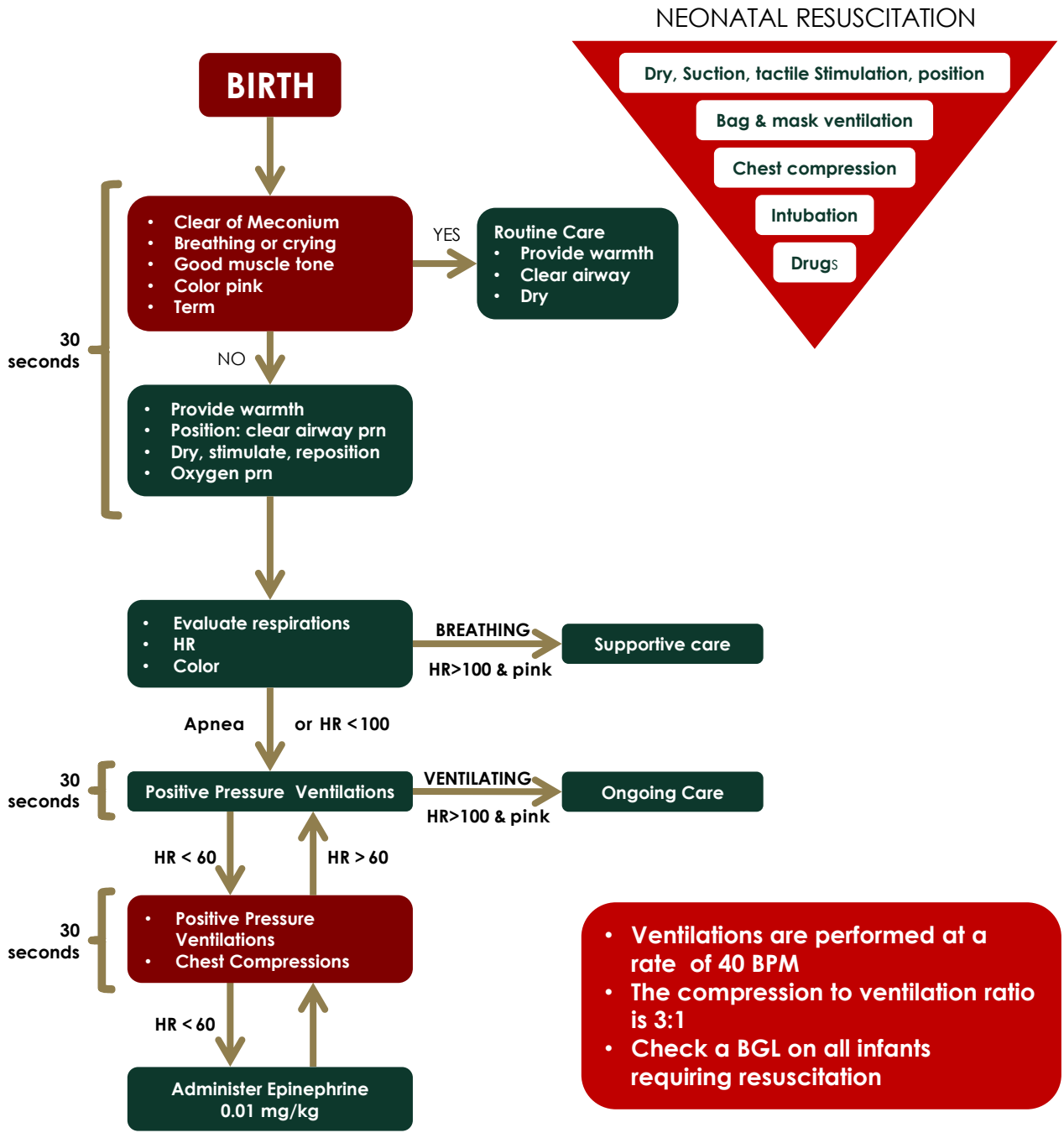
OB-7
Published: 3/1/2021
Reviewed:
Updated: 1/15/2024

Meconium Staining

- Meconium will appear as a yellow to dark green substance that may be noted as a greenish tint to the amniotic fluid or a thick dark green substance coming from the vagina or covering the neonate's head.
- If upon delivery of the head there is meconium staining present, use a bulb syringe to clear secretions from the mouth and then nose before delivery of the shoulders.
- Meconium aspirators are rarely needed, however consideration for usage may be given in patients whose airway is obstructed by meconium that cannot be cleared by simpler methods.

Neonatal Resuscitation

OB-8
Published: 3/1/2021
Reviewed:
Updated: 1/15/2024



- Ventilations are performed at a rate of 40 BPM
- The compression to ventilation ratio is 3:1
- Check a BGL on all infants requiring resuscitation

Assessments & Procedures

Section 10 | Assessments & Procedures

Section 10 | Assessments & Procedures

Section 10 | Assessments & Procedures

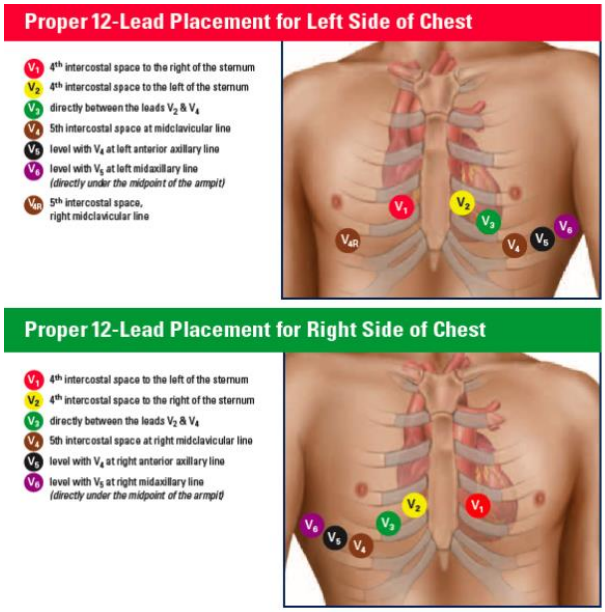
Section 10 | Assessments & Procedures

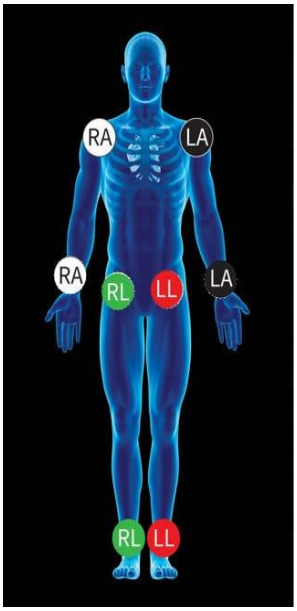
4/12 Lead ECG

AP-1
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

- All ALS patients shall be continuously monitored in lead II
- Patients who present with any of the following cardiac or possible cardiac symptoms shall have a 12 lead ECG performed:
  - Chest/arm/neck/jaw/upper back/shoulder/epigastric pain or discomfort
  - Palpitations
  - Syncope, lightheadedness, general weakness, or fatigue
  - CHF, SOB, or hypotension
  - Unexplained diaphoresis or nausea
- 12 lead ECGs shall be repeated every 5 minutes and upon a ROSC (if transporting leave cables connected until patient is turned over to the ED staff).





RA Right Arm

LA Left Arm

The arm leads in a traditional approach are often placed on the wrists

The arm leads in a modified approach are often portrayed in the location of this image

While outside of the torso is correct, the most optimal location for modified arm leads is in line with the horizontal axis of V4

RL Right Leg

LL Left Leg

The leg leads in a traditional approach are often placed near the ankles

The leg leads in a modified approach should optimally be at least 8 cm below and 5 cm on either side of the navel

STEMI ALERT CRITERIA

- ST-Segment Elevation in two or more contiguous leads (2mm or greater in V2 and V3 or 1mm or greater in all other leads) with a "convex" (frown face) or "straight" morphology.
- ST-Segment Elevation in two or more contiguous leads of 2mm or greater in any lead with a "concave" (smiley face).

Advanced Airway Monitoring w/ ETCO2 Detection

AP-2
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

Continuous end-tidal CO2 (EtCO2) detection is required with any endotracheal tube (ETT) or blind insertion airway device (BIAD) use.

Procedure:

1. Attach EtCO2 detector to the BIAB or the ETT.

2. Record initial EtCO2. EtCO2 detection should be used on all cardiac, respiratory, AMS, or patients where airway control or assistance is needed.

3. Continuous capnography is required throughout the transport to the receiving facility.

4. ETT or BIAB placement should be verified frequently and always with each patient move, change in BVM compliance, defibrillation, change in patient status and prior to be turned over to a hospital in front of person taking over airway note EtCO2 reading.

5. ETT of BAIB confirmation steps include:
   - (For ETT) visualization of the tube passing the vocal cords
   - Mark ETT at the gums or teeth – average placement is 3x the size of the ETT at the level of the teeth (i.e., a 7.0 ETT should be measured at 21 cm at the teeth)
   - Good bag compliance
   - Negative epigastric sounds
   - Positive lung sounds
   - SaO2 above 90%
   - ETCO2 reading
   - EtCO2 wave form
   - Improvement in patient color

Amputation Management

AP-3
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

Procedure:

1. Open wounds, exposed bone ends, or amputations should be covered with a moist sterile dressing.
2. Remove jewelry or watches from the affected extremity.
3. Small amputated parts should be rinsed off, wrapped in sterile gauze and placed in a plastic bag. If ice is available, place the sealed bag in a larger container with ice & water or chilled saline. Label the bag with the patient's name, date, and time of the amputation, and the time the part was wrapped and cooled.
4. In amputations, time is critical. Transport and notify medical control immediately, so that the appropriate destination can be determined.
5. Contact hospital – advise you are transporting patient with an amputation injury. Note if you are transporting with or without the body part.

Assessment (Adult)

AP-4
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

The following standard requirements should be performed on patients whenever possible, verbal consent should be obtained prior to treatment.

ASSESSMENT - S.O.A.P. Format

Subjective

- CHIEF COMPLAINT: Why did the person call 911
- HISTORY OF THE PRESENT ILLNESS(O,P,Q,R,S,T,A)
    - ONSET: Did the symptoms appear gradual or sudden?
    - PALLIATIVE: What makes the symptoms better?
    - PROVOKE: What makes the symptoms worse?
    - PREVIOUS: Previous similar episodes?
    - QUALITY: (What kind of pain?) pressure, squeezing, aching, dull, etc.
    - RADIATION: Does the pain or discomfort radiate? Where?
    - Severity of pain: 1-10 scale, Faces pain scale for pediatrics.
    - Time: What time did the symptoms begin?
    - Associated: What are the associated signs and symptoms?
- S.A.M.P.L.E HISTORY
    - SIGNS & SYMPTOMS
    - ALLERGIES
    - MEDICATIONS: Prescribed, over the counter, or not prescribed to patient
    - PAST MEDICAL HISTORY: Heart attack, asthma, COPD, diabetes, hypertension, stroke, etc.
    - LAST ORAL INTAKE
    - EVENTS PRECEDING

Objective

- Physical EXAM
- Vital Signs
- Physical exam finding

Assessment

- In narrative form summarize diagnosis.

Plan

- In narrative form summarize treatment, disposition, and any other important information not documented prior.

Assessment (Pediatric)

AP-5
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

Clinical Indications:

- EMS: Puberty is defined as breast development for females and underarm, chest, or facial hair on males. Once a child reaches puberty, use the adult protocols.
- Medical ED- Pediatric is defined as 17 y/o or younger/18 = adult medical
- Trauma Alert -Pediatric is defined as 15 y/o or younger/16= adult trauma

Pediatric Respiratory Rates

- Neonate: Birth to I month (40-60 breaths/min)
- Infants: 1 month to 1 year (30-60 breaths/minute)
- Toddlers: 1-3 y/o (24-40 breaths/minute)
- Preschooler: 4-5 y/o (22-34 breaths/minute)
- School age: 6-12 y/o (18-30 breaths/minute)
- Adolescent ages: 13-18 y/o (12-16 breaths/minute)

Pediatric Heart Rates

- Newborn to 3 months: 85-205,mean 140 beats/minute
- 3 months to 2 years: 100-190, mean 130beats/minute
- 2 years to 10 years: 60-140, mean 80beats/minute
- Greater than 10 years old: 60-100, mean 75 beats/minute

Pediatric Blood Pressure

- Neonates: SBP less than 60
- Infants: SBP less than 70
- Children 1-10 years: SBP less than 70 + (age in years x 2)
- Children greater than 10 years: SBP less than90

Signs & Symptoms - COMPENSATED SHOCK

- Anxiety
- Agitation
- Restlessness
- Normotensive
- Capillary Refill (normal to delayed)
- Tachycardia (Weak-rapid pulse greater than 130 beats/min is usually a sign of shock in children of all ages except neonates.)

Signs & Symptoms - DECOMPENSATED SHOCK

- Decreased LOC
- Hypotension
- Peripheral Cyanosis
- Capillary Refill (delayed)
- Inequality of Central/Distal Pulses
- Tachycardia (later progressing to bradycardia)

Automatic External Defibrillator (A.E.D.)

AP-6
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

There are several varieties of AEDs utilized in the area. The following are general procedures to operate an AED.

Contraindication:

1. Pediatric patients who are so small that the pads cannot be placed without touching one another.
2. Use of pediatric pads on adults when appropriate pads are unavailable.

Procedure:

1. Verify that continuous CPR is being performed until the AED is attached and turned on.
2. Apply the AED pads to the chest following the manufacturers recommendations. Use alternate placement when implanted devices (pacemakers, AICDs) occupy preferred pad positions. Remove any medication patches on the chest and wipe off any residue.
3. Turn the AED "ON" and follow prompts (some AEDs will turn on automatically when the cover is opened).
4. Activate AED for analysis of rhythm. Stop CPR and clear the patient for rhythm analysis. Keep interruption in CPR as brief as possible.
5. If AED advises to "shock" make sure EVERYONE is clear from touching patient by yelling "CLEAR". Visualize that no one, including yourself, is in contact with the patient prior to defibrillation.
6. Push the "shock" button to defibrillate the patient.
7. Resume CPR immediately after defibrillation.
8. Analyze per AED prompt after two (2) minutes of compressions.
9. If no shock advised appears, perform CPR for two minutes and then reanalyze.
10. Transport and continue treatment as indicated.
11. Keep interruption of CPR compressions as brief as possible. CPR with proper depth and recoil is essential.
12. If pulse returns, please use the ***Post Resuscitation Protocol.***

NOTE – With several AED brands on the market, the AED pads used may not be the same as with the monitor/defibrillators carried by FLFR. Change pads immediately if required upon transfer of patient care.

Blind Insertion Airway Device (BIAD)

INFORMATION

The i-Gel is a second generation supraglottic airway, made of a medical grade thermoplastic elastomer, designed to create a non-inflatable anatomical seal of the pharyngeal, laryngeal and perilaryngeal structures. An integrated gastric channel provides an early warning of regurgitation, facilitates venting of gas from the stomach and allows for the passing of a gastric tube to empty the stomach contents. The device also includes a buccal cavity stabilizer to provide vertical strength during insertion and eliminate the potential for rotation.

Clinical Indications:

The i-Gel is indicated for use during resuscitation of an apneic patient in lieu of endotracheal intubation or, after multiple failed endotracheal intubation attempts of an unconscious patient with pulses (Failed Airway).

Contraindications:

1. Conscious or semi-conscious patients with an intact gag reflex.
2. Obstructive lesions below the glottis. Suspected laryngeal swelling from inhalation burns or anaphylaxis (allergic reaction).
3. Trismus, limited mouth opening, pharyngo- perilaryngeal abscess, trauma or mass.
4. Ingestion of caustic substances.
5. No attempt should be made to use i-gel as a conduit for intubation without fiber-optic guidance.

Procedure:

Refer to manufacturer instructions on the next page.

Reference:

https://www.intersurgical.com/info/igel-emergency-medicine

i-gel size	Patient Size	Patient weight guidance (kg)
1.5	Infant	5-12kg
2	Small paediatric	10-25kg
3	Small adult	30-60kg
4	Medium adult	50-90kg
5	Large adult	90+kg

Blind Insertion Airway Device (BIAD)

Preparations for use

Open the i-gel package, and on a flat surface take out the protective cradle containing the device.

Remove the i-gel and transfer it to the palm of the same hand that is holding the protective cradle, supporting the device between the thumb and index finger.

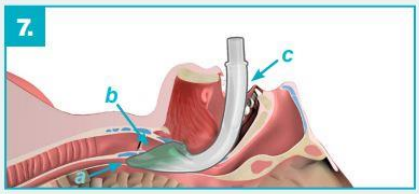
Place a small bolus of a water-based lubricant, such as K-Y Jelly®, onto the middle of the smooth surface of the protective cradle in preparation for lubrication.

Grasp the i-gel with the opposite (free) hand along the integral bite block and lubricate the back, sides and front of the cuff with a thin layer of lubricant.

Inspect the device carefully, confirm there are no foreign bodies or a BOLUS of lubricant obstructing the distal opening. Place the i-gel back into the protective cradle in preparation for insertion.

Insertion technique

Remove the i-gel from the protective cradle. Grasp the lubricated i-gel firmly along the integral bite block. Position the device so that the i-gel cuff outlet is facing towards the chin of the patient. The patient should be in the 'sniffing the morning air' position with head extended and neck flexed. The chin should be gently pressed down before proceeding. Introduce the leading soft tip into the mouth of the patient in a direction towards the hard palate.



Glide the device downwards and backwards along the hard palate with a continuous but gentle push until a definitive resistance is felt.

The tip of the airway should be located into the upper oesophageal opening (a) and the cuff should be located against the laryngeal framework (b). The incisors should be resting on the integral bite block (c).

Post Placement:

1. Auscultate breath sounds, check for chest rise and confirm placement with ETCO2 monitoring and SpO2 monitoring. Confirm negative epigastric sounds.
2. Secure the tube maintaining downward pressure.
3. Place NG tube inside port and advance to the appropriate position, apply suction to decompress the stomach. Use of lubricated jelly may be required.

   Adult – Salem Sump Tube, sizes 10-12.

   Pediatric – Salem Sump Tube, sizes 8-10.

4. Continue to monitor for proper placement throughout patient care.
5. Aspiration can occur with this device. Ensure suctioning equipment is ready and clear the airway as needed prior to re-establishing the i-Gel or other airway adjunct.

Blood Glucose Analysis (BGL)

AP-8
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

Clinical Indications:

A blood glucose level (BGL) shall be documented for patients with any of the following: history of diabetes, suspected drug or alcohol use, altered mental status, general weakness, seizure, syncope/lightheadedness, dizziness, poisoning, stroke, and cardiac arrest.

Procedure:

Follow the manufacturers recommendations for the specific type of BGL measuring device

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. Place correct amount of blood on reagent strip or site on glucometer per the manufacturer's instructions.
4. Time the analysis as instructed by the manufacturer.
5. Document the glucometer reading and treat the patient as indicated by the analysis and protocol.
6. Repeat glucose analysis as indicated for reassessment after treatment and as per protocol.

Follow associated protocols based on the result and the patient's condition.

Test Strip Range: 20-500mgdL

Capnography (ETCO2)

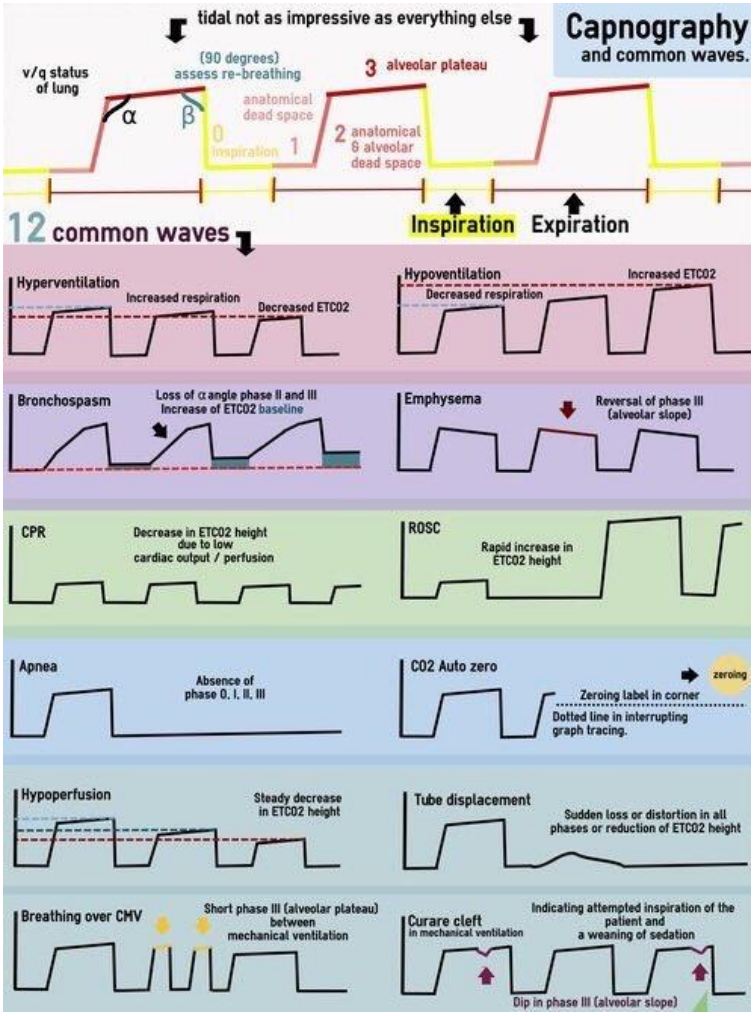
AP-9
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

Clinical Indications:

The following patients should be monitored if the EtCO2 nasal cannula sampling device is available:

- In respiratory distress
- With an altered mental status
- Sedated patients or patients receiving pain medication
- Patient administered Ketamine
- Seizure patient
- Requiring ventilatory support (ETT, BIAD, CPAP, etc.)



Cardio-Pulmonary Resuscitation CPR

AP-10
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

Clinical Indications:
Basic life support for the patient in cardiac arrest

Procedure:

- **Universal Patient Care Protocol**
- **Go to High-Performance CPR (HP-CPR) protocol**

General CPR considerations (Per the 2020 AHA guidelines):

- Start compressions within 10 seconds after recognizing cardiac arrest
- Push hard and push fast
- Compression rate of 100-120 per minute
- At least 2" depth for adults
- At least 1/3 depth of chest for children (approx. 2")
- At least 1/3 depth of chest for infants (approx. 1.5")
- Allow for complete chest recoil
- Minimize interruptions in chest compressions (less than 10 seconds)
- Avoid excessive ventilation

Source: 2020 AHA BLS Guidelines

Cervical Collar Application

AP-11
Published: 3/1/21
Reviewed:
Updated: 9/6/2023

INFORMATION

Need for spinal immobilization as determined by protocol, injuries, and/or complaint of patient.

Procedure:

1. Gather a backboard, straps, c-collar appropriate for patient's size, tape, and head rolls or similar device to secure the head.
2. Explain the procedure and reasons why to the patient.
3. Place the patient in an appropriately sized C-collar while maintaining in-line stabilization of the C-spine. This stabilization, to be provided by a second rescuer, should not involve traction or tension but rather simply maintaining the head in a neutral, midline position while the first rescuer applied the collar.
4. Once the collar is secure, the second rescuer should still maintain their position to ensure stabilization. The collar is helpful but will not do the job by itself.
5. Place the patient on a long spine board with the log-roll technique if the patient is supine or prone. For the patient in a vehicle or otherwise unable to be placed prone or supine, place them on a backboard by the safest method available that allows maintenance of in-line spinal stability.
6. Stabilize the patient with straps and head rolls/tape or another similar device. Once the head is secured to the backboard, the second rescuer may release manual in-line stabilization.
7. NOTE: Some patients, due to size or age, will not be able to be immobilized through in-line stabilization with standard backboards and C-collars. Never force a patient into a non-neutral position to immobilize them. Such situations may require a second rescuer to maintain.
8. Manual stabilization throughout the transport to the hospital.
9. Document the time of the procedure in the electronic patient care report (ePCR).

Chest Decompression (Needle)

AP-12
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

Clinical Indications:
Patients with hypotension (SBP less than 90), clinical signs of shock, and at least one of the following signs:

- Jugular vein distention.
- Tracheal deviation away from the side of the injury (often a late sign).
- Absent or decreased breath sounds on the affected side.
- Hyper-resonance to percussion on the affected side.
- Increased resistance when ventilating a patient.
- Standing Order – Bilateral Needle Decompression in *Traumatic Arrest (See Protocol).*

Procedure:

1. Don personal protective equipment (gloves, eye protection, etc.).

2. Administer high flow oxygen.

3. Identify and prep the site. Locate the second intercostals space (ICS) in the mid-clavicular line on the same side as the pneumothorax. If unable to place anteriorly, lateral placement may be used at the fourth ICS mid-axillary line. Prepare the site with povidone-iodine prep or solution.

4. Insert the catheter (14 gauge 3.25-4-inch needle for adults ,Pediatric use 16–18-gauge, 2-inch needle) into the skin over the third rib and direct it just over the top of the rib (superior border) into the interspace.

5. Advance the catheter through the parietal pleura until a pop is felt and air or blood exits under pressure through the catheter, then advance catheter only to chest wall.

6. Remove the needle, leaving the plastic catheter in place.

7. Secure the catheter hub to the chest wall with dressings and tape.
8. Consider using a finger cot cut from an exam glove as a flutter valve which affixes over the catheter hub. Secure the glove finger with tape or a rubber band. (Note: don't waste much time preparing the flutter valve; if necessary, control the air flow through the catheter hub with your gloved thumb.) **or** consider the use of an IV extension set without the medication administration port and using the pinch-clamp to control air flow/release.

Color-Coded Length-Based Pediatric Emergency Tape

AP-13
Published: 3/1/21
Reviewed: 2/27/21
Updated: 9/26/2023

INFORMATION

Primary Method:

If the patient's weight or age is available, use the FLFR developed Medication Tool below.

Secondary Method:

If either the patient's weight or age is unable to be determined, then use the Color-Coded Length-Based Pediatric Emergency Tape to determine the appropriate medication dosage and equipment sizes:

1. Lay the child down.
2. Measure from the head using the red end of the tape ("red to the head").
3. Use free hand to run the tape down the length of the child's body.
4. Identify the zone and use that colored zone to guide treatment.
5. If child is overweight, consider using the next zone above the one measured.
6. Once you have determined the colored zone, refer to the FLFR developed Medication Tool below.

MEDICATION	Gray	Pink	Red	Purple	Yellow	White	Blue	Orange	Green	Green	Green	Infusions	Normal Pediatric Vital Signs	1001
	3-5 KG	6-7 KG	8-9 KG	10-11 KG 1 Year	12-14 KG 2 Years	15-18 KG 3 Years	19-23 KG 5 Years	24-29 KG 7 Years	30-36 KG 9 Years	45 KG	55 KG			

Continuous Positive Airway Pressure (CPAP)

AP-14
Published: 3/1/21
Reviewed:
Updated: 8/28/2023

INFORMATION

Clinical Indications:
CPAP (10cm H2O) is indicated for moderate/severe respiratory distress, including COPD, asthma, complications of pneumonia, and near drownings. Patients must be 30 kg or greater and at least 12 years of age.

Contraindications:
- Cardiac Arrest, Respiratory Failure/Arrest or Agonal Respirations.
- Unconscious and/or inability to follow commands (lethargic).
- Shock associated with cardiac insufficiency or Systolic BP < 100.
- Penetrating Chest Trauma, Pneumothorax, or Facial Trauma/Burns.
- Excessive secretions and/or actively vomiting.
- Recent gastric surgery or current gastrointestinal bleeding.

Procedure (Pulmodyne, O2-Max Fixed System w/ Nebulizer):
O2-MAX Generator is a fixed flow venturi device that uses an oxygen supply in conjunction with air to generate an output flow. O2-MAX Generator uses a 50psi oxygen supply and can generate flows up to 140 lpm and fractional inspired oxygen (FiO2) approximately 30%. The O2-CPAP valves, which are snapped onto the anti-asphyxia housing end of the circuit, are used to maintain positive pressure flow rates from 60 to 140 lpm.

1. Connect directly to a 50psi oxygen source.
2. Have the patient sit up as much as possible (Full Fowler's Position).
3. Secure the face mask snugly to patient's face using head harness.
4. Set the PEEP valve to 10cm H20.
5. If the patient condition requires, use the included nebulizer to provide medications during CPAP administration/use.
6. The following should be monitored:
    - SaO2 continuously.
    - Level of consciousness continuously.
    - Check and document vital signs every (5) minutes.
    - Observe for gastric distention (Use caution with history of GI Bleeds.) If utilizing CPAP in conjunction with a nebulizer (see picture below), a second oxygen source will be required.
7. Document time and response on patient care report (ePCR).
8. Remove the CPAP if the following occurs:
    - If the patient's respiratory status does not improve and continues to decline. Remove CPAP, assist ventilations via BVM, and consider an advanced airway.
    - Immediately remove the CPAP for the asthmatic patient whose condition worsens after applying the CPAP. Silent lung sounds are a precursor to respiratory arrest.
    - If the patient is unable to tolerate the mask, use *Verbal Tactics* to calm/assist the patient through the treatment. As a last resort, 2mg Midazolam may be administered to help calm the patient.
    - In case of complications or increasing distress (unable to tolerate) discontinue treatment and follow appropriate protocol.

https://www.pulmodyne.com/wp-content/uploads/2021/09/2764F-O2-MAX-Fixed-System-with-Nebulizer.pdf

Cricothyrotomy (Needle)

AP-15
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

Clinical Indications:

Surgical Airway: If an airway cannot be secured by any other means, and the patient can not be effectively oxygenated or ventilated, a cricothyrotomy should be performed on adult patients (or needle cricothyrotomy for pediatrics).

Equipment:

Logistics currently prepares our needle cricothyrotomy kits with the following equipment:

- 3.0 endotracheal tube
- 14-gauge IV needle (Jelco)
- Veni-Gard
- 10 cc syringe
- Iodine prep pad
- Alcohol prep pad

Procedure:

1. Determine need for procedure, as indicated above
2. Prepare equipment, including suction
3. Preoxygenate
4. Position on back with head slightly hyperextended unless contraindicated
5. Locate cricothyroid membrane between cricoid and thyroid cartilage
6. Clean with alcohol / iodine
7. Puncture membrane with 14-gauge angiocath (needle angled 45 -60 degrees to feet)
8. Advance angiocath into trachea until pop is felt and air return noted
9. Remove needle and ventilate
10. Attach 3 mm ET tube adapter to angiocath or other alternative means of ventilation
11. Confirm needle placement
12. Secure needle with Veni-Gard or hold in place during transport
13. Monitor patient

Cricothyrotomy (Surgical)

AP-16
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

Clinical Indications:

Surgical Airway: If an airway cannot be secured by any other means, and the patient can not be effectively oxygenated or ventilated, a cricothyrotomy should be performed on adult patients (or needle cricothyrotomy for pediatrics).

Equipment:

Logistics currently prepares our needle cricothyrotomy kits with the following equipment:

- 6.0 ET tube
- Ear Loop Mask/Shield
- #10 scalpel
- ICON stabilization device
- 10 ml inflation syringe
- PVP prep pad
- 4x4's
- ICON Instruction

Procedure:

1. Determine need for procedure, as indicated above
2. Preoxygenate the patient while preparing the equipment, including suction
3. Locate cricothyroid membrane between cricoid and thyroid cartilage
4. Clean with alcohol / iodine
5. Attach the 10-cc syringe to an 18G - 1 & 1/2-inch needle.
6. Insert the needle (with syringe attached) perpendicularly through the cricothyroid membrane with the needle directed posteriorly.
7. During needle insertion, gentle aspiration should be applied to the syringe. Rapid aspiration of air into the syringe indicates successful entry into the trachea. Do not advance the needle any further. Attach forceps and remove syringe.
8. With the needle remaining in place, make a 1-inch vertical incision through the skin and subcutaneous tissue above and below the needle using a scalpel. Using blunt dissection technique, expose the cricothyroid membrane. This is a bloody procedure. The needle should act as a guide to the cricothyroid membrane.
9. With the needle still in place, make a horizontal stabbing incision approx. 1/2 inch through the membrane on each side of the needle. Remove the needle.
10. Using (skin hook, tracheal hook, or gloved finger) to maintain surgical opening, insert the cuffed tube into the trachea. (Cric tube from the kit or a #6 endotracheal tube is usually sufficient).
11. Inflate the tube cuff with 5-10cc of air and ventilate the patient while manually stabilizing the tube.
12. Reassess the patient
13. Secure the ET tube in place with ICON stabilization device
14. Attach BVM and EtCO2
15. Document details of the procedure in the PCR
16. Place a gastric tube if possible

Critical Incident Stress Management Team Activation

AP-17
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

Automatic Activation: (Via Chain of Command by AC2)

- Death or Serious Injury of a Coworker
- Death of a Child (patient or Coworker)
- Death of a patient after a prolong rescue
- Suicide of a Coworker
- Any Incident deemed necessary

Information Needed For CISM TEAM:

- Type of Incident
- Number of Members involved
- Meeting Location
- Contact Person (Name, Rank, and Phone Number)
- Units out of service for meeting
- Special concerns for any members involved.

1. Contact Fire Com's duty officer Via Radio, and or via phone: 954-476-4730, or
2. Contact Firefighter Andrew Masters 954-249-7202, or
3. Contact Farther Perkins 954-494-5105

Crush Syndrome

AP-18
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INDICATIONS:
Isolated extremity trauma only, not recommended for multiple-system injury. Crush Injury is a localized crush injury with systemic signs and symptoms causing muscle breakdown and release of potentially toxic muscle cell components and electrolytes into the circulation. Crush syndrome typically manifests after 1 – 4 hours of crush injury. Ideally, treatment should be started prior to release of compression to combat hypovolemia and to dilute cellular toxins.

Management/Care:

1. Universal care protocol and immediate psychological support.
2. ABCs/monitor cardiac rhythm/selective spinal motion restriction/control hemorrhage.
3. Wipe out mouth with damp cloth as needed. Protect the patient from dust using a facemask or N95 mask.
4. If O2 is not safe to administer, protect the patient from dust using a facemask or N95 mask.
5. Manage airway per protocols
6. Establish IV/IO access in the unaffected limb.
7. Administer normal saline fluid resuscitation, prior to release of compression force:
   - Entrapped – Less than two (2) hours, administer @ rate of 1 Liter per hour IV/IO.
   - Entrapped – More than two (2) hours, decrease to 500mL per hour IV/IO.
8. Consider Albuterol nebulized for possible hyperkalemia (peaked T-waves or wide QRS > 0.12 seconds), wheezing or bronchospasm (See: *Really Wide Complex Tachycardia*).
9. Sodium Bicarbonate (NaHCO3) 1meq/kg IVP - (FOR CRUSH SYNDROME).
10. Consult *Pain Management protocol*.
11. Release compression and extricate patient.
12. Non-compressive splints/dressings prn and keep affected limb at level of the heart.
13. If not able to perform IV / IO fluid resuscitation immediately, consider tourniquet on crushed limb until IV / IO fluids can be initiated (even if tourniquet is not used for hemorrhage control).
14. Transport to a Level I Trauma Center.

Pediatric Specific Care:

1. Follow Management/Care steps 1-6 and 11-14, as noted above.
2. Normal saline 20ml/kg for fluid resuscitation, prior to release of compression force.
3. Consider Albuterol nebulized for possible hyperkalemia, wheezing or bronchospasm.
4. Sodium Bicarbonate (NaHCO3) 1mEq/kg IVP - (FOR CRUSH SYNDROME).
8. Consult *Pain Management protocol*.

Existing Catheter Use

AP-19
Published: 3/1/21
Reviewed: 2/27/21
Updated: 10/12/23

INFORMATION

Clinical Indications:

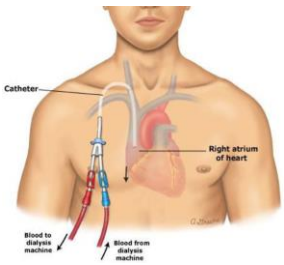
- Inability to obtain adequate peripheral access.
- Access of an existing venous catheter for medication or fluid administration.
- Central venous access in a patient in cardiac arrest.

Procedure:

- Clean the port of the catheter with alcohol wipe.
- Using sterile technique, withdraw 5-10 ml of blood and discard syringe in sharps container.
- Using 5cc of normal saline, access the port with sterile technique and gently attempt to flush the saline.
- If there is no resistance, no evidence of infiltration (e.g., no subcutaneous collection of fluid), and no pain experienced by the patient, then proceed to step 5. If there is resistance, evidence of infiltration, pain experienced by the patient, or any concern that the catheter may be clotted or dislodged, do not use the catheter.
- Begin administration of medications or IV fluids slowly and observe for any signs of infiltration. If difficulties are encountered, stop the infusion and reassess.
- Record procedure, any complications, and fluids/medications administered in the Patient Care Report (ePCR).

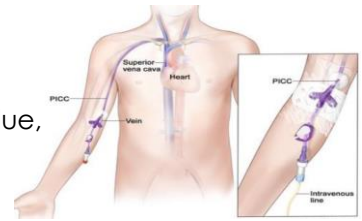
Types of IV Catheters:

Dialysis Catheter - Surgically implanted device used to access the vasculature for hemodialysis. May be tunneled under the skin with access on outside of skin surface or may be non-tunneled with greater portion of catheter on outside of skin surface. Most catheters have a **RED** port and a **BLUE** port. Some catheters have a **RED** port and a **WHITE** port.



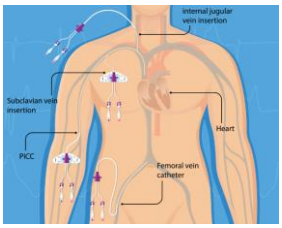
Only approved for access during cardiac arrest.

PICC (Peripherally Inserted Central Catheters) - Long catheter inserted into a vein in arm or leg (less common) with the tip of the catheter positioned into the central circulation. May have 1 or 2 ports (possibly more, but less common.) Port ends usually white, blue, or purple. (May be red, less common and is not used for dialysis.)



May access and utilize following procedure above.

Central Lines - Catheter placed in large vein in the neck, under the clavicle, or in the groin. May have 1 - 4 ports (possibly more, but less common.) Port ends usually white, blue, or purple. (May be red, less common and is not used for dialysis.)



May access and utilize following procedure above.

Foreign Body Obstruction

AP-20
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

Clinical Indications:

Removal of severe foreign body airway obstruction. Severe signs include:

- Clutching the throat (the "universal choking sign")
- Unable to speak or cry
- Poor or no air exchange
- Weak, ineffective cough or no cough
- High pitched sound upon inhalation or no sounds
- SOB
- Possible cyanosis

Procedure:

Mild obstructions (good air exchange, forceful cough, possible wheezes) continue to encourage the patient to cough, monitor patient.

Severe Obstructions – conscious adult or child

1) Abdominal thrusts – stand or kneel behind victim
2) Make fist; place thumb side against abdomen above navel but well below breastbone
3) Provide quick, forceful upward thrusts
4) Repeat until object is expelled or victim becomes unresponsive
5) If victim becomes unresponsive, follow the HP-CPR protocol while checking for the foreign body every two minutes or when assessing the airway

Severe Obstructions – conscious infant

1) Kneel or sit with infant in lap
2) Hold infant facedown, head slightly lower than chest, resting on your forearm
3) Deliver 5 forceful back slaps
4) Transfer infant to other forearm, flipping infant face up, cradling head with hand
5) Deliver 5 quick chest thrusts over the lower half of the breastbone
6) Repeat the sequences of 5 back slaps and 5 chest thrusts until the foreign object becomes dislodged or the infant becomes unresponsive
7) If victim becomes unresponsive, follow the CPR protocol while checking for the foreign body every two minutes or when assessing the airway

Source: 2020 AHA BLS Guidelines

Gastric Tube Insertion

AP-21
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Updated:

INFORMATION

Clinical Indications:

Gastric tubes (sometimes identified by "Salem Sump" on the package) are used in the emergency setting to decompress patient that either has an advanced airway in place (ETT or BIAD), receiving prolonged ventilations via BVM during cardiac arrest resuscitation, or requires gastric decompression.

Procedure:

1. Determine the length needed - measure from the nose, over the ear, down to the stomach (tip of the xiphoid process)
2. Flex neck forward to facilitate passage.
3. Lubricate the distal end of the tube with a water-soluble gel.
4. Pass through the patient's nostril along the floor of the nasal passage.
5. Advance tube to predetermined length.
6. Use a 60cc syringe filled with air to inject into the tube. Listen for bubbling or gurgling to confirm placement.
7. Secure the tube with tape.
8. Connect the tube to low suction to decompress the gastric space.

Note:

The King LTS-D has a large gastric access port that can accommodate up to an 18 French OG gastric tube.

Glasgow Coma Score

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Updated:

INFORMATION

The Glasgow Coma Scale (GCS) is used to objectively describe the extent of impaired consciousness in all types of acute medical and trauma patients. The scale assesses patients according to three aspects of responsiveness: eye-opening, motor, and verbal responses. Reporting each of these separately provides a clear, communicable picture of a patient. The findings in each component of the scale can aggregate into a total Glasgow Coma Score which gives a less detailed description but can provide a useful summary of the overall severity. The Glasgow Coma Scale and its total score have since been incorporated in numerous clinical guidelines and scoring systems for victims of trauma or critical illness.

The findings using the scale guide initial decision making and monitor trends in responsiveness that are important in signaling the need for new actions.

Eye Opening Response:

- Spontaneous--open with blinking at baseline 4 points
- To verbal stimuli, command, speech 3 points
- To pain only (not applied to face) 2 points
- No response 1 point

Verbal Response:

- Oriented 5 points
- Confused conversation, but able to answer questions 4 points
- Inappropriate words 3 points
- Incomprehensible speech 2 points
- No response 1 point

Motor Response:

- Obeys commands for movement 6 points
- Purposeful movement to painful stimulus 5 points
- Withdraws in response to pain 4 points
- Flexion in response to pain (decorticate posturing) 3 points
- Extension response in response to pain (decerebrate posturing) 2 points
- No response 1 point

Sources: https://www.glasgowcomascale.org/what-is-gcs/
Source: https://www.cdc.gov/masstrauma/resources/gcs.pdf

In-Field Blood Draw

INFORMATION

There are occasions when Fire Rescue personnel may be requested to emergency scenes and/or other law enforcement facilities in order to retrieve a blood sample from a subject of an active investigation. When requested to assist Department of Law Enforcement (DLE), this procedure shall provide direction for drawing blood in the field.

Only a state certified Paramedic is approved by the Medical Director to comply with DLE requests for an In-Field Blood Draw.

Law enforcement will provide the Paramedic with a *Blood Specimen Collection* kit with the following items include:

- Blood Specimen Collection Instructions (Blue Paper)
- Consent Form/Blood Collector's report (White Paper/Red Writing)
- Two vials in a cardboard holder
- 20-gauge Blood Collection Needle (Vacutainer® compatible)
- 1 Vacutainer®
- 1 Povidone-Iodine Prep Pad
- Zip-Lock® Bag with 1 Liquid Absorbing Sheet
- Specimen Security Seal x 2

Items not included within kit, but maybe required:

- Tourniquet
- Sterile 4x4
- Band-Aid®

Terminating Factors (from SOP 1108) – any situation listed below that would supersede or cancel FLPD's request for a Blood Draw:

- Patient requires immediate treatment and transport to an appropriate receiving emergency department. At **no** time will a Blood Draw request delay treatment or transport of a critically injured or ill patient.
- Patient requests transport to hospital emergency department for further evaluation/care.
- Patient exhibiting signs of a medical and/or traumatic event, but is refusing to "ALL" contact, therefore not relaying a complaint. This instance may include a "hostile" patient. Every attempt within safety should be made to render care as necessary. Document as much information as possible and secure a witness of refusal signature from the FLPD officer on scene. FLFR
- Personnel are **not permitted** to conduct a "forced" and/or "Court Ordered" Blood Draw.
- Patient denies voluntary permission to a Blood Draw or reverses initial decision giving permission to a Blood Draw.
- Patient anatomy limiting the Medical Personnel to properly or safely complete the procedure (I.e., poor venous access).
- When multiple patients are on scene, the request for a Blood Draw will be of least priority until the scene is secure.

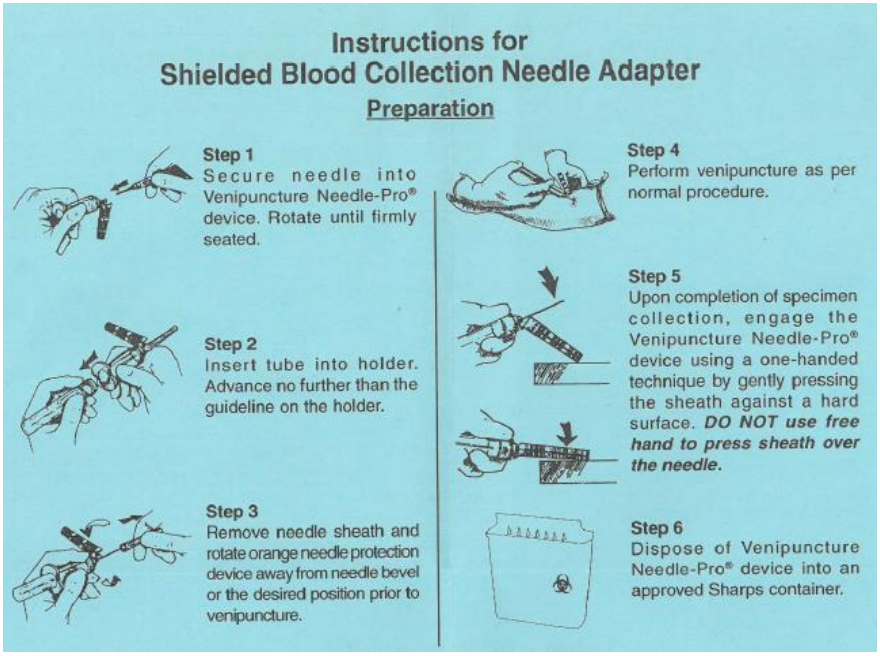
In-Field Blood Draw

Procedure:

1. An electronic Patient Care Report (ePCR) must be complete and accurate as you are performing an invasive procedure. This report shall include a:
    - Full assessment,
    - Vital signs (x 3 sets),
    - Blood glucose monitoring,
    - ECG tracing, and
    - Narrative documenting injuries and/or complaints, or lack thereof.
2. Accept the Blood Specimen Collection kit **without** wearing gloves.
3. Confirm with investigating officer (DLE) that the kit is sealed and not expired. Expired kits are immiscible in court.
4. Don proper PPE per protocol (including **new pair of gloves**).
5. Break the seal and open the kit. Confirm contents, integrity of the vials (I.e., visible damage) and follow all instructions within the kit given to you verbally by the investigating officer.
6. Initial both *Specimen Seals* as indicated and return to the investigating officer. Have the investigating officer complete the *Consent Form* with the person of interest.
7. **Only** use the items within the Blood Draw kit to complete the procedure with the addition of a tourniquet, if required. **Never use** an alcohol prep pad to cleanse the site. Following the instructions provided and prepare the kit's contents. (If required, refer to the *Instructions for Shielded Blood Collections Needle Adapter* below).
8. Utilizing the *Venous Access Extremity* procedure, complete steps 4-7 (Note – feel for venous puncture, flashback will not be seen.). Using the blood tubes provided, insert a blood tube into the Vacutainer® and withdraw the blood specimens allowing the tube to fill to the maximum volume. Remove tube and insert the second tube. While the second tube is filling, follow mixing directions below for the first tube. Repeat mixing direction for second tube. (**NOTE:** Immediately after blood collection, assure proper mixing of the anticoagulant powder by slowly and completely inverting the blood tubes at least five (5) times. **Do not shake vigorously.**
9. Remove tourniquet prior to withdrawing the 20-gauge Blood Collection Needle/Vacutainer®. Apply sterile 4x4 and direct pressure to venous puncture site for one minute after removal of needle, and then apply Band-Aid®.
10. Do not return used 20-gauge Blood Collection Needle (Vacutainer® compatible), Vacutainer®, or Povidone-Iodine Prep Pad to the kit box. Discard in the appropriate biohazard waste receptacle as required by your Department's policy.
11. Specific to the blood draw procedure, the following additional information is required to be documented within the ePCR:
    - Name and badge number of the investigating officer requesting the blood draw,
    - Expiration date and lot number of the blood draw kit,
    - Affirmation that the blood draw kit is sealed,
    - Medical Personnel completing the blood draw procedure, and
    - Date/time the blood draw occurred.

In-Field Blood Draw

Instructional Insert:



Instructions for
Shielded Blood Collection Needle Adapter

Preparation

Step 1
Secure needle into Venipuncture Needle-Pro® device. Rotate until firmly seated.

Step 2
Insert tube into holder. Advance no further than the guideline on the holder.

Step 3
Remove needle sheath and rotate orange needle protection device away from needle bevel or the desired position prior to venipuncture.

Step 4
Perform venipuncture as per normal procedure.

Step 5
Upon completion of specimen collection, engage the Venipuncture Needle-Pro® device using a one-handed technique by gently pressing the sheath against a hard surface. ***DO NOT use free hand to press sheath over the needle.***

Step 6
Dispose of Venipuncture Needle-Pro® device into an approved Sharps container.

Contents of Specimen Box:

Intraosseous Access (EZ-IO)

INFORMATION

Clinical Indications:

Patients where rapid, regular IV access is unavailable with any of the following:

- Cardiac arrest.
- Multisystem trauma with severe hypovolemia.
- Severe dehydration with vascular collapse and/or loss of consciousness.
- Respiratory failure / Respiratory arrest.

The current approved sites for IO insertion are the proximal tibia (adults and pediatrics) and proximal humerus (adults ONLY). Additional sites will be researched and added following approval and associated training.

Contraindications:

- Fracture in target bone
- Previous, significant orthopedic procedures at insertion site, prosthetic limb or joint
- IO access (or attempted IO access) in the targeted bone within the past 48 hours
- Infection at area of insertion
- Excessive tissue (severe obesity) and/or absence of adequate anatomical landmarks

If a critical patient needs resuscitation & an IV cannot be established, the EZ-IO will be indicated. Although the diabetic patient who is unconscious could arguably fit this category, it is probably prudent to use other means for treatment (e.g., Glucagon). If there is no change in the patient's status and further treatment is required, the EZ-IO should be considered for the administration of Dextrose. As with the administration of Dextrose, the possibility of infiltration of Dextrose through the EZ-IO is a concern and due caution should be used. If a situation presents where the EZ-IO is the first-line intervention, proper documentation must be noted in the PCR to justify the use of the EZ-IO without any IV attempts. Should a discrepancy arise, please reference protocols followed by contacting your supervisor or EMS Chief.

EZ-IO® Needle Set selection:

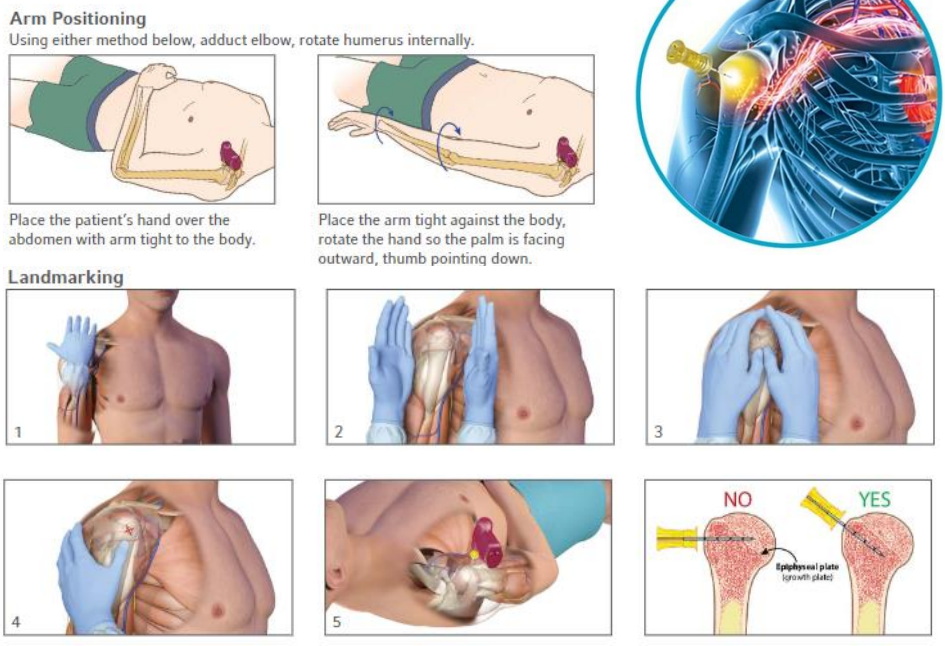
Select EZ-IO® Needle Set based on patient weight (kg), anatomy, and clinical judgment. The EZ-IO® Needle Set is marked with black lines. Prior to drilling, with the EZ-IO® Needle Set inserted through the soft tissue and the needle tip touching bone, adequate needle length is determined by the ability to see at least one black line outside the skin.

- **EZ-IO® 45 mm Needle Set (yellow hub)** is indicated for patients ≥40 kg. This needle length should be considered for proximal humerus site in most patients weighing ≥40 kg, to accommodate for any inadvertent movement of the extremity after insertion. This needle length should also be considered for patients with excessive tissue over any insertion site.
- **EZ-IO 25 mm Needle Set (blue hub)** is indicated for patients ≥3 kg
- **EZ-IO 15 mm Needle Set (pink hub)** is indicated for patients 3-39 kg

Intraosseous Access (EZ-IO)

Proximal Humerus (Adult ONLY):
Internally rotate and adduct the arm using one of the following methods: 1) Place the hand over the abdomen with the arm tight to the body, or 2) place the arm tight against the body and rotate the hand so the palm is facing outward, thumb pointing down. Palpate the surgical neck of the proximal humerus. The insertion site is on the anterolateral part of the arm, 1-2 cm above the surgical neck, in the most prominent aspect of the greater tubercle. Insert needle set into the greater tubercle at an approximately 45-degree angle, as if aiming toward the opposite hip.

Locate Site:
1. Clean site with povidone-alcohol
2. Prepare supplies (extension set, flush set, driver and proper needle)
3. Aim the needle set at a 45-degree angle as if aiming toward the opposite hip
4. Push the needle set tip through the skin until the tip rests against the bone
5. The 5-mm mark must be visible outside the skin for confirmation of adequate needle set length
6. Squeeze trigger and apply gentle, steady pressure
7. Gently drill. In the proximal humerus for most adults the needle set should be advanced until the hub is flush or against the skin (this may be more than approximately 1 cm)
8. See "Insertion Completion" on next page



Landmark Guide -
https://p.widencdn.net/x101n7/MC-000620Rev2_Arrow_EZIO_EMS_ProximalHumerus_DataSheet_HR_SAM

Intraosseous Access (EZ-IO)

Proximal Humerus (Adult):

Internally rotate and adduct the arm using one of the following methods: 1) Place the hand over the abdomen with the arm tight to the body, or 2) place the arm tight against the body and rotate the hand so the palm is facing outward, thumb pointing down. Palpate the surgical neck of the proximal humerus. The insertion site is on the anterolateral part of the arm, 1-2 cm above the surgical neck, in the most prominent aspect of the greater tubercle. Insert needle set into the greater tubercle at an approximately 45-degree angle, as if aiming toward the opposite hip.

Proximal Tibia (Pediatric and Adult):

1. Clean site with povidone-alcohol.
2. Prepare supplies (extension set, flush set, driver and proper needle)
3. Aim the needle set at a 90-degree angle to the bone.
4. Push the needle set tip through the skin until the tip rests against the bone
   The 5-mm mark must be visible outside the skin for confirmation of adequate needle set length.
5. Squeeze trigger and apply gentle, steady pressure, immediately release the trigger when you feel a sudden "give" or "pop" as the needle set enters the medullary space.
   Avoid recoil – do NOT pull back on the driver when releasing the trigger
6. See "Insertion Completion" in the next section.

Insertion Completion:

1. Stabilize Needle Set Hub, disconnect EZ-IO® Power Driver, and remove stylet.
2. Place sharps in sharp container.
3. Confirm needle is stable and place EZ-Stabilizer® Dressing over cannula hub
4. Attach a primed EZ-Connect® Extension Set to the hub, firmly secure to cannula hub by twisting clockwise, ensure clamp is open.
5. Pull the tabs off the dressing to expose the adhesive and adhere to the skin
6. Flush the EZ-IO® Cannula with normal saline (0.9% Sodium Chloride; 5-10 ml for adults, 2-5 ml infant/child).
   - Prior to flush, aspirate for blood/bone marrow (2nd confirmation of placement).
   - Inability to withdraw/aspirate blood from the cannula hub does not mean the insertion was unsuccessful.
7. Administer medications and fluids as ordered and pressurize fluids up to 300 mmHg for maximum flow.
8. Stabilize the affected limb and monitor site for extravasation or other complications.
   - For proximal humerus insertions, apply arm immobilizer or another securement device.
9. Document date and time on patient PCR.

Kendrick Extrication Device (K.E.D.)

AP-25
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Updated:

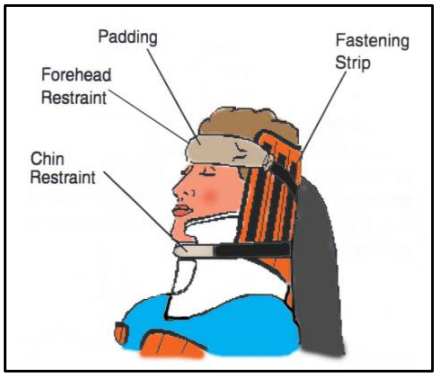
INFORMATION

The Model 125 KED (Kendrick Extrication Device, referred to as the KED in this manual) is an emergency patient-handling device designed to aid in the immobilization and short transfer movement of patients with suspected spinal/cervical injuries or fracture. The KED is designed for use by a minimum of two trained operators. Additional help may be preferred or needed.

Procedure:

1. Apply cervical collar
2. Place KED behind the patient
3. Position KED so it is snug under patient's armpits
4. Secure middle strap
5. Secure bottom strap
6. Secure Leg straps
7. Secure head strap
8. Secure top strap
9. Tighten all straps
10. Position backboard under buttocks (if patient is in a vehicle)
11. Transfer patient to backboard from vehicle
12. Too allow the legs to straighten on the backboard, disconnect the leg straps
13. Resecure leg straps after legs are straightened

- Source: Ferno Model 125 KED https://co.grand.co.us/DocumentCenter/View/681/KED-Kendrick-Extrication-Device-User-Guide?bidId=



LUCAS Device

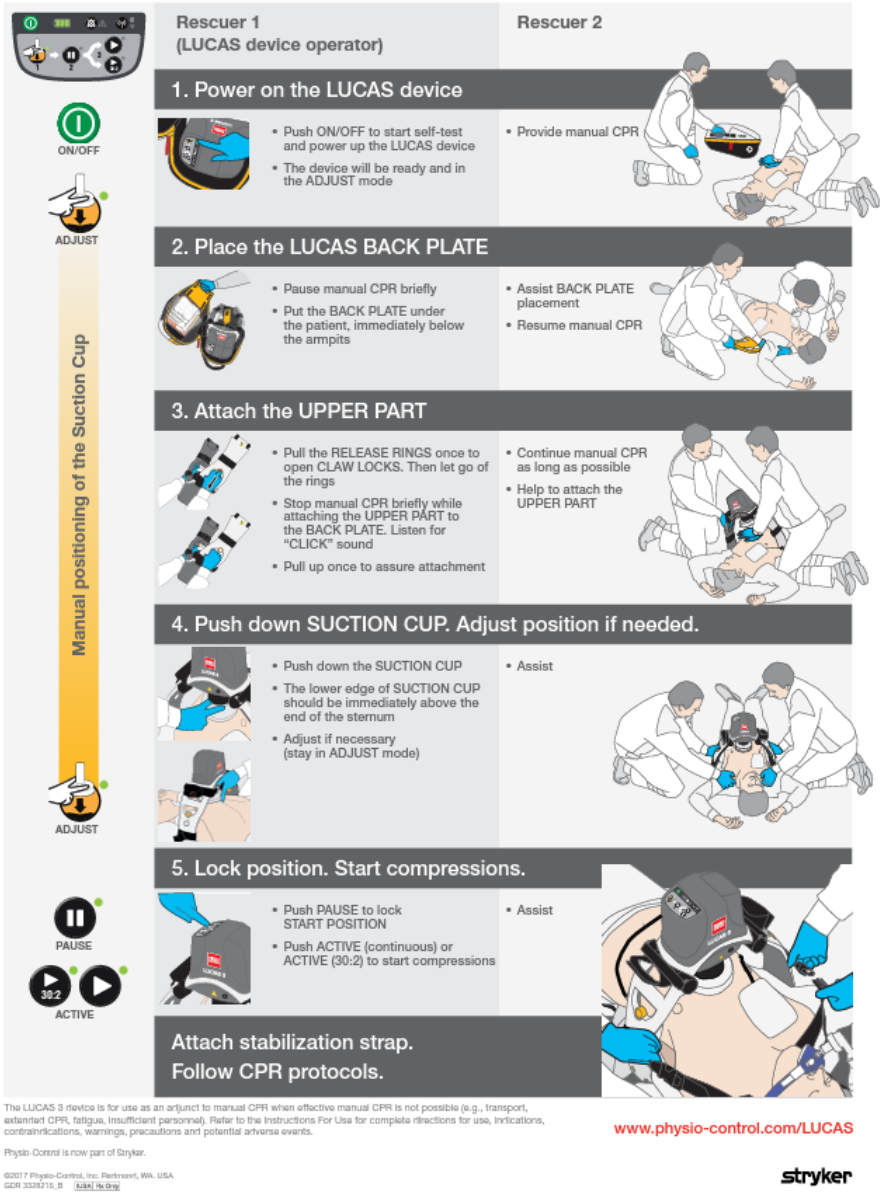
AP-26
Published: 3/1/21
Reviewed: 2/27/21
Updated:

LUCAS Special Circumstances

INFORMATION

Indications:
The Lucas may be used in patients 12 years of age and older who have suffered cardiac arrest, where manual CPR would otherwise be used. **Trauma is NOT a contraindication for use, but least preferred as compared to manual chest compressions by the Broward County TSQIC.**

Manual:
https://www.lucas-cpr.com/files/5496926_10092501%20Rev%20E%20LUCAS%203%20IFU%20EN_lowres.pdf



Mucosal Atomized Device (MAD)

AP-27
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

Atomized nasal medications are the optimal size for rapid absorption across mucosal membranes into the bloodstream, avoiding first-pass metabolism. This route is painless, safe, and requires little training to deploy this technique.

Procedure:

1. Aspirate the proper volume of medication required to treat the patient (including medication to account for the dead space in the device; approx. 0.1 ml)
    - Ideal dose is 0.5 ml; max dose per nostril is 1 ml
    - Approved medications include Narcan and Versed, if in the correct concentration.
2. Remove (twist off) the syringe from the vial adapter and discard in sharps container
3. Attach the MAD Nasal Device to the syringe via the luer lock connector
4. Using the free hand to hold the occiput of the head stable, place the tip of the MAD Nasal Device snugly against the nostril aiming slightly up and outward (toward the top of the ear)
5. Briskly compress the syringe plunger to deliver **half of the medication** into the nostril
6. Move the device over to the opposite nostril and **administer the remaining medication** into the other nostril.

Factors Affecting Absorption:

- Vasoconstrictors
- Epistaxis, nasal congestion, mucous discharge
- Destruction of mucosa from surgery or past cocaine use
- Particles 10-50 microns adhere best to the mucosa
- Too much fluid administration per nostril

Contraindications:

- Epistaxis, trauma, septal abnormality, nasal congestion, mucous discharge
- Destruction of nasal mucosa from surgery or past cocaine abuse

Notes on Narcan:

- Absorption almost as fast as IV
- Gradual increase in LOC, respiratory status improves fast or faster due to elimination of IV access delay
- Not always 100% effective. If needed follow with IV along with reassessment for other causes
- Narcotic antagonist that reverses the effect of opiate drugs, narcotics/synthetic narcotics: Morphine, Dilaudid, Fentanyl, Demarol, Paragoric, Methadone, Heroin, Percodan, Tylox, Nubain, Stadol, Talwin, Darvon
- Same indications, contraindications, and precautions for IV use

Medication Administration

AP-28
Published: 3/1/21
Reviewed: 2/27/21
Updated: 11/25/21

INFORMATION

Intramuscular:
An intramuscular injection is a technique used to deliver a medication deep into the muscles. This allows the medication to be absorbed into the bloodstream quickly.
Adults and large children, use a 21-gauge 1.5-inch needle. The injection site is the lateral thigh (4mL maximum) or deltoid. If greater than 4mL needs to be administered, split the dose between both thighs. Insert the needle into flattened skin with a smooth, steady motion on a 90-degree angle.
Infants and Children, use a 23-gauge 1 inch needle. The injection site is the lateral thigh 1mL maximum. If greater than 1mL needs to be administered, split the dose between both thighs.

Intranasal:
See *Mucosal Atomized Device (MAD)*

Nebulizer:
1. Gather the necessary equipment.
2. Assemble the nebulizer kit.
3. Instill the appropriate medication as per protocol into the reservoir well of the nebulizer.
4. Connect the nebulizer device to oxygen at 4-6 liters per minute or adequate flow to produce a steady, visible mist.
5. Instruct the patient to inhale normally through the mouthpiece or facemask of the nebulizer. The goal is to inhale the medication (visible mist).
6. The treatment should last until the solution is depleted. Tapping the reservoir well near the end of the treatment will assist in utilizing all the solution.
7. Monitor the patient for medication effects. This should include the patient's assessment of his/her response to the treatment.
8. Reassess vital signs, ECG, and breath sounds.
9. Document the treatment, dose, and route on the patient care report (ePCR).

Subcutaneous:
The most common site for subcutaneous injection is the arm. SQ Injections are given with a short 5/8 inch, 25 to 27-gauge needle at a 45-degree angle while the skin is pinched together. Usually less than 1mL but up to 2mL of fluid administration is safe.

Sublingual:
Sublingual administration involves placing a drug under your tongue to dissolve and absorb into your blood through the tissue there. Sublingual drugs come in tablets, films, or sprays.

Medication Administration (The "5" Rights)
RIGHT: Patient
RIGHT: Medication
RIGHT: Time (within Protocol)
RIGHT: Dose
RIGHT: Route
Document Administration

Orotracheal Intubation

AP-29
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

Clinical Indications:

- Any patient without a gag reflex who is apneic or is demonstrating inadequate respiratory effort.
- Any patient with a GCS ≤ 8 REQUIRE aggressive airway management and possibly intubation, refer to *Airway Protocol*.
- Any patient medicated for rapid sequence intubation or sedated airway control.

Procedure:

1. Prepare all equipment and have suction ready.
2. Preoxygenate and position the patient.
3. Open the patient's airway and holding the laryngoscope in the left hand, insert the blade into the right side of the mouth and sweep the tongue to the left.
4. Use the blade to assist in visualizing the vocal cords (either directly with the straight blade or indirectly with the curved blade).
5. Once the glottic opening is visualized, insert the lubricated tube through the cords and continue to visualize until the cuff is past the cords or until the intubation depth marker is equal to the vocal cords.
6. Remove the stylet and inflate the cuff with enough air to make a seal.
7. Auscultate for absence of sounds over the epigastrium and bilaterally equal breath sounds. This should be repeated frequently and after movement or manipulation.
8. Confirm the placement using direct visualization, EDD, epigastric and breath sounds symmetrical chest rise, capnograph, and bag compliance.
9. Secure the tube and apply C-collar.
10. Document ETT size, time, result (success), and placement location by the centimeter marks either at the patient's teeth or lips on the patient care report (PCR). Use all devices to confirm initial tube placement and document. Reassess and document after each patient movement, electrical therapy, change in bag compliance, change in Pt status, and transfer of Pt care at the hospital.
11. Attach ventilator. (See ventilator procedure).
12. Insert NG\OG tube

Orthostatic Blood Pressure Monitoring

AP-30
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

Source: https://www.cdc.gov/steadi/pdf/Measuring_Orthostatic_Blood_Pressure-print.pdf

ASSESSMENT

Measuring Orthostatic Blood Pressure

Patient _____

Date _____

Time _____ ☐AM ☐PM

1. Have the patient lie down for 5 minutes.
2. Measure blood pressure and pulse rate.
3. Have the patient stand.
4. Repeat blood pressure and pulse rate measurements after standing 1 and 3 minutes.

A drop in BP of ≥20 mm Hg, or in diastolic BP of ≥10 mm Hg, or experiencing lightheadedness or dizziness is considered abnormal.

POSITION	TIME	BP	ASSOCIATED SYMPTOMS
Lying Down 	5 Mins.	BP____ /____ HR_____	
Standing 	1 Min.	BP____ /____ HR_____	
Standing 	3 Mins.	BP____ /____ HR_____	

CDC's STEADI tools and resources can help you screen, assess, and intervene to reduce your patient's fall risk. For more information, visit www.cdc.gov/steadi

Centers for Disease Control and Prevention
National Center for Injury Prevention and Control

2017

STEADI Stopping Elderly Accidents, Deaths & Injuries

Pain Assessment and Documentation

AP-31
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

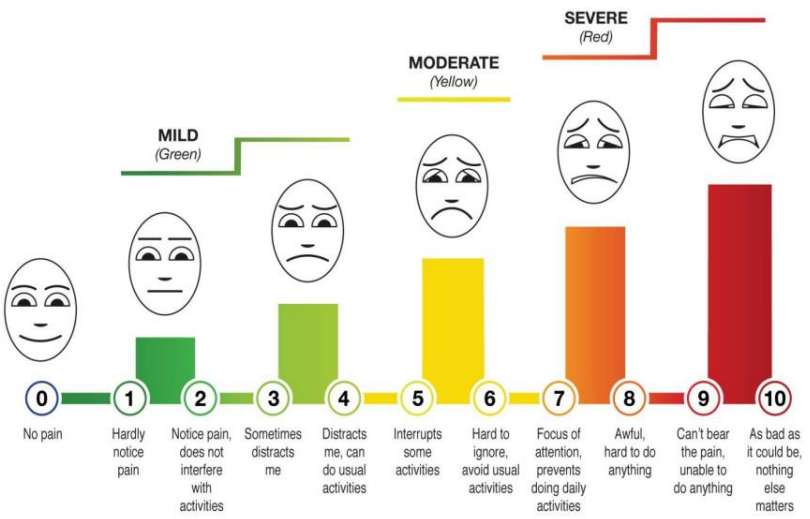
Clinical Indications:
Any patient with pain.

Definitions:
- Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage.
- Pain is subjective (whatever the patient says it is).

Procedure:
1. Initial and ongoing assessment of pain intensity and character is accomplished through the patient's self report.
2. Pain should be assessed and documented in the PCR during initial assessment, before starting pain control treatment, and with each set of vitals.
3. Pain should be assessed using the appropriate approved scale.
4. Three pain scales are available: the 0 - 10, the Wong - Baker "faces", and the FLACC.

0 - 10 Scale: the most familiar scale used by EMS for rating pain with patients. It is primarily for adults and is based on the patient being able to express their perception of the pain as related to numbers. Avoid coaching the patient; simply ask them to rate their pain on a scale from 0 to 10, where 0 is no pain at all and 10 is the worst pain ever.

Wong Baker FACES scale: this scale is primarily for use with pediatrics but may also be used with geriatrics or any patient with a language barrier. The faces correspond to numeric values from 0-10. This scale can be documented with the numeric value.



Defense and Veterans Pain Rating Scale (v2.0)

Allina Health Pain Assessment Scale, 2015.

Pain Assessment and Documentation

AP-31
Published: 3/1/21
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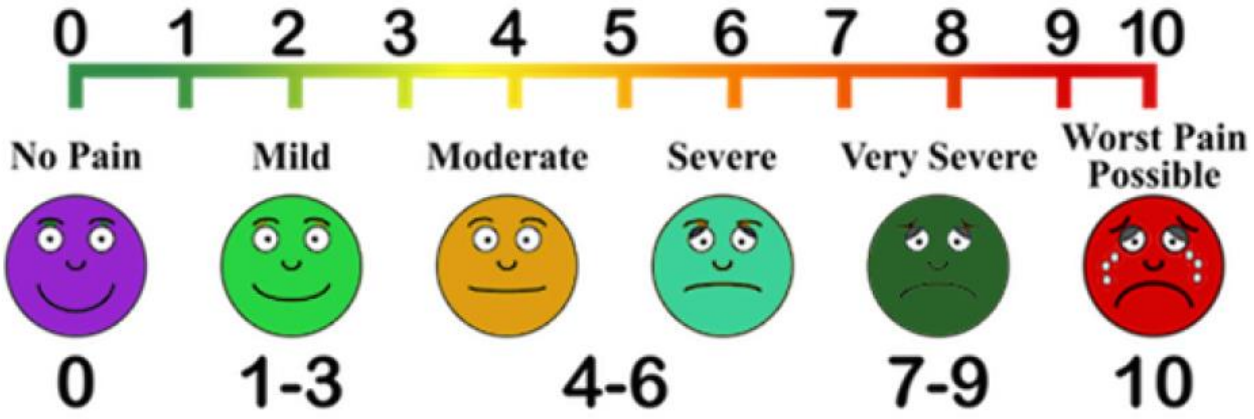
Updated:



Score	0	1-3	4-6	7-9	10
English	No Pain	A Little Pain	Increased Pain	Severe	Unbearable, Worst
Creole	San Doulè	Yon Ti Doulè	Doulè Modere	Gwo Doulè	Doulè, Ensipòtab
Spanish	No Dolor	Un Pequeño Dolor	Un Dolor Leve	Dolor Severo	Dolor Intenso, Insoportable

Common Questions (Translated)

English	Creole	Spanish
What is your name?	Kijan ou rele?	Cómo te llamas?
What is your birthday?	Ki dat ou fèt?	Cual es tu fecha de cumpleaños?
Are you in pain?	Èske ou nan doulè?	Tienes dolor?
Where is the pain?	Kotè doule a ye?	Dónde está el dolor?
When did the pain start?	Ki lè doulè a te kòmanse?	Cuándo empezo el dolor?
What is your medical history?	Ki pwoblèm medical ou genyen?	Que problemas médicos tienes?
Do you take medicine? What are their names?	Ou pran medikaman? Ki non yo genyen?	Tomas medicina? Cuáles son los nombres?
Are you allergic to any medications?	Èske ou fè alèji ak nenpòt medikaman?	¿Eres alérgico a algún medicamento?

Pulse Oximetry

AP-32
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Updated:

INFORMATION

Procedure:

1. Apply probe to patient's finger or any other digit as recommended by the device manufacturer.
2. Allow machine to register saturation level.
3. Record time and initial saturation percent on room air if possible, on/with the patient care report (PCR).
4. Verify pulse rate on machine with actual pulse of the patient.
5. Monitor critical patients continuously until arrival at the hospital. If recording a one-time reading, monitor patients for a few minutes as oxygen saturation can vary.
6. Document percent of oxygen saturation every time vital signs are recorded and in response to therapy to correct hypoxemia.
7. In general, normal saturation is 97-99%. Below 94%, suspect a respiratory compromise.
8. Use the pulse oximetry as an added tool for patient evaluation. Treat the patient, not the data provided by the device.
9. The pulse oximeter reading should never be used to withhold oxygen from a patient in respiratory distress or when it is the standard of care to apply oxygen despite good pulse oximetry readings, such as chest pain. Supplemental oxygen is not required if the oxyhemoglobin saturation is >= 94%, unless there are obvious signs of heart failure, dyspneic, or hypoxic to maintain to 94%.

Conditions that can lead to unreliable SaO2 readings:

- Poor peripheral perfusion (blood volume, hypotension, hypothermia)
- Patient movement or excessive movement of the sensor probe
- Nail polish or dirty fingers
- CO or cyanide poisoning
- Sepsis
- Jaundice
- Placement of BP cuff on same extremity as pulse ox probe.

Sources: https://www.jems.com/patient-care/the-how-what-and-why-of-ems-pulse-oximetry/

Pulse CO-Oximeter (RAD 57) Carboxyhemoglobin Monitoring

AP-33
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION:

Carboxyhemoglobin monitoring is used to determine if carbon monoxide levels are present in firefighters, patients and occupants with possible exposure to carbon monoxide. If levels are present, determine course of treatment needed.

SpCO readings can be used as an additional screening measure to determine exposure to carbon monoxide. SpCO readings can also be used as a tool of inclusion/exclusion on vague medical complaints to reduce the risk of undiagnosed carbon monoxide poisoning. When SpCO is used in conjunction with SPO2 it gives a higher index of suspicion of hypoxia and indicates a need for aggressive treatment.

Clinical Indications:

1. Post-incident firefighter screening on all fires.
2. Firefighter rehabilitation in accordance with NFPA 1584.
3. Extended time on or near fire-ground.
4. Multiple SCBA bottle use.
5. Suspected carbon monoxide exposure from work performed in confined spaces.
6. Carbon monoxide alarms/gas leaks without symptoms in conjunction with gas detectors to determine presence and exposure.
7. Multi-patient presentation.
8. Headache, dizziness, syncope, weakness, altered mental status, and/or lethargy.
9. Shortness of breath, chest pain.
10. Nausea, vomiting, abdominal complaints.
11. Any ill or injured patient with vague complaints.

For use during firefighter rehabilitation and as a screening tool on occupants without complaints regardless of whether known or unknown exposure. The following guidelines will be used as a baseline for detecting SpCO levels:

1. 0 - 3% Normal, no treatment required
2. 3 - 12% Yes - signs and symptoms or history of exposure TREAT
3. 3 -12% No - signs or symptoms, no history of exposure OBSERVE
4. 12% and higher TREAT and TRANSPORT

Treatment: 100% oxygen by non re-breather mask and transport to hospital is highly recommended.

For use on patients with vague flu-like symptoms to include nausea, vomiting, headache and lethargy. Also, to be used when there are multiple patients complaining of similar signs and symptoms.

Pulse CO-Oximeter (RAD 57) Carboxyhemoglobin Monitoring

Procedure:

1. Apply probe to patient's middle finger or any other digit to center of fingernail as recommended by the device manufacturer. If near strobe lights, cover finger to avoid interference and/or move away from lights if possible.
2. Allow machine to register percent circulating carboxyhemoglobin.
3. Record CarboxyHb procedure in PCR or on the scene rehabilitation form. Also record SaO2 from RAD 57
4. Verify pulse rate on machine with actual pulse of the patient.
5. Monitor critical patients continuously until arrival at the hospital. If recording a one-time reading, monitor patients for a few minutes as oxygen saturation can vary.
6. Document percent of carboxyhemoglobin every time vitals signs are recorded and in response to therapy to correct CO exposure.
7. Use the pulse oximetry feature of the device as an added tool for patient evaluation. Treat the patient, not the data provided by the device. Utilize the CO Exposure protocol for guidance.
8. The pulse oximeter reading should never be used to withhold oxygen from a patient in respiratory distress or when it is the standard of care to apply oxygen despite good pulse oximetry readings, such as chest pain.
9. Factors which may reduce the reliability of the reading include:
    - Poor peripheral circulation (blood volume, hypotension, hypothermia and vasoconstrictors)
    - Excessive external lighting, particularly strobe/flashing lights
    - Excessive pulse oximeter sensor motion
    - Fingernail polish (may be removed with acetone pad)
    - Irregular heart rhythms (atrial fibrillation, SVT, etc.)
    - Jaundice
    - Placement of BP cuff on same extremity as pulse ox probe

0 - 4%	Normal Value
> 5%	Possibly Some Exposure
< 10%	Alarm will sound, High CO Exposure
	Start treating patient appropriately and transport to closest appropriate hospital.

Treatment: 100% oxygen by non re-breather mask and transport to hospital is highly recommended.

Pulse CO-Oximeter (RAD 57) Carboxyhemoglobin Monitoring

Special Considerations:

- SpCO RAD 57-C is not intended to be used on pediatric patients
- Smokers may have baseline SpCO readings up to 10%.
- Pregnancy: Fetal SpCO may be 10 - 15% higher than maternal readings.
- Inaccurate readings may occur due to misplaced/dislodged probes.
- Do not utilize thumb or 5th digit [pinky finger] for readings.
- Never utilize tape to secure probe.
- Person with suspected or known exposure to carbon monoxide. Rehab of Firefighters on fireground or training operations for possible exposure to carbon monoxide.

Documentation Recommendations:

- When SpCO monitors are used for screening of asymptomatic patients and/or occupants and no readings are present, then document in the ePCR along with the gas detector reading.
- When used for firefighter rehabilitation and occupants with positive, low to moderate level readings that are asymptomatic complete the *Firefighter Rehabilitation* log.
- When used for symptomatic and/or high-level readings complete an ePCR.

Res-Q-Pod

AP-34
Published: 3/1/21
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Updated:

INFORMATION

Source: https://www.zoll.com/products/ipr/resqpod

Using the ResQPOD on a Facemask

1. Connect the ResQPOD to facemask.
2. Open airway. Establish and maintain tight face seal with mask throughout chest compressions; a head strap or 2-handed technique is recommended.
3. Connect ventilation source to top of ResQPOD, or mouthpiece if performing mouth to mask ventilation.
4. Perform CPR at recommended compression to ventilation ratio.
5. Place $ETCO_2$ detector between ResQPOD and ventilation source (preferred).

Using the ResQPOD on an ET Tube

1. Confirm ET tube placement and secure with commercial tube restraint.
2. Connect the ResQPOD to ET tube.
3. Connect ventilation source to the ResQPOD.
4. Perform continuous chest compressions.
5. Turn on timing assist lights. Ventilate asynchronously at timing light flash rate of 10/min.
6. Administer ET meds directly into ET tube.
7. Place $ETCO_2$ detector between ResQPOD and ventilation source (preferred).

Performing High Quality CPR with the ResQPOD

1. Begin chest compressions immediately
2. Avoid interruptions (CCF ≥ 80%)
3. Compress at the correct rate (100 – 120/min)
4. Push hard (at least 5 cm/2 inches)
5. Allow complete chest wall recoil
6. Don't hyperventilate
7. Use tools to help you get it right
   - Timing lights on the ResQPOD ITD to guide ventilations
   - CPR feedback, like Real CPR Help®, to guide compression rate, depth and fraction
8. Remove secretions from ResQPOD by blowing out with the ventilation source.

Respirator Operation/Use

AP-35
Published: 3/1/21
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Updated:

INFORMATION

Clinical Indications:
Transport of an intubated patient (ETT, BAIB, tracheostomy tube, etc.).

Procedure:

1. Confirm the placement of tube as per airway protocol.
2. Ensure adequate oxygen delivery to the respirator device using the quick connect coupling.
3. Preoxygenate the patient as much as possible with bag-valve mask.
4. Remove BVM and attach tube to respiration device.
5. Set the respiration value appropriately.
6. Adjust respirator setting as clinically indicated.
7. If any worsening of patient condition, decrease in oxygen saturation, or any question regarding the function of the respirator, remove the respirator and resume bag-valve mask ventilations.
8. Document time, complications, and patient response on the patient care report (PCR).

Restraints: Physical

AP-36
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Updated:

INFORMATION

Any patient who may harm himself, herself, or others may be gently restrained to prevent injury to the patient or crew. This restraint must be in a humane manner and used only as a last resort. Other means to prevent injury to the patient or crew must be attempted first. These efforts could include reality orientation, distraction techniques, or other less restrictive therapeutic means. Physical or chemical restraint should be a last resort technique. Police officer should be on scene when using restraints for combative patients.

Procedure:

1. Attempt less restrictive means of managing the patient.
2. Request law enforcement assistance.
3. Ensure that there are sufficient personnel available to physically restrain the patient safely.
4. Restrain the patient in a lateral or supine position. No devices such as backboards, splints, or other devices will be on top of the patient. The patient will never be restrained in the prone position.
5. The patient must be always under constant observation by the EMS crew. This includes direct visualization of the patient as well as cardiac and pulse oximetry monitoring whenever possible
6. The extremities that are restrained will have a circulation check at least every 5 minutes. The first of these checks should occur as soon after placement of the restraints as possible. This MUST be documented on the ePCR.
7. Documentation on/with the electronic patient care report (ePCR) should include the reason for the use of restraints, the type of restraints used, and the time restraints were placed.
8. If the above actions are unsuccessful, or if the patient is resisting the restraints, consider administering medications per protocol. (Chemical restraint may be considered earlier.)
9. If a patient is restrained by law enforcement personnel with handcuffs or other devices EMS personnel can not remove, a law enforcement officer must accompany the patient to the hospital in the transporting EMS vehicle.

Splinting

AP-37
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

- Immobilization of an extremity for transport, either due to suspected fracture, sprain, or injury.
- Immobilization of an extremity for transport to secure medically necessary devices such as intravenous catheters.

Procedure:

1. Assess and document pulses, sensation, and motor function prior to placement of the splint. If no pulses are present and a fracture is suspected, consider reduction of the fracture prior to placement of the splint.
2. Remove all clothing and jewelry from the extremity and place it in a secure area and return to patient and document.
3. Select a site to secure the splint both proximal and distal to the area of suspected injury, or the area where the medical device will be placed.
4. Do not secure the splint directly over the injury or device.
5. Place the splint and secure with Velcro, straps, or bandage material (e.g., kling, kerlex, cloth bandage, etc.) depending on the splint manufacturer and design.
6. Document pulses, sensation, and motor function after placement of the splint. If there has been a deterioration in any of these 3 parameters, remove the splint and reassess
7. If a femur fracture is suspected and there is no evidence of pelvic fracture or instability, the following procedure may be followed for placement of a femoral traction splint:
    - Assess neurovascular function as in #1 above.
    - Place the ankle device over the ankle.
    - Place the proximal end of the traction splint on the posterior side of the affected extremity, being careful to avoid placing too much pressure on genitalia or open wounds.
    - Make certain the splint extends proximal to the suspected fracture. If the splint will not extend in such a manner, reassess possible involvement of the pelvis
    - Extend the distal end of the splint at least 6 inches beyond the foot.
    - Attach the ankle device to the traction crank.
    - Twist until moderate resistance is met.
    - Reassess alignment, pulses, sensation, and motor function. If there has been deterioration in any of these 3 parameters, release traction and reassess.
8. Document the time, type of splint, and the pre and post assessment of pulse, sensation, and motor function in the electronic patient care report (ePCR).

Stryker Power Pro Stretcher

AP-38
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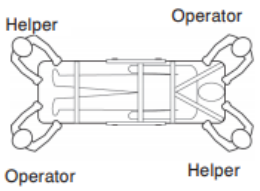
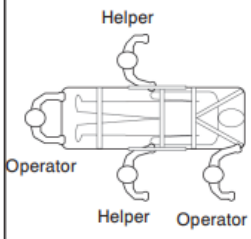
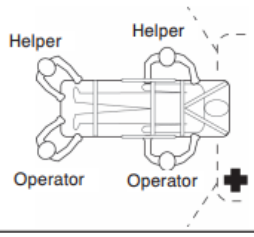
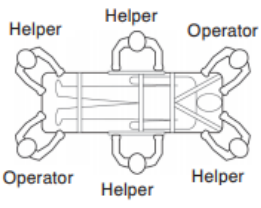
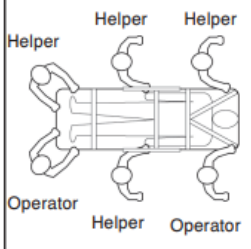
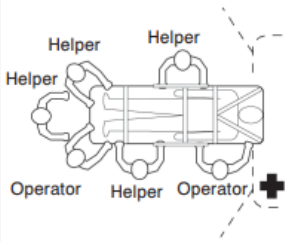
Reviewed: 2/27/21
Updated:

INFORMATION

Operating Guidelines:

- Read all labels and instructions on the cot before using the cot.
- Use a minimum of two (2) operators to manipulate the cot while a patient is on the cot. If additional assistance is needed, see illustration below.
- Do not adjust, roll or load the cot into a vehicle without advising the patient. Stay with the patient and always control the cot.
- The ambulance cot can be transported in any position. Stryker recommends transporting the patient in as low a position as is comfortable for the operators to maneuver the cot.
- Only use the wheel lock(s) during patient transfer or without a patient on the ambulance cot.
- Always use the restraint straps.
- Use properly trained helpers when necessary, to control the cot and patient.

Using Additional Assistance

	Changing Levels	Rolling	Loading/Unloading
Two Operators Two Helpers			
Two Operators Four Helpers			

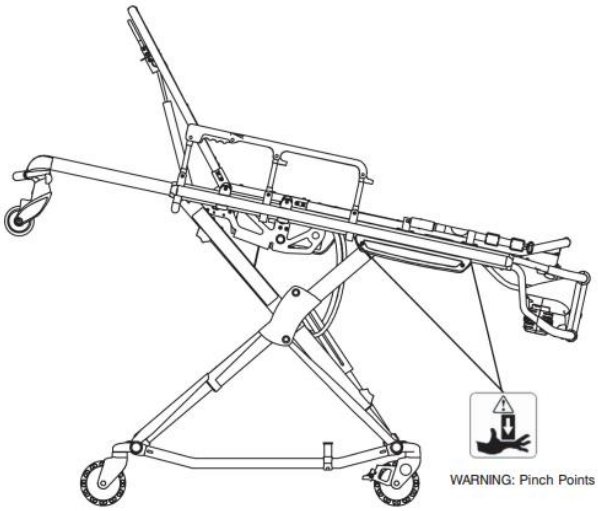
⚠ Warning/Caution:

- Improper usage of the Power-PRO™ XT ambulance cot can cause injury to the patient or operator.
- Entanglement in powered ambulance cot mechanisms can cause serious injury. Operate the ambulance cot only when all persons are clear of the mechanisms.

⚠ Warning/Caution (Continued):

- Practice changing height positions and loading the ambulance cot until operation of the product is fully understood. Improper use can cause injury.
- Do not allow untrained assistants to assist in the operation of the ambulance cot. Untrained technicians/assistants can cause injury to the patient or themselves.
- Ensure proper hand placement on hand grips. Hands should be clear of red safety bar pivots while loading and unloading the cot.
- Do not ride on the base of the Power-PRO™ XT ambulance cot. Damage to the product could occur, resulting in injury to the patient or operator.
- **Transporting the cot sideways can cause the cot to tip, resulting in possible damage to the product and/or injury to the patient or operator.** Transporting the cot in a lowered position, head or foot end first, will minimize the potential of a cot tip.
- Grasping the Power-PRO™ XT ambulance cot improperly can cause injury. Keep hands, fingers and feet away from moving parts. To avoid injury, use extreme caution when placing your hands and feet near the base tubes while raising and lowering the ambulance cot, see illustration below.

Potential Pinch Points



Proper Lifting Techniques:

When lifting the ambulance cot and patient, there are five basic guidelines to help you avoid injury:

1. Before operating the cot, clear any obstacles that may interfere and cause injury to the operator or patient.
2. Keep your hands close to your body.

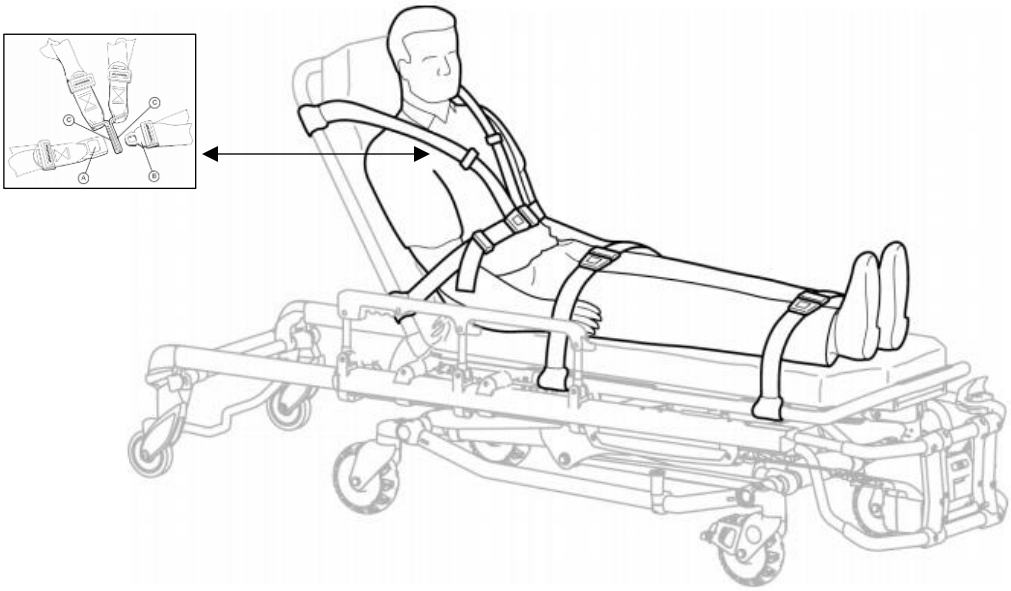
Proper Lifting Techniques (Continued):

3. Keep your back straight.
4. Coordinate your movements with your partner and lift with your legs.
5. Avoid twisting.

Using Restraint Straps:

1. Roll the cot to the patient.
2. Place the cot beside the patient and raise/lower the cot to the level of the patient.
3. Lower the siderails and open the restraint straps.
4. Transfer the patient to the cot using accepted EMS procedures.
5. Use all the restraint straps to secure the patient to the cot, see illustrations below.
6. Raise the siderails and adjust the backrest and leg rest, as necessary.

Restraint Straps (Securing the Patient)



- Always use all restraint straps to secure the patient on the cot. An unrestrained patient may fall from the cot and be injured.
- Always secure the patient on the cot with all the restraint straps. Buckle the restraints across the patient's chest/shoulders, waist and legs.
- Keep the restraint straps buckled when the cot is not being used with a patient to avoid damage to the buckles and straps.
- Ensure that restraints are not entangled in the base frame when raising/lowering the cot.

Adjusting the Height of the Cot (Powered Mode):

You can raise or lower an unoccupied cot with one operator. **If a patient is on the cot, a minimum of two (2) trained operators (one located at each end of the cot) are required to raise or lower the of the cot.**

To raise or lower an unoccupied cot:

1. Operator 1 (Foot End) − Grasp the cot frame at the foot end and press either the extend (+) button on the control switch to raise the litter or the retract (–) button on the control switch to lower the litter to the desired position.

To raise or lower the cot with a patient:

1. Operator 1 (Foot End) − Grasp the cot frame at the foot end and press either the extend (+) button on the control switch to raise the litter or the retract (–) button on the control switch to lower the litter to the desired position.
2. Operator 2 (Head End) − Maintain a firm grip on the outer rail until the cot is securely in the desired position.

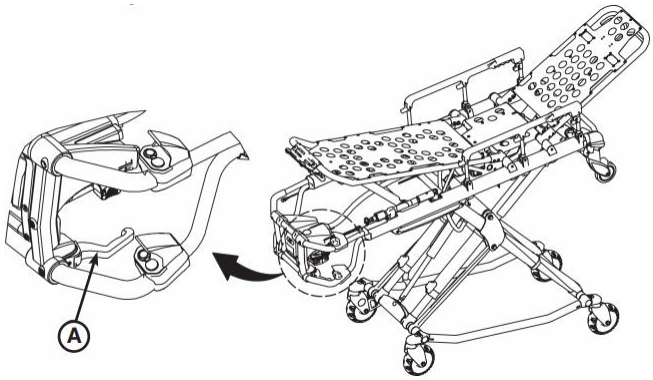
Note: If the extend (+) button on the control switch remains activated after reaching the set load height, the motor will remain halted until the operator releases the button. After the button is released, press the extend (+) button again to "jog" the cot height up further.

Adjusting the Height of the Cot (Manual Mode):

In the event of loss of electrical function, the Power-Pro is equipped with a manual override to allow manual operation of the stretcher. The RED manual release lever is located along the patient left side of the lower lift bar at the foot-end of the stretcher.

To lower the stretcher with the manual release:

1. Must have one operator at each end of stretcher.
2. Operators must lift the stretcher weight slightly off the wheels when a patient is on it for the manual release lever to work.
3. Operator at the foot-end pulls the manual release lever.
4. Both operators support the weight of the stretcher and patient while raising and lowering.



Stryker Power Pro Stretcher

Battery Power Level:

The cot is supplied with a removable 24V SMRT Paks. Battery power level is displayed by the "battery power indicator," which is a light that is located at the foot-end of the stretcher.

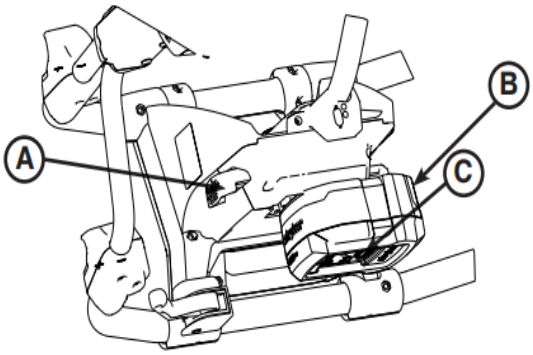
- The indicator lights **GREEN** when the battery is fully charged or has adequate charged power.
- The indicator flashes **RED** when the battery needs to be re-charged or replaced. When the indicator is flashing red, the stretcher has approximately three (3) patient lifts remaining.

To remove the SMRT Pak:

1. Press the RED one hand release button (C) or press the battery release button (A) to release the SMRT Pak (B) from the cot, see illustration below.
2. Slide the released SMRT Pak out of the enclosure.

To reinstall or replace the SMRT Pak:

1. Align the tabs in the battery enclosure.
2. Push the SMRT Pak into the enclosure until the latch clicks into place.
   - The cot power indicator LED is solid **GREEN** if the SMRT Pak is fully charged and ready.
   - The cot power indicator LED flashes **RED** if the SMRT Pak needs to be recharged or replaced.



***Remove the battery if the cot is not going to be used for more than 24 hours.**

Cleaning/Washing Procedure:

1. The stretcher should be thoroughly cleaned after each use.
2. If the stretcher is going to be exposed to large amounts of water (ex: hose down), the battery MUST BE REMOVED.
3. SOME CLEANING PRODUCTS ARE CORROSIVE IN NATURE AND MAY CAUSE DAMAGE TO THE PRODUCT IF USED IMPROPERLY. Measures must be taken to ensure the cots are wiped with clean water and thoroughly dried following cleaning. Failure to properly rinse and dry the cots will leave a corrosive residue on the surface of the cots, possibly causing premature corrosion of critical components.
4. Towel dry all components after cleaning.

Stryker Power-LOAD Cot Fastener System

AP-39
Published: 3/1/21
Reviewed: 2/27/21
Updated:

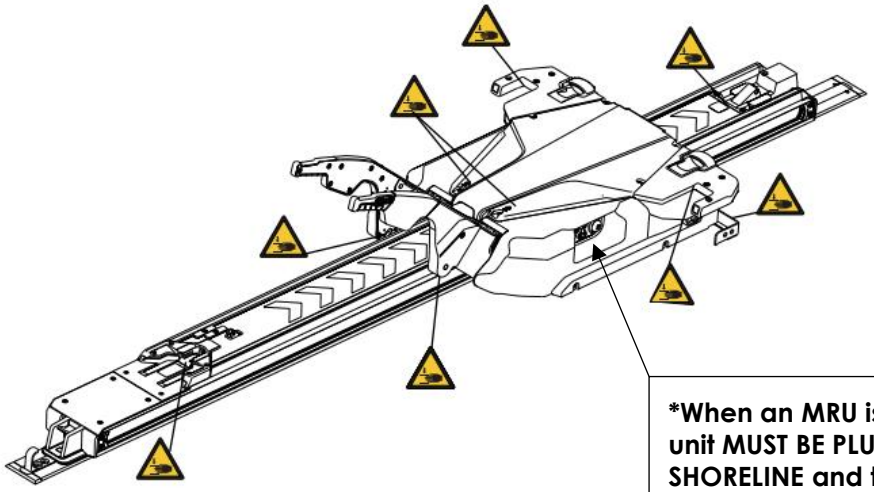
INFORMATION

The Stryker Model 6390 Power-LOAD® power-loading cot fastener system is designed to lift, lower, or steer compatible ambulance cots into and out of an emergency ground transport vehicle. When the cot is securely attached to the system, a battery powered hydraulic system assists the operators in loading and unloading a cot. The system also secures the compatible ambulance cot within the vehicle for patient transportation purposes. When the cot is secured in the transport position, Power-LOAD inductively charges the Stryker Pro Stretcher.

Indications for Use:

Power-LOAD is intended to assist with loading and unloading of a compatible wheeled stretcher (ambulance cot) to and from a transport vehicle and to secure the ambulance cot during transport. The device has a maximum safe working load of 870lb (395kg), which includes the weight of the ambulance cot, patient, and equipment attached to the cot (such as oxygen bottles, monitors, and pumps).

Potential Pinch Points



***When an MRU is not in service, the unit MUST BE PLUGGED INTO THE SHORELINE and the Power-Load Cot Fastener System shut off.**

Cleaning/Washing Procedure:

- When used in concentrations recommended by the manufacturer, either phenolic type or quaternary (excluding Virex® TB) type disinfectants can be used. Iodophor type disinfectants are not recommended for use because staining may occur.
- Avoid over saturation. Do not allow the product to stay wet longer than the chemical manufacturer's guidelines for proper disinfecting.
- Always wipe the product with clean water and dry after cleaning. Some cleaning products are corrosive in nature and may cause damage to the product. Failure to properly rinse and dry the product leaves a corrosive residue on the surface of the product and may cause premature corrosion of critical components.

Sucking Chest Wound / Hyfin Chest Seal

AP-40
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

Description:

The HyFin® Vent Chest Seal Twin Pack from North American Rescue (NAR) sets the standard for the prevention, management and treatment of an open and/or tension pneumothorax potentially caused by a penetrating chest trauma. Two seals, each individually packaged, are designed to allow the user to apply a seal to both an entry or an exit wound while also giving the option to only apply one and store the other until needed as the situation requires. This innovative design provides 3-vented channels designed to prevent airflow into the chest cavity during inhalation while allowing air to escape through the vent channels during exhalation. The 3-vent channels are designed to allow blood to escape and provide a backup fail-safe system, as even if two of the three channels become obstructed, the vent is designed to remain fully operational.

Advanced adhesive technology provides superior adhesion as the HyFin® Vent Chest Seal Twin Pack is specifically designed to overcome adverse conditions in austere environments where the casualty may be covered in blood, sweat, body hair, or other environmental contaminants when a reliable chest seal is mandatory. Packaged in a more compact, rugged, easy-to-open twin foil pouch, each chest seal also includes a gauze pad to wipe the wound surface prior to application. The HyFin® Vent Chest Seal Twin Pack has a large red pull tab for single-step peel-and-apply application, while the transparent backing facilitates easy placement over the wound area, conforming to the patient's chest.

NAR packages each chest seal using its signature Red Tip Technology® red tear notches in a rugged, easy-to-open, foil pouch to ensure high quality performance. The HyFin® Vent Chest Seal Twin Pack meets or exceeds the current EMS Standard of Care and TCCC & TECC Guidelines for treatment of penetrating injuries to the chest and is the superior prehospital chest seal.

Specifications:

- Designed for the prevention, management and treatment of an open and/or tension pneumothorax potentially caused by a penetrating chest trauma.
- Patented, new design with 3-channel pressure relief vents.
- Two Chest Seals designed for the treatment of either entry/exit or multiple penetrating injuries.
- Advanced adhesive technology designed to provide a superior seal in the most adverse conditions, including sweaty or hairy casualties.
- 3-vent channels designed to prevent airflow into the chest cavity during inspiration while allowing air to escape through the vent channels during exhalation.

Sucking Chest Wound
Hyfin Chest Seal

Specifications (Continued):

- Vent channels designed to allow blood to escape and provides a backup fail-safe system as even if two of the three channels become obstructed.
- Easy-to-grip, large red tab for single step, peel-and-apply application that allows for the burping of the wound if necessary.
- Rugged, easy-to-open twin foil pouch featuring signature Red-Tip Technology® tear notches with perforated packaging allowing rescuers to open only one dressing at a time as needed.




Sucking Chest Wound:

By name alone, the term "sucking chest" wound gives away one of the signs of the condition. It's a wound in the chest that creates a 'sucking' or 'hissing' noise as a person breathes.

Why? Well, it's because something has penetrated the chest and created an open channel of communication between the thorax (chest) and the environment.

The chest cavity must be sealed off from the outside environment for the lungs to properly inflate during inhalation. If the chest cavity is penetrated, then the lung collapses since it can't inflate against the column of outside air pressing down upon it. This scenario, a collapsed lung, is broadly called a pneumothorax. More specifically, an open pneumothorax is caused by an open channel of communication between the environment and chest cavity as a result of a defect in the chest wall.

Besides the sucking noise, other signs and symptoms of a sucking chest wound include:

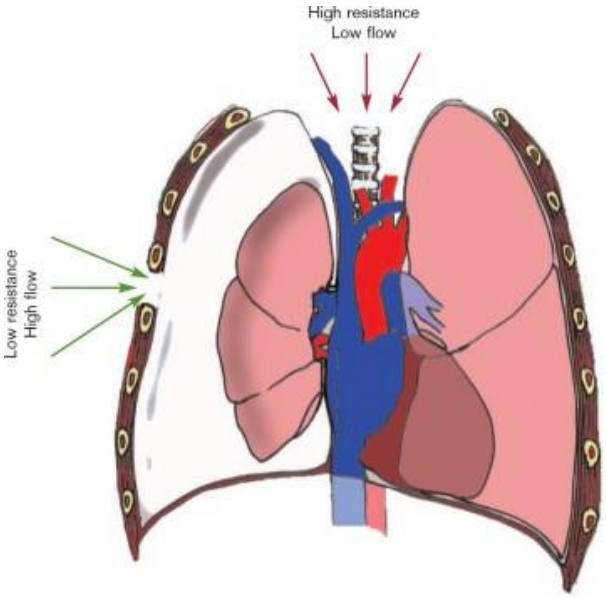
- Dyspnea, or difficulty breathing
- Tachypnea, which is rapid and shallow breathing
- Tachycardia, which is a fast heart rate
- An absence of breathing sounds on affected side of the chest
- Pain
- Obvious evidence of trauma to the chest
- The bubbling or 'spitting' of blood around the wound as a person breathes

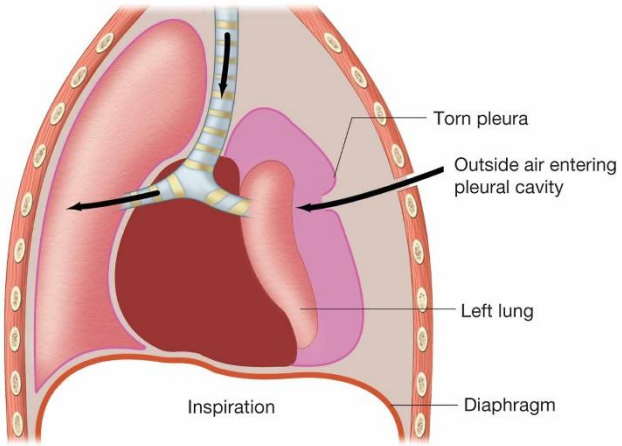
Not every 'hole' (defect) in the chest will create a sucking chest wound, however. Usually, the hole needs to be at least 66% the width of the trachea, the person's windpipe. An easy way to gauge this is to imagine that if the hole is bigger than a penny, then that means a sucking chest wound and severe respiratory impairment could be the result.

Sucking Chest Wound
Hyfin Chest Seal

Sucking Chest Wound (Continued):

1. ALL SUCKING CHEST WOUNDS must be treated immediately by applying a vented chest seal to the defect. These can be life-threatening.
2. If vented chest seal is not available, apply a non-vented chest seal (or occlusive dressing).
3. Apply during exhalation, if possible.
4. Monitor the patient for development of a tension pneumothorax.
5. If patient develops increased hypoxia, respiratory distress of hypotension and a tension pneumothorax is suspected, treat by burping and/or temporarily removing the dressing. If not corrected be prepared to provide needle decompression.
6. Immediate/rapid transport off the scene and to a trauma center is required.





References:

https://study.com/academy/lesson/sucking-chest-wound-symptoms-treatment.html
https://www.narescue.com/hyfin-vent-chest-seal-twin-pack.html

Suctioning

AP-41
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

Obstruction of the airway (secondary to secretions, blood, or any other substance) in a patient who cannot maintain or keep the airway clear or who is currently being assisted by an airway adjunct such as a naso-tracheal tube, endotracheal tube, BIAD, tracheostomy tube, or a cricothyrotomy tube.

Procedure (Basic):

1. Ensure suction device is in proper working order with suction tip in place.
2. Preoxygenate the patient if you are able. Utilize passive oxygenation.
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 ventilation devices from the airway.
6. Use the suction device to remove any secretions, blood, or other substance.
7. The alert patient may assist with this procedure.
8. Reattach ventilation device (e.g., bag-valve mask) and ventilate or assist the patient.
9. Record the time and result of the suctioning in the electronic patient care report (ePCR).

Procedure (Advanced):

1. Ensure suction device is in proper working order.
2. Preoxygenate the patient if you are able. Utilize passive oxygenation.
3. Attach suction catheter to suction device, keeping sterile plastic covering over catheter.
4. Using the suprasternal notch and the end of the airway into the catheter will be placed as guides, measure the depth desired for the catheter (judgment must be used regarding the depth of suctioning with cricothyrotomy and tracheostomy tubes).
5. If applicable, remove ventilation devices from the airway.
6. With the thumb port of the catheter uncovered, insert the catheter through the airway device. Once the desired depth (measured in #4 above) has been reached, occlude the thumb port and remove the suction catheter slowly.
7. A small amount of Normal Saline (10 ml) may be used if needed to loosen secretions for suctioning.
8. Reattach ventilation device (e.g., bag-valve mask) and ventilate the patient.
9. Document time and result in the electronic patient care report (ePCR).

Synchronized Cardioversion

AP-42
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

Clinical Indications:

- Unstable patient with a tachydysrhythmia (rapid atrial fibrillation, supraventricular tachycardia, ventricular tachycardia).
- Patient is not pulseless (the pulseless patient requires unsynchronized cardioversion, i.e., defibrillation).

Procedure:

1. Ensure the patient is attached properly to a monitor/defibrillator capable of synchronized cardioversion.
2. Have all equipment prepared for unsynchronized cardioversion/defibrillation if the patient fails synchronized cardioversion and the condition worsens.
3. Consider the use of pain or sedating medications.
4. Set energy selection to the appropriate setting.
5. Set monitor/defibrillator to synchronized cardioversion mode.
6. Make certain all personnel are clear of patient.
7. Press and hold the shock button to cardiovert. Stay clear of the patient until you are certain the energy has been delivered. NOTE: It may take the monitor/defibrillator several cardiac cycles to "synchronize", so there may a delay between activating the cardioversion and the actual delivery of energy.
8. Note patient response and perform immediate unsynchronized cardioversion/defibrillation if the patient's rhythm has deteriorated into pulseless ventricular tachycardia/ventricular fibrillation, following the procedure for Defibrillation-Manual.
9. If the patient's condition is unchanged, repeat steps 2 to 8 above, using escalating energy settings.
10. Repeat until maximum setting or until efforts succeed. Consider discussion with medical control if cardioversion is unsuccessful after 2 attempts.
11. Note procedure, response, and time in the electronic patient care report (ePCR).

Taser Treatment

AP-43
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

It is the intent of this policy to outline and define the steps that are necessary for all Personnel to carry out when they encounter a patient that has been subdued with a TASER. Typically, it is not the "TASER" event itself that leads to the need for transport to the hospital, rather the events that have led up to the individual being tased, such as "EXCITED DELIRIUM".

All Fire Rescue personnel will treat and transport any patient from whom Fire Rescue has been requested. The signs and symptoms that the patient is exhibiting, as well as possible occult injuries that may have occurred while the individual was being subdued, will guide this treatment. At minimum all "TASER" patients will receive the following assessment/treatment:

1. A complete physical examination (including glucose).
2. Oxygen as needed.
3. Cardiac Monitor – 4 Lead ECG, 12 Lead ECG (PRN)
4. C-Spine precautions, unless a cervical spine injury can be definitively ruled out.
5. Intra-venous line as needed

Note: If a patient resists, these actions will be carried out with the safety of the crew in mind. A police officer will be required to accompany the patient in the rescue during transport.

Procedure:

- Establish that the scene has been secured and determine what events have led up to the individual being subdued with a TASER.
- Determine how many 5-second cycles of energy that the individual has been exposed to and document this in the patient care report.
- In most TASER incidents, it will not be possible for EMS personnel to determine the extent of injuries that the patient has sustained. While it is unlikely that the Taser itself will have caused an injury, there is a high likelihood of an occult injury secondary to the event. Examples of this would be fall injuries as a result of incapacitation; pathological fractures secondary to muscle contraction and impending demise secondary to a state of excited delirium.
- The following is a systematic five step approach to responding to and evaluating patients who have been tased:
    1. Find out what happened before the patient was tased – this will provide you with information regarding the patient's mental status prior to being tased and potential for any future decompensation. Consider any report of extreme behavior prior to the tasing as significant, regardless of the patient's current presentation.
    2. Approach the patient with caution – The Taser can dramatically change a patient's outward presentation. Assume that any patient who has been tased is violent and dangerous.

Procedure (Continued):

3. Complete a thorough physical exam and history. The exam should include a basic neurological exam, skin signs, pupil assessment, a complete set of vital signs and a close look for traumatic injuries. Tased patients are fall patients until proven otherwise.
4. It is not uncommon to find minor first-degree burns located between the Taser probes. Anything that looks worse than minor sunburn should be considered abnormal. Incontinence should be considered abnormal. Chest pain, shortness of breath, vomiting and headaches should all be treated according to the appropriate medical treatment protocol.
5. Consider the potential for sudden unexpected death syndrome – The vast majority of patients that have died in police custody have shown signs of excited delirium.
6. Removing of probes will not be performed by fire-rescue personnel. If the probes are still embedded upon arrival, the probes will be treated as an impaled object and treated according to the appropriate medical protocol.
7. In order to transport the patient, it will be likely that the wires to the probes need to be removed. This can be done by simply cutting them with a pair of trauma sheers.
8. If the probes are removed by the police officer, the probes should be treated as a contaminated sharp. The probes can be stored in the Taser cartridge in the absence of a sharp/biohazard container.

Excited Delirium:

A state in which a person is in a psychotic and extremely agitated state. Mentally the subject is unable to focus and process any rational thought or focus his/her attention to any one thing. Physically the organs within the subject are functioning at such an excited rate that they begin to shut down. These two factors occurring at the same time cause a person to act erratically enough that they become a danger to themselves and to the public. This is typically where law enforcement encounters the person.

Essentially three things bring on excited delirium:

1. Overdose on stimulant or hallucinogenic drugs.
2. Drug withdrawal
3. A person who is non-compliant with prescribed psychotropic medication.

Some of the symptoms of excited delirium are as follows:

- Bizarre and aggressive behavior
- Dilated pupils
- High body temperature
- Incoherent speech
- Inconsistent breathing patterns
- Fear and panic
- Profuse sweating
- Shivering
- Nakedness

Taser Treatment

Excited Delirium (Continued):

Another key symptom to the onset of death while experiencing excited delirium is "Instant tranquility". This is when the suspect has been very violent and vocal and suddenly becomes quiet and docile while in the car or sitting at the scene.

Transport Considerations:

Be very consentience of patients who exhibit one or more of the following:

- Evidence of excited delirium prior to being tased.
- Persistent abnormal vital signs.
- History or physical findings consistent with amphetamine or hallucinogenic drug use.
- Cardiac History
- Altered level of consciousness, or aggressive, violent behavior, including resistance to evaluation.
- Evidence of hyperthermia
- Abnormal subjective complaints, including chest pain, shortness of breath, nausea or headaches.

Excited Delirium? (YES)
CONSULT: Behavioral / Agitated Delirium Protocol

Chest Pain? (YES)
CONSULT: Chest Pain / Suspected Cardiac Event Protocol

Temperature Measurement

AP-44
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

Clinical Indications:

- As a result of the COVID-19 Pandemic, **ALL** patients will have their temperature taken by either oral thermometer probe, tympanic ear probe, or forehead sticker.
- Monitoring body temperature in a patient with suspected infection, hypothermia, hyperthermia, or to assist in evaluating resuscitation efforts.

Procedure:

1. If clinically appropriate, allow the patient to reach equilibrium with the surrounding environment.
2. For adult patients that are conscious, cooperative, and in no respiratory distress, an oral temperature is preferred (steps 3 to 5 below). For infants or adults that do not meet the criteria above, a rectal temperature is preferred (steps 6 to 8 below).
3. To obtain an oral temperature, ensure the patient has no significant oral trauma and place the thermometer under the patient's tongue with appropriate sterile covering.
4. Have the patient seal their mouth closed around thermometer.
5. If using an electric thermometer, leave the device in place until there is indication an accurate temperature has been recorded (per the beep or other indicator specific to the device). If using a traditional thermometer, leave it in place until there is no change in the reading for at least 30 seconds (usually 2 to 3 minutes). Proceed to step 9.
6. Prior to obtaining a rectal temperature, assess whether the patient has suffered any rectal trauma by history and/or brief examination as appropriate for patient's complaint.
7. To obtain a rectal temperature, cover the thermometer with an appropriate sterile cover, apply lubricant, and insert into rectum no more than 1 to 2 cm beyond the external anal sphincter.
8. Follow guidelines in step 5 above to obtain temperature.
9. Record time, temperature, method (oral, rectal), and scale (C° or F°) in the electronic patient Care Report (ePCR).

Tourniquet Use (CAT)

AP-45
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

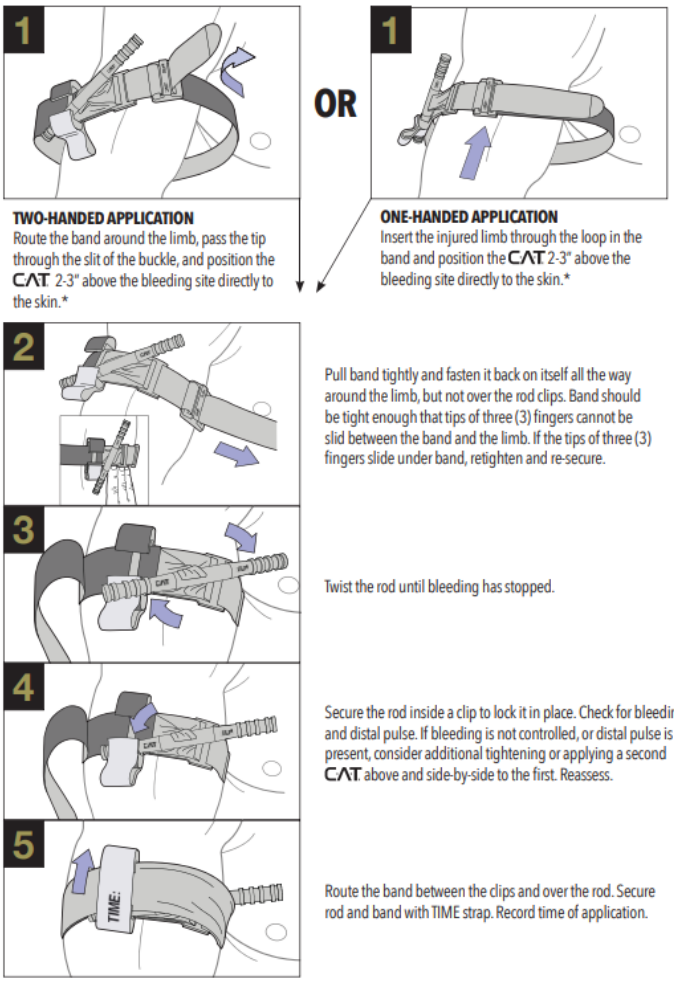
Clinical Indications:
Life threatening extremity hemorrhage that can not be controlled by other means. Serious or life-threatening extremity hemorrhage and tactical considerations prevent the use of standard hemorrhage control techniques.

Contraindications:
- Non-extremity hemorrhage or bleeding controlled by alternative methods (direct pressure, dressings, pressure dressing, etc.)
- Proximal extremity location where tourniquet application is not practical.
- Junctional wound (REQUIRE firm/direct pressure and rapid transport to Trauma Center).

Procedure:
1. Establish a need for a tourniquet meeting the above criteria.
2. Remove the C-A-T from the trauma bag and carrying pouch.
3. Open the CAT completely and apply to injured extremity following guide below.

***Document time and person who applied the tourniquet within the electronic patient care report (ePCR).**

***Only use black or orange tourniquets on patients in emergency situations.**



Note: Completely severed arteries tend to retract, thus the artery may be proximal to the actual wound and deep within. Proper tourniquet placement is crucial to bleeding control.

Traction Splint (Hare)

AP-46
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

The hare traction splint is designed to be used on those patients who have suffered a suspected femur fracture. Proper use can decrease the pain and damage caused by the fracture.

Clinical Indications:

Suspected femur fracture.

Contraindications:

Open femur fracture.
Injury close to the knee or involving the knee.
Suspected fracture distal to mid shaft femur.
Injury to the hip or pelvis, suspected hip fractures/dislocations.
Lower leg or ankle injury.

Procedure:

1. Upon recognizing the injury, Rescuer One should stabilize leg in the position found.
2. Rescuer Two will then expose the injured leg.
    - Assess neurological function distal to injury site.
    - Assess circulatory function distal to injury site.
3. Rescuer Two should prepare traction splint.
    - Position splint against uninjured leg.
    - Place the ischial pad against the iliac crest.
    - Adjust splint to length, extending the splint so that the bend is even with the heel of the foot.
    - Tighten locking collars.
    - Open and position the Velcro straps along the splint.
    - Release the ratchet, extending the entire length of the traction strap.
    - Place the splint next to the injured leg.
4. Rescuer Two should apply the ankle hitch and then apply gentle but firm traction.
5. Rescuer One will now move the splint into position. The splint should be firmly seated against the ischial tuberosity.
6. Rescuer One secures the pubic-strap. The strap is brought over the groin and high over the thigh and secured.
7. Rescuer One attaches the ankle hitch to the traction strap.
8. The traction strap is taken in, applying mechanical traction until the pain and muscle spasms are relieved.
    - Maintain manual traction until the mechanical traction takes over.
    - Traction can be stopped when the injured leg is approximately the same length as the uninjured leg.
9. Secure the remaining Velcro straps around the leg.
10. Reevaluate all he straps. Properly applied, the patient's foot should be upright.
11. Reassess circulatory and neurological function distal to injury site. Compare to original findings and note any changes.
12. Transport patient on firm surface, such as a long spine board, so that the splint is supported.

Source: http://www.haretractionsplint.com/hare-traction-splint-users-guide/

Traction Splint (Sager)

AP-47
Published: 3/1/21
Reviewed: 6/6/22
Updated: 6/6/22

INFORMATION

The Sager traction splint is designed to be used on those patients who have suffered a suspected femur fracture(s). Proper use can decrease the pain and damage caused by the fracture. The human pelvis is a closed bony ring that is strong and massively constructed. It is the foundation for the torso and provides support for the lower limb attachment and locomotion.

The largest muscle mass in the human body is located surrounding the length of the Femur. When fracture of the Femur occurs, it can result in:

- Laceration of arteries, veins and nerves at the site of the fracture.
- Severe muscle spasms resulting in Bone fragment overriding, deformity and shortening of the limb.
- Decreased tissue pressure — resulting in further bleeding and shock, as well as severe pain.

Clinical Indications:

Suspected femur fracture.

Contraindications:

Open femur fracture.

Injury close to the knee or involving the knee.

Suspected fracture distal to mid shaft femur.

Injury to the hip or pelvis, suspected hip fractures/dislocations.

Lower leg or ankle injury.

Procedure:

1. Upon recognizing the injury, Rescuer One should stabilize leg in the position found.
2. Rescuer Two will then expose the injured leg.
   - Assess neurological function distal to injury site.
   - Assess circulatory function distal to injury site.
3. Rescuer Two should apply the ankle hitch to the patient and then apply gentle but firm traction.
4. Rescuer One should prepare traction splint and position splint between the patient's legs.
5. Rescuer One secures the thigh strap around the upper thigh of the fractured limb. Push the Ischial Perineal Cushion gently down while at the same time pulling the thigh strap laterally under the patients' thigh. This will seat the lower end of the cushion comfortably against the ischial tuberosity. Tighten the thigh strap.
6. Rescuer One attaches the ankle hitch to the traction strap.
7. Grasp the padded shaft of the S304 with one hand and the Traction Handle with the other, gently extend the Inner Shaft until the desired amount of traction is recorded on the Traction Scale. It is suggested to use 10% of the patients' body weight per fractured femur up to 7kg (15 lbs.) for each leg. If bilateral fractures are present the maximum amount would be 14kg (30 lbs.).
8. Secure the legs and splint using the elastic Leg Cravats.
9. Reevaluate all the straps. Adjust the thigh strap at the upper Thigh making sure it is not too tight but snug and secure, then firmly secure the elastic Leg Cravats. When splint is properly applied, the patient's foot should be upright.

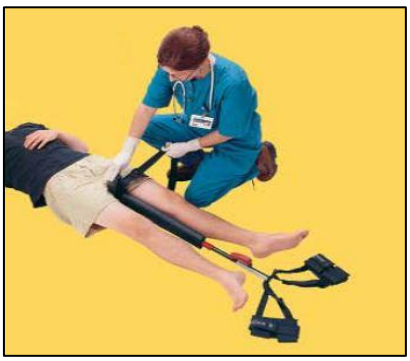
Traction Splint (Sager)

Procedure (continued):

10. Reassess circulatory and neurological function distal to injury site. Compare to original findings and note any changes.
11. Transport patient on firm surface, such as a long spine board or scoop stretcher, so that the splint is supported.

Source: https://sagersplints.com/indications-cleaning-instructions/

1.



2.

3.

4.

PLEASE NOTE: When the mechanism of injury (MOI) indicates the possibility of multiple trauma and understanding the high amounts of force required to fracture the femur bone, Level I Trauma Criteria must be consulted. During these instances, the application of a Sager Splint may be a tertiary (later) priority. **Do not delay transport for the application of this device.**

Transcutaneous Pacing (External, Non-Invasive)

AP-48
Published: 3/1/21
Reviewed: 2/27/21
Updated:

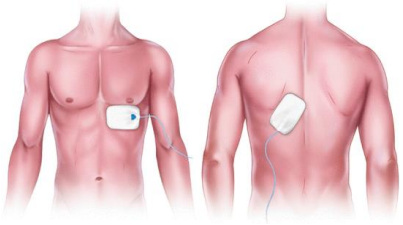
INFORMATION

Clinical Indications:
Symptomatic Bradycardia (heart rate of less than 60 beats per minute with associated signs and symptoms, such as chest pain, SOB, hypotension, pulmonary edema, and altered mental status).

Procedure:
1. Consider the use of sedation or analgesia if patient is uncomfortable.

2. Attach four-lead monitor (pacing pads are not capable of monitoring and delivering current simultaneously).

3. Apply defibrillation/pacing pads to chest and back. The anterior/posterior position is preferred as it minimizes transthoracic electrical impedance by locating the heart between the two pads:
   - One pad to left mid chest next to sternum.
   - One pad to mid left posterior chest next to spine.



3. Select PACER.

4. Adjust rate to 70 BPM for an adult and 100 BPM for a child.

5. Note pacer spikes on ECG screen.

6. Slowly increase output until capture of electrical rhythm on the monitor (electrical capture).

7. If unable to capture while at maximum current output, stop pacing immediately.

8. If capture observed on monitor, as evidenced by a wide QRS complex following each pacer spike, check for corresponding pulse and assess vital signs (mechanical capture).

NOTE – Full capture is electrical capture plus mechanical capture.

10. Document the dysrhythmia and the response to external pacing with ECG strips in the PCR.

Venous Access

AP-49
Published: 3/1/21
Reviewed: 2/27/21
Updated: 11/15/23

INFORMATION

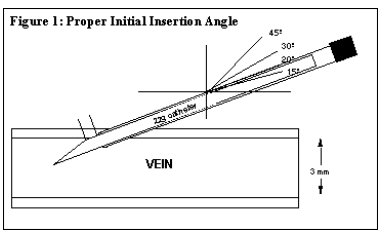
Clinical Indications (Extremity Access):

Any patient where intravenous access is indicated (significant trauma or mechanism, emergent or potentially emergent medical condition).

Procedure (Extremity Access):

1. Normal Saline IV Lock may be used as an alternative to an IV tubing and IV fluid in every protocol at the discretion of the ALS professional. In addition, a Normal Saline IV Lock will precede all IV set-ups in order to confirm patency prior to IV fluid administration.
2. Inspect the IV solution for vessel/packaging integrity, expiration date, cloudiness, discoloration, leaks, and/or the presence of particles.
3. Using a 10ml syringe filled with Normal Saline (or larger), connect to the Lock set-up (e.g. extension set, "J" loop, etc.), and prime the tubing, flushing all air bubbles from the tubing.
4. Place a tourniquet around the patient's extremity above the expected IV access site to restrict venous flow only. Avoid (if possible) the following:
    - Extremities with suspected fracture/trauma.
    - Extremities sharing the same side as previous surgical procedures (e.g. lymph node dissection, mastectomy, etc.).
    - Extremities with other access types (e.g. dialysis fistula, PICC line, etc.).
5. Select an IV access site and use the largest catheter bore necessary based upon the patient's condition and size of vein.
    - **ALL SUSPECTED STOKE PATIENTS - initial IV access the right Antecubital (R-AC) site with an 18 gauge IV or larger.**
    - **TRAUMA PATIENTS -** IV attempts shall not delay transport. IO is acceptable utilizing good clinical judgement.
    - One Large Bore IV @ KVO rate is acceptable when the patient presents with a manageable B/P.
    - **Two Large Bore IV or One Large Bore IV/IO Combination – only required to treat Hemorrhagic Shock when mental status is deteriorated, and systolic B/P is less than 80mmHg.**
6. Prep the skin with an antiseptic solution (alcohol prep pad). Use multiple if required.
7. Insert the needle with the bevel up into the skin at a 15-30° angle in a steady, deliberate motion until the bloody flashback is visualized in the catheter.

GOOD



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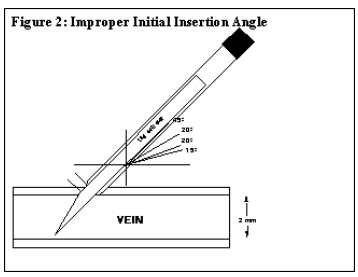

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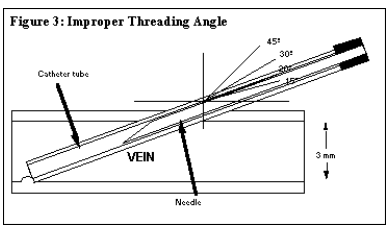


Venous Access

Procedure (Extremity Access) Continued:

8. Advance the catheter into the vein at a slightly more reduced angle. Remember - never reinsert the needle through the catheter. This may accidently cause catheter shearing and/or puncture the catheter.
9. Place a gauze pad directly under the IV catheter against the patient's skin.
10. Release the tourniquet.
11. If one-way valve is not present in the catheter - prior to completely removing the needle from the IV catheter hub, apply direct finger pressure above the insertion site at about where the IV catheter would be in the vein. Skip Step 11 if one-way valve is present in the catheter.
12. Remove and dispose the needle without recapping into an appropriate biohazard container.
13. Connect the primed Normal Saline IV lock with 10ml prefilled syringe connected.
14. Aspirate the syringe slightly ensuring blood return and venous access patency. Flush the remaining contents of the Normal Saline syringe. Be sure to visualize and/or palpate above the IV access site for infiltration.
15. Cover the site with a sterile dressing and secure Normal Saline IV lock.
16. Disconnect the syringe from the Normal Saline lock and discard.
17. Label the Normal Saline IV lock with date and time, catheter gauge, and name/ID of the person completing the procedure.
18. Document the procedure, time and result (success) within the electronic patient care report (ePCR).

Clinical Indications (External Jugular – EJ):

1. External jugular vein cannulation is indicated in a critically ill patient > 8 years of age who requires intravenous access for fluid or medication administration and in whom an extremity vein is not obtainable.
2. External jugular cannulation can be attempted initially in life threatening events where no obvious peripheral site is noted.

Procedure (External Jugular – EJ):

1. Place the patient in a supine, head down position. This Trendelenburg positioning helps distend the vein and prevent an air embolism.
2. Turn the patient's head toward the opposite side if no risk of cervical injury exists.
3. Cleanse the site with Povidone-iodine pad first, followed by an alcohol prep pad.
4. Align the catheter with the vein and aim toward the ipsilateral (same) side shoulder.
5. While pressing lightly with one finger above the clavicle to tamponade the vein, puncture the vein midway between the angle of the jaw and the clavicle and cannulate the vein.
6. Attach the IV and secure the catheter.
7. Avoid circumferential dressing or taping.
8. Document the procedure, time and result (success) within the electronic patient care report (ePCR).

Venous Access

If IV fluid administration is required, follow steps below:

- Normal Saline IV Lock set-up (10ml prefilled syringe w/ Luer Lock tip) for all initial IV attempts.
- Normal Saline with a macro drip (10 gtt/cc) for trauma, hypovolemia, and medical conditions.
- Normal Saline with a micro drip (60 gtt/cc) for medication infusions.

1. Inspect the IV solution for vessel/packaging integrity, expiration date, cloudiness, discoloration, leaks, and/or the presence of particles.
2. Connect IV tubing per manufacturer/packaging directions to the solution in a sterile manner. Fill the drip chamber of the IV set half full and then flush the tubing, bleeding all air bubbles from the tubing.
3. Prep the Luer lock connection of the Normal Saline IV lock with an antiseptic solution and then connect IV tubing in a sterile manner.
4. Open the IV to ensure the free flow of the fluid and then adjust the flow rate as per protocol or clinically indicated.
5. Label the IV with date and time, catheter gauge, and name/ID of the person starting the IV.
6. Document the procedure, time and result (success) on/with the patient care report (PCR).

NOTE: In adults, paramedics may attempt intraosseous (IO) access prior to IV attempt when consulting the *HP-CPR Algorithm Protocol and Trauma Arrest Protocol* only.

DRIP RATES:

Maintenance/Keep Vein Open (KVO)

- Adult: 60cc/hr (1gtt/6sec for a macro drip set)
- Pediatric: 30cc/hr (1gtt/12 sec for a macro drip set)

Wound Care

AP-50
Published: 3/1/21
Reviewed: 2/27/21
Updated:

INFORMATION

Clinical Indications (General):
Protection/care for open wounds and control of bleeding (PRN) prior to and during transport.

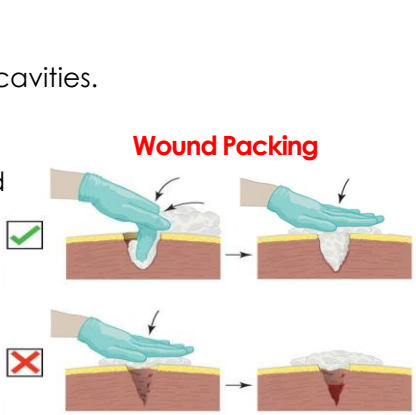
Procedure:
1. Use personal protective equipment, including gloves, gown, and mask as indicated.
2. If active bleeding, elevate the affected area if possible and hold direct pressure. Do not rely on compression bandage to control bleeding. Direct pressure is much more effective (see below).
3. Once bleeding is controlled, irrigate contaminated wounds with saline as appropriate (this may have to be avoided if bleeding was difficult to control). Consider analgesia per protocol prior to irrigation.
4. Cover wounds with sterile gauze/dressings. Check distal pulses, sensation, and motor function to ensure the bandage is not too tight.
5. Remove all jewelry on injured extremity distal to site.
6. Monitor wounds and/or dressings throughout transport for bleeding.
7. Document the wound and assessment and care in the patient care report (PCR).

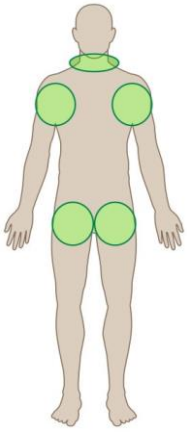
Note: Add direct pressure during wrapping getting to where the bleeding really is, not just where it is coming out from the skin area. Consider space bleeding and need for wound packing using a hemostatic gauze (see below).

Clinical Indications (Hemostatic Gauze / Wound Packing):
Serious hemorrhage that can not be controlled by other means. Deep wounds with profuse bleeding locating within extremity junctional areas (see illustration).

Contraindications:
Wounds involving open thoracic or abdominal cavities.

Procedure:
1. Apply hemostatic gauze directly into wound in direct contact with vessel bleeding and continue until cavity is "packed."
2. Apply direct pressure over wound for 2-3 minutes and/or apply a pressure dressing. *Agent requires time to assist with clotting of blood within wound.
3. Direct pressure may be still required despite bandage during transport, be vigilant.




Anterior & Posterior

FLFR currently deploys QuikClot EMS Rolled Gauze as part of our cache of equipment.
Source: https://quikclot.com/QuikClot/About-QuikClot

Pharmacology

Section 11A | Pharmacology

Published: 3/1/2021
Reviewed:
Updated 1/15/2024

Acetaminophen (Tylenol®)

ACTION:

Acetaminophen is a pain reliever and fever reducer. Acetaminophen is most used to treat minor aches and pains, including headache, backache, minor pain of arthritis, toothache, muscular aches, premenstrual and menstrual cramps. It is also commonly used to temporarily reduce fever.

INDICATIONS:

~ Fevers > 100.4
~ Can be used post-febrile seizure if patient is responsive and has self-control of airway.
~ Pain relief of minor pediatric injuries.

CONTRAINDICATIONS:

~ Inability to tolerate PO secondary to AMS or lethargy (NO self-control of airway).
~ Patients with a history of hypersensitivity to Acetaminophen (Tylenol).

WARNINGS:

~ The presence of other medical problems may affect the use of this medicine.

~ Alcohol abuse, kidney disease (severe), Hepatitis or other liver disease, may increase the chance of serious side effects.

~ Phenylketonuria - Some brands of acetaminophen contain aspartame, which can make a condition worse.

~ Tylenol taken with certain drugs, the effects of either may be increased, decreased, or altered:

- Alcohol
- Cholestyramine (Questran)
- Isoniazid (Nydrazid)
- Oral Contraceptives
- Nonsteroidal anti-inflammatory drugs such as Ibuprofen, Motrin or Ketorolac (Toradol).
- Phenytoin (Dilantin)
- Warfarin (Coumadin)
- Zidovudine (Retrovir)

~ Taking certain other medicines together with acetaminophen may increase the chance of unwanted effects. The risk will depend on how much of each medicine the patient takes every day, and on how long they will take the medicines together:

- Aspirin or other salicylates
- Diclofenac (e.g., Voltaren)
- Diflunisal (e.g., Dolobid)
- Etodolac (e.g., Lodine)
- Fenoprofen (e.g., Nalfon)
- Floctafenine (e.g., Idarac)
- Flurbiprofen, oral (e.g., Ansaid)
- Ibuprofen (e.g., Motrin)
- Indomethacin e.g., Indocin)
- Ketoprofen (e.g., Orudis)
- Ketorolac (e.g., Toradol)
- Meclofenamate (e.g., Meclomen)
- Mefenamic acid (e.g., Ponstel)
- Nabumetone (e.g., Relafen
- Naproxen (e.g., Naprosyn)
- Oxaprozin (e.g., Daypro)
- Phenylbutazone (e.g., Butazolidin)
- Piroxicam (e.g., Feldene)
- Sulindac (e.g., Clinoril)
- Tenoxicam (e.g., Apo-Tenoxicam)
- Tiaprofenic acid (e.g., Surgam)
- Tolmetin (e.g., Tolectin)

Acetaminophen (Tylenol®)

⚠ SIDE EFFECTS:

Although not all these side effects may occur, if they do occur, they may need medical attention:

- ~ Yellow eyes or skin
- ~ Bloody or cloudy urine
- ~ Skin rash, hives, or itching
- ~ Unusual tiredness or weakness
- ~ Bloody or black, tarry stools
- ~ Pinpoint red spots on skin
- ~ Unusual bleeding or bruising
- ~ Pain in lower back and/or side (severe and/or sharp)
- ~ Sore throat (not present before treatment and not caused by the condition being treated)
- ~ Fever (not present before treatment and not caused by the condition being treated)
- ~ Sores, ulcers, or white spots on lips or in mouth
- ~ Sudden decrease in amount of urine

Symptoms of overdose:

- ~ Diarrhea
- ~ Loss of appetite
- ~ Nausea or vomiting
- ~ Increased sweating
- ~ Stomach cramps or pain
- ~ Swelling, pain, or tenderness in the upper abdomen or stomach area

PROTOCOLS USED:

Fever and Infection Control – (ME-8)

HOW TO ADMINISTER: Acetaminophen
Only when in control of airway and can tolerate PO, use a disposable syringe (NO sharp attached) to inject liquid medication into cheek area of mouth. Older children may tolerate using a small cup.
Administer in small amounts.
Then dispose of syringe or cup.

Adenosine (Adenocard®)

P-2
Published: 3/1/2021
Reviewed:
Updated 1/15/2024

ACTION:

Adenosine exerts its effects by decreasing conduction through the AV node with a half-life of less than 15 seconds. Vagal maneuvers should be attempted pre and post administration if needed. They may convert up to 25% of SVT.

INDICATIONS:

~ Supraventricular tachycardia (PSVT)
~ Regular Narrow-Complex Tachycardias.
~ Vagal maneuvers should be attempted pre and post administration if needed.

CONTRAINDICATIONS:

~ Do not administer to patients with known accessory bypass tracts (Wolf-Parkinson-White Syndrome)
~ Do not administer to patients with history of a heart transplant.
~ Second or third-degree AV block (ineffective).
~ Sick sinus syndrome (except in patients with a functioning artificial pacemaker).
~ Patients with a history of hypersensitivity to Adenosine.

WARNINGS:

~ May produce a short-lasting first, second, or third-degree heart block.
~ Transient asystole may result.
~ A variety of new rhythms may appear during the conversion (PVC's, PAC's, sinus bradycardia, sinus tachycardia, skipped beats, and varying degrees of AV block) generally lasting a few seconds without intervention.
~ Adenosine may produce bronchoconstriction in patients with asthma.

SIDE EFFECTS:

~ Cardiovascular: Facial flushing, headache, sweating, palpitations, chest pain, and hypotension.
~ Respiratory: Shortness of breath, chest pressure, hyperventilating, and feeling of tightness in throat.
~ CNS: Light headedness and rarely: dizziness, blurred vision, tingling and numbness in extremities.
~ GI: Metallic taste, nausea and vomiting.

PROTOCOLS USED:

Supraventricular Tachycardia – (CE-7)

HOW TO ADMINISTER:

IV ONLY – Adenosine should be administered rapidly via proximal IV site followed by a 20mL Normal Saline flush.

Be sure to record "Press Print" on the ECG prior to administration.

Albuterol (Proventil®)

P-3
Published: 3/1/2021
Reviewed:
Updated 1/15/2024

ACTION:

Albuterol acts on Beta-2 adrenergic receptors to relax the bronchial smooth muscle. As a beta-2 sympathomimetic drug, it will produce bronchodilation. Although albuterol also affects beta-1 adrenergic receptors, this is minimal and has little effect on the heart rate. Onset is within 15 minutes and peaks within 60-90 minutes. Therapeutic effects may be active up to 5 hours.

INDICATIONS:

Relief of bronchospasm in patients with reversible obstructive airway disease including:

- Asthma
- COPD
- Bronchospasm 2° Allergic Reaction

CONTRAINDICATIONS:

~ Patients with a history of hypersensitivity.

WARNINGS:

~ Use caution in patients with coronary artery disease, hypertension, hyperthyroidism, and diabetes.
~ Epinephrine should not be used after a failure of the other.
~ Administer cautiously to patients on MAO inhibitors or tricyclic anti-depressants.
~ Beta-Blockers and Albuterol will inhibit each other.

SIDE EFFECTS:

~ Cardiovascular: Tachycardia, hypertension, and angina.
~ CNS: Nervousness, tremor, headache, dizziness, and insomnia.
~ GI: Drying of oropharynx, nausea, and vomiting, unusual taste.

PROTOCOLS USED:

Allergic reaction – (ME-2)

Respiratory Distress (ASTHMA) – (AR-3A)

Respiratory Distress (COPD) – (AR-3B)

Crush Syndrome – (AP-18)

Irritant Gas: Treatment: Yellow – (HP-9)

HOW TO ADMINISTER:

Child/Adult dosage:
2.5mg of Albuterol mixed in 3ml of NS via Nebulized Treatment @ 6 LPM.

Infant dosage (less than 1 year or less than 10kg):
Add 1.25mg of Albuterol mixed in 1.5 ml of NS via Nebulized Treatment @ 6 LPM.

Treatments will be delivered over approximately 5 to 15 minutes.

Amiodarone (Cardarone®)

P-4
Published: 3/1/2021
Reviewed:
Updated 1/15/2024

ACTION:

Amiodarone blocks sodium channels at rapid pacing frequencies and exerts a non-competitive anti-sympathetic action. One of its main effects, with prolonged administration, is to lengthen the cardiac action potential. In addition, it produces a negative chronotropic effect in nodal tissues. Also, it blocks potassium channels, which contributes to the slowing of conduction and prolongation of refractory period. Its vasodilatory action can decrease cardiac workload and consequently myocardial consumption.

INDICATIONS:

~ Recurring ventricular fibrillation, atrial fibrillation, and hemodynamically unstable ventricular tachycardia.
~ Supraventricular tachycardia.

CONTRAINDICATIONS:

~ Patients with a history of hypersensitivity to Amiodarone or IV iodine (Shellfish).
~ Patients with cardiogenic shock, marked sinus bradycardia, and second or third-degree AV block.

WARNINGS:

~ May worsen existing or start new dysrhythmia's, including torsade de pointes, and VF.
~ Use with beta-blocking agents could increase risk of hypotension and bradycardia.
~ Amiodarone inhibits atrioventricular conduction and decreases myocardial contractility, increasing the risk of AV block with verapamil or diltiazem or hypotension with any calcium channel blocker.
~ Use with caution with pregnancy and with nursing mothers.

SIDE EFFECTS:

~ Cardiovascular: Hypotension or Bradycardia.

HOW TO BOLUS:

Amiodarone is very thick and will absorb into the blood stream better if premixed with normal saline in a large syringe prior to bolus administration.

PROTOCOLS USED:

Ventricular Fibrillation / Pulseless Ventricular Tachycardia – (CA-6)

Atrial Fibrillation/Flutter (Rapid) – (CE-6)

Supraventricular Tachycardia – (CE-7)

Wide Complex Ventricular Tachycardia w/ Pulse – (CE-8)

Aspirin

P-5
Published: 3/1/2021
Reviewed:
Updated 1/15/2024

ACTION:

Aspirin is an analgesic, anti-inflammatory and anti-pyretic, which also appears to cause an inhibition of synthesis and release of prostaglandins. Aspirin also blocks formation of Thromboxane A2, which causes platelets to aggregate and arteries to constrict. Aspirin reduces overall mortality from acute myocardial infarction.

INDICATIONS:

~ Acute Myocardial Infarction (AMI).
~ Chest Pain (Cardiac Determined).
~ ST Elevation Myocardial Infarction (STEMI).
~ Non-ST Elevation Myocardial Infarction (NSTEMI).

CONTRAINDICATIONS:

~ Inability to tolerate PO secondary to altered mentation or lethargy (NO self-control of airway).
~ Known allergy to Aspirin.
~ Active GI ulceration or bleeding.
~ Hemophilia or other bleeding disorders.
~ During pregnancy.
~ Children under 2 years of age.

WARNINGS:

~ Hypersensitivity, bronchospasm, tightness in chest, angioedema, urticaria, and anaphylaxis.

SIDE EFFECTS:

~ OTIC: Tinnitus.
~ GI: Nausea, Vomiting, Heartburn, or Stomach Pain.

PROTOCOLS USED:

Chest Pain / Suspected Cardiac Event – (CA-1)

HOW TO ADMINISTER:

Adult dosage:
325mg chewed

Withhold if patient self-administered 324mg of aspirin within 24 hours. If patient self-administered less than 324mg of aspirin within 24 hours, re-administer full 324mg dose.

Pediatric dosage:
Dosage is derived from adult studies. The dose for antiplatelet effects 162-324mg chewed.

Atropine

Atropine Sulfate as a Cardiac Agent

ACTION:

Atropine is a potent para-sympatholytic that binds to acetylcholine receptors thus diminishing the actions of acetylcholine. Atropine is the first-line therapy (Class IIa) for symptomatic bradycardia in the absence of reversible causes. Acetylcholine works on three different receptors that merit attention in nerve agent poisonings. Atropine is only useful to counter muscarinic effects (pralidoxime and benzodiazepines act on the others). If there are local symptoms in the eyes or respiratory tract, atropine is not indicated. Intravenous (IV) atropine indications include patients with hypersalivation, bronchial secretions, or bradycardia.

INDICATIONS:

~ Sinus Bradycardia accompanied by hemodynamic compromise, (e.g., hypotension, confusion, frequent PVC's; pales, cold, clammy skin).
~ Pretreatment in pediatric intubations to prevent bradycardia.

CONTRAINDICATIONS:

~ None in emergency situations.

WARNINGS:

~ Patients with a history of hypersensitivity to Sulfa derived medications, use caution.
~ Too small of a dosage or if pushed too slowly may initially cause a reverse action and decrease the heart rate.
~ Antihistamines and antidepressants potentiate atropine.
~ For 2nd degree type II and 3rd degree AV blocks, Atropine may be ineffective. Consider going to Transcutaneous Pacing procedure.

Transcutaneous Pacing Procedure

SIDE EFFECTS:

~ CNS: Restlessness, agitation, confusion, psychotic reaction, pupil dilation, blurred vision, or headache.
~ Cardiovascular: Increase heart rate, may worsen ischemia or increase area of infarction, ventricular fibrillation, ventricular tachycardia, angina, or flushing of skin.
~ GI: Dry Mouth or Difficulty Swallowing.
~ Other: Urinary Retention or Worsened pre-existing glaucoma.

PROTOCOLS USED:

Bradycardia – (CE-5)

Published: 3/1/2021
Reviewed:
Updated 1/15/2024

Atropine

Atropine Sulfate as Antidote for Poisonings

ACTION:

Atropine is a potent para-sympatholytic that binds to acetylcholine receptors thus diminishing the actions of acetylcholine. Acetylcholine works on three different receptors that merit attention in nerve agent poisonings. Atropine is only useful to counter muscarinic effects (pralidoxime and benzodiazepines act on the others). If there are local symptoms in the eyes or respiratory tract, atropine is not indicated. Intravenous (IV) atropine indications include patients with hypersalivation, bronchial secretions, or bradycardia.

INDICATIONS:

~ Anticholinesterase syndrome poisoning such as; Organophosphate (e.g., parathion, Malathion, rid-a-bug) and carbamates (e.g., Baygon, Sevin and many common roach & ant sprays).
~ Victims of organophosphate poisoning can tolerate large doses, up to 1000mg.
~ Signs of Atropinization (resolution of "SLUDGEM") are the end point of administration (flushing, pupil dilation, dry of secretions, and tachycardia).

CONTRAINDICATIONS:

~ None when used in the management of severe organophosphate poisoning.
~ If there are local symptoms isolated to the eyes or respiratory tract ONLY, atropine is not indicated. This is rare when confirmed organophosphate positioning has occurred. If unconfirmed and presented with local symptoms isolated to the eyes or respiratory tract only, consider other chemical exposure.

WARNINGS:

~ It is important that the patient be adequately oxygenated and ventilated prior to using atropine as it may precipitate ventricular fibrillation in a poorly oxygenated patient.
~ Even after atropine is administered, the patient may require intubation and aggressive ventilatory support.

PROTOCOLS USED:

HAZMAT Protocols – Chemical Treatment: Green – (HP-4)

Specialty Pharmacology – Pralidoxime/Atropine (Duodote®)

PEA/Asystole Reversable Causes (H's and T's) (Toxins)

Signs of Organophosphate Poisoning:	
S	Salivation
L	Lacrimation
U	Urination
D	Defecation
G	GI Distress
E	Emesis (Vomiting)
M	Miosis (pin-point pupils)
Other Signs:	
Bradycardia	
Bronchospasm/Bronchorrhea	
Excessive Sweating	

Calcium Chloride

P-7
Published: 3/1/2021
Reviewed:
Updated 1/15/2024

ACTION:

Calcium chloride increases the force of myocardial contraction; calcium may either increase or decrease systemic vascular resistance. In normal hearts, calcium's positive inotropic and vasoconstriction effects produce a rise in systemic arterial pressure.

INDICATIONS:

~ Resuscitation treatment of hypocalcemia and calcium channel blocker toxicity (e.g. Verapamil or Cardizem overdose) and magnesium sulfate overdose.
~ Protects the heart from hyperkalemia seen in patients with end-stage renal disease.
~ Magnesium intoxication (overdose) in eclampsia. Signs of toxicity (e.g., visual changes, flushing, somnolence, muscle paralysis, loss of patellar reflexes) pulmonary edema, chest pain, respiratory depression or arrest, slurred speech or confusion.

CONTRAINDICATIONS:

~ Cardiopulmonary arrest not associated with calcium channel blocker overdose/toxicity.
~ Cardiopulmonary arrest in the presence of ventricular fibrillation.
~ Known hypercalcemia or digitalis toxicity (see Warning below).

WARNINGS:

~ Do not administered in the same infusion with sodium bicarbonate. Calcium chloride will combine with sodium bicarbonate to form an insoluble precipitate (calcium carbonate).
~ Give with extreme caution, and in reduced dosage, to persons taking digitalis because it increases ventricular irritability and may precipitate digitalis toxicity.

SIDE EFFECTS:

~ Cardiovascular: With pulses, rapid administration of calcium chloride may decrease heart rate.

PROTOCOLS USED:

PEA/Asystole Reversable Causes (H's and T's) (Toxins)

Atrial Fibrillation/Flutter (Rapid) – (CE-6)

REALLY WIDE Complex Tachycardia w/ Pulse – (CE-8)

Calcium Channel Blocker Overdose – (OD-3)

Pre-Eclampsia/Eclampsia (Magnesium Intoxication) – (OB-4)

Dextrose

P-8
Published: 3/1/2021
Reviewed:
Updated 1/15/2024

ACTION:

A monosaccharide, which provides calories for metabolic needs, spares body proteins and loss of electrolytes. Readily excreted by kidneys producing diuresis. Hypertonic solution containing more dissolved particles (such as salt and other electrolytes) than is found in normal cells and blood.

INDICATIONS:

~ Altered mental status (AMS) or unconsciousness secondary to confirmed hypoglycemia.

CONTRAINDICATIONS:

~ Intra-cranial or intra-spinal hemorrhage.
~ DTs with dehydration.
~ Blood glucose level above 60 mg/dl.

WARNINGS:

~ May cause Wernicke-Korsakoff syndrome in acute alcohol intoxication. Perform a glucose test prior to and a few minutes after administering Dextrose.

SIDE EFFECTS:

~ Cardiovascular: Thrombosis, sclerosis - if given in peripheral vein.
~ Local: Tissue irritation if infiltrated. Extravasation may cause tissue necrosis; use a large vein and aspirate occasionally to ensure route patency.
~Others: Acidosis, alkalosis, hyperglycemia, and hypokalemia.

PROTOCOLS USED:

PEA/Asystole Reversable Causes (H's and T's)

Diabetic Emergencies – (ME-6)

Diphenhydramine (Benadryl®)

P-9
Published: 3/1/2021
Reviewed:
Updated 1/15/2024

ACTION:

Diphenhydramine is an antihistamine with anticholinergic (drying) and sedative side effects. Antihistamines appear to compete with histamine for cell receptor sites on effector cells. Diphenhydramine prevents, but does not reverse histamine mediated responses, particularly histamine effects on the smooth muscle of the bronchial airways, gastrointestinal tract, uterus, and blood vessels.

INDICATIONS:

~ Allergy symptoms, anaphylaxis (as an adjunct to epinephrine).
~ Sedation of violent patient in conjunction with Haloperidol (Haldol®) administration.
~ Dystonic Reactions (see below).
~ Rhinitis
~ Anti-Parkinsonism
~ Nighttime sedation
~ Motion sickness

PEDIATRICS
HOW TO ADMINISTER: Diphenhydramine

Remove 1ml of Normal Saline from Prefilled Syringe and then pull 1ml from vial (50mg/ml).

Concentration will now equal 5mg/ml.

CONTRAINDICATIONS:

~ Not to be used in newborn or premature infants or in nursing mothers.
~ Not to be used in patients with lower respiratory tract symptoms including asthma.

WARNINGS:

~ In infants and children especially, antihistamines in overdose may cause hallucinations, convulsions, or death.
~ Antihistamines may diminish mental alertness in all age groups and more likely to cause dizziness, sedation, and hypotension in the elderly (60 years or older) patient.
~ In young children, they may produce excitation.
~ Diphenhydramine has additive effects with alcohol and other CNS depressants (hypnotics, sedatives, tranquilizers, etc.).

SIDE EFFECTS:

~ CNS: Drowsiness, confusion, insomnia, headache, vertigo (especially in the elderly).
~ Cardiovascular: Palpitations, tachycardia, PVC's and hypotension.
~ Respiratory: Thickening of bronchial secretions, tightness of the chest, wheezing, and congestion.
~ GI: Nausea, vomiting, diarrhea, dry mouth, and constipation.
~ GU: Dysuria, urinary retention.

PROTOCOLS USED:

Allergic Reaction – (ME-2)

Behavioral/Agitated Delirium – (ME-5)

Diltiazem (Cardizem®)

P-10
Published: 3/1/2021
Reviewed:
Updated 1/15/2024

ACTION:

Diltiazem inhibits the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle. The therapeutic benefits of Diltiazem is supraventricular tachycardia are related to its ability to slow AV nodal conduction time and prolong AV nodal refractoriness. Diltiazem also prolongs the sinus cycle length and decreases peripheral vascular resistance.

INDICATIONS:

~ Atrial Fibrillation or Atrial Flutter with rapid ventricular response.
~ Sedation Paroxysmal Supraventricular Tachycardia. Unless contraindicated, vagal maneuvers should be attempted prior to administration of Diltiazem.

CONTRAINDICATIONS:

~ Sick sinus syndrome except in the presence of a functioning ventricular pacemaker.
~ 2nd or 3rd degree AV block except in the presence of a functioning ventricular pacemaker.
~ Severe hypotension or cardiogenic shock.
~ Patients taking Clarithromycin.
~ Demonstrated hypersensitivity to Diltiazem.
~ Ventricular tachycardias.
~ Wolff-Parkinson-White syndrome or short PR syndrome.
~ Intravenous Diltiazem and intravenous beta-blockers should not be administered together or in proximity (within a few hours).

WARNINGS:

~ Caution should be used with caution in patients with impaired liver or renal function.
~ Caution should be used when administering Diltiazem and anesthetics.
~ Caution should also be used in pregnant females and mothers that are nursing.
~ Caution if administered in the presence of CHF.
~ Intravenous Diltiazem administered to a patient who is taking oral beta-blockers may cause bradycardia, AV block, and/or depression of contractility.

SIDE EFFECTS:

~ Skin: Itching or burning at injection site, flushing of skin.
~ Cardiovascular: Hypotension, junctional rhythm.
~ Other side effects are less frequent (e.g., AV blocks, atrial flutter, chest pain, etc.).

PROTOCOLS USED:

Atrial Fibrillation/Flutter (Rapid) – (CE-6)

Supraventricular Tachycardia – (CE-7)

Epinephrine

P-11
Published: 3/1/2021
Reviewed:
Updated 1/15/2024

ACTION:

1:1000 - Sympathomimetic causing immediate bronchodilation, increase in heart rate and an increase in the force of cardiac contraction.

~ Beta 1 - contractility, inotropic, increase AV conduction, and automaticity.
~ Beta 2 - bronchial dilation and skeletal muscle vasodilation.
~ Alpha - peripheral vasoconstriction and fight or flight response.

1:10,000 - Epinephrine is stimulates both Alpha and Beta-receptors. As a result of the its effects, myocardial and cerebral blood flow are increased during ventilation and chest compression during cardiac arrest. Administration increases systemic vascular resistance, thus enhancing defibrillation.

INDICATIONS:

Cardiac:
~ Ventricular Fibrillation (V-Fib)
~ Pulseless Electrical Activity (PEA)
~ Pulseless Ventricular Tachycardia (VT w/o Pulse)

Respiratory:
~ Asthma
~ Anaphylaxis
~ Acute Bronchial Spasm (present during exacerbation of COPD, Croup, or Asthma).
~ Angioneurotic Edema, unpredictable frequent swelling of cutaneous and mucosal tissues such as lips, eyes, oral cavity, larynx, and gastrointestinal system (GIS).

PEDIATRICS: Nebulized Epinephrine

Nebulized epinephrine is an accepted treatment for airway edema and obstruction. It is commonly used for treatment of bronchiolitis in children having significant respiratory distress (Angioedema, Croup, and Bronchiolitis).

CONTRAINDICATIONS:

~ None in the cardiac arrest situation.
~ Hyperthyroidism, hypertension, cerebral arteriosclerosis in asthma.
~ Should not be administered in elderly or debilitated patients with cardiovascular disease.
~ In the presence of Anaphylaxis, there are no contraindications.

WARNINGS:

~ Epinephrine 1:1,000 & 1:10,000. Causes hyperglycemia except for cardiac arrest.
~ Epinephrine is inactivated by alkaline solutions never mix with Sodium Bicarbonate.
~ Do not mix isoproterenol and epinephrine, results is exaggerated response.
~ If catecholamines is depressed by acidosis, attention to ventilation and circulation is essential.

SIDE EFFECTS:

~ CNS: Anxiety, headache, cerebral hemorrhage.
~ Cardiovascular: Tachycardia, ventricular dysrhythmias, hypertension, angina, palpitations.
~ GI: Nausea and vomiting.

Etomidate (Amidate®)

P-12
Published: 3/1/2021
Reviewed: 8/1/2021
Updated: 8/30/2021

ACTION:

Ultra short acting (3-5 minutes) non-barbiturate hypnotic, lacking analgesic properties used for rapid induction of general anesthesia with minimal cardiovascular effects. The action is at the level of the reticular activating system in the brain system. Considered to have minimal adverse effects on cardiac/respiratory function.

INDICATIONS:

~ Induce general anesthesia to facilitate intubation or conscious sedation.

CONTRAINDICATIONS:

~ Patients with a history of hypersensitivity to Etomidate (Amidate®).
~ Patient with suspected sepsis or in septic shock.

WARNINGS:

~ Supportive airway control must always be on the direct observation and vital signs monitored during the entire procedure.
~ Etomidate can decrease the adrenal glands production and steroid hormones in trauma patients.
~ Risk of toxicity is greater in patient with renal impairment, use with caution.

SIDE EFFECTS:

~ GI: Nausea and vomiting.
~ Other: Uncontrolled skeletal muscle activity.
~ TRISMUS, if pushed too fast.

PROTOCOLS USED:

Airway – (AR-1A)

Pediatric Airway – (AR-1B)

Bradycardia – (CE-5)

Supraventricular Tachycardia – (CE-7)

Wide Complex Tachycardia w/ Pulse – (CE-8)

Polymorphic Ventricular Tachycardia (Torsades) – (CE-8)

Beta Blocker Overdose – (OD-2)

Calcium Channel Blocker Overdose – (OD-3)

Fentanyl

P-13
Published: 3/16/2022
Reviewed: 7/12/2022
Updated: 7/19/2024

ACTION:

Synthetic opioid that produces analgesia to treat moderate to severe pain. Fentanyl molecules target a subclass of opioid receptor systems in the body, many of which are localized in the brain within specialized neuroanatomical structures, particularly involving the control of pain.

INDICATIONS:

~ Provide analgesia to treat moderate to severe pain.
~ Pain from acute myocardial infarction.
~ Pain associated with an isolated extremity fracture and from renal colic or burns.

CONTRAINDICATIONS:

~ Patients with history of hypersensitivity or intolerance, and/or other opioid analgesics.
~ Significant head trauma and increased intracranial pressure.
~ Pregnant women near term (32 weeks or greater).
~ Depressed ventilatory function (e.g.: COPD, asthma, obstructive sleep apnea).
~ Hypotensive with systolic B/P less than 90mmhg.
~ Acute alcohol intoxication

WARNINGS:

~ Fentanyl may cause muscle rigidity, particularly involving the muscles of respiration. This effect is related to the dose and speed of injection and may be reduced by slow intravenous injection.
~ The initial Fentanyl dose should be reduced in elderly and debilitated patients. Elderly patients may be more susceptible to adverse effects, such as respiratory depression and cardiovascular effects.

SIDE EFFECTS:

~ CNS: Drowsiness, Confusion, Delirium, Euphoria/Hallucinations, LOC, or Coma.
~ Respiratory: Respiratory Depression, Bronchoconstriction, or decreased cough reflex.
~ Other: Muscle Rigidity or Dyskinesia (Voluntary Muscle Movement Impairment).
~ Cardiovascular: Hypotension.
~ GI: Nausea and vomiting.

PROTOCOLS USED:

Abdominal Pain and GI Emergencies – (ME-1)

Pain Control and Management – (ME-10)

Chest Pain / Suspected Cardiac Event – (CE-1)

HOW TO ADMINISTER: Fentanyl Options

1. IV/IO - Remove 2ml of Normal Saline from Pre-Filled Syringe and then pull full amount of 2ml from vial (50mcg/ml). Concentration will now equal 10mg/ml. **Administer SIVP**
2. IN – Do Not Dilute, use concentrated amount. Refer to MAD Instruction page for further.
3. IM – Do Not Dilute, use concentrated amount. Refer to Medication Administration Instruction page for further.

Furosemide (Lasix®)

P-14
Published: 3/1/2021
Reviewed:
Updated: 8/27/2024

ACTION:
Furosemide is a potent diuretic that inhibits the reabsorption of sodium and chloride in the proximal tubule, distal tubule, and the loop of Henle. Rapid acting, potent diuretic; inhibits reabsorption of Sodium Chloride. It is also a venous dilator that decreases preload.

INDICATIONS:
~ Cardiogenic Pulmonary Edema (Adults Only).

CONTRAINDICATIONS:
~ Patients with history of hypersensitivity to Furosemide (Lasix®).
~ Allergies to SULFA prepared medications (Sulfonamides).
~ Pregnancy.
~ Dehydration or Shock.
~ Anuria (Lack of urine production due to shock, severe blood loss, or heart or kidney failure.)

WARNINGS:
~ Rapid administration may cause auditory problems including tinnitus/hearing loss.
~ Administration to patients suffering from Sepsis and/or pneumonia (respiratory infection) could worsen their condition (lung sounds, temperature, & history of present illness must be confirmed).

SIDE EFFECTS:
~ CNS: Headache or Dizziness.
~ Respiratory: Respiratory Depression, Bronchoconstriction, or decreased cough reflex.
~ Other: Dehydration, Dry Mouth, or Tinnitus.
~ Cardiovascular: Hypotension (Secondary to Hypovolemia).
~ GI: Nausea and vomiting.
~ Blood/Hematology: Electrolyte Disturbances that include Hyponatremia (Low Sodium), Hypokalemia (Low Potassium), Hypochloremia (Low Chloride), and Hyperglycemia.

PROTOCOLS USED:

Pulmonary Edema (CHF) – (AR-2)

Glucagon

P-15
Published: 3/1/2021
Reviewed:
Updated: 8/27/2024

ACTION:
Glucagon produced in the pancreas by the Alpha cells of the Islets of Langerhans, causes an increase in blood glucose concentrations. It is effective in small doses and no evidence of toxicity has been reported with its use. Glucagon acts only on liver glycogen, converting it to glucose, if patient has adequate glycogen reserves. Also, possesses positive inotropic and chronotropic properties.

INDICATIONS:
~ Treatment of hypoglycemia when IV/IO access is unavailable and oral glucose is contraindicated, or high suspicion of stroke. IM Injection, Onset @ 10 minutes, Peak effect @ 30 minutes.
~ Treatment of Beta-Blocker Overdose. IV Bolus, Onset – Immediate, Peak effect @ 5-20 minutes.

CONTRAINDICATIONS:
~ Patients with history of hypersensitivity to Glucagon.

WARNINGS:
~ Glucagon should be administered with caution in patients with a history of insulinoma (Pancreatic Tumors) and/or pheochromocytoma (Adrenal Glands Tumors).

SIDE EFFECTS:
~ GI: Nausea and vomiting.
~ Other: Pain around the injection site.

PROTOCOLS USED:

Diabetic Emergencies – (ME-6)

Suspected Stroke – (ME-13)

PEA/Asystole Reversable Causes – (CA-4/5)

Beta Blocker Overdose – (OD-3)

Haloperidol (Haldol®)

P-16
Published: 3/1/2021
Reviewed:
Updated: 8/27/2024

ACTION:

Haloperidol is a potent, long-acting Butyrophenone derivative with pharmacologic actions like those of Piperazine Phenothiazines but with higher incidence of extrapyramidal effects, less hypotensive and relatively low sedative activity. Exerts strong anti-emetic effect and impairs central thermoregulation. Produces weak central anti-cholinergic effects and transient orthostatic hypotension. Actions thought to be due to blockade of Dopamine activity.

INDICATIONS:

~ Used for management of manifestations of psychotic disorders and for the treatment of agitated states in acute and chronic psychoses.

CONTRAINDICATIONS:

~ Combativeness from trauma.
~ Patients with a history of hypersensitivity to Haldol.
~ Patient with:
- ~ Parkinson's disease
- ~ Coma
- ~ Severe mental depression
- ~ Thyrotoxicosis
- ~ Seizure disorders
- ~ Alcoholism
- ~ CNS depression
- ~ Cocaine overdose.

~ Should not be used in the management of dysphoria caused by Talwin/Pentazocine.

WARNINGS:

~ Orthostatic hypotension.
~ Use with caution in patients with severe cardiovascular disorders (may cause transient hypotension and/or precipitation of angina pain).
~ Use with caution in patients receiving anticonvulsant medication (may lower the effectiveness).

SIDE EFFECTS:

~ CNS: Parkinson-like mimics, restlessness, lethargy, headache, exacerbation of psychotic symptoms.
~ GI: Nausea and/or vomiting.
~ Cardiovascular: Tachycardia, hypotension, hypertension (seen w/ overdose).
~ Other: Bronchospasm, laryngospasm, respiratory depression, dry mouth, hyper-salivation, drooling.

PROTOCOLS USED:

Behavioral/Hyperactive Delirium – (ME-5)

Dystonic (Extrapyramidal) Reactions:

Dystonic (also known as Extrapyramidal) reactions are characterized by intermittent spasmodic or sustained involuntary contractions of muscles in the face, neck, trunk, pelvis, extremities, and even the larynx. Typically, antipsychotic (Haldol, Lithium, etc.), antiemetic (Compazine, Reglan, etc.) or anti-depressant (Prozac, Paxil etc.) medications are responsible. A dystonic reaction can occur immediately or be delayed for hours to days. When recognized, give **Diphenhydramine (Benadryl®) 50mg Slow IV/IO or IM in adults**. See Medication Tool for pediatrics.

Ketamine

P-17
Published: 3/16/2022
Reviewed: 3/14/2022
Updated: 8/27/2024

ACTION:

Ketamine is a dissociative anesthetic agent, which interrupts the connection between the thalamo-cortical tracts and the limbic system. It is unique among sedative agents in that it also provides analgesia in addition to the amnestic and sedative effects. The sympathomimetic effects cause an increase in heart rate, blood pressure, and cardiac output. It also has bronchodilator effects.

INDICATIONS:

~ Violent agitated patient.
~ Suspected "Hyperactive Delirium" (agitation, drug abuse, Flakka).
~ Resisting physical restraints putting self or crew in danger.
~ Used to facilitate intubation in patients who are semi-conscious and/or with an intact gag reflex.
~ Continued sedation after the use of Etomidate to achieve a secured advanced airway.

CONTRAINDICATIONS:

~ Significant Head Trauma.
~ Increased Intracranial Pressure (ICP).
~ Use in pregnancy is not recommended.

WARNINGS:

~ Respiratory depression/apnea may occur with over-dosage or rapid administration.
~ Caution with chronic alcoholics, acute alcohol intoxication, and elderly patients.
~ Use to manage patients suffering from psychiatric disorders/psychosis is not recommended. These patients should be administered Haldol/Benadryl/Versed combination instead.

SIDE EFFECTS:

~ CNS: Parkinson-like mimics, restlessness, lethargy, headache, exacerbation of psychotic symptoms.
~ GI: Nausea and/or vomiting.
~ Cardiovascular: Tachycardia, hypotension, hypertension (seen w/ overdose).
~ Other: Bronchospasm, laryngospasm, respiratory depression, dry mouth, hyper-salivation, drooling.

PROTOCOLS USED:

Behavioral/Hyperactive Delirium – (ME-5)

Pain Control/Management – (ME-10)

Seizure – (ME-11)

Airway – (AR-1A)

Pediatric Airway – (AR-1B)

HOW TO ADMINISTER: Ketamine Options (IV)
1. Dilute full 500mg/5ml vial with 50ml D5W, Or
2. Remove 1ml of Normal Saline from Prefilled Syringe and then pull 1ml from vial (100mg/ml).
Concentration will now equal 10mg/ml.
Administer SIVP and continuously monitor vial signs.

Ketorolac (Toradol®)

P-18
Published: 3/1/2021
Reviewed:
Updated: 8/27/2024

ACTION:

Toradol works by reducing hormones that cause inflammation and pain in the body. Ketorolac is used to relieve moderately severe pain, usually pain that occurs after an operation, kidney stones, back pain or other painful procedure. It belongs to the group of medicines called nonsteroidal anti-inflammatory drugs (NSAIDs). Ketorolac is not a narcotic and is not habit-forming. It is 30 times the strength of aspirin. It will not cause physical or mental dependence, as narcotics can. However, ketorolac is sometimes used together with a narcotic to provide better pain relief than either medicine used alone.

INDICATIONS:

~ Used to treat moderate to severe pain that occurs after an operation, trauma, kidney stones, back pain or other painful procedure.
~ Adults Only, fever and infection control if PO Acetaminophen can not be tolerated.

CONTRAINDICATIONS:

~ Allergic to ASA or NSAIDs.
~ Taking blood thinners or anticoagulants.
~ Severe renal disease or kidney transplant.
~ A bleeding or blood clotting disorder.
~ A closed head injury or bleeding in brain.
~ A stomach ulcer or a history of stomach or intestinal bleeding.
~ Patient needing surgery.
~ A surgical candidate with open fracture or fracture deformities.
~ Women who are actively breast-feeding.

WARNINGS:

~ Consult physician if patient has a history of any liver disease, kidney disease, blood disorders, ulcers, heart disease, alcohol use, high blood pressure, eye disease, asthma, nasal polyps, any allergies - especially aspirin/NSAID allergy (e.g., ibuprofen, celecoxib).

SIDE EFFECTS:

~ CNS: Dizziness or drowsiness.
~ GI: Nausea and/or vomiting, bloating, gas, or loss of appetite. Stomach upset is the most common.
~ Other: Pain/Irritation around the injection site. Sweating, blurred vision, dry mouth, abnormal tastes.

PROTOCOLS USED:

Fever and Infection Control – (ME-8)

Pain Control/Management – (ME-10)

GERIATRIC/ELDERLY CONSIDERATIONS:
When treating pain, consider halving (1/2) the dose when administering to geriatric/elderly patients.

Magnesium Sulfate

P-19
Published: 3/1/2021
Reviewed:
Updated: 10/3/2024

ACTION:

Magnesium is an important cofactor for enzymatic reactions and plays an important role in neurochemical transmission and muscular excitability. Magnesium prevents or controls convulsions by blocking neuromuscular transmission and decreasing the amount of acetylcholine liberated at the end plate by the motor nerve impulse. Magnesium is said to have a depressant effect on the central nervous system, but it does not affect the mother, fetus or neonate when used as directed in eclampsia and pre-eclampsia. Magnesium acts peripherally to produce vasodilation.

INDICATIONS:

~ Parenteral anticonvulsant for the prevention or control of seizures in severe toxemia of pregnancy.
~ Torsades de pointes.
~ Suspected hypomagnesemia state (e.g., chronic alcoholism and chronic use of diuretics).
~ Refractory ventricular fibrillation.
~ Asthma refractory to other treatments.

CONTRAINDICATIONS:

~ Patients with a history of hypersensitivity to Magnesium Sulfate.
~ Hypermagnesemia (High levels of Magnesium in the blood.)
~ Hypercalcemia (High levels of Calcium in the blood.)
~ Myocardial damage or heart blocks.

WARNINGS:

~ Patients with a history of hypersensitivity to Sulfa derived medications, use caution.
~ Magnesium Sulfate 50% must be diluted to a concentration of 20% or less prior to IV infusion.
~ Use with caution in patients with renal impairment.
~ Calcium Chloride should be immediately available to counteract the potential hazards of magnesium intoxication in eclampsia.
~ Intravenous use of magnesium sulfate should not be given to mothers with toxemia of pregnancy during the two hours immediately preceding delivery.

SIDE EFFECTS:

Adverse effects of Magnesium Sulfate IV are usually the result of magnesium intoxication. Signs of hypermagnesemia include flushing, sweating, hypotension, depression of reflexes, flaccid paralysis, hypothermia, circulatory collapse, depression of cardiac function and central nervous system depression. These symptoms can precede fatal paralysis.

PROTOCOLS USED:

Respiratory Distress – ASTHMA – (AR-3A)

Ventricular Fibrillation / Pulseless Ventricular Tachycardia – (CA-6)

Polymorphic Ventricular Tachycardia (Torsades) – (CE-9)

Pre-Eclampsia/Eclampsia – (OB-3)

Methylprednisolone (Solu-Medrol®)

ACTION:

Methylprednisolone is a corticosteroid. While the exact mechanism of corticosteroid activity is unknown, these agents decrease inflammatory and immune responses by stabilizing membranes within white blood cells responding to a site of infection, injury, irritation, or inflammation.

INDICATIONS:

~ Allergic Reaction
~ Respiratory Distress

CONTRAINDICATIONS:

~ Patients with a history of hypersensitivity or allergic to any component of the formulation.
~ Untreated serious infections.
~ Those with systemic fungal infections. (Ask about these in patients on chemotherapy or with AIDS).
~ Premature infants.

WARNINGS:

~ Must be delivered slow IV/IO push/bolus.

SIDE EFFECTS:

~ Cardiovascular: Hypertension.
~ CNS: Headache and/or dizziness.
~ Hematology: Hyperglycemia.
~ Other: Euphoria or Behavioral Alterations, phlebitis if pushed too fast.

PROTOCOLS USED:

Allergic Reaction – (ME-2)

Respiratory Distress – ASTHMA – (AR-3A)

Respiratory Distress – COPD – (AR-3B)

Bites, Envenomations, and Stings – (EE-4)

Midazolam (Versed®)

P-21
Published: 3/1/2021
Reviewed:
Updated: 10/3/2024

ACTION:

Midazolam is a shorter-acting benzodiazepine central nervous system depressant that produces sedation and lack of recall. **Versed is no longer used to facilitate intubation or provide sedation prior to cardioversion.**

INDICATIONS:

~ Sedation for seizures.
~ Chemical sedation for patients in a hyperactive delirious state.
~ Sedation for patients receiving external transcutaneous pacing ONLY.
~ Sedation (Mild) to assist with the application/toleration of CPAP procedure.

CONTRAINDICATIONS:

~ Patients with a history of hypersensitivity or allergic to Midazolam (Versed).
~ Narrow-angle glaucoma.

WARNINGS:

~ Must be Midazolam does not protect against increase in intracranial pressure and bradycardia associated with intubation attempts.
~ Patient with chronic Benzodiazepine use may require a large dose for wanted effects.

SIDE EFFECTS:

~ Respiratory: Respiratory depression, laryngospasm, bronchospasm, and/or dyspnea.
~ Cardiovascular: PVC's, bradycardia, tachycardia, nodal rhythms, and/or hypotension.
~ CNS: Retrograde amnesia, altered mental status, dizziness, and/or prolonged unconsciousness.
~ GI: Nausea/vomiting, hiccoughs, and/or coughing.
~ Local: Pain, redness, swelling, burning at injection site.

PROTOCOLS USED:

Behavioral/Hyperactive Delirium – (ME-5)

Seizure – (ME-11)

Pulmonary Edema (CHF) – (AR-2), when requiring CPAP.

Respiratory Distress – ASTHMA – (AR-3A), when requiring CPAP.

Respiratory Distress – COPD – (AR-3B), when requiring CPAP.

Bradycardia – (CE-5), when requiring transcutaneous pacing.

Beta Blocker Overdose – (OD-3), when requiring transcutaneous pacing.

Calcium Channel Blocker Overdose – (OD-3), when requiring transcutaneous pacing.

Cocaine Overdose – (OD-4)

Naloxone (Narcan®)

P-22
Published: 3/1/2021
Reviewed:
Updated: 10/3/2024

ACTION:

Antagonizes (reverses) the effects of opiates by competing at same receptor sites. When given IV, the action is apparent within a few minutes. IN, IM, or SC administration are slower.

INDICATIONS:

~ Complete or partial reversal of decreased mentation and respiratory depression secondary to opiate related (derived) drugs, either medicinal or illicit.

Common Names:

- Fentanyl (Sublimaze)
- Hydromorphone (Dilaudid)
- Meperidine (Demerol)
- Nalbuphone (Nubain)
- Codeine
- Pentazocine (Talwin)
- Oxycodone (Percodan, Percocet)
- Propoxyphene (Darvon, Darvocet)
- Morphine Sulfate
- Methadone
- Heroin
- Lomotil

Larger doses of naloxone may be required to reverse toxicity from diphenoxylate/atropine (Lomotil), methadone, propoxyphene, pentazocine, and fentanyl derivatives.

CONTRAINDICATIONS:

~ NO CONTRAINDICATIONS IN CONFIRMED OPIOID OVERDOSES THAT THREATEN LIFE.
~ Patients with a history of hypersensitivity to Narcan.
~ Incompatible with bisulfite and with alkaline solutions.

WARNINGS:

~ Naloxone should be administered cautiously to persons including newborns of mothers who are known or suspected to be physically dependent on opiates.
~ Administration of Narcan may precipitate an acute abstinence syndrome. The initial phase of withdrawal from drugs or alcohol that occurs almost immediately after stopping use.
~ Repeat Naloxone is not effective against a respiratory depression due to non-opiate drugs.
~ Use caution during administration, patient may become violent as level of consciousness increases.

SIDE EFFECTS:

~ Cardiovascular: Hypo/Hypertension, PVC's, tachycardia, ventricular fibrillation, and rapid onset pulmonary edema.
~ CNS: Tremors, agitation, belligerence, pupil dilation, and seizures secondary to rapid withdrawal.
~ GI: Nausea/vomiting.
~ Other: Increased tear and sweat production.

PROTOCOLS USED:

Narcotic/Opioid Overdose – (OD-6)

Nitroglycerin Tablets/Paste

P-23
Published: 3/1/2021
Reviewed:
Updated: 10/3/2024

ACTION:

Nitroglycerin is a direct vasodilator, which acts principally on the venous system although it also produces direct coronary artery vasodilation as a result. There is a decrease in venous return, which decreases the workload on the heart, thus decreasing myocardial oxygen demand. Nitroglycerin S/L is readily absorbed. Pain relief occurs within one to two minutes and therapeutic effects can last up to 30 minutes.

INDICATIONS:

~ Chest pain or discomfort associated with suspected Acute Myocardial Infarction (AMI).
~ Angina Pectoris (severe chest pain radiating to shoulders/arms, and neck).
~ Pulmonary edema associated with hypertension.

CONTRAINDICATIONS:

~ Hypotension.
~ Patients increased intracranial pressure.
~ Patients who have taken medication for erectile dysfunction in the past 24 hours.

WARNINGS:

~ Tolerance to nitrates easily develops, which necessitates increasing the dosage.
~ Nitroglycerin tablets are inactivated by light, heat, air and moisture. Must be kept in amber glass containers with tight-fitting lids. Once opened, shelf-life of 3 months.
~ Alcohol will accentuate vasodilating and hypotensive effects.
~ Consult the Medical Director for pediatric patients with cardiac related chest pain.

SIDE EFFECTS:

~ Cardiovascular: Hypotension and reflex tachycardia.
~ CNS: Headache and/or dizziness.
~ GI: Nausea/vomiting.

PROTOCOLS USED:

Chest Pain / Suspected Cardiac Event – (CE-1)

Pulmonary Edema (CHF) – (AR-2)

Nitrous Oxide

P-24
Published: 3/1/2021
Reviewed:
Updated: 10/3/2024

ACTION:
Nitrous oxide is a colorless gas, which acts on the central nervous system. When mixed with 50% oxygen and inhaled by patient-self administration, it produces an effect like a mild intoxicant. The patient laughs and talks but does not go to sleep. When inhaled, nitrous oxide has potent analgesic effects, which dissipates within 2-5 minutes after stopping administration.

INDICATIONS:
~ Moderate to severe pain secondary to trauma.
~ Acute Myocardial Infarction (AMI)
~ Burns
~ Renal Colic
~ Childbirth, labor pain (only during delivery)

CONTRAINDICATIONS:
~ AMS (e.g., head injury, alcohol ingestion, drug OD).
~ COPD patients, acute pulmonary edema, pneumothorax, decompression sickness, air embolus, and abdominal pain with distention or suspicion of obstruction.
~ Pregnancy (except during delivery).
~ Unable to self-administer Nitronox.

WARNINGS:
~ Since nitrous oxide is heavier than air, it may accumulate on the floor of ambulance. During transport greater than 15 minutes, nitrous oxide may affect ambulance personnel.
~ Apply O2 cannula at 4-6 L to maintain O2 therapy when nitrous oxide is not being administered.

SIDE EFFECTS:
~ CNS: Headache, dizziness, light-headedness, confusion, and/or drowsiness.
~ GI: Nausea/vomiting.

PROTOCOLS USED:

Abdominal Pain and GI Emergencies – (ME-1)

Pain Control and Management – (ME-10)

Ondansetron (Zofran®)

P-25
Published: 3/1/2021
Reviewed:
Updated: 10/3/2024

ACTION:

The mechanism by which ondansetron works to control nausea and vomiting is not fully understood. It is believed that the antiemetic properties occur because of serotonin receptor antagonism.

INDICATIONS:

~ Nausea and vomiting due to chemotherapy.
~ Prophylactic use prior to administration of pain management medication.
~ Nausea and vomiting with moderate-severe dehydration or electrolyte imbalance.

CONTRAINDICATIONS:

~ History of allergic reaction to ondansetron or to any medicine like ondansetron, including:
- Dolasetron (Anzemet)
- Granisetron (Kytril)
- Palonosetron (Aloxi)

WARNINGS:

~ Patients with a history, or family history, of Long QT syndrome; transient EKG changes have been seen with IV administration including QT interval prolongation.
~ Adverse reactions are typically seen at doses significantly higher than used in these protocols and in patients receiving the medication for longer periods of time.
~ Liver disease (metabolizes in the liver)
~ Breast-feeding (passes through breast milk) ~ Pregnancy (no adverse effects are known)

SIDE EFFECTS:

~ Cardiovascular: Hypotension or Cardiac dysrhythmia (rare).
~ CNS: Headache, dizziness, and/or drowsiness/sedation.
~ Respiratory: Bronchospasm
~ GI: Constipation, diarrhea, or dry mouth.
~ Immunological: Anaphylaxis (rare).
~ Other: Muscle pain, fatigue, malaise, or chills.

PROTOCOLS USED:

Abdominal Pain and GI Emergencies – (ME-1)
Beta Blocker Overdose – (OD-2)
Pain Control and Management – (ME-10)
Heat Emergencies – (EE-3)
Chest Pain / Suspected Cardiac Event – (CE-1)
Calcium Channel Blocker Overdose – (OD-3)

Oral Glucose (Glutose®)

P-26
Published: 3/1/2021
Reviewed:
Updated: 10/3/2024

ACTION:
After absorption from GI tract, provides a prompt increase in circulating blood sugar and glucose is distributed to the tissue cells. 1 to 2 tubes orally, use second tube of oral glucose based on blood glucose results.

INDICATIONS:
~ Conscious hypoglycemic states.
~ Patient has self-control of airway (swallow) and able to follow commands.

CONTRAINDICATIONS:
~ Unconscious or inability to follow commands (swallow).

WARNINGS:
~ Altered level of consciousness.
~ Obtain the patient's ability to swallow an oral preparation of glucose without airway compromise.
~ Must be swallowed, not absorbed sublingually, or via buccal cavity.

SIDE EFFECTS:
~ GI: Nausea

PROTOCOLS USED:

Diabetic Emergencies – (ME-6)

Sodium Bicarbonate

P-27
Published: 3/1/2021
Reviewed:
Updated: 10/3/2024

ACTION:

An alkalizing agent used to buffer acids present in the body during and after severe hypoxia. Bicarbonate combines with excess acids (usually lactic acid) present in the body to form a weak, volatile acid. This acid is broken down into CO2 and H2O. Sodium bicarbonate is effective only when administered with adequate ventilation and oxygenation.

INDICATIONS:

~ Metabolic acidosis due to:

- Aspirin overdose.
- Barbiturate overdose.
- Physostigmine toxicity.
- Methanol toxicity.
- Ethylene glycol toxicity.
- Tricyclic anti-depressant overdose.
- Hyperkalemia.
- Severe ketoacidosis.
- Cardiac arrest.
- Shock.

HOW TO ADMINISTER IV/IO:
4.2% Sodium Bicarbonate
Neonates, Infants, and Pediatrics

1. Discard 25ml (half the pre-filled syringe) of 8.4% Sodium Bicarbonate.
2. Draw up 25ml of Normal Saline into pre-filled syringe (total volume 50ml).

Concentration will now equal 4.2% (0.5meg/ml)

CONTRAINDICATIONS:

~ Congestive heart failure.
~ Alkalotic states.

WARNINGS:

~ Excessive bicarbonate therapy inhibits the release of oxygen.
~ Bicarbonate does not improve the ability to defibrillate.
~ May inactivate simultaneously if administered with catecholamines.
~ Will precipitate if mixed with calcium chloride.

SIDE EFFECTS:

~ Metabolic alkalosis.
~ Hypernatremia (elevated sodium blood levels).
~ Cerebral acidosis.
~ Sodium and H2O retention, which can cause congestive heart failure (CHF).

PROTOCOLS USED:

Behavioral/Hyperactive Delirium – (ME-5)
Pulseless Electrical Activity (PEA) – (CA-5)
PEA/Asystole Reversable Causes – (CA-4/5)
REALLY WIDE Complex Tachycardia – (CE-8, Page 2)
Ventricular Fibrillation / Pulseless Ventricular Tachycardia – (CA-6)
Asystole – (CA-4)
TCA Overdose – (OD-5)
Crush Syndrome – (AP-18)

Tranexamic Acid (TXA)

P-28
Published: 3/1/2021
Reviewed:
Updated: 1/15/2024

ACTION:

An antifibrinolytic medicine (fibrinolysis inhibitor) that stabilizes fibrinogen, decreases plasmin formation, and fibrin clot. Tranexamic acid is a synthetic analog of the amino acid lysine. It serves as an antifibrinolytic by reversibly binding four to five lysine receptor sites on plasminogen. This decreases the conversion of plasminogen to plasmin, preventing fibrin degradation and preserving the framework of fibrin's matrix structure.

INDICATIONS:

Blunt or Penetrating Trauma with either:
- ~ Hemorrhagic Shock w/ Altered Mentation
- ~ Suspected Traumatic Brain Injury (TBI) w/ GCS ≤ 12

CONTRAINDICATIONS:

- ~ Injuries greater than 3 hours (> 3 hours)
- ~ Less than 5 years old (< 5 years old)

WARNINGS:

- ~ Orthostatic hypotension.
- ~ Use with caution in patients with severe cardiovascular disorders (may cause transient hypotension and/or precipitation of angina pain).
- ~ Use with caution in patients receiving anticonvulsant medication (may lower the effectiveness).

SIDE EFFECTS:

- ~ Stinging/burning/redness @ the infusion site.
- ~ Blurred Vision
- ~ Allergic Reaction

PROTOCOLS USED:

Hemorrhagic Shock Treatment – (TC-2)

Head Trauma – (TC-9)

Section 11B | Specialty Pharmacology

Hydroxocobalamin (Cyanokit®)

SP-1
Published: 3/1/21
Reviewed:
Updated: 9/19/2023

Information:

Cyanokit® is indicated for the treatment of known or suspected cyanide poisoning. Sources of cyanide poisoning include hydrogen cyanide and its salts, cyanogenic plants, aliphatic nitriles, and prolonged exposure to sodium nitroprusside. Cyanide poisoning may result from inhalation, ingestion, or dermal exposure to various cyanide-containing compounds, including smoke from closed-space fires.

Diagnosing cyanide poisoning may be difficult. The presence and extent of cyanide poisoning are often initially unknown. There is no widely available, rapid, confirmatory cyanide blood test. Treatment decisions must be made based on clinical history and signs and symptoms of cyanide intoxication.

Where there is smoke, there may be cyanide. Although carbon monoxide is a well-known toxin in fire smoke, cyanide can be an overlooked danger.3 Cyanide is often released when everyday items found in most homes and businesses combust, making smoke inhalation the most common cause of acute cyanide poisoning. With signs and symptoms similar to carbon monoxide poisoning, cyanide poisoning can be difficult to recognize. Despite the similarities, quick diagnosis is essential.

CYANIDE	COMMON TO BOTH	CARBON MONOXIDE
Chest tightness Altered mental status Mydriasis Tachypnea/Hyperpnea (late) Bradypnea/Apnea (late) Hypertension (early) Hypotension (late) Cardiovascular collapse	Headache Nausea Vomiting Confusion Dyspnea Coma Seizure	Dizziness Vertigo Irritability Flu-like symptoms Fatigue Delirium Ataxia Loss of consciousness Chest pain Myocardial infarction Stroke

Age Group (years)	Hydroxocobalamin (Cyano Kit)		20 Drop Set (w/ kit)
0-2	¼ Bottle	1,250 MG	1 gtt / 2 seconds*
3-5	¼ Bottle	1,250 MG	1 gtt / 2 seconds*
6-14	½ Bottle	2,500 MG	1 gtt / 1 second*
≥15	Full Bottle	5 Grams	2 gtts / 1 second

Pediatric Dose - Stop After 16 minutes (*)

- **Adult Dose** - finish bottle

CYANOKIT Administration Video

CYANOKIT Training Presentation

CYANOKIT Coding Guide

Pralidoxime/Atropine (DuoDote®)

Information:

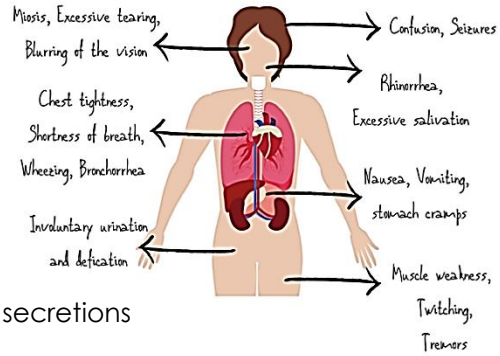
DuoDote is a dual-chambered auto-injector that contains atropine and pralidoxime chloride, which are used to treat organophosphorus and/or nerve agent poisoning. It has a pressure activated coiled spring mechanism, which triggers the needle for injection of the antidote solution. The DuoDote auto-injector features two (2) separate liquid-filled chambers each containing the two (2) drugs delivered sequentially through a single needle.

- Atropine - 2.1mg in 0.7mL of sterile solution. Atropine competitively blocks the effects of acetylcholine, including excess acetylcholine due to organophosphate poisoning, at muscarinic cholinergic receptors on smooth muscle, cardiac muscle, and secretory gland cells and in peripheral autonomic ganglia and the central nervous system.
- Pralidoxime Chloride - 600mg in 2mL of sterile solution. Pralidoxime reactivates acetylcholinesterase which has been inactivated by phosphorylation due to an organophosphorus nerve agent or insecticide. However, pralidoxime does not reactivate acetylcholinesterase inactivated by all organophosphorus nerve agents (e.g., soman). Reactivated acetylcholinesterase hydrolyzes excess acetylcholine resulting from organophosphorus poisoning to help restore impaired cholinergic neural function. Reactivation is clinically important because only a small proportion of active acetylcholinesterase is needed to maintain vital functions. Pralidoxime cannot reactivate phosphorylated acetylcholinesterase that have undergone a further chemical reaction known as "aging."

Three (3) DuoDote auto-injectors should be available for use in each patient (including healthcare providers) at risk for organophosphorus poisoning; one (1) for mild symptoms plus two (2) more for severe symptoms [see *Dosage Information*]. **Note:** individuals may not have all symptoms included under the mild or severe symptom category.

Only administer DuoDote to patients experiencing symptoms of organophosphorus poisoning in a situation where exposure is known or suspected. The DuoDote auto-injector is intended as an initial treatment of the symptoms of organophosphorus nerve agent or insecticide poisonings as soon as symptoms appear; definitive medical care should be sought immediately.

Symptoms of Organophosphorus Exposure:



- Blurred vision, miosis
- Excessive, unexplained teary eyes
- Excessive, unexplained runny nose
- Increased salivation such as sudden drooling
- Chest tightness or difficulty breathing
- Tremors throughout the body or muscular twitching
- Nausea and/or vomiting
- Unexplained wheezing, coughing or increased airway secretions
- Acute onset of stomach cramps
- Tachycardia or bradycardia
- Strange or confused behavior
- Severe difficulty breathing or copious secretions from lungs/airway
- Severe muscular twitching and general weakness
- Involuntary urination and defecation
- Convulsions
- Unconsciousness

Pralidoxime/Atropine (DuoDote®)

Package Description:

The container is white plastic with black lettering. The safety cap is gray plastic attached to the top of the container. The needle end bears a green plastic cap, which- when the safety cap is removed, and pressure is applied, activates the coiled spring mechanism to drive the needle into the skin and inject the antidote.

*Do Not Remove Gray Safety Release until ready to use.

*Never touch the Green Tip (Needle End)!

Administration Instructions:

1. Tear open the plastic pouch at any of the notches and remove.
2. Place the DuoDote auto-injector in your dominant hand. (If you are right-handed, your right hand is dominant.) Firmly grasp the center of the DuoDote auto-injector with the **Green Tip** (needle end) pointing down.
3. With your other hand, pull off the **Gray Safety Release**. DuoDote is now ready to be administered.
4. The injection site is the mid-lateral thigh area. The DuoDote auto-injector can inject through clothing. However, make sure pockets at the injection site are empty. People who may not have a lot of fat at the injection site should also be injected in the mid-lateral thigh, but before giving the injection, bunch up the thigh to provide a thicker area for injection.
5. Firmly push the **Green Tip** straight down (a 90° angle) against the mid-lateral thigh. Continue to firmly push until you feel the DuoDote auto-injector trigger. After the auto-injector triggers, hold the DuoDote auto-injector firmly in place against the injection site for approximately 10 seconds.
6. Remove the DuoDote auto-injector from the thigh and look at **Green Tip**. If the needle is visible, the drug has been administered. If the needle is not visible, check to be sure the **Gray Safety Release** has been removed, and then repeat above steps beginning with Step 4, but push harder in Step 5.
7. After the drug has been administered, dispose of the device in a biohazard/sharp container and document time of administration within the ePCR.

Dosage/Administration:

Adults and Pediatric Patients ≥ 41 kg (90 Pounds).

First Dose:
If the patient experiences two or more symptoms of nerve agent or insecticide exposure listed, administer one (1) DuoDote auto-injector intramuscularly into the mid-lateral thigh.

Additional Doses:
If, at any time after the first dose, the patient develops any of the severe symptoms, administer two (2) additional DuoDote auto-injectors intramuscularly in rapid succession.

Wait 10 to 15 minutes for DuoDote to take effect. If, after 10 to 15 minutes, the patient does not develop any of the severe symptoms and/or the previous symptoms begin to resolve, no additional DuoDote auto-injectors are recommended.

Confirmed Organophosphate Exposure? (YES)

EXIT TO: HAZMAT Protocols

CONSULT: Chemical Treatment: GREEN

Sudecon® Wipes

SP-3
Published: 3/1/21
Reviewed:
Updated: 9/19/2023

Sudecon – Irritant Spray Decontamination Wipes

Sudecon Decontamination Wipes neutralizes pepper spray and tear gas when running water is not available. **Sudecon** will neutralize and wash off pepper spray from affected areas (your eyes and skin) if you follow the simple directions. **Sudecon wipes** will quickly ease the pain and burn. They can also be used to wipe down hard surface areas.

Indications to use Sudecon Wipes:
~Sprayed with OLEORESIN CAPSICUM you may experience these physical and mental effects:

-Mild to intense facial burning / skin burning
-Mild to intense respiratory distress
-Involuntary eye closure
-Mental Distress
-Disorientation
-Mental fogging

Sudecon Directions:

1. Tear the package open & unfold towelette.
2. Thoroughly wipe off entire facial area including the **closed eyes, nose and mouth**. **Do Not Rub Eyes!** You may need to use more than 1 towelette to make this clean-up complete.
3. After thoroughly decontaminating the facial area, it is **extremely important** to tilt head back and **squeeze at least 1 new, clean towelette over the closed eyes –** allowing the solution to flow over and around them. Additionally, you can lay the towel over the face to soothe the burning sensation.
4. Sudecon towelettes instantly lift contaminating agents from the skin. In approximately 7 – 15 minutes – or less – the burning will spontaneously subside, and you can open your eyes.

Note – Towelette may begin to turn color – this is the contaminant being absorbed by the towelette. Additionally, the areas cleaned by the towelette may feel a bit sticky. This is normal.

Considerations for those affected:

1. Remove patient from contaminated area.
2. Stop the Spread of the irritant. Remove the clothing (place the contaminated clothing in a bag to prevent re-contamination), get it off the skin and out of the eyes, if a water source if accessible remove excess contaminant, then use Sudecon wipes (Do Not use water simultaneously with wipes as this will dilute the formula and stop it from performing appropriately).

Tetracaine

SP-4
Published: 3/1/21
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Updated: 9/19/2023

INDICATIONS
~Patient who is unable to cooperate with you in adequately flushing the eye(s) due to discomfort or pain.

CONTRAINDICATIONS
~Known hypersensitivity to the drug.
~Tetracaine may cross- react in patients with allergy to procaine (Novocain) or chloroprocaine (Nesacaine).

Administration Instructions:

2 drops of 0.5% solution
ROUTE OF ADMINISTRATION
Medication should be instilled into eye in lower conjunctival sac. Patient should be instructed to look up towards the top of the head while the paramedic pulls down the lower lid and instills the medication within the pouch formed by the inner surface of the lower lid and the conjunctiva.

SIDE EFFECTS
~Many patients experience a transient (
NOTES:
~Tetracaine does not dilate the pupil, paralyze gaze, or increase intraocular pressure.

WARNINGS
Do not use the solution if it contains crystals.
Discolored solutions should not be used. Containers must be kept tightly closed.
Warn patient not to touch or rub eye while cornea is anesthetized. This may cause corneal abrasion, further injury, and greater discomfort once tetracaine wears off.

CLASS
Local anesthetic

ACTION
Stabilizes membranes of conjunctival and corneal pain fibers to inhibit depolarization and perception of pain.

HAZMAT Protocols

Section 13 | HAZMAT Protocols

Supportive Care Procedures

HP-1
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1. Remove the patient from the hazardous area.
2. If the patient was exposed externally, remove his/her clothing and jewelry and decontaminate with copious amounts of water. Provide ocular irrigation with normal saline (do not attempt to neutralize with another solution).
3. If the patient has external burns, see Burn Injuries.
4. Contact the Poison Information Center (1-800-222-1222).
5. If the patient has pulmonary edema, maintain adequate ventilation and oxygenation, and provide pulmonary suction to remove fluid. Non-cardiogenic pulmonary edema should not be treated with Lasix, but with positive end expiratory pressure (PEEP) or a CPAP mask.

Decontamination Procedures & Reference Guides

Mass Decon: Large numbers of people, in the event of industrial, accidental, or intentional contamination by toxic, infective, caustic, polluted, or otherwise unhealthful or damaging substances. Fire engines, ladder trucks and fire hydrants are perfect to use for this procedures, because if multiple fog nozzles (set on wide fog) are attached, then the large number of victims can walk through the curtain of water and begin the decon process.

Emergency Decon: This type of procedure is used on first responders or civilians that have life threatening symptoms during or after a chemical exposure and need medical attention immediately. These victims take decon priority over everyone else to help facilitate them getting moved through the decon line and transported off scene.

Technical Decon: This type of decon usually occurs when a designated hazmat team arrives and begins setting up large scale decon equipment. Such as male and female decon line showers, decon tent, contaminated water catchment, etc.

Initial Decontamination Procedures

- Remove patient clothing (this will help remove 80%-90% of the contaminant).
- Copious amounts of water should be used for initial decontamination unless the substance exposed is a powder or otherwise indicated.
- Assist patient with decontamination of themselves (using soap (if indicated) & water bucket and brush), with extra attention to decontamination of the hands, feet, armpits, groin, and any skin folds.
- Once decon is complete, issue the patient post decontamination scrubs or gown to put on. Then direct them to proper triage treatment area.
- Patients need to be quarantined and rapid transport implemented for critically ill patients only after emergency decon has been performed.

NOTE: Chemical Solubility per NIOSH Chemical Guidebook

- Chemicals with 1% solubility or less: Only require water for decontamination.
- Chemicals with 1% solubility and more: Require soap and clothing removal, issue decon scrubs post.

HAZMAT Toxidrome & Traditional Syndromes

HP-2
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Reviewed:
Updated:

Toxidromes are clinical syndromes that a patient may present with. These patterns of signs and symptoms are essential for the successful recognition of chemical exposure. The toxidromes identified in this protocol are chemical exposure based while others such as the opioids are found within general medical protocol. Each can present as a clinical manifestation of the chemical/poisoning involved with some cross-over between toxidromes.

Additional Notes:

Acid pH: < 7

Base pH: > 7

Neutral pH: 7

Coagulative Necrosis: Pathological change produced when acid contacts tissue. Cell death with scab-like formations.

Liquefactive necrosis: Cell death without scab-like formation. Produced by alkaline (base) burns.

HazMat Toxidrome	NFPA 473 Correlation	HazMat Protocol
Cholinergic	▪ Pesticides ▪ Nerve Agents	▪ Organophosphate ▪ Carbamate
Corrosive	▪ Corrosives ▪ Vesicants	▪ Hydrofluoric Acid (HF) ▪ Chemical burns to the eye.
Asphyxiant	▪ Chemical Asphyxiants ▪ Simple Asphyxiants ▪ Blood Agents	▪ Cyanide & Hydrogen Sulfide ▪ Closed Space Fires
Methemoglobin - Forming Compound	▪ Carbon Methemoglobin Formers	▪ Aniline Dyes ▪ Nitrobenzene ▪ Nitrites, Nitrates ▪ Dinitrobenzene (DNB) ▪ Nitrogen Dioxide
Miscellaneous	▪ Toxic Alcohols	▪ Ethylene Glycol/Methanol
Irritant Gas	▪ Irritants	▪ Bronchospasm ▪ OC Pepper spray & Lacrimators ▪ Chloramine and Chlorine • Acidic & Alkaline Gas Inhalation
Hydrocarbon & Halogenated HC	▪ Organic Solvents ▪ Phenolic Compounds	▪ Phenol ▪ Halogenated Hydrocarbons ▪ Carbon Monoxide

Poisonings & Corresponding Treatments

HP-3
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Reviewed:
Updated: 9/22/2023

Poisoning	Antidote	Adult Dose	Pediatric Dose
Organophosphates, Carbamates, and Nerve Agents	Atropine Sulfate	1-2mg IV Bolus Repeat until atropinization occurs.	0.02-0.04mg/kg IV Bolus Never less than 0.1mg administration. Repeat until atropinization occurs.
	Protopam Chloride (2-Pam)	1-2g IV Infusion over 10 mins, then 500mg/hr. continuous IV Infusion.	20-40mg/kg IV Infusion over 10 mins, then 5-10 mg/kg/hr. continuous IV Infusion.
Hydrofluoric Acid (skin burns)	Calcium Gluconate 2.5%-10% Topical Gel	Topical Application	Topical Application
Systemic Hydrofluoric Acid or Fluoride Poisoning	Calcium Gluconate 10%	10-20ml Bolus Repeat PRN	0.2-0.3ml/kg Repeat PRN
	10% Calcium Chloride	5-10ml IV Bolus Repeat PRN	0.1-0.2 ml/kg Repeat PRN
Cyanides, Nitriles, and Sulfides	Amyl Nitrite	Inhalation every 30 secs until an IV is established.	Inhalation every 30 secs until an IV is established.
	Sodium Nitrite	10ml (1amp) IV Infusion over 5 mins	0.12-0.33ml/kg IV Infusion over 5 mins (max 10ml)
Cyanides, Nitriles	Sodium Thiosulfate	50ml IV Infusion over 10-20 mins	1.6ml/kg IV Infusion over 10-20 mins (max 50ml)
Cyanides/Smoke Inhalation	Hydroxocobalamin (CyanoKit)	5grams reconstitute in 100ml NS administered over 15 mins (Adult = 1 Bottle)	TOUCH HERE FOR PEDIATRIC DOSE CHART
Methemoglobin-Forming Compounds	Methylene Blue	1-2mg/kg IV Infusion over 5 mins PRN	1-2mg/kg IV Infusion over 5 mins PRN
Ethylene Glycol, Methanol	Thiamine	100mg IV	
Chlorine, Ammonia, Acids/Mists, etc.	Sodium Bicarbonate	3ml of 8.4% Nebulized Repeat PRN	3ml of 4.2% Nebulized Repeat PRN
Phenol and Halogenated Hydrocarbons	Large copious amounts of water. Followed by soap and water.	Irrigate burn area with mineral oil, olive oil, or isopropyl alcohol.	Irrigate burn area with mineral oil, olive oil, or isopropyl alcohol.
Carbon Monoxide	Oxygen *Consider Hyperbaric Chamber*	100% O2 via appropriate delivery device depending on patient severity.	100% O2 via appropriate delivery device depending on patient severity.

Chemical Treatment: GREEN

HP-4
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Organophosphates & Carbamates Insecticide Poisoning

Example Material: Malathion, parathion, ethion, bendiocarb, and aldicarb.

Nerve Agents (GA, GB, GD, GF, or VX)

Example Material: Sarin, Soman, Tabun, VX, and Novichuk.

Description:

Pesticides and/or weaponized nerve agents can be inhaled, ingested, or absorbed. Once in the body, it binds to the enzyme acetylcholinesterase, which initially causes excitation of nervous system conduction and then paralysis. These agents can be lethal in a dose less than 5 mg.

Signs of Organophosphate & Nerve Agent	
D - Diarrhea **U** - Urination **M** - Miosis (pinpoint pupils) **B** - Bronchospasm, bradycardia, bronchorrhea (known as killer "B's") **E** - Emesis **L** - Lacrimation **S** - Salivation	***Note:*** *Not all pesticides are considered organophosphates or carbamates. In addition, carbamates tend to be less severe, self limiting and may require less aggressive treatment. Atropine should be titrated to clinical effect.*

Decontamination Procedures:

Organophosphates/Carbamates: Decontaminate with copious amounts of water. Irrigate eyes with water if necessary. Remove patients clothing and issue post decontamination scrubs.

Nerve Agents: Decontaminate with copious amounts of water and soap. Irrigate eyes with water if necessary. Remove patients clothing and issue post decontamination scrubs.

Treatments:

1. Immediately administer 100% high-flow O2, monitor airway, suction as needed (aggressive PRN).
2. Start IV with normal saline and give:
3. If symptomatic, administer:
   - Atropine 2-6mg IVP at 5-minute intervals until atropinization occurs (drying of secretions). There is not a maximum dose but use extreme caution in hypoxic patient(s). Giving atropine to a hypoxic heart may stimulate ventricular fibrillation.
   - Pralidoxime (2-PAM, Protopam) IVP 1gm over 2 min. (Not used in known Carbamate Poisonings).
4. ECG – recommended to dry chest and attach combo-defibrillation pads to monitor heart rhythm.
5. Seizures, refer to appropriate protocol.

Atropine | Pralidoxime

Active Seizures? (YES)	Confirmed Exposure? (YES)
CONSULT: Seizure Protocol	**CONSULT:** Supportive Care Procedures

Chemical Treatment: ORANGE

Hydrofluoric Acid (HF)

Vikane

Description: Injury is twofold in that the compound causes corrosive burning of the skin and deep underlying tissue, also binds with calcium and magnesium from the nerve pathways, bone, and blood stream. Systemic effects may be delayed. The results are spontaneous depolarization producing excruciating pain, and hypocalcemia, resulting in tetany and cardiac dysrhythmias, which may degenerate to cardiac arrest. Skin may look deceptively normal at the surface. Pain is an indication for treatment, and that it's managed through the administration of calcium not analgesic.

DECON PROCEDURES

Hydrofluoric Acid
Decontaminate with copious amounts of water. Irrigate eyes with water if necessary. Remove patients clothing and issue post decontamination scrubs.

Vikane (Sulfuryl Fluoride)
Decontaminate with copious amounts of water and soap. Irrigate eyes with water if necessary. Remove patients clothing and issue post decontamination scrubs.

SUPPORATIVE CARE *(Touch Here)*

TREATMENTS

In all cases Contact Medical Control/Director immediately for when indications of symptoms shows systemic involvement:

- Cardiac dysrhythmias
- Conduction disturbances
- ST Segment abnormalities on ECG
- Tetany
- Seizures, refer to appropriate protocol and monitor the airway.

Skin Burns:

a) Immediately flush exposed area with large amounts of water.

b) Apply calcium gluconate Gel to burned area (mix 10 ml of a 10% calcium gluconate solution into a 2 ounce tube of sterile water soluble jelly).

If pain continues (Skin Burns):

c) Calcium gluconate in a 5% solution is injected subcutaneously in a volume of 0.5 ml/cm^2 every ¼ inch into burned area and is also injected subcutaneously ½ inch around the circumference of the burned area.

Be prepared for a possible order for IV calcium gluconate. This must be considered for all inhalation and ingestion injuries because of the higher potential of systemic involvement and cardiac dysrhythmias.

Note: Patient may present with extreme burning pain without obvious visual skin burns present. Area affected may just have redness.

Eye Injuries:

a) Immediately flush eyes with any means possible.

b) Mix 50 ml of a 10% solution of calcium gluconate into 500 ml of normal saline for irrigation.

c) Connect bag and tubing to a Morgan Irrigation Lens and run wide-open.

d) If possible remove contact lens (Morgan lens can not be used with contacts or trauma to the eye).

e) Irrigate the eyes.

For Inhalation Injuries (Adult and Pediatric):

a) Immediately support ventilations.

b) Administer calcium gluconate Treat inhalation injuries with oxygen and 2.5% calcium gluconate nebulizer, administer 1mL mixed 3mL normal saline via a nebulizer.

c) For severe respiratory depression/arrest and/or cardiac toxicity (dysrhythmia, prolonged QT interval, hypotension), administer calcium gluconate (10%) 1-2 g slow IV over 5 minutes.

d) Treat dysrhythmias and treat persistent hypotension.

e) If hypotension persists, administer a fluid challenge:

- Adults - 20 mL/kg normal saline IV PRN (max total dose 60 mL/kg).
- Pediatrics - 20 mL/kg normal saline IV PRN (max dose of 40 mL/kg).
- Neonate - 10mL/kg (max dose of 30 mL/kg).

f) If systemic symptoms persist, repeat calcium gluconate (10%) adult dose 1-2 g slow IV over 5 minutes. Pediatric dose 100mg/kg slow IV over 5 minutes (max dose of 1 gram).

Chemical Treatment: ORANGE

Chemical Burns to the Eyes

Note: *Watch water run off so other parts of the body do not become contaminated (especially other parts of the face, ears, and back of neck). Eye burns are almost always associated with contamination of other parts of the face or body.*

SUPPORATIVE CARE ***(Touch Here)***

TREATMENTS

A. Immediately start eye irrigation by whatever means possible.

B. Insure all particulate matter or contact lenses are out of the eyes by digitally opening the lids and pouring irrigation fluid across the globe.

C. Prepare the Morgan Lens by attaching an IV solution of normal saline, insure that fluid continues to flow at steady rate.

D. Apply 1 to 2 drops of ponticaine, opthalmicaine or tetracaine Ophthalmic drops into the injured eye.

E. Morgan lens can not be used if trauma to the globe is observed or a contact lens is adhered to the eye.

F. If Morgan Lens can not be used a nasal cannula can be used to irrigate the eyes. (If a nasal cannula is used the eyes must be held open digitally to effectively irrigate the eyes).

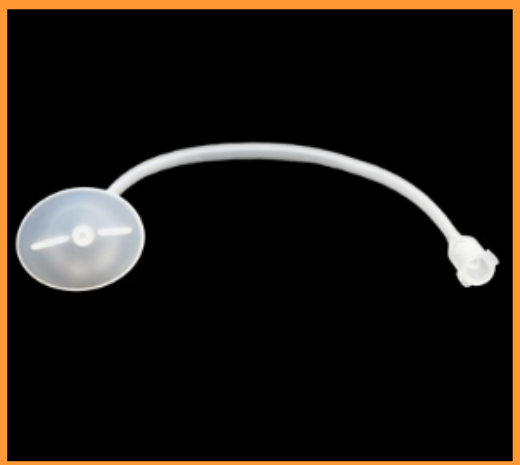
G. Adjust the flow so that a continuous solution is flowing from the eye.

H. Continue irrigation until arrival at the emergency department.

I. Consider sedation to reduce anxiety.

Morgan Lens Video

https://www.morganlens.com/resource-library/morgan-lens-instructional-video



Chemical Treatment: RED

Published: 3/1/21
Reviewed:
Updated: 9/22/2023

Cyanide Poisoning

Description:

Cyanide is one of the most rapidly acting poisons. It is reported to smell like "bitter almonds" to those that are genetically capable of detecting the odor. Pulse oximetry will accurately indicate an unusually high saturation due to the cell's inability to pick up oxygen from the blood stream.

Example Material:

Hydrogen cyanide, cyanogen chloride, potassium cyanide, sodium cyanide, hydrocyanic acid (AC), cyanogen chloride (CK). Hydrogen sulfide (H2S), sulfides, mercaptans, and "azides."
Hydrogen Sulfide is becoming commonly used in chemical suicides in enclosed spaces (i.e., cars, closets, small bedrooms, etc.). This chemical at high concentrations will incapacitate a victim immediately upon inhalation, as well as numb the olfactory nerve, therefore knocking out the sense of smell.

Decontamination Procedures:

Every chemical listed except Cyanogen Chloride and Potassium Cyanide: Decontaminate with copious amounts of water. Irrigate eyes with water if necessary. Remove patients clothing and issue decon scrubs.

Cyanogen Chloride/Potassium Cyanide: Decontaminate with copious amounts of water and soap. Irrigate eyes with water if necessary. Remove patients clothing and issue decon scrubs.

Treatments:

Cyanide or Cyanide Components Exposure – refer to Page 2 of 2 of this protocol and administer Hydroxocobalamin (CyanoKit). DO NOT USE IF HYDROGEN SULFIDE EXPOSURE IS SUSPECTED.

Hydrogen Sulfide Exposure with Cyanide or Cyanide Components – treat with Lilly Kit.

1. Amyl nitrite pearls— Broken and held on a gauze pad under the patient's nose. Allow the patient to inhale the material for 15 to 30 seconds of every minute. *During the interval during which the patient is not inhaling the amyl nitrate, 100% oxygen should be administered. Note: This is a temporizing measure only, with the most effective antidotes being given IV. The amyl nitrite step may be bypassed once IV access is obtained.*
2. If intubated provide positive pressure ventilation (PPV) utilizing a BVM.
3. As soon as possible start an IV of normal saline and immediately administer sodium nitrite:
   Adult - 10 ml of a 3% solution IV over 2 minutes (300mg) (continuous BP monitoring required).
   Children - 0.33 ml/kg of a 3% solution over 10 minutes (continuous BP monitoring required).

Note: *Additional doses of sodium nitrite should be withheld until methemoglobin level is measured or blood analysis is confirmed.*

Note: *Do not administer sodium nitrite in cases involving smoke inhalation (structure fires) or carbon monoxide poisoning. Administer only sodium thiosulfate and 100% oxygen.*

4. Administer 100% (NRBM) oxygen after administering Sodium Nitrite.
5. Administer sodium thiosulfate:
   Adult - 50 ml of a 25% solution over 10 minutes (continuous BP monitoring required).
   Children - 1.65 mL/kg up to 50 ml over 10 minutes (continuous BP monitoring required).

Confirmed Exposure? (YES)

CONSULT: Supportive Care Procedures

Amyl Nitrite | Sodium Nitrite | Sodium Thiosulfate

MAIN MENU | HAZMAT

Chemical Treatment: RED

Closed Space Fire (Smoke Inhalation)

Description:

Closed space fires produce many toxic substances, including cyanide, carbon monoxide, and numerous respiratory irritating gases. CYANIDE is one of the most rapidly acting poisons which can be found in the productions of combustion. Increasingly, cyanide has been recognized as a threat at the scene of a closed space fire and hazardous materials incidents. CO in combination with Cyanide rapidly removes the ability of the blood to transport oxygen. This combined with the severe swelling of the bronchioles and bronchospasms related to the exposure to respiratory irritants creates a patient that will rapidly decompensate.

The mechanism of injury during a fire is three-fold; thermal damage, pulmonary irritation, and chemical asphyxiation (HCN and CO). Anyone exposed from a close space fire should be considered to have inhalation chemical asphyxiation.

Treatments:

1. Immediately administer 100% oxygen if conscious, if unconscious secure airway to deliver 100% oxygen.
2. Preferably, perform endotracheal intubation and monitor end tidal CO2 (ETCO2).
3. Start IV of 1000 cc normal saline, age-appropriate maintenance rate.
4. Treat unconscious patients per the General Medical Considerations Protocol in the Standing Medical Protocols by evaluating glucose levels, correcting hypoglycemia, administering naloxone (Narcan ®) and administering thiamine. As called for by local medical protocols.
5. Hydroxocobalamin (CyanoKit):
   - Start a dedicated IV line
   - Reconstitute the 5-gram vial with 100 ml sodium chloride
   - Invert or rock the vial. Do not shake.
   - Administer 5 grams (both vials in the kit) at 15 mL/min.
     *If supplied in two vials, follow reconstitution instructions, and administer both vials in the kit.
   - Repeat doses can be administered over 15 – 20 minutes.
   - Monitor blood pressure during and after administration. Substantial increases in blood pressure may occur.

Age Group (years)	Hydroxocobalamin (Cyano Kit)		20 Drop Set (w/ kit)
0-2	¼ Bottle	1,250 MG	1 gtt / 2 seconds*
3-5	¼ Bottle	1,250 MG	1 gtt / 2 seconds*
6-14	½ Bottle	2,500 MG	1 gtt / 1 second*
≥15	Full Bottle	5 Grams	2 gtts / 1 second

Pediatric Dose - Stop After 16 minutes (*)

- **Adult Dose -** finish bottle


CYANOKIT Administration Video

PDF CYANOKIT Training Presentation

PDF CYANOKIT Coding Guide

Confirmed Exposure? (YES)

CONSULT: Supportive Care Procedures

Hydroxocobalamin

Chemical Treatment: Gray

HP-7
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Carbon Methemoglobin Formers

Description:

Commonly found in fertilizers, paints, inks, and dyes. Changes hemoglobin into a non-oxygen carrying compound, methemoglobin. Blood color changes from red to a chocolate brown. Pulse oximetry will indicate an inaccurately low reading due to the opaqueness of the compound.

Example Material:

Aniline dyes, nitrites, nitrates, nitrobenzene, Dinitrobenzene (DNB), and nitrogen dioxide.

Decontamination Procedures:

All chemicals except Nitrogen Dioxide: Decontaminate with copious amounts of water. Irrigate eyes with water if necessary. Remove patients clothing and issue post decontamination scrubs.

Nitrogen Dioxide (NO_2): Reactive with water and does not pose a secondary contamination risk unless patient is off gassing. Dry decon and clothing removal is recommended. If the patient is off-gassing, deluge shower for 20 minutes. Remove patients clothing and issue post decontamination scrubs.

Treatments:

1. For adult and pediatric patients that are dyspneic, cyanotic, and have a normal SpO2 with chocolate-like brown colored blood, administer Methylene Blue (1%) 1 - 2 mg/kg IV Infusion over 5 minutes, followed by a 30ml Normal Saline flush.
2. If cyanosis persists, administer a repeat dose of Methylene Blue (1%) 1 - 2 mg/kg IV Infusion over 5 minutes, followed by a 30ml Normal Saline flush.
3. Do not induce vomiting.
4. If the patient has dysrhythmias, treat PRN with appropriate protocol.
5. Seizures, refer to appropriate protocol and monitor the airway.
6. If hypotension is present, administer fluid resuscitation:
   - Adult – Normal Saline 500mL Bolus, Titrate to SPB ≥ 90 mmHg, REPEAT as needed, Maximum of 1L
   - Pediatric – Normal Saline 20mL/kg IV/IO. Repeat as needed, Maximum – follow Medication Tool.

Pulse oximetry should be obtained with a device that can read carboxyhemoglobin and methemoglobin levels.

MEDICATION	Gray	Pink	Red	Purple	Yellow	White	Blue	Orange	Green	Green	Green	Infusions	Normal Pediatric Vital Signs	TOOL
	3-5 KG	6-7 KG	8-9 KG	10-11 KG 1 Year	12-14 KG 2 Years	15-18 KG 3 Years	19-23 KG 5 Years	24-29 KG 7 Years	30-36 KG 9 Years	45 KG	55 KG			

Cardiac Dysrhythmia? (YES)
CONSULT: Appropriate Protocol

Active Seizures? (YES)
CONSULT: Seizure Protocol

Confirmed Exposure? (YES)
CONSULT: Supportive Care Procedures

Chemical Treatment: PINK

HP-8
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Updated:

Ethylene Glycol

Methanol

Clinical Manifestations of Ethylene Glycol Poisoning:

Phase I (30 minutes to 12 hours): ethanol-like inebriation, metabolic acidosis, seizures, and coma.

Phase II (12 to 36 hours): tachycardia, tachypnea, hypertension, pulmonary edema.

Phase III (36 to 48 hours): crystalluria, acute tubular necrosis with oliguria - renal failure.

Signs and Symptoms of Methanol Exposure:

Cardiovascular: dysrhythmias and hypotension.

Respiratory: respiratory insufficiency or arrest, pulmonary edema, chemical pneumonitis, and bronchitis.

Central Nervous System: CNS depression and coma, seizures, headache, muscle weakness, and delirium.

Gastrointestinal: GI bleeding, nausea/vomiting, and diarrhea. Eye: chemical conjunctivitis. Skin: problems ranging from irritation to full-thickness burns.

DECON PROCEDURES

Ethylene Glycol/Methanol
Decontaminate with copious amounts of water. Irrigate eyes with water if necessary. Remove patients clothing and issue decontamination scrubs.

SUPPORATIVE CARE *(Touch Here)*

TREATMENTS

A) If seizures are present, refer to appropriate protocol and monitor the airway.

B) Immediately administer 100% oxygen if conscious. If unconscious secure airway to deliver 100% oxygen.

C) If the patient's lungs are clear, administer normal saline at a rate of 100 mL/h IV.

D) If the patient's respiratory rate is twice the normal rate, administer sodium bicarbonate 8.4% 1-2 mEq/kg IV.

MEDICATION	Gray	Pink	Red	Purple	Yellow	White	Blue	Orange	Green	Green	Green	Infusions	Normal Pediatric Vital Signs	TOOL
	3-5 KG	6-7 KG	8-9 KG	10-11 KG 1 Year	12-14 KG 2 Years	15-18 KG 3 Years	19-23 KG 5 Years	24-29 KG 7 Years	30-36 KG 9 Years	45 KG	55 KG			

Confirmed Exposure? (YES)

CONSULT: Supportive Care Procedures

Chemical Treatment: YELLOW

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Acids (Acid Mists)
Alkaline Compounds
Chlormine
Ammonia (Liquid and Gas)
Chlorine Gas and Phosgene (CG)
Mustard (Sulfur Mustard): Lewisite, Blister Agents (H, HD, HS)
Methylene Biphenyl Isocyanate, Ethyl Isocyanate, and Methylene Dilsocyanate (MDI)

Description:

Low concentrations of airborne acids and alkalis can produce rapid onset of eye, nose, and throat irritation. Higher concentrations (low concentrations of ammonia) can produce cough, stridor, wheezing, and chemical pneumonia (non-cardiogenic pulmonary edema). Ingestion of acids and alkalis can result in severe injury to the upper airway, esophagus, and stomach. In addition, there may be circulatory collapse, as well as partial- or full-thickness burns. End-stage symptoms may resemble organophosphate poisoning. However, patients will have normal or dilated pupils. Patients will not have pinpoint pupils. These patients should not be given atropine or 2-PAM.

Decontamination Procedures:

All chemicals except Ammonia: Decontaminate with copious amounts of water. Irrigate eyes with water if necessary. Remove patients clothing and issue post decontamination scrubs.

Ammonia: Decontaminate with copious amounts of water and soap. Irrigate eyes with water if necessary. Remove patients clothing and issue post decontamination scrubs.

Treatments:

1. Immediately administer 100% oxygen if conscious. If unconscious secure airway to deliver 100% oxygen.
2. If the patient has bronchospasm, administer Albuterol via nebulizer 2.5mg pre-mixed with 3mL normal saline. If less than one (1) years old, use ½ the dose (1.25mg) diluted in 3mL of normal saline. May repeat x two (2) PRN.
3. If the patient has inhaled chlorine or hydrochloric acid (HCl) and has significant respiratory distress, administer Sodium Bicarbonate via nebulizer:
   - Adult – 3mL of 8.4% (Repeat PRN)
   - Pediatric – 3mL of 4.2% (Repeat PRN)
4. Seizures, refer to appropriate protocol and monitor the airway.
5. If hypotension is present, administer fluid resuscitation:
   - Adult – Normal Saline 500mL Bolus, Titrate to SPB ≥ 90 mmHg, REPEAT as needed, Maximum of 1L
   - Pediatric – Normal Saline 20mL/kg IV/IO. Repeat as needed, Maximum – follow Medication Tool.

Albuterol
Sodium Bicarbonate

Active Seizures? (YES)
CONSULT: Seizure Protocol

Confirmed Exposure? (YES)
CONSULT: Supportive Care Procedures

Chemical Treatment: YELLOW

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Bronchospasm Secondary to Toxic Inhalation & Lacrimators

Description:

Wheezing due to exposure of the respiratory system to an irritant. The condition of wheezing may be caused by both bronchospasms and bronchial swelling because of the inhalation of an irritating gas or vapor. To adequately treat this condition both bronchodilation and anti-inflammation pharmaceuticals must be considered.

The patient will usually present with severe burning of the eyes and nose, as well as congestion due to increased mucous production. Exam will find the patient suffering from increased tear production and blepharospasm.

Example Material:

Bronchospasm Secondary to Toxic Inhalation: Chlorine, Ammonia, and industrial respiratory irritants.

Lacrimators: OC (Oleoresin Capsicum) pepper spray and other lacrimators.

Treatments:

Bronchospasm Secondary to Toxic Inhalation:

1. Immediately administer 100% humified oxygen if conscious. If unconscious secure airway to deliver 100% oxygen.
2. If the patient has bronchospasm, administer Albuterol via nebulizer 2.5mg pre-mixed with 3mL normal saline. If less than one (1) years old, use ½ the dose (1.25mg) diluted in 3mL of normal saline. May repeat x two (2) PRN.
3. Consider high levels of steroids (Solu-Medrol) to decrease respiratory swelling.
4. Wheezing due to exposure to fluorine or fluorine containing product follow Hydrofluoric Acid exposure protocol.
5. Wheezing due to exposure to chlorine or chloramines follow chlorine and chloramine protocol.

Lacrimators: Since the agent does not cause significant tissue damage, treatment is aimed at relieving the pain caused by nerve stimulation.

1. Initially determine the history of the injury. If a determination can be established that the pain is caused secondary to OC Spray, the eyes should be immediately anesthetized.
2. Once it has been determined that the patient is not allergic to local anesthetics ("caine" derivatives), apply Tetracaine, Alcaine, or Opthalmacaine drops.
3. When the blepharospasm is relieved, a visual exam is performed to evaluate for eye trauma.
4. Consider and be prepared for anaphylactic reactions related to an exposure to lacrimators.
5. Assess for clear tear (discharge).

MEDICATION	Gray	Pink	Red	Purple	Yellow	White	Blue	Orange	Green	Green	Green	Infusions	Normal Pediatric Vital Signs	TOOL
	3-5 KG	6-7 KG	8-9 KG	10-11 KG 1 Year	12-14 KG 2 Years	15-18 KG 3 Years	19-23 KG 5 Years	24-29 KG 7 Years	30-36 KG 9 Years	45 KG	55 KG			

Albuterol

Confirmed Exposure? (YES)

CONSULT: Supportive Care Procedures

Chemical Treatment: BLUE

Phenol

Description:

Also known as Carbolic Acid. Found in many household items and is commonly used as a disinfectant, germicide, antiseptic, and as a wood preservative. It causes injury much the same as other acids by causing coagulating necrosis. Systemic effects are seen throughout the central nervous system. Evidence of CNS depression including respiratory arrest.

Halogenated Hydrocarbons

Description:

Inhalation of this chemical family sensitizes the myocardium to the effects of epinephrine and/or catecholamines. Significant inhalation can depress the CNS producing anesthetic like state with coma and death.

Example Material:

Chloroform, Chlorinated, Brominated Hydrocarbons.

Decontamination Procedures:

Phenol (9% Solubility): Decontaminate with copious amounts of water and soap. Irrigate eyes with water if necessary. Remove patients clothing and issue post decontamination scrubs.

Treatments:

1. Decontaminate initially with large volumes of water then irrigate burned area with mineral oil, olive oil, isopropyl alcohol or polyethylene glycol (PEG -Golytely®, Colyte®) if available. Alternate washes of mild soap and water and oil (or PEG) a minimum of two times each before transport.

   NOTE: Small volumes of water increase absorption by expanding the surface area of exposure.
2. If the patient has dysrhythmias, treat PRN with appropriate protocol.
3. Seizures, refer to appropriate protocol and monitor the airway.
4. If hypotension is present, administer fluid resuscitation:
   - Adult – Normal Saline 500mL Bolus, Titrate to SPB ≥ 90 mmHg, REPEAT as needed, Maximum of 1L
   - Pediatric – Normal Saline 20mL/kg IV/IO. Repeat as needed, Maximum – follow Medication Tool.

MEDICATION

Gray	Pink	Red	Purple	Yellow	White	Blue	Orange	Green	Green	Green	Infusions	Normal Pediatric Vital Signs
3-5 KG	6-7 KG	8-9 KG	10-11 KG 1 Year	12-14 KG 2 Years	15-18 KG 3 Years	19-23 KG 5 Years	24-29 KG 7 Years	30-36 KG 9 Years	45 KG	55 KG		

TOOL

Cardiac Dysrhythmia? (YES)	Active Seizures? (YES)	Confirmed Exposure? (YES)
CONSULT: Appropriate Protocol	**CONSULT:** Seizure Protocol	**CONSULT:** Supportive Care Procedures

Chemical Treatment: BLUE

Carbon Monoxide Poisoning

Description: Colorless, odorless, tasteless, non-irritating gas. Converts hemoglobin into carboxyhemoglobin, a non-oxygen carrying compound causing chemical asphyxiation. Pulse oximetry can indicate an incorrect, false high oxygen saturation. *Pulse oximetry should be obtained with a device that has the ability to read carboxyhemoglobin and methemoglobin. Units that do not have this capability may give falsely high PaO2 readings.*

Note: Possible symptoms at 10 to 20% range: Nausea and headache. Difficult to correlate a level of carboxyhemoglobin with unconsciousness, because the presence of other gases and the lack of oxygen are all involved. Other medical conditions also impact how the exposure presents. Serious neurologic and cardiac toxicity has been seen at levels in the 30% to 40% range. Unconsciousness in the setting of smoke inhalation is probably due to mixed exposures including cyanide, carbon monoxide, and acid gases as well as many other toxic products of combustion, consider use of closed space fire protocol. In the prehospital settings, rely on clinical features to make recommendations for treatment.

CO competes with oxygen for the oxygen-binding sites on hemoglobin. The binding of CO to hemoglobin results in the formation of the compound called Carboxyhemoglobin (COHb). This compound is unable to transport or transfer oxygen. Lack of oxygen can lead to tissue inflammation, reduced cardiac function and vasodilatation.

DECON PROCEDURES

Remove patient(s) from environment. If patient is removed from a structure fire and has been exposed to smoke, remove clothing and issue decon scrubs. Use extreme caution when removing burn victims. Proper wound care and prevention of infection required.

SUPPORATIVE CARE *(Touch Here)*

TREATMENTS

A) Immediately administer 100% oxygen if conscious, if unconscious secure an advanced airway to deliver 100% oxygen. Preferably endotracheal intubation and monitor End Tidal CO2 (ETCO2).

NOTE: Elevated levels of Carboxyhemoglobin(COHb) will lead to inaccurate SpO2 measurements.

B) If patient is semi-conscious with signs of inhalation burns (soot around the mouth and nose, singed nasal hair, burns around the nose and mouth), immediately evaluate for chemically induced/facilitated advance airway placement.

C) Establish IV access with 1000cc Normal Saline, age appropriate maintenance rate.

E) Treat unconscious patients per the General Care Protocol and include evaluation to rule out other possible causes (Differential Diagnosis) and treat clinical findings PRN (i.e. overdose, hypoglycemia, etc.).

E) Patients should be transported to the closest appropriate medical facility maintain the “golden hour.”

Confirmed Exposure? (YES)

CONSULT: Supportive Care Procedures

Pediatric WMD/HAZMAT Dosage Guide

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WEAPONS OF MASS DESTRUCTION (WMD) PROTOCOL

Call Poison Control 800-222-1222		NB	4MO	6 MO	1 YR	3 YR	5 YR	7 YR	9 YR	10 YR	≥11 YR	
ANTIDOTE	**POISONING**	4 KG	6 KG	8 KG	10 KG	15 KG	20 KG	25 KG	30 KG	35 KG	≥40 KG	**NOTES**
Atropine *0.4 mg/mL*	Organophosphates Carbamates Nerve Agents	0.5 mL	0.75 mL	1 mL	1.3 mL	1.9 mL	2.5 mL	3.1 mL	3.8 mL	4.4 mL	5 mL	0.05 mg/kg IV/IO bolus Repeat Q 2-5 min
AtroPen® Auto-injector	Same as Atropine Indication	N/A	0.25 mg	0.5 mg	0.5 mg	0.5 mg	1 mg	1 mg	1 mg	1 mg	2 mg	IM only
Calcium Chloride 10% slow IV bolus	Systemic Hydrofluoric Acid Systemic Fluoride Poison	0.8 mL	1.2 mL	1.6 mL	2 mL	3 mL	4mL	5 mL	6 mL	7 mL	10 mL	Repeat doses may be required
Calcium Gluconate 10% slow IV bolus	Systemic Hydrofluoric Acid Systemic Fluoride Poison	0.8 mL	1.2 mL	1.6 mL	2 mL	3 mL	4mL	5 mL	6 mL	7 mL	10 mL	Repeat doses may be required
Calcium Gluconate Gel	Hydrofluoric Acid Skin Burn	Apply topically using gel or solution										2.5%-10% topical
DuoDote™ Auto-injector (Atropine + 2-PAM)	Organophosphates Nerve Agents	N/A	N/A	N/A	N/A	N/A	N/A	N/A	YES	YES	YES	9 years and over
Methylene Blue	Methemoglobin Forming Compounds	0.4 mL	0.6 mL	0.8 mL	1 mL	1.5 mL	2 mL	2.5 mL	3 mL	3.5 mL	5 mL	IV/IO slow (5 min)
Pralidoxime (2-PAM)	Organophosphates Nerve Agents	2 mL	3 mL	4 mL	5 mL	7.5 mL	10 mL	12.5 mL	15 mL	17.5 mL	20 mL	IV/IO over 10 min then continuous @5-10 mg/kg/hr
Sodium Nitrite	Cyanide / Nitriles Hydrogen Sulfide	0.8 mL	1.2 mL	1.6 mL	2 mL	3 mL	4 mL	5 mL	6 mL	7 mL	8 mL *(max 10 mL)*	3% solution IV/IO over 5 minutes
Sodium Thiosulfate	Cyanide Nitriles	5 mL	8 mL	10 mL	12 mL	18 mL	24 mL	30 mL	36mL	42 mL	50 mL *(max)*	Infuse IV/IO over 10-20 min 25% solution

1. CYANOKIT INSTRUCTIONS		**AMOUNT TO REMOVE FROM VIAL (Use Syringe)**									Cyanide / Nitriles / Sulfides	
Use these instructions to reconstitute 1 vial. Each vial = 5 g of Hydroxycobalamin	1. Draw one (1) tiger top tube 2. Add 200 mL D5W to 5 g vial 3. Rock/Rotate (60 seconds) 4. Remove desired vol. w/ syringe 5. Reinsert into empty D5W bag 6. Attach macro/maxi tubing	11 mL	17 mL	22 mL	28 mL	42 mL	56 mL	70 mL	84 mL	98 mL	**Administer directly from vial over 15 minutes**	Can also reconstitute with Normal Saline or Lactated Ringers
2. SELECT ONE (Based on Preference)		**INFUSION INSTRUCTIONS**										**VALUES**
If using macro/maxi tubing	Drops per minute (gtt/min)	7	11	15	19	28	37	47	56	65	N/A	gtt/min
If using Cyanokit tubing	Drops per minute (gtt/min)	15	23	30	37	56	75	93	112	130	260	gtt/min
If using an infusion pump	Infusion volume (over 15 min)	11 mL	17 mL	22 mL	28 mL	42 mL	56 mL	70 mL	84 mL	98 mL	Entire Volume	Give over 15 min

Reference Section

MAIN MENU

Section 14 | Reference Section

Approved Medical Abbreviations

R-1
Published: 3/1/21
Reviewed:
Updated:
Referenced: None

The following is a list of approved medical abbreviations. In general, the use of abbreviations should be limited to this list.

A:
A&O x 3 - alert and oriented to person, place and time
A&O x 4 - alert and oriented to person, place, time and event
A-FIB - atrial fibrillation
AAA - abdominal aortic aneurysm
ABC - airway, breathing, circulation
ABD - abdomen (abdominal)
ACLS - advanced cardiac life support
AKA - above the knee amputation
ALS - advanced life support
AMA - against medical advice
AMS - altered mental status
AMT – amount
APPROX – approximately
ASA – aspirin
ASSOC – associated

B:
BGL - blood glucose level
BILAT – bilateral
BKA - below the knee amputation
BLS - basic life support
BM - bowel movement
BP - blood pressure
BS - breath sounds
BVM - bag-valve-mask

C:
C-SECTION - caesarean section
C-SPINE - cervical spine
C/O - complaint of (complains of)

CA - cancer
CABG - coronary artery bypass graft
CAD - coronary artery disease
CATH - catheter
CC - chief complaint
CEPH - cephalic
CHF - congestive heart failure
CNS - central nervous system
COPD - chronic obstructive pulmonary disease
CP - chest pain
CPR - cardiopulmonary resuscitation
CSF - cerebrospinal fluid
CT - cat scan
CVA - cerebrovascular accident (stroke)

D:
D5W - 5% dextrose in water, D10W - 10% dextrose in water
DKA - diabetic ketoacidosis
DNR - do not resuscitate
DOA - dead on arrival
DT - delirium tremens
Dx - diagnosis

E:
ECG - electrocardiogram
EEG - electroencephalogram
ET - endotracheal
ETOH - ethanol (alcohol)
ETT - endotracheal tube
EXT - external (extension)

F:
FB - foreign body
FLEX - flexion
Fx - fracture

Approved Medical Abbreviations

G:
g - gram(s)
GI – gastrointestinal
GSW - gunshot wound
gtts – drops
GU – gastrourinary
GYN - gynecology (gynecological)

H:
H/A – headache
HEENT - head, eyes, ears, nose, throat
HR - heart rate (hour)
HTN – hypertension
Hx – history

I:
ICP - intracranial pressure
ICU - intensive care unit
IM – intramuscular
IO - intraosseous
IV – intravenous
IVP – intravenous push

J:
JVD - jugular vein distension

K:
kg – kilogram
KVO - keep vein open

L:
L-SPINE - lumbar spine
L/S-SPINE - lumbarsacral spine
L&D - labor and delivery
LAT - lateral

lb – pound
LLE - left lower extremity
LLQ - left lower quadrant
LMP - last mestrual period
LOC - level of consciousness (loss of consciousness)
LR - lactated ringers
LUQ - left upper quadrant

M:
MAD Nasal – intranasal mucosal atomization device
mcg - microgram(s)
MED – medicine
mg - milligram(s)
MI - myocardial infarction (heart attack)
min - minimum / minute
MS - mental status
MS - mental status change
MSO4 – morphine
MVC - motor vehicle crash

N:
N/V - nausea/vomiting
N/V/D - nausea/vomiting/diarrhea
NAD - no apparant distress
NC - nasal cannula
NEB – nebulizer
NKDA - no known drug allergies
NRB - non-rebreather
NS - normal saline
NSR - normal sinus rhythm

O:
OB/GYN - obstetrics/gynecology

Approved Medical Abbreviations

P:
PALP - palpation
PAC - premature atrial contraction
PE - pulmonary embolus
PEARL - pupils equal and reactive to light
PMHx - past medical history
PO - orally
PRB - partial rebreather
PRN - as needed
PT - patient
PVC - premature ventricular contraction

R:
RLQ - right lower quadrant
RUQ - right upper quadrant
Rx - medicine
RXN - reaction
R/o - rule out

S:
SIVP - slow intravenous push, SIVB - slow intravenous bolus
S/P - status post
SOB - shortness of breath
SQ - subcutaneous
ST - sinus tachycardia
SVT - supraventricular tachycardia
Sx - symptom
SZ - seizure

T:
T-SPINE - thoracic spine
T - temperature
TIA - transient ischemic attack
TKO - to keep open (refer to IV's - same as KVO)
Tx - treatment

Approved Medical Abbreviations

U:
UOA - upon our arrival
URI - upper respiratory infection
UTI - urinary tract infection

V:
VF - ventricular fibrillation
VS - vital signs
VT - ventricular tachycardia

W:
WAP - wandering atrial pacemaker
WNL - within normal limits

Y:
YO (YOA) - years old (years of age)

Symbols:

M or ♂	- male
F or ♀	- female
-	- negative
+	- positive
?	- questionable
~	- approximately
>	- greater than
≥	- greater than / equal to
<	- less than
≤	- less than
=	- equal
↑	- upper (increased)
$\overline{a}$	- before
$\overline{p}$	- after
Δ	- change
L	- left
R	- right
↓	- lower (decreased)
1°	- primary
2°	- secondary
$\overline{c}$	- with
$\overline{s}$	- without

Difficult Airway Evaluation

R-2
Published: 3/1/21
Reviewed:
Updated:
Referenced: AR-2

INFORMATION - (LEMON)

Between 1 – 3% of patients who require endotracheal intubation have airways that make intubation difficult. Recognizing those patients who may have a difficult airway allows the paramedic to proceed with caution and to keep as many options open as possible. It also allows the paramedic to prepare additional equipment (such as a cricothyrotomy kit) that may not ordinarily be part of a standard airway kit. The pneumonic LEMON is useful in evaluating patients for signs that may be consistent with a difficult airway and should raise the paramedic's index of suspicion.

Look Externally:

External indicators of either difficult intubation or difficult ventilation include presence of a beard or moustache, abnormal facial shape, extreme cachexia, edentulous mouth, facial trauma, obesity, large front teeth or "buck teeth", high arching palate, receding mandible, short bull neck.

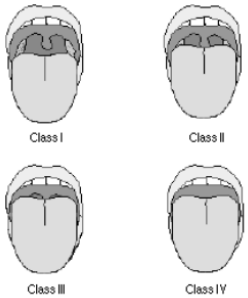
Evaluate 3-3-2 Rule:

- 3 fingers between the patient's teeth (patient's mouth should open adequately to permit three fingers to be placed between the upper and lower teeth)
- 3 fingers between the tip of the jaw and the beginning of the neck (under the chin)
- 2 fingers between the thyroid notch and the floor of the mandible (top of the neck)

Mallampati:

This scoring system is based on the work of Mallampati et al published in the Canadian Anesthesia Society Journal in 1985. The system considers the anatomy of the mouth and the view of various anatomical structures when the patient opens his mouth as wide as possible. This test is performed with the patient in the sitting position, the head held in a neutral position, the mouth wide open, and the tongue protruding to the maximum. Inappropriate scoring may occur if the patient is in the supine position (instead of sitting), if the patient phonates or if the patient arches his or her tongue.

- Class I (easy) = visualization of the soft palate, fauces, uvula, anterior and posterior pillars.
- Class II = visualization of the soft palate, fauces and uvula.
- Class III = visualization of the soft palate and the base of the uvula.
- Class IV (difficult) = soft palate is not visible at all.



Obstruction:

Besides the obvious difficulty if the airway is obstructed with a foreign body, the paramedic should also consider other obstructers such as tumor, abscess, epiglottis, or expanding hematoma.

Neck Mobility:

Ask the patient to place their chin on their chest and to tilt their head backward as far as possible. Obviously, this will not be possible in the immobilized trauma patient.

LUCAS – Special Considerations

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December 2016

Dear Valued Customer,

Thank you for your inquiry regarding the use of the LUCAS® 2 / LUCAS 3 Chest Compression System for patients with *cardiac arrest and trauma, pregnancy and/or after cardiac surgery*.

The LUCAS Chest Compression System is used to perform guidelines-consistent chest compressions on adult cardiac arrest patients, as an adjunct to manual cardiopulmonary resuscitation (CPR) when effective manual CPR is not possible (e.g., patient transport, extended CPR, fatigue, insufficient personnel). LUCAS must only be used in cases where chest compressions are likely to help the patient. Always follow local and/or international guidelines for CPR when using LUCAS. [1,2]

The contraindications for using the LUCAS device are:

- If it is not possible to position LUCAS safely or correctly on the patient's chest.
- Patient is too small.
- Patient is too large. [1,2]

There are no specific contraindications to the use of the LUCAS device for patients with cardiac arrest and trauma, pregnancy and/or after cardiac surgery.

The unique clinical circumstances of individual cardiac arrest patients require case-by-case patient management decisions. The provider therefore needs to consider the guidelines for CPR in special circumstances as well as the LUCAS Instructions For Use.

Taking local protocols and organization competencies into account, the physician or medical director can best determine whether it is appropriate for their team to use the LUCAS device for patients with cardiac arrest and trauma, pregnancy and/or after cardiac surgery.

There are no randomized controlled clinical studies with these patient populations. The following published case reports describe the use of the LUCAS device in these types of patients:

- A Danish case report describing the resuscitation of a drowned, hypothermic trauma patient.[3]
- A U.S. case report of a cardiac arrest patient with recent sternotomy who received manual chest compressions, LUCAS chest compressions, as well as open chest cardiac massage during a 90 min resuscitation attempt.[4]
- A Norwegian case report describing a cardiac arrest of a woman in anaphylaxis during a caesarean section who received 50 minutes of LUCAS chest compressions and was successfully resuscitated.[5]
- A Swedish report of LUCAS used as a bridge to definitive care in a patient with lower abdominal/genital hematoma as well as bilateral upper extremity fractures and head lacerations.[6]

LUCAS Device Instructions

MAIN MENU

REFERENCE

LUCAS – Special Considerations

American Heart Association (AHA) Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care provide the following guidance for chest compressions and cardiac arrest in the mentioned special situations:

Excerpts from AHA 2010 (not reviewed/updated for 2015) on cardiac arrest associated with trauma[7]

Part 12.8: Cardiac Arrest Associated With Trauma
BLS and ACLS for the trauma patient are fundamentally the same as that for the patient with primary cardiac arrest, with focus on support of airway, breathing, and circulation. In addition, reversible causes of cardiac arrest need to considered. While CPR in the pulseless trauma patient has overall been considered futile, several reversible causes of cardiac arrest in the context of trauma are correctible and their prompt treatment could be life-saving. These include hypoxia, hypovolemia, diminished cardiac output secondary to pneumothorax or pericardial tamponade, and hypothermia.

BLS Modifications
When multisystem trauma is present or trauma involves the head and neck, the cervical spine must be stabilized. A jaw thrust should be used instead of a head tilt–chin lift to establish a patent airway. If breathing is inadequate and the patient's face is bloody, ventilation should be provided with a barrier device, a pocket mask, or a bag-mask device while maintaining cervical spine stabilization. Stop any visible hemorrhage using direct compression and appropriate dressings. If the patient is completely unresponsive despite rescue breathing, provide standard CPR and defibrillation as indicated.

Excerpts from AHA 2015 on cardiac arrest associated with pregnancy[8]

Patient Positioning During CPR
Patient position has emerged as an important strategy to improve the quality of CPR and resultant compression force and cardiac output. The gravid uterus can compress the inferior vena cava, impeding venous return, thereby reducing stroke volume and cardiac output.
[…]
Although chest compressions in the left lateral tilt position are feasible in a manikin study, they result in decreased CPR quality (less forceful chest compressions) than is possible in the supine position. Manual left lateral uterine displacement effectively relieves aortocaval pressure in patients with hypotension.

LUCAS – Special Considerations

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2015 Recommendations - New and Updated
BLS Modification: Relief of Aortocaval Compression
Priorities for the pregnant woman in cardiac arrest are provision of high-quality CPR and relief of aortocaval compression (Class I, LOE C-LD). If the fundus height is at or above the level of the umbilicus, manual left lateral uterine displacement can be beneficial in relieving aortocaval compression during chest compressions (Class IIa, LOE C-LD).

Excerpts from AHA 2010 (not reviewed/updated for 2015) on cardiac arrest following cardiac surgery[7]

For patients with cardiac arrest following cardiac surgery, it is reasonable to perform resternotomy in an appropriately staffed and equipped intensive care unit (Class IIa, LOE B). Despite rare case reports describing damage to the heart possibly due to external chest compressions, chest compressions should not be withheld if emergency resternotomy is not immediately available (Class IIa, LOE C).

Please refer to the full guidelines text for the comprehensive information.

Thank you for your inquiry and feel free to contact us with any questions.

Sincerely,

Erik von Schenck
VP & GM, Circulatory
PHYSIO-CONTROL / JOLIFE AB

Paula Lank
VP, Regulatory Affairs and Clinical Affairs
PHYSIO-CONTROL, INC

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[1] LUCAS™ 2 Chest Compression System Instructions For Use. 100901-00 A ©2014 Jolife AB
[2] LUCAS® 3 Chest Compression System Instructions For Use. 100925-00 F ©2016 Jolife AB
[3] Kyrval H, Ahmad K. Automatic mechanical chest compression during helicopter transportation. (Article in Danish, Abstract in English.) *Ugeskr Laeger* 2010;172:3190-3191.
[4] Fidler R, Hirsch J, Stechert M, et al. Three modes of cardiac compressions in a single patient: a comparison of usual manual compressions, automated compressions, and open cardiac massage. Letter to the Editor. *Resuscitation* 2014;85(5):e75-e76.
[5] Vatsgar T, Ingebrigtsen O, Fjosea L, et al. Cardiac arrest and resuscitation with an automatic mechanical chest compression device (LUCAS) due to anaphylaxis of a woman receiving caesarean section because of pre-eclampsia. *Resuscitation* 2006;68:155-159.
[6] M Hörer T, Cajander P, Jans A, et al. A case of partial aortic balloon occlusion in an unstable multi-trauma patient. *Trauma* 2016;18(2):150-154.
[7] Vanden Hoek TL, Morrison LJ, Shuster M, et al. Part 12: Cardiac Arrest in Special Situations: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation* 2010;122:S829-S861
[8] Lavonas EJ, Drennan IR, Gabrielli A, et al. Part 10: Special Circumstances of Resuscitation 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation* 2015;132(suppl 2):S501–S518.

GDR 3331164_A

Medication Tool

Length/Age-Based Tape Medication Tool

R-4
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Version: 2024v1

Medications (ml) D: Dose C: Conc. Estimated Age	Gray 3-5 KG
Adenosine IV D: 0.1/0.2mg/kg C: 3mg/ml Max = adult dose	0.14ml Repeat @ 0.28ml
Amiodarone (Bolus) D: 5mg/kg IV C: 50mg/ml Max = adult dose Infusion (with 50ml D5W)	Cardiac Arrest 0.4ml Same Dose
Atropine D: 0.02mg/kg IV/IO C: 0.1mg/ml Max = adult dose	1.0ml
Calcium Chloride D: 20mg/kg IV/IO C: 100mg/ml Max = adult dose	1.0ml
D10 (Infusion) D: 5ml/kg IV/IO Max = adult dose	25ml
Diphenhydramine (Diluted) D: 1mg/kg IV/IO C: 5mg/ml	1.0ml
Diphenhydramine (Not Diluted) D: 1mg/kg IM Conc: 50mg/ml	0.1ml
Epinephrine 1:10,000 D: 0.01mg/kg IV/IO C: 0.1mg/ml	0.5ml
Epinephrine 1:1000 **Anaphylaxis IM ONLY** D: 0.01mg/kg C: 1mg/ml Max = adult dose	0.1ml
Etomidate IV/IO C: 2mg/ml D: RSI 0.3mg/kg D: Sedation: 0.15 mg/kg	RSI 0.6ml Sedation 0.3ml
Fentanyl IV/IO (Diluted) D: 1mcg/kg C: 10mcg/ml Max = adult dose	0.5ml

Medications (ml) D: Dose C: Conc. Estimated Age	Gray 3-5 KG
Fentanyl (Intranasal/IM) 1.5mcg/kg IN/IM C: 50mcg/ml	0.1ml
Ketamine (Diluted) D: 1mg/kg IV/IO/IM C: 10mg/ml Max = adult dose	0.5ml
Magnesium Sulfate D:40mg/kg IV/IO C: 1gm/2ml (Asthma or Torsades)	0.3ml With 50ml D5W for infusion
Narcan D: 0.1mg/kg IV C: 1mg/ml Max = adult dose	0.5ml IV 1.0ml IN
Normal Saline (Fluid Resuscitation) Repeat @ 5 min.	60-100ml Repeat x 2
Sodium Bicarb 4.2% (Diluted) D: 1meq/kg IV/IO C: 0.5meq/ml	8ml
Sodium Bicarb 8.4% D: 1meq/Kg IV/IO C: 1meq/ml Max = adult dose	Use 4.2% Dilute as above
Solumedrol D: 2mg/kg C: 62.5mg/ml	0.1ml
Tranexamic Acid (TXA) D: 15mg/kg IV/IO C: 100mg/ml Max = adult dose	Call Medical Director for orders.
Versed IV/IO D: 0.1mg/kg C: 5mg/ml **IN/IM Dose →**	0.1ml _____ **0.2ml**
Zofran D: 0.1mg/kg IM or Slow IV/IO C: 4mg/2ml Max = adult dose	0.2ml

Equipment	
Oral Airway	40mm
Nasopharyngeal Airway	12FR
IO	Pink
I-Gel	XXXX
Res-Q-Pod	No
Endotracheal Intubation	2.5-3.0 UC
Electrical Therapies (Stryker) *Use Peds Combo Pads*	
Cardioversion First Dose Second Dose	 5 Joules 10 Joules
Defibrillation First Dose Second Dose Additional Dose	 10 Joules 20 Joules 50 Joules

Normal Vital Signs	
Pulse (BPM)*	100-205
Systolic BP (mmHG)	60-84
Diastolic BP (mmHG)	30-54
Respiration (BPM)	30-60

*Upper limit of heart rate within certain conditions (such as fever and agitation) for an infant is 280BPM. While for a preschooler, it is 240BPM. However, be alert to tachydysrhythmia if the rate exceeds 200BPM.

Reference: PALS Guidelines, 2015
http://pediatrics.aappublications.org/content/early/2017/08/21/peds.2017-1904

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Medications (ml) D: Dose C: Conc. Estimated Age	Pink 6-7 KG
Adenosine IV D: 0.1/0.2mg/kg C: 3mg/ml Max = adult dose	0.2ml Repeat @ 0.4ml
Amiodarone (Bolus) D: 5mg/kg IV C: 50mg/ml Max = adult dose Infusion (with 50ml D5W)	Cardiac Arrest 0.6ml Same Dose
Atropine D: 0.02mg/kg IV/IO C: 0.1mg/ml Max = adult dose	1.2ml
Calcium Chloride D: 20mg/kg IV/IO C: 100mg/ml Max = adult dose	1.2ml
D10 (Infusion) D: 5ml/kg IV/IO Max = adult dose	35ml
Diphenhydramine (Diluted) D: 1mg/kg IV/IO C: 5mg/ml	1.5ml
Diphenhydramine (Not Diluted) D: 1mg/kg IM Conc: 50mg/ml	0.2ml
Epinephrine 1:10,000 D: 0.01mg/kg IV/IO C: 0.1mg/ml	0.8ml
Epinephrine 1:1000 **Anaphylaxis IM ONLY** D: 0.01mg/kg C: 1mg/ml Max = adult dose	0.1ml
Etomidate IV/IO C: 2mg/ml D: RSI 0.3mg/kg D: Sedation: 0.15 mg/kg	RSI 0.9ml Sedation 0.4ml
Fentanyl IV/IO (Diluted) D: 1mcg/kg C: 10mcg/ml Max = adult dose	0.7ml

Medications (ml) D: Dose C: Conc. Estimated Age	Pink 6-7 KG
Fentanyl (Intranasal/IM) 1.5mcg/kg IN/IM C: 50mcg/ml	0.2ml
Ketamine (Diluted) D: 1mg/kg IV/IO/IM C: 10mg/ml Max = adult dose	0.7ml
Magnesium Sulfate D:40mg/kg IV/IO C: 1gm/2ml (Asthma or Torsades)	0.5ml With 50ml D5W for infusion
Narcan D: 0.1mg/kg IV C: 1mg/ml Max = adult dose	0.5ml IV 1.0ml IN
Normal Saline (Fluid Resuscitation) Repeat @ 5 min.	120-140ml Repeat x 2
Sodium Bicarb 4.2% (Diluted) D: 1meq/kg IV/IO C: 0.5meq/ml	14ml
Sodium Bicarb 8.4% D: 1meq/Kg IV/IO C: 1meq/ml Max = adult dose	Use 4.2% Dilute as above
Solumedrol D: 2mg/kg C: 62.5mg/ml	0.2ml
Tranexamic Acid (TXA) D: 15mg/kg IV/IO C: 100mg/ml Max = adult dose	Call Medical Director for orders.
Versed IV/IO D: 0.1mg/kg C: 5mg/ml **IN/IM Dose →**	0.15ml _____ **0.3ml**
Zofran D: 0.1mg/kg IM or Slow IV/IO C: 4mg/2ml Max = adult dose	0.3ml

Equipment	
Oral Airway	50mm
Nasopharyngeal Airway	14FR
IO	Pink
I-Gel	XXXX
Res-Q-Pod	No
Endotracheal Intubation	3.0 UC
Electrical Therapies (Stryker) *Use Peds Combo Pads*	
Cardioversion First Dose Second Dose	 7 Joules 15 Joules
Defibrillation First Dose Second Dose Additional Dose	 15 Joules 30 Joules 50 Joules

Normal Vital Signs	
Pulse (BPM)*	100-205
Systolic BP (mmHG)	60-84
Diastolic BP (mmHG)	30-54
Respiration (BPM)	30-60

*Upper limit of heart rate within certain conditions (such as fever and agitation) for an infant is 280BPM. While for a preschooler, it is 240BPM. However, be alert to tachydysrhythmia if the rate exceeds 200BPM.

Reference: PALS Guidelines, 2015
http://pediatrics.aappublications.org/content/early/2017/08/21/peds.2017-1904

Medication Tool

Length/Age-Based Tape Medication Tool

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Medications (ml) D: Dose C: Conc. Estimated Age	Red 8-9 KG
Adenosine IV D: 0.1/0.2mg/kg C: 3mg/ml Max = adult dose	0.24ml Repeat @ 0.5ml
Amiodarone (Bolus) D: 5mg/kg IV C: 50mg/ml Max = adult dose Infusion (with 50ml D5W)	Cardiac Arrest 0.8ml Same Dose
Atropine D: 0.02mg/kg IV/IO C: 0.1mg/ml Max = adult dose	1.6ml
Calcium Chloride D: 20mg/kg IV/IO C: 100mg/ml Max = adult dose	1.6ml
D10 (Infusion) D: 5ml/kg IV/IO Max = adult dose	46ml
Diphenhydramine (Diluted) D: 1mg/kg IV/IO C: 5mg/ml	2.0ml
Diphenhydramine (Not Diluted) D: 1mg/kg IM Conc: 50mg/ml	0.25ml
Epinephrine 1:10,000 D: 0.01mg/kg IV/IO C: 0.1mg/ml	1.0ml
Epinephrine 1:1000 **Anaphylaxis IM ONLY** D: 0.01mg/kg C: 1mg/ml Max = adult dose	0.1ml
Etomidate IV/IO C: 2mg/ml D: RSI 0.3mg/kg D: Sedation: 0.15 mg/kg	RSI 1.2ml Sedation 0.6ml
Fentanyl IV/IO (Diluted) D: 1mcg/kg C: 10mcg/ml Max = adult dose	0.9ml

Medications (ml) D: Dose C: Conc. Estimated Age	Red 8-9 KG
Fentanyl (Intranasal/IM) 1.5mcg/kg IN/IM C: 50mcg/ml	0.3ml
Ketamine (Diluted) D: 1mg/kg IV/IO/IM C: 10mg/ml Max = adult dose	0.9ml
Magnesium Sulfate D:40mg/kg IV/IO C: 1gm/2ml (Asthma or Torsades)	0.6ml With 50ml D5W for infusion
Narcan D: 0.1mg/kg IV C: 1mg/ml Max = adult dose	0.5ml IV 1.0ml IN
Normal Saline (Fluid Resuscitation) Repeat @ 5 min.	160-180ml Repeat x 2
Sodium Bicarb 4.2% (Diluted) D: 1meq/kg IV/IO C: 0.5meq/ml	18ml
Sodium Bicarb 8.4% D: 1meq/Kg IV/IO C: 1meq/ml Max = adult dose	Use 4.2% Dilute as above
Solumedrol D: 2mg/kg C: 62.5mg/ml	0.3ml
Tranexamic Acid (TXA) D: 15mg/kg IV/IO C: 100mg/ml Max = adult dose	Call Medical Director for orders.
Versed IV/IO D: 0.1mg/kg C: 5mg/ml **IN/IM Dose →**	0.2ml _____ **0.4ml**
Zofran D: 0.1mg/kg IM or Slow IV/IO C: 4mg/2ml Max = adult dose	0.4ml

Equipment	
Oral Airway	50mm
Nasopharyngeal Airway	16FR
IO	Pink
I-Gel	XXXX
Res-Q-Pod	No
Endotracheal Intubation	3.0-4.0 UC
Electrical Therapies (Stryker) *Use Peds Combo Pads*	
Cardioversion First Dose Second Dose	 10 Joules 20 Joules
Defibrillation First Dose Second Dose Additional Dose	 20 Joules 50 Joules 70 Joules

Normal Vital Signs	
Pulse (BPM)*	100-190
Systolic BP (mmHG)	72-100
Diastolic BP (mmHG)	38-60
Respiration (BPM)	30-60

*Upper limit of heart rate within certain conditions (such as fever and agitation) for an infant is 280BPM. While for a preschooler, it is 240BPM. However, be alert to tachydysrhythmia if the rate exceeds 200BPM.

Reference: PALS Guidelines, 2015
http://pediatrics.aappublications.org/content/early/2017/08/21/peds.2017-1904

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Medications (ml) D: Dose C: Conc. Estimated Age	Purple 10-11 KG 1 Year
Adenosine IV D: 0.1/0.2mg/kg C: 3mg/ml Max = adult dose	0.36ml Repeat @ 0.7ml
Amiodarone (Bolus) D: 5mg/kg IV C: 50mg/ml Max = adult dose Infusion (with 50ml D5W)	Cardiac Arrest 1.0ml Same Dose
Atropine D: 0.02mg/kg IV/IO C: 0.1mg/ml Max = adult dose	2.0ml
Calcium Chloride D: 20mg/kg IV/IO C: 100mg/ml Max = adult dose	2.0ml
D10 (Infusion) D: 5ml/kg IV/IO Max = adult dose	56ml
Diphenhydramine (Diluted) D: 1mg/kg IV/IO C: 5mg/ml	2.5ml
Diphenhydramine (Not Diluted) D: 1mg/kg IM Conc: 50mg/ml	0.25ml
Epinephrine 1:10,000 D: 0.01mg/kg IV/IO C: 0.1mg/ml	1.0ml
Epinephrine 1:1000 **Anaphylaxis IM ONLY** D: 0.01mg/kg C: 1mg/ml Max = adult dose	0.12ml
Etomidate IV/IO C: 2mg/ml D: RSI 0.3mg/kg D: Sedation: 0.15 mg/kg	RSI 1.5ml Sedation 0.8ml
Fentanyl IV/IO (Diluted) D: 1mcg/kg C: 10mcg/ml Max = adult dose	1.0ml

Medications (ml) D: Dose C: Conc. Estimated Age	Purple 10-11 KG 1 Year
Fentanyl (Intranasal/IM) 1.5mcg/kg IN/IM C: 50mcg/ml	0.3ml
Ketamine (Diluted) D: 1mg/kg IV/IO/IM C: 10mg/ml Max = adult dose	1.0ml
Magnesium Sulfate D:40mg/kg IV/IO C: 1gm/2ml (Asthma or Torsades)	0.8ml With 50ml D5W for infusion
Narcan D: 0.1mg/kg IV C: 1mg/ml Max = adult dose	0.5ml IV 1.0ml IN
Normal Saline (Fluid Resuscitation) Repeat @ 5 min.	200-220ml Repeat x 2
Sodium Bicarb 4.2% (Diluted) D: 1meq/kg IV/IO C: 0.5meq/ml	22ml
Sodium Bicarb 8.4% D: 1meq/Kg IV/IO C: 1meq/ml Max = adult dose	Use 4.2% Dilute as above
Solumedrol D: 2mg/kg C: 62.5mg/ml	0.4ml
Tranexamic Acid (TXA) D: 15mg/kg IV/IO C: 100mg/ml Max = adult dose	Call Medical Director for orders.
Versed IV/IO D: 0.1mg/kg C: 5mg/ml **IN/IM Dose →**	0.22ml _____ **0.5ml**
Zofran D: 0.1mg/kg IM or Slow IV/IO C: 4mg/2ml Max = adult dose	0.6ml

Equipment	
Oral Airway	60mm
Nasopharyngeal Airway	18FR
IO	Pink
I-Gel	2
Res-Q-Pod	Yes
Endotracheal Intubation	4.0 UC
Electrical Therapies (Stryker) *Use Peds Combo Pads*	
Cardioversion First Dose Second Dose	 10 Joules 20 Joules
Defibrillation First Dose Second Dose Additional Dose	 20 Joules 50 Joules 70 Joules

Normal Vital Signs	
Pulse (BPM)*	98-140
Systolic BP (mmHG)	86-106
Diastolic BP (mmHG)	40-64
Respiration (BPM)	22-38

*Upper limit of heart rate within certain conditions (such as fever and agitation) for an infant is 280BPM. While for a preschooler, it is 240BPM. However, be alert to tachydysrhythmia if the rate exceeds 200BPM.

Reference: PALS Guidelines, 2015
http://pediatrics.aappublications.org/content/early/2017/08/21/peds.2017-1904

Medication Tool

Length/Age-Based Tape Medication Tool

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Medications (ml) D: Dose C: Conc. Estimated Age	Yellow 12-14 KG 2 Years
Adenosine IV D: 0.1/0.2mg/kg C: 3mg/ml Max = adult dose	0.4ml Repeat @ 0.8ml
Amiodarone (Bolus) D: 5mg/kg IV C: 50mg/ml Max = adult dose Infusion (with 50ml D5W)	Cardiac Arrest 1.4ml Same Dose
Atropine D: 0.02mg/kg IV/IO C: 0.1mg/ml Max = adult dose	2.4ml
Calcium Chloride D: 20mg/kg IV/IO C: 100mg/ml Max = adult dose	2.4ml
D10 (Infusion) D: 5ml/kg IV/IO Max = adult dose	70ml
Diphenhydramine (Diluted) D: 1mg/kg IV/IO C: 5mg/ml	3.0ml
Diphenhydramine (Not Diluted) D: 1mg/kg IM Conc: 50mg/ml	0.3ml
Epinephrine 1:10,000 D: 0.01mg/kg IV/IO C: 0.1mg/ml	1.6ml
Epinephrine 1:1000 **Anaphylaxis IM ONLY** D: 0.01mg/kg C: 1mg/ml Max = adult dose	0.14ml
Etomidate IV/IO C: 2mg/ml D: RSI 0.3mg/kg D: Sedation: 0.15 mg/kg	RSI 1.8ml Sedation 1.0ml
Fentanyl IV/IO (Diluted) D: 1mcg/kg C: 10mcg/ml Max = adult dose	1.4ml

Medications (ml) D: Dose C: Conc. Estimated Age	Yellow 12-14 KG 2 Years
Fentanyl (Intranasal/IM) 1.5mcg/kg IN/IM C: 50mcg/ml	0.4ml
Ketamine (Diluted) D: 1mg/kg IV/IO/IM C: 10mg/ml Max = adult dose	1.4ml
Magnesium Sulfate D:40mg/kg IV/IO C: 1gm/2ml (Asthma or Torsades)	1.0ml With 50ml D5W for infusion
Narcan D: 0.1mg/kg IV C: 1mg/ml Max = adult dose	0.5ml IV 1.0ml IN
Normal Saline (Fluid Resuscitation) Repeat @ 5 min.	240-280ml Repeat x 2
Sodium Bicarb 4.2% (Diluted) D: 1meq/kg IV/IO C: 0.5meq/ml	26ml
Sodium Bicarb 8.4% D: 1meq/Kg IV/IO C: 1meq/ml Max = adult dose	Use 4.2% Dilute as above
Solumedrol D: 2mg/kg C: 62.5mg/ml	0.5ml
Tranexamic Acid (TXA) D: 15mg/kg IV/IO C: 100mg/ml Max = adult dose	Call Medical Director for orders.
Versed IV/IO D: 0.1mg/kg C: 5mg/ml **IN/IM Dose →**	0.26ml _____ **0.6ml**
Zofran D: 0.1mg/kg IM or Slow IV/IO C: 4mg/2ml Max = adult dose	0.6ml

Equipment	
Oral Airway	60mm
Nasopharyngeal Airway	20FR
IO	Pink
I-Gel	2
Res-Q-Pod	Yes
Endotracheal Intubation	4.0-5.0 UC
Electrical Therapies (Stryker) *Use Peds Combo Pads*	
Cardioversion First Dose Second Dose	 15 Joules 30 Joules
Defibrillation First Dose Second Dose Additional Dose	 30 Joules 70 Joules 100 Joules

Normal Vital Signs	
Pulse (BPM)*	98-140
Systolic BP (mmHG)	86-106
Diastolic BP (mmHG)	40-64
Respiration (BPM)	22-38

*Upper limit of heart rate within certain conditions (such as fever and agitation) for an infant is 280BPM. While for a preschooler, it is 240BPM. However, be alert to tachydysrhythmia if the rate exceeds 200BPM.

Reference: PALS Guidelines, 2015
http://pediatrics.aappublications.org/content/early/2017/08/21/peds.2017-1904

Medication Tool

Length/Age-Based Tape Medication Tool

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Medications (ml) D: Dose C: Conc. Estimated Age	White 15-18 KG 3 Years
Adenosine IV D: 0.1/0.2mg/kg C: 3mg/ml Max = adult dose	0.6ml Repeat @ 1.2ml
Amiodarone (Bolus) D: 5mg/kg IV C: 50mg/ml Max = adult dose Infusion (with 50ml D5W)	Cardiac Arrest 1.8ml Same Dose
Atropine D: 0.02mg/kg IV/IO C: 0.1mg/ml Max = adult dose	3.4ml
Calcium Chloride D: 20mg/kg IV/IO C: 100mg/ml Max = adult dose	3.4ml
D10 (Infusion) D: 5ml/kg IV/IO Max = adult dose	90ml
Diphenhydramine (Diluted) D: 1mg/kg IV/IO C: 5mg/ml	4.0ml
Diphenhydramine (Not Diluted) D: 1mg/kg IM Conc: 50mg/ml	0.4ml
Epinephrine 1:10,000 D: 0.01mg/kg IV/IO C: 0.1mg/ml	1.8ml
Epinephrine 1:1000 **Anaphylaxis IM ONLY** D: 0.01mg/kg C: 1mg/ml Max = adult dose	0.16ml
Etomidate IV/IO C: 2mg/ml D: RSI 0.3mg/kg D: Sedation: 0.15 mg/kg	RSI 2.2ml Sedation 1.2ml
Fentanyl IV/IO (Diluted) D: 1mcg/kg C: 10mcg/ml Max = adult dose	1.8ml

Medications (ml) D: Dose C: Conc. Estimated Age	White 15-18 KG 3 Years
Fentanyl (Intranasal/IM) 1.5mcg/kg IN/IM C: 50mcg/ml	0.5ml
Ketamine (Diluted) D: 1mg/kg IV/IO/IM C: 10mg/ml Max = adult dose	1.8ml
Magnesium Sulfate D:40mg/kg IV/IO C: 1gm/2ml (Asthma or Torsades)	1.2ml With 50ml D5W for infusion
Narcan D: 0.1mg/kg IV C: 1mg/ml Max = adult dose	0.5ml IV 1.0ml IN
Normal Saline (Fluid Resuscitation) Repeat @ 5 min.	300-360ml Repeat x 2
Sodium Bicarb 4.2% (Diluted) D: 1meq/kg IV/IO C: 0.5meq/ml	34ml
Sodium Bicarb 8.4% D: 1meq/Kg IV/IO C: 1meq/ml Max = adult dose	Use 4.2% Dilute as above
Solumedrol D: 2mg/kg C: 62.5mg/ml	0.6ml
Tranexamic Acid (TXA) D: 15mg/kg IV/IO C: 100mg/ml Max = adult dose	Call Medical Director for orders.
Versed IV/IO D: 0.1mg/kg C: 5mg/ml **IN/IM Dose →**	0.35ml _____ **0.7ml**
Zofran D: 0.1mg/kg IM or Slow IV/IO C: 4mg/2ml Max = adult dose	0.8ml

Equipment	
Oral Airway	60mm
Nasopharyngeal Airway	22FR
IO	Pink
I-Gel	2
Res-Q-Pod	Yes
Endotracheal Intubation	5.0 UC
Electrical Therapies (Stryker)	
15kg - Use Peds Combo Pads 16+kg - Use Adult Combo Pads	
Cardioversion	
First Dose	20 Joules
Second Dose	50 Joules
Defibrillation	
First Dose	50 Joules
Second Dose	100 Joules
Additional Dose	125 Joules

Normal Vital Signs	
Pulse (BPM)*	80-120
Systolic BP (mmHG)	88-112
Diastolic BP (mmHG)	46-72
Respiration (BPM)	20-28

*Upper limit of heart rate within certain conditions (such as fever and agitation) for an infant is 280BPM. While for a preschooler, it is 240BPM. However, be alert to tachydysrhythmia if the rate exceeds 200BPM.

Reference: PALS Guidelines, 2015
http://pediatrics.aappublications.org/content/early/2017/08/21/peds.2017-1904

Medication Tool

Length/Age-Based Tape Medication Tool

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Medications (ml) D: Dose C: Conc. Estimated Age	Blue 19-23 KG 5 Years
Adenosine IV D: 0.1/0.2mg/kg C: 3mg/ml Max = adult dose	0.7ml Repeat @ 1.4ml
Amiodarone (Bolus) D: 5mg/kg IV C: 50mg/ml Max = adult dose Infusion (with 50ml D5W)	Cardiac Arrest 2.0ml Same Dose
Atropine D: 0.02mg/kg IV/IO C: 0.1mg/ml Max = adult dose	4.0ml
Calcium Chloride D: 20mg/kg IV/IO C: 100mg/ml Max = adult dose	4.4ml
D10 (Infusion) D: 5ml/kg IV/IO Max = adult dose	100ml
Diphenhydramine (Diluted) D: 1mg/kg IV/IO C: 5mg/ml	5.0ml
Diphenhydramine (Not Diluted) D: 1mg/kg IM Conc: 50mg/ml	0.5ml
Epinephrine 1:10,000 D: 0.01mg/kg IV/IO C: 0.1mg/ml	2.0ml
Epinephrine 1:1000 **Anaphylaxis IM ONLY** D: 0.01mg/kg C: 1mg/ml Max = adult dose	0.2ml
Etomidate IV/IO C: 2mg/ml D: RSI 0.3mg/kg D: Sedation: 0.15 mg/kg	RSI 2.6ml Sedation 1.6ml
Fentanyl IV/IO (Diluted) D: 1mcg/kg C: 10mcg/ml Max = adult dose	2.2ml

Medications (ml) D: Dose C: Conc. Estimated Age	Blue 19-23 KG 5 Years
Fentanyl (Intranasal/IM) 1.5mcg/kg IN/IM C: 50mcg/ml	0.7ml
Ketamine (Diluted) D: 1mg/kg IV/IO/IM C: 10mg/ml Max = adult dose	2.2ml
Magnesium Sulfate D:40mg/kg IV/IO C: 1gm/2ml (Asthma or Torsades)	1.4ml With 50ml D5W for infusion
Narcan D: 0.1mg/kg IV C: 1mg/ml Max = adult dose	0.5ml IV 1.0ml IN
Normal Saline (Fluid Resuscitation) Repeat @ 5 min.	380-460ml Repeat x 1
Sodium Bicarb 4.2% (Diluted) D: 1meq/kg IV/IO C: 0.5meq/ml	44ml
Sodium Bicarb 8.4% D: 1meq/Kg IV/IO C: 1meq/ml Max = adult dose	22ml
Solumedrol D: 2mg/kg C: 62.5mg/ml	0.7ml
Tranexamic Acid (TXA) D: 15mg/kg IV/IO C: 100mg/ml Max = adult dose	3.0ml
Versed IV/IO D: 0.1mg/kg C: 5mg/ml **IN/IM Dose →**	0.45ml _____ **0.9ml**
Zofran D: 0.1mg/kg IM or Slow IV/IO C: 4mg/2ml Max = adult dose	1.0ml

Equipment	
Oral Airway	60-80mm
Nasopharyngeal Airway	24FR
IO	Pink
I-Gel	2
Res-Q-Pod	Yes
Endotracheal Intubation	5.0 UC
Electrical Therapies (Stryker) *Use Adult Combo Pads*	
Cardioversion First Dose Second Dose	 30 Joules 70 Joules
Defibrillation First Dose Second Dose Additional Dose	 70 Joules 150 Joules 175 Joules

Normal Vital Signs	
Pulse (BPM)*	80-120
Systolic BP (mmHG)	88-112
Diastolic BP (mmHG)	46-72
Respiration (BPM)	20-28

*Upper limit of heart rate within certain conditions (such as fever and agitation) for an infant is 280BPM. While for a preschooler, it is 240BPM. However, be alert to tachydysrhythmia if the rate exceeds 200BPM.

Reference: PALS Guidelines, 2015
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Medication Tool

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Medications (ml) D: Dose C: Conc. Estimated Age	Orange 24-29 KG 7 Years
Adenosine IV D: 0.1/0.2mg/kg C: 3mg/ml Max = adult dose	0.8ml Repeat @ 1.6ml
Amiodarone (Bolus) D: 5mg/kg IV C: 50mg/ml Max = adult dose Infusion (with 50ml D5W)	Cardiac Arrest 2.4ml Same Dose
Atropine D: 0.02mg/kg IV/IO C: 0.1mg/ml Max = adult dose	5.0ml
Calcium Chloride D: 20mg/kg IV/IO C: 100mg/ml Max = adult dose	5.4ml
D10 (Infusion) D: 5ml/kg IV/IO Max = adult dose	100ml
Diphenhydramine (Diluted) D: 1mg/kg IV/IO C: 5mg/ml	6.0ml
Diphenhydramine (Not Diluted) D: 1mg/kg IM Conc: 50mg/ml	0.6ml
Epinephrine 1:10,000 D: 0.01mg/kg IV/IO C: 0.1mg/ml	2.5ml
Epinephrine 1:1000 **Anaphylaxis IM ONLY** D: 0.01mg/kg C: 1mg/ml Max = adult dose	0.3ml
Etomidate IV/IO C: 2mg/ml D: RSI 0.3mg/kg D: Sedation: 0.15 mg/kg	RSI 3.8ml Sedation 1.9ml
Fentanyl IV/IO (Diluted) D: 1mcg/kg C: 10mcg/ml Max = adult dose	2.6ml

Medications (ml) D: Dose C: Conc. Estimated Age	Orange 24-29 KG 7 Years
Fentanyl (Intranasal/IM) 1.5mcg/kg IN/IM C: 50mcg/ml	0.9ml
Ketamine (Diluted) D: 1mg/kg IV/IO/IM C: 10mg/ml Max = adult dose	2.6ml
Magnesium Sulfate D:40mg/kg IV/IO C: 1gm/2ml (Asthma or Torsades)	2.0ml With 50ml D5W for infusion
Narcan D: 0.1mg/kg IV C: 1mg/ml Max = adult dose	0.5ml IV 1.0ml IN
Normal Saline (Fluid Resuscitation) Repeat @ 5 min.	500ml Repeat x 1
Sodium Bicarb 4.2% (Diluted) D: 1meq/kg IV/IO C: 0.5meq/ml	50ml
Sodium Bicarb 8.4% D: 1meq/Kg IV/IO C: 1meq/ml Max = adult dose	25ml
Solumedrol D: 2mg/kg C: 62.5mg/ml	0.8ml
Tranexamic Acid (TXA) D: 15mg/kg IV/IO C: 100mg/ml Max = adult dose	4.0ml
Versed IV/IO D: 0.1mg/kg C: 5mg/ml **IN/IM Dose →**	0.5ml _____ **1.0ml**
Zofran D: 0.1mg/kg IM or Slow IV/IO C: 4mg/2ml Max = adult dose	1.5ml

Equipment	
Oral Airway	80mm
Nasopharyngeal Airway	26FR
IO	Pink
I-Gel	2.5
Res-Q-Pod	Yes
Endotracheal Intubation	6.0 C
Electrical Therapies (Stryker) *Use Adult Combo Pads*	
Cardioversion First Dose Second Dose	 30 Joules 70 Joules
Defibrillation First Dose Second Dose Additional Dose	 70 Joules 150 Joules 175 Joules

Normal Vital Signs	
Pulse (BPM)*	74-118
Systolic BP (mmHG)	96-116
Diastolic BP (mmHG)	56-76
Respiration (BPM)	18-26

Reference: PALS Guidelines, 2015
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Medications (ml) D: Dose C: Conc. Estimated Age	Green 30-36 KG 9 Years
Adenosine IV D: 0.1/0.2mg/kg C: 3mg/ml Max = adult dose	1.0ml Repeat @ 2.0ml
Amiodarone (Bolus) D: 5mg/kg IV C: 50mg/ml Max = adult dose Infusion (with 50ml D5W)	Cardiac Arrest 3.0ml Same Dose
Atropine D: 0.02mg/kg IV/IO C: 0.1mg/ml Max = adult dose	5.0ml
Calcium Chloride D: 20mg/kg IV/IO C: 100mg/ml Max = adult dose	6.0ml
D10 (Infusion) D: 5ml/kg IV/IO Max = adult dose	100ml
Diphenhydramine (Diluted) D: 1mg/kg IV/IO C: 5mg/ml	7.0ml
Diphenhydramine (Not Diluted) D: 1mg/kg IM Conc: 50mg/ml	0.7ml
Epinephrine 1:10,000 D: 0.01mg/kg IV/IO C: 0.1mg/ml	3.0ml
Epinephrine 1:1000 **Anaphylaxis IM ONLY** D: 0.01mg/kg C: 1mg/ml Max = adult dose	0.3ml
Etomidate IV/IO C: 2mg/ml D: RSI 0.3mg/kg D: Sedation: 0.15 mg/kg	RSI 4.5ml Sedation 2.4ml
Fentanyl IV/IO (Diluted) D: 1mcg/kg C: 10mcg/ml Max = adult dose	3.5ml

Medications (ml) D: Dose C: Conc. Estimated Age	Green 30-36 KG 9 Years
Fentanyl (Intranasal/IM) 1.5mcg/kg IN/IM C: 50mcg/ml	1.0ml
Ketamine (Diluted) D: 1mg/kg IV/IO/IM C: 10mg/ml Max = adult dose	3.5ml
Magnesium Sulfate D:40mg/kg IV/IO C: 1gm/2ml (Asthma or Torsades)	2.4ml With 50ml D5W for infusion
Narcan D: 0.1mg/kg IV C: 1mg/ml Max = adult dose	0.5ml IV 1.0ml IN
Normal Saline (Fluid Resuscitation) Repeat @ 5 min.	500ml Repeat x 1
Sodium Bicarb 4.2% (Diluted) D: 1meq/kg IV/IO C: 0.5meq/ml	Use 8.4% See Below
Sodium Bicarb 8.4% D: 1meq/Kg IV/IO C: 1meq/ml Max = adult dose	35ml
Solumedrol D: 2mg/kg C: 62.5mg/ml	1.0ml
Tranexamic Acid (TXA) D: 15mg/kg IV/IO C: 100mg/ml Max = adult dose	5.0ml
Versed IV/IO D: 0.1mg/kg C: 5mg/ml **IN/IM Dose →**	0.6ml _____ **1.0ml**
Zofran D: 0.1mg/kg IM or Slow IV/IO C: 4mg/2ml Max = adult dose	2.0ml

Equipment	
Oral Airway	80mm
Nasopharyngeal Airway	26FR
IO	Pink/Blue
I-Gel	2.5/3.0
Res-Q-Pod	Yes
Endotracheal Intubation	6.0 C
Electrical Therapies (Stryker) *Use Adult Combo Pads*	
Cardioversion First Dose Second Dose	 30 Joules 70 Joules
Defibrillation First Dose Second Dose Additional Dose	 70 Joules 150 Joules 200 Joules

Normal Vital Signs	
Pulse (BPM)*	74-118
Systolic BP (mmHG)	96-116
Diastolic BP (mmHG)	56-76
Respiration (BPM)	18-26

Reference: PALS Guidelines, 2015
http://pediatrics.aappublications.org/content/early/2017/08/21/peds.2017-1904

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Medications (ml) D: Dose C: Conc.	Green 45 KG
Adenosine IV D: 0.1/0.2mg/kg C: 3mg/ml Max = adult dose	1.5ml Repeat @ 3.0ml
Amiodarone (Bolus) D: 5mg/kg IV C: 50mg/ml Max = adult dose Infusion (with 50ml D5W)	Cardiac Arrest 4.5ml Same Dose
Atropine D: 0.02mg/kg IV/IO C: 0.1mg/ml Max = adult dose	5.0ml
Calcium Chloride D: 20mg/kg IV/IO C: 100mg/ml Max = adult dose	9.0ml
D10 (Infusion) D: 5ml/kg IV/IO Max = adult dose	100ml
Diphenhydramine (Diluted) D: 1mg/kg IV/IO C: 5mg/ml	9.0ml
Diphenhydramine (Not Diluted) D: 1mg/kg IM Conc: 50mg/ml	1.0ml
Epinephrine 1:10,000 D: 0.01mg/kg IV/IO C: 0.1mg/ml	4.5ml
Epinephrine 1:1000 **Anaphylaxis IM** D: 0.01mg/kg C: 1mg/ml Max = adult dose	0.3ml IM
Etomidate IV/IO C: 2mg/ml D: RSI 0.3mg/kg D: Sedation: 0.15 mg/kg	RSI 6.6ml Sedation 3.5ml
Fentanyl IV/IO (Diluted) D: 1mcg/kg C: 10mcg/ml Max = adult dose	4.5ml

Medications (ml) D: Dose C: Conc.	Green 45 KG
Fentanyl (Intranasal/IM) 1.5mcg/kg IN/IM C: 50mcg/ml	1.35ml
Ketamine (Diluted) D: 1mg/kg IV/IO/IM C: 10mg/ml Max = adult dose	4.5ml
Magnesium Sulfate D:40mg/kg IV/IO C: 1gm/2ml (Asthma or Torsades)	3.6ml With 50ml D5W for infusion
Narcan D: 0.1mg/kg IV C: 1mg/ml Max = adult dose	0.5ml IV 1.0ml IN
Normal Saline (Fluid Resuscitation) Repeat @ 5 min.	500ml Repeat x 1
Sodium Bicarb 4.2% (Diluted) D: 1meq/kg IV/IO C: 0.5meq/ml	Use 8.4% See Below
Sodium Bicarb 8.4% D: 1meq/Kg IV/IO C: 1meq/ml Max = adult dose	45ml
Solumedrol D: 2mg/kg C: 62.5mg/ml	1.5ml
Tranexamic Acid (TXA) D: 15mg/kg IV/IO C: 100mg/ml Max = adult dose	6.75ml
Versed IV/IO D: 0.1mg/kg C: 5mg/ml **IN/IM Dose →**	0.8ml _____ **1.0ml**
Zofran D: 0.1mg/kg IM or Slow IV/IO C: 4mg/2ml Max = adult dose	2.0ml

Equipment	
Oral Airway	90mm
Nasopharyngeal Airway	28FR
IO	Blue
I-Gel	3.0
Res-Q-Pod	Yes
Endotracheal Intubation	6.0 C
Electrical Therapies (Stryker) *Use Adult Combo Pads*	
Cardioversion First Dose Second Dose	 50 Joules 100 Joules
Defibrillation First Dose Second Dose Additional Dose	 100 Joules 200 Joules 250 Joules

Normal Vital Signs	
Pulse (BPM)*	74-118
Systolic BP (mmHG)	96-116
Diastolic BP (mmHG)	56-76
Respiration (BPM)	18-26

Reference: PALS Guidelines, 2015
http://pediatrics.aappublications.org/content/early/2017/08/21/peds.2017-1904

Medication Tool

Length/Age-Based Tape Medication Tool

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Medications (ml) D: Dose C: Conc.	Green 55 KG
Adenosine IV D: 0.1/0.2mg/kg C: 3mg/ml Max = adult dose	1.8ml Repeat @ 3.6ml
Amiodarone (Bolus) D: 5mg/kg IV C: 50mg/ml Max = adult dose Infusion (with 50ml D5W)	Cardiac Arrest 5.5ml Same Dose
Atropine D: 0.02mg/kg IV/IO C: 0.1mg/ml Max = adult dose	5.0ml
Calcium Chloride D: 20mg/kg IV/IO C: 100mg/ml Max = adult dose	10ml
D10 (Infusion) D: 5ml/kg IV/IO Max = adult dose	100ml
Diphenhydramine (Diluted) D: 1mg/kg IV/IO C: 5mg/ml	10ml
Diphenhydramine (Not Diluted) D: 1mg/kg IM Conc: 50mg/ml	1.0ml
Epinephrine 1:10,000 D: 0.01mg/kg IV/IO C: 0.1mg/ml	5.5ml
Epinephrine 1:1000 **Anaphylaxis IM ONLY** D: 0.01mg/kg C: 1mg/ml Max = adult dose	0.3ml
Etomidate IV/IO C: 2mg/ml D: RSI 0.3mg/kg D: Sedation: 0.15 mg/kg	RSI 8.0ml Sedation 4.0ml
Fentanyl IV/IO (Diluted) D: 1mcg/kg C: 10mcg/ml Max = adult dose	5.5ml

Medications (ml) D: Dose C: Conc.	Green 55 KG
Fentanyl (Intranasal/IM) 1.5mcg/kg IN/IM C: 50mcg/ml	1.65ml
Ketamine (Diluted) D: 1mg/kg IV/IO/IM C: 10mg/ml Max = adult dose	5.5ml
Magnesium Sulfate D:40mg/kg IV/IO C: 1gm/2ml (Asthma or Torsades)	4.0ml With 50ml D5W for infusion
Narcan D: 0.1mg/kg IV C: 1mg/ml Max = adult dose	0.5ml IV 1.0ml IN
Normal Saline (Fluid Resuscitation) Repeat @ 5 min.	500ml Repeat x 1
Sodium Bicarb 4.2% (Diluted) D: 1meq/kg IV/IO C: 0.5meq/ml	Use 8.4% See Below
Sodium Bicarb 8.4% D: 1meq/Kg IV/IO C: 1meq/ml Max = adult dose	50ml
Solumedrol D: 2mg/kg C: 62.5mg/ml	2.0ml
Tranexamic Acid (TXA) D: 15mg/kg IV/IO C: 100mg/ml Max = adult dose	8.0ml
Versed IV/IO D: 0.1mg/kg C: 5mg/ml **IN/IM Dose →**	1.0ml _____ **1.0ml**
Zofran D: 0.1mg/kg IM or Slow IV/IO C: 4mg/2ml Max = adult dose	2.0ml

Equipment	
Oral Airway	90mm
Nasopharyngeal Airway	28FR
IO	Blue
I-Gel	3.0-4.0
Res-Q-Pod	Yes
Endotracheal Intubation	6.0-7.0 C
Electrical Therapies (Stryker) *Use Adult Combo Pads*	
Cardioversion First Dose Second Dose	 70 Joules 150 Joules
Defibrillation First Dose Second Dose Additional Dose	 150 Joules 225 Joules 300 Joules

Normal Vital Signs	
Pulse (BPM)*	74-118
Systolic BP (mmHG)	96-116
Diastolic BP (mmHG)	56-76
Respiration (BPM)	18-26

Reference: PALS Guidelines, 2015
http://pediatrics.aappublications.org/content/early/2017/08/21/peds.2017-1904

Infusion Table

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ADULT INFUSIONS		
AMIODARONE (Cardarone®)	**MIXTURE:**	**INFUSION RATES:**
Atrial Fibrillation (or WPW) or Wide Complex VT (Stable)	150mg within 50ml D5W	10gtts/ml (macro) set Give 50gtts/min to achieve 50ml over 10 min.
MAGNESIUM SULFATE	**MIXTURE:**	**INFUSION RATES:**
Torsades or Refractory V-Fib ---------- Conversion? YES	2g within 50ml D5W ---------- 1g within 250ml Normal Saline	10gtts/ml (macro) set – WIDE OPEN ---------- 60gtts/ml (**micro**) set – 60gtts/min.
Respiratory Distress - Asthma	2g within 50ml D5W	10gtts/ml (macro) set Give 50gtts/min to achieve 50ml over 10 min.
Preeclampsia And Eclamptic Seizures	4g within 50ml D5W Repeat (1) Time @ 2g within 50ml D5W	10gtts/ml (macro) set Give 2gtts/sec to achieve 50ml over 4 min.
TRANEXAMIC ACID (TXA)	**MIXTURE:**	**INFUSION RATES:**
Traumatic Hemorrhagic Shock or Traumatic Brain Injury (TBI)	2g within 50ml D5W	10gtts/ml (macro) set – WIDE OPEN

PEDIATRIC INFUSIONS		
AMIODARONE (Cardarone®)	**MIXTURE:**	**INFUSION RATES:**
Wide Complex VT (Stable)	#ml (per Med Tool) in 50ml D5W 5mg/kg within 50ml D5W Max Dose 150mg	10gtts/ml (macro) set Give 20gtts/min to achieve 50ml over 25 min. (1gtt every 3 seconds)
MAGNESIUM SULFATE	**MIXTURE:**	**INFUSION RATES:**
Torsades or Refractory V-Fib	#ml (per Med Tool) in 50ml D5W 40mg/kg within 50ml D5W Max Dose 2g	10gtts/ml (macro) set Give 50gtts/min to achieve 50ml over 10 min.
Respiratory Distress - Asthma	#ml (per Med Tool) in 50ml D5W 40mg/kg within 50ml D5W Max Dose 2g	10gtts/ml (macro) set Give 20gtts/min to achieve 50ml over 25 min. (1gtt every 3 seconds)
TRANEXAMIC ACID (TXA)	**MIXTURE:**	**INFUSION RATES:**
Traumatic Hemorrhagic Shock or Traumatic Brain Injury (TBI)	#ml (per Med Tool) in 50ml D5W 40mg/kg within 50ml D5W Max Dose 2g	10gtts/ml (macro) set – WIDE OPEN

Pediatric Vital Signs Reference Chart

R-6
Published: 3/1/2021
Reviewed:
Updated: 1/15/2024
Referenced: None

Heart Rate (beats/min)		
Age	**Awake**	**Asleep**
Neonate (<28 d)	100-205	90-160
Infant (1-12 mos)	100-190	
Toddler (1-2 y)	98-140	80-120
Preschool (3-5 y)	80-120	65-100
School-age (6-11 y)	75-118	58-90
Adolescent (12-15 y)	60-100	50-90

Respiratory Rate (breaths/min)	
Age	**Normal**
Infant (<1 y)	30-53
Toddler (1-2 y)	22-37
Preschool (3-5 y)	20-28
School-age (6-11 y)	18-25
Adolescent (12-15 y)	12-20

Reference: PALS Guidelines, 2015 (Confirmed in 2020 Update)

Blood Pressure (mmHg)				
Age		**Systolic**	**Diastolic**	**Systolic Hypotension**
Birth (12 h)	<1 kg	39-59	16-36	<40-50
	3 kg	60-76	31-45	<50
Neonate (96 h)		67-84	35-53	<60
Infant (1-12 mos)		72-104	37-56	<70
Toddler (1-2 y)		86-106	42-63	<70 + (age in years × 2)
Preschool (3-5 y)		89-112	46-72	
School-age (6-9 y)		97-115	57-76	
Preadolescent (10-11 y)		102-120	61-80	<90
Adolescent (12-15 y)		110-131	64-83	

Reference: PALS Guidelines, 2015 (Confirmed in 2020 Update)
http://pediatrics.aappublications.org/content/early/2017/08/21/peds.2017-1904

Temperature (°C)	
Method	**Normal**
Rectal	36.6-38.0
Tympanic	35.8-38.0
Oral	35.5-37.5
Axillary	36.5-37.5

Ranges do not vary with age.
Screening: axillary, temporal, tympanic (↓ accuracy)
Definitive: rectal & oral (↑ reflection of core temp.)
Reference: CPS Position Statement on Temperature Measurement in Pediatrics (2015)

Oxygen Saturation (SpO_2)

SpO_2 is lower in the immediate newborn period. Beyond this period, a SpO_2 of **<90-92%** may suggest a **respiratory condition** or **cyanotic heart disease**.

Uniform Trauma Transport Protocols

I. COMMUNICATION (DISPATCH) CENTER PROCEDURE

A. All EMS systems utilize the E911-phone system in conjunction with Computer Aided Dispatch (CAD) and Emergency Medical Dispatch programs. The call taker confirms all emergency information, including address and callback data prior to the end of the telephone conversation; immediately transmits the emergency call request to the nearest available Fire-Rescue unit(s) for response; and provides all unit(s) with all available information concerning the incident.

B. Call taker personnel/dispatchers shall make every attempt to obtain the following information from the 911 caller:
   1. Nature of the emergency;
   2. Location of the incident;
   3. Call back number;
   4. Number of patients;
   5. Severity of the illness/injury;
   6. Name of the caller.

C. Broward County operates a consolidated communications system, encompassing all but three self-dispatched fire rescue agencies. Should on scene personnel recognize a need for other emergency agencies (e.g. law enforcement, fire, EMS, Coast Guard), they shall notify Dispatch immediately. On scene personnel must identify the type of additional equipment/staffing needed/required. The communications center shall contact the appropriate services (mutual aid/automatic aid).

II. ON SCENE PROCEDURE - Ground

A. Upon arrival at the scene, EMS personnel shall conduct a size up of the scene, to include, but not limited to, Trauma Alert Criteria (Section IV), safe entry, severity, and number of patients, the need for extrication, and the need for additional help. Dispatch and the nearest appropriate trauma center will be notified, as soon as possible, of "Trauma Alert" patient(s). Dispatchers shall immediately transfer this information, using the words "Trauma Alert" to the supervisor on duty.

B. EMS personnel shall transport patient(s) to the nearest appropriate trauma center (catchment area identified in the Broward County Trauma Plan). If the nearest appropriate Trauma Center is outside of the Trauma Agency's geographical boundaries, the Trauma Alert patient will be transported to the nearest appropriate facility.

C. EMS personnel shall submit the treatment data for each trauma patient to the trauma center as required in 64J-1.014, F.A.C. and their respective agency.

III. TRANSPORT PROCEDURE (Rescue Helicopter)

Three steps to follow when Broward Sheriff's Office, Dept. of Fire Rescue's (BSODFR) Helicopter is used for rapid transport of the trauma patient. ***The first two*** *are directed toward the safety of the helicopter pilot and crew, ground personnel, patient, and bystanders; and the* ***third*** *is to establish operational guidelines as to when and/or if the helicopter may be used to transport these patients.*

A. Severe weather at scene, helicopter hanger, landing zone (LZ), or Trauma Center reduces the use of the Rescue Helicopter.

B. Safety considerations for landing zone (if any of 4 below, use ground transport or **move** the landing zone):
   1. Power lines around landing zone;
   2. Trees, signs, poles, or other obstacles in immediate landing area;
   3. Pedestrians and large gatherings of civilians in the area;
   4. An expectation that the area may not remain safe.

C. Rescue helicopter may be used if:
   1. Transport driving time to the appropriate Trauma Center the patient is farther away than twenty (20) minutes;
   2. Ground transportation is not available and is not expected to be available within a reasonable time;
   3. The helicopter is needed to gain access to a patient for transport from an inaccessible area;
   4. Extrication time greater than fifteen (15) minutes.

D. Operational Guidelines by ground EMS crews for Rescue helicopter use:

1. Secure a TAC radio channel through the County's dispatch center and keep open until Helicopter has left scene.
2. Ground Crew **PRE-ALERT** Trauma Center.
3. Start County Unified Trauma Telemetry Report (**CUTT REPORT**) or respective agency's modified patient treatment form.
4. Airway - advise Air Crew on airway status and if airway assistance or **RSI** (Rapid Sequence Intubation) is required.

   NOTE: (for pediatric patients only) if using the landing pad at Broward Health North Medical Center and crew feels that the patient requires immediate attention, advise helicopter crew that the patient will be seen by the Trauma Services physicians prior to transport to pediatric trauma center (BHMC or Memorial)
5. Begin Packaging Patient (remove shoes and clothes from vital areas). Advise Air Crew of the weight of the patient.
6. Have a minimum of three (3) unobstructed lanes of traffic for roadway landings whenever possible.
7. Pilot may require traffic stopped in both directions.
8. Landing Zone units must remain at their post until helicopter has left the scene.
9. Headlights should be turned off at night.
10. Only clear landing zone upon direction of Air Rescue crew and law enforcement on scene.

IV TRAUMA ALERT CRITERIA

The following guidelines are to be used to establish the criteria for a "Trauma Alert" patient and determine which patient(s) will be transported to a trauma center. Any patient that meets any **one** of the "RED" criteria or any two "BLUE" criterion will be considered a trauma alert.

A. ADULT TRAUMA SCORECARD METHODOLOGY

1. Each EMS provider shall ensure that upon arrival at the location of an incident, EMS personnel shall:
   a. Assess the condition of each adult trauma patient using the adult trauma scorecard methodology, as provided in this section to determine whether the patient should be a trauma alert.
   b. In assessing the condition of each adult trauma patient, the EMS personnel shall evaluate the patient's status for each of the following components: airway, circulation, best motor response (i.e., Glasgow Coma Scale), cutaneous, long bone fracture, patient's age, and mechanism of injury. The patient's age and mechanism of injury (i.e., ejection from a vehicle or deformed steering wheel) shall only be assessment factors when used in conjunction with assessment criteria included in # 3 **(Level 2)** of this section. (NOTE: Glasgow Coma Scale included for quick reference.)

2. EMS personnel shall assess all adult trauma patients using the following "RED" criteria in the order presented and if **any one** of the following conditions is identified, the patient shall be considered a trauma alert.

   a. AIRWAY: Active ventilation assistance required due to injury(ies) causing ineffective or labored breathing beyond the administration of oxygen.

   b. CIRCULATION: Patient lacks a radial pulse with a sustained heart rate greater than or equal to 120 beats per minute or has a blood pressure of less than 90mmHg systolic.

   c. LONGBONE FRACTURE: Patient reveals signs or symptoms of two or more long bone fractures sites (humerus, radius/ulna, femur, or tibia/fibula).

   d. CUTANEOUS: 2nd or 3rd degree burns to 15 percent or greater of the total body surface area; electrical burns (high voltage/direct lightning) regardless of surface area calculations; an amputation proximal to the wrist or ankle; any penetrating injury to the head, neck, or torso (excluding superficial wounds where the depth of the wound can be determined).

   e. BEST MOTOR RESPONSE (BMR): Patient exhibits a score of 4 or less on the motor assessment component of the Glasgow Coma Scale; exhibits the presence of paralysis; suspicion of a spinal cord injury; or the loss of sensation.

   f. MISC.:

      - PARAMEDIC JUDGEMENT- If none of the conditions are identified using the criteria above during the assessment of the adult trauma patient, the paramedic can call a trauma alert if, in his or her judgment, the patient's condition warrants such action.
      - GLASGOW COMA SCORE- 12 or less

3. Should the patient not be identified as a trauma alert using the "RED" criterion listed in #2 of this section, the trauma patient shall be further assessed using the "BLUE" criteria in this section and shall be considered a **trauma alert** patient when a condition is identified from **any two** of the seven components included in this section.
   a. **AIRWAY:** Respiratory rate of 30 or greater.
   b. **CIRCULATION:** Sustained heart rate of 120 beats per minute or greater.
   c. **LONGBONE FRACTURE:** Patient reveals signs or symptoms of a single long bone fracture resulting from a motor vehicle collision or a fall from an elevation of 10 feet or greater.
   d. **CUTANEOUS:** Soft tissue loss from either a major degloving injury; or major flap avulsion greater than 5 inches; or has sustained a gunshot wound to the extremities of the body.
   e. **BEST MOTOR RESPONSE (BMR):** BMR of 5 on the motor component of the Glasgow Coma Scale.
   f. **MECHANISM OF INJURY:** Patient has been ejected from a motor vehicle, (excluding any motorcycle, moped, all-terrain vehicle, bicycle or the open body of a pick-up truck), or the driver of the motor vehicle has impacted with the steering wheel causing steering wheel deformity.
   g. **AGE:** Anticoagulated Older Adult >55
   h. **MISC.:** Blunt Abdominal Injury

4. If the patient is not identified as a trauma alert after evaluation using the criteria in sections 2 or 3 above, the trauma patient will be evaluated using all elements of the Glasgow Coma Scale. If the score is **12 or less**, the patient shall be considered a trauma alert (excluding patients whose normal Glasgow Coma Scale Score is 12 or less, as established by medical history or pre-existing medical condition when known).

5. Where additional trauma alert criteria have been approved by the EMS service's medical director and approved for use in conjunction with Broward County Trauma Alert Criteria as the basis for calling a trauma alert shall be documented as required in section 64J-1.014, F.A.C. of the patient care record. Such local trauma assessment criteria can only be applied after the patient has been assessed as provided in sections #2, #3, and #4 above of the Adult Trauma Alert Criteria.

6. If paramedic judgment is used as the basis for calling a trauma alert, it shall be documented on all patient data records as required in section 64J-1.014, F.A.C.

7. The results of the patient assessment shall be recorded and reported on all patient data records in accordance with the requirements of section 64J-1.014, F.A.C.

Patients found to meet Trauma Alert criteria upon arrival or after arrival at a non-trauma center will be expeditiously transferred to the appropriate trauma center. (See Section V.)

B. PEDIATRIC TRAUMA SCORECARD METHODOLOGY

Pediatric patients are those persons age 15 or younger and will be transported to the nearest appropriate Pediatric Trauma Center.

1. EMS personnel shall assess all pediatric trauma patients using the following "RED" criteria and if **any** of the following conditions are identified, the patient shall be considered a pediatric trauma alert:
   a. AIRWAY: Active ventilation assistance required due to injury(ies) causing ineffective or labored breathing beyond the administration of oxygen.
   b. CONSCIOUSNESS: Patient exhibits an altered mental status that includes drowsiness; lethargy; inability to follow commands; unresponsiveness to voice or painful stimuli; or suspicion of a spinal cord injury with/without the presence of paralysis or loss of sensation (can include reliable history of loss of consciousness).

c. **CIRCULATION:** Faint or non-palpable carotid or femoral pulse or the patient has a systolic blood pressure of less than 50 mmHg.

d. **FRACTURE:** Evidence of an open long bone (humerus, radius/ulna, femur, or tibia/fibula) fracture or there are multiple fracture sites or multiple dislocations (except for isolated wrist or ankle fractures or dislocations).

e. **CUTANEOUS:** Major soft tissue disruption, including major degloving injury; or major flap avulsions; or 2nd or 3rd degree burns to 10 percent or more of the total body surface area; electrical burns (high voltage/direct lightning) regardless of surface area calculations; or amputation proximal to the wrist or ankle; or any penetrating injury to the head, neck or torso (excluding superficial wounds where the depth of the wound can be determined).

f. **PARAMEDIC JUDGEMENT:** If none of the conditions are identified using the criteria above during the assessment of the pediatric trauma patient, the paramedic can call a trauma alert if, in his or her judgment, the patient's condition warrants such action.

2. In addition to the criteria listed above in (1) of this section, a pediatric trauma alert shall be called when **"Blue"** criteria are identified from **any two** of the components included below:

a. **CONSCIOUSNESS:** Exhibits symptoms of amnesia, or there is loss of consciousness.

b. **CIRCULATION:** Carotid or femoral pulse is palpable, but the radial or pedal pulses are not palpable or the systolic blood pressure is less than 90 mmHg.

c. **FRACTURE:** Reveals signs or symptoms of a single closed long bone fracture. *Long bone fractures do not include isolated wrist or ankle fractures.*

d. **MISC.:** Blunt Abdominal Injury

e. **SIZE:** Pediatric trauma patients weighing 11 kilograms or less, or the body length is equivalent to this weight on a pediatric length and weight emergency tape (the equivalent of 33 inches in measurement or less).

3. In the event paramedic judgment is used as the basis for calling a **Trauma Alert**, it shall be documented as required in the 64J-1.014 F.A.C., on the patient care report and the County Unified Trauma Telemetry Report (CUTT), if used.

C. LEVEL 2 TRAUMA PATIENTS:(ADULTANDPEDIATRIC)

Persons who sustain injury with any of the following Mechanisms of Injury shall be classified as a Level 2 Trauma

1. Falls > 12 feet (adults); falls > 6 feet (pediatrics);
2. Extrication time > 15 minutes;
3. Rollover motor vehicle crash;
4. Burns involving the face, eyes, ears, hands, feet, or perineum that may result in functional or cosmetic impairment:
5. Death of occupant in the same passenger compartment;
6. Major intrusion into passenger compartment;
7. Separation from a bicycle;
8. Pedestrian struck by vehicles not meeting the preceding automatic criteria (i.e. adults < 15 mph and pediatrics < 5 mph);
9. Any height fall adult age >55 on anticoagulant/antiplatelet medication;
10. Paramedic judgment.

V. TRANSFER PROCEDURES FOR EMERGENCY INTER-HOSPITAL TRAUMA TRANSFERS

Any hospital in Broward County may transfer a patient meeting **"Trauma Alert"** criteria by:

A. Calling 911 and reporting a **Trauma Alert** in their Emergency Department. This call will automatically initiate a response from the local EMS rescue agency.

B. Calling the closest Trauma Center (adult vs. pediatric) and advising the trauma section of the Trauma Alert completes the initiation of the transfer. This call should be from the sending emergency department physician to the receiving trauma surgeon.

C. The Fire-Rescue/EMS Provider that is responsible for the area where the sending hospital is located, shall respond to the emergency department and transport the patient to the nearest trauma center as identified by the sending hospital.

D. At the start of the transport, the Fire Rescue/EMS Provider shall notify the receiving trauma center that the unit is enroute to their facility and provide the trauma center with an estimated time of arrival.

VI. GLASGOW COMA SCALE SCORING

The Glasgow Coma Score (GCS) measures cognitive abilities. It is composed of three parameters, (eye, verbal, and motor responses) and uses numerical scoring to assist in the correlation of brain injury. Those scores are as follows:

Adult GCS:

Best Eye Response:

1. No eye opening;
2. Eye opening to pain;
3. Eye opening to verbal command;
4. Eyes open spontaneously.

Best Verbal Response:

1. No verbal response;
2. Incomprehensible sounds;
3. Inappropriate words;
4. Confused;
5. Oriented.

Best Motor Response:

1. No motor response;
2. Extension to pain;
3. Flexion to pain;
4. Withdrawal from pain;
5. Localizing pain;
6. Obeys commands.

*A GCS score is between **3** and **15**, **3 being the worst and 15 the best**. A Coma score of 13 or higher correlates with a mild brain injury; 9 to 12 is a moderate injury, and 8 or less a severe brain injury. (Note a phrase "GCS of 11" is essentially meaningless, and it is important to break the figure down into its components, such as eye 3+ verbal 3 + motor 5 = GCS 11)*

Pediatric GCS:

Eye Opening	<1 Year	>1 Year	
4	Spontaneously	Spontaneously	
3	To verbal command	To verbal command	
2	To pain	To pain	
1	No response	No response	
Motor Response	**<1 Year**	**>1 Year**	
6		Obeys	
5	Localizes pain	Localizes pain	
4	Flexion – normal	Flexion – withdrawal	
3	Flexion – abnormal (decorticate rigidity)	Flexion – abnormal (decorticate rigidity)	
2	Extension (decerebrate rigidity)	Extension (decerebrate rigidity)	
1	No response	No response	
Verbal Response	**0-23 Months**	**<2-5 Years**	**>5 Years**
5	Smiles, coos, cries appropriately	Appropriate words and phrases	Oriented and converses
4	Cries	Inappropriate words	Disoriented and converses
3	Inappropriate crying and/or screaming	Cries and/or screams	Inappropriate words
2	Grunts	Grunts	Incomprehensible
1	No response	No response	No response

*A GCS score is between **3** and **15**, **3 being the worst and 15 the best**. A Coma score of 13 or higher correlates with a mild brain injury; 9 to 12 is a moderate injury, and 8 or less a severe brain injury. (Note a phrase "GCS of 11" is essentially meaningless, and it is important to break the figure down into its components, such as eye 3 + verbal 3 + motor 5 = GCS 11)*

VII. DESIGNATED FACILITIES

Trauma Alert patients will be transported to the nearest appropriate trauma center. If the nearest appropriate Trauma Center is outside of the Trauma Agency's geographical boundaries, the Trauma Alert patient will be transported to the nearest appropriate facility. Should this Trauma Center be temporarily unable to provide adequate trauma care, the patient will be transported to the next closest Trauma Center.

Listed below are the Trauma Centers located in Broward County:

Broward Health North Medical Center
201 E. Sample Road
Deerfield Beach, Florida 33064

Broward Health Medical Center
1600 S. Andrews Avenue
Fort Lauderdale, Florida 33316

Memorial Regional Hospital
3501 Johnson Street
Hollywood, Florida 33021

Listed below are the Pediatric Trauma Centers located in Broward County:

Broward Health Medical Center
1600 S. Andrews Avenue
Fort Lauderdale, Florida 33316

Memorial Regional Hospital
3501 Johnson Street
Hollywood, Florida 33021

VIII. RUN REPORTS

The Fire Rescue/EMS provider issuing the **"Trauma Alert"** shall provide the trauma center (Adult or Pediatric) with information required under section 64J-2.002(5), F.A.C., as well as ensuring the timely delivery of a copy of the Patient Care Run report. In addition, the EMS crew will complete the County Unified Trauma Telemetry (CUTT) Report for rapid transfer of patient information to Air Rescue and leave a copy of this report with the trauma center staff if utilized by respective EMS agency. (See attached.)

IX. TRANSPORT DEVIATION

- ***Any deviation from these Trauma Transport Protocols must be documented and justified on the patient-care incident report.***

Pre-hospital providers covered under these Uniform Trauma Transport Protocols are:

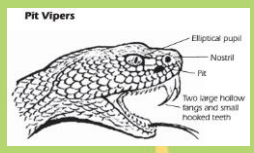
American Ambulance Service	American Medical Response
Broward Sheriff's Office Fire Rescue	Century Ambulance Service
Coral Springs Fire Rescue	Davie Fire Rescue
Fort Lauderdale Fire Rescue	Hallandale Beach Fire Rescue
Hollywood Fire Rescue	Lauderhill Fire Rescue
Lighthouse Point Fire Rescue	Margate Fire Rescue
Miramar Fire Rescue	National Health Transport
North Lauderdale Fire Rescue	Oakland Park Fire Rescue
Pembroke Pines Fire Rescue	Plantation Fire Rescue
Pompano Beach Fire Rescue	Seminole Tribe Fire Rescue
Sunrise Fire Rescue	Tamarac Fire Rescue
Tri-County Ambulance Service	

VIII. RUN REPORTS

The Fire Rescue/EMS provider issuing the **"Trauma Alert"** shall provide the trauma center (Adult or Pediatric) with information required under section 64J-2.002(5), F.A.C., as well as ensuring the timely delivery of a copy of the Patient Care Run report. In addition, the EMS crew will complete the County Unified Trauma Telemetry (CUTT) Report for rapid transfer of patient information to Air Rescue and leave a copy of this report with the trauma center staff if utilized by respective EMS agency. (See attached.)

Venomous Snakes of Florida Guide

R-8
Published:
Reviewed:
Updated: 10/6/23



Pit Vipers

(Crotalidae): Hemotoxic - Venom causes severe pain, swelling, and bleeding.

Eastern Diamondback Rattlesnake (Crotalus adamanteus)

- Found statewide in both dry and wet habitats.
- Largest venomous snake in the United States, with an average length of 5 feet and a maximum of more than 7 feet.
- Heavy-bodied with light to dark brown color, distinct diamond pattern on back, and rattle at end of tail.
- Considered to be the most dangerous snake due to its size.

Pigmy Rattlesnake (Sistrurus miliarius)

- Abundantly found statewide in wooded habitats, but occasionally found in marshes.
- Average length is 1 to 1-1/2 feet, and because of its small size, the "buzz" of the rattle might be difficult to hear.
- Gray in color, with dark gray or brown blotches and red highlight from head to tail.
- Due to its defensive behavior, this snake is a frequent offender.

Cottonmouth/Water Moccasin (Agkistrodon piscivorus)

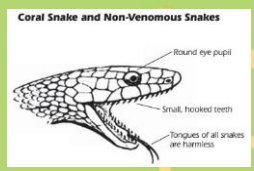
- Found statewide near bodies of water.
- Average adult length: 3 to 4 feet.
- Colors vary from black to gray to brown with dark brown markings on its heavy body.
- Distinctive patterns appear on juveniles.
- Known for holding its ground, and when disturbed, will often give an "open mouth display."

Copperhead (Agkistrodon contortrix)

- Found in northern Florida in wooded areas and swampy highlands.
- Average adult length: 2 to 3 feet.
- Light brown with dark brown to red-brown saddle-shaped cross bands.
- Easily blends into surroundings due to its unique camouflage ability.

Canebrake Rattlesnake (Crotalus horridus)

- Found in northern Florida in dry wooded areas.
- Average length: 3 to 4 feet.
- Heavy-bodied tan snake with black cross bands and black tail with rattle.
- Southern subspecies of the Timber Rattlesnake.



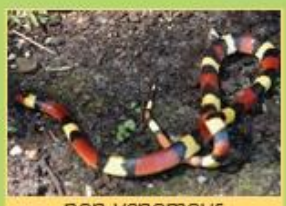
Coral Snakes

(Elapidae): Neurotoxic - Venom causes minor pain, swelling and discoloration. Stroke-like symptoms, slurred speech and difficulty breathing may occur hours later.

Coral Snake (Micrurus fulvius)

- Found statewide.
- Average length: 2 to 3 feet.
- Colorful red, yellow and black, thin-bodied snake.
- Often confused with the non-venomous Scarlet King Snake.

Can be identified by the rhyme "Red touches yellow, kills a fellow. Red touches black, venom lack."



non-venomous
Scarlet King Snake

Protocol Changes

Protocol Changes

LAST UPDATED: 3/16/2022

1. **ME-9: Hypertension Protocol Changed on 3/9/2021.** Removal of old/changed protocol from this section scheduled for 6/9/2021.

2. **AR-1: Adult Airway Protocol Discontinued on 4/1/2021.** Removal of old/changed protocol from this section scheduled for 7/1/2021.

3. **AR-2: Adult Airway-Failed Protocol Discontinued on 4/1/2021.** Protocol consolidated with Adult Airway Protocol. Removal of old/changed protocol from this section scheduled for 7/1/2021.

4. **ME-2: Allergic Reaction Protocol Changed on 4/1/2021.** Removal of old/changed protocol from this section scheduled for 7/1/2021.

5. **AR-3: Pulmonary Edema (CHF) Protocol Changed on 4/1/2021.** Removal of old/changed protocol from this section scheduled for 7/1/2021.

6. **AR-4: Respiratory Distress Protocol Changed on 4/1/2021.** Removal of old/changed protocol from this section scheduled for 7/1/2021.

7. **AP-13: Continuous Positive Airway Pressure (CPAP) Changed on 4/1/2021.** Removal of old/changed procedure page from this section scheduled for 7/1/2021.

8. **ME-5: Diabetic Emergencies Changed on 5/13/2021.** Removal of old/changed protocol from this section scheduled for 8/13/2021.

9. **TC-9: Spinal Motion Restriction Changed on 5/13/2021.** Removal of old/changed protocol from this section scheduled for 8/13/2021.