

2019

Ashwaubenon Public Safety & De Pere Fire Rescue



EMS Protocols

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AMPUTATED/AVULSED PARTS

Amputated or avulsed parts should be wrapped in dry gauze or Kling, placed in a sealed plastic bag or wrapped in plastic and kept cool by placing on ice or a cold pack and transported with the patient to the hospital.

PROTECTION AGAINST BLOODBORNE AND AIRBORNE PATHOGENS

All EMS providers are required to have an exposure plan in place and are expected to adhere to it. Any indications of exposure or potential exposure refer to the department SOP or SOG. Some general guidelines are listed below.

- Heavy duty leather gloves should be worn during extrication procedures to protect your hands against cuts and scratches that could become contaminated with a patient's blood or body fluids.
- Exam or surgical gloves should be worn at all times when in contact with bleeding or draining wounds, starting IV's or childbirth situations.
- In situations where blood or body fluids could be splashed into the mouth a surgical mask should be worn.
- Eye protection should be worn in those situations (tracheal intubation, suctioning, and ventilation with a demand-valve) where blood or body fluids could be splashed into the eye.
- IV cannulas, SQ and IM needles should not be recapped. A heavy plastic container should be present in the ambulance for disposal of contaminated needles and other sharps. The contaminated material should be properly disposed of at the hospital.
- Approved ventilation devices (pocket-mask, bag-mask or demand-valve) should be immediately available and used in preference to mouth-to-mouth resuscitation.
- High efficiency particulate air (HEPA) respirators must be worn at all times when in close contact with an individual with known or suspected TB.
- An alcohol-based foam or liquid hand cleanser should be available in the ambulance to clean hands. Any cuts or abrasions to your hands should be covered with Band-Aids.
- Vehicle interior, cot surfaces and equipment (i.e. PASG) should be adequately cleaned and disinfected with an approved solution.
- Significant exposure forms are available in the emergency departments and should be completed for all parenteral and mucocutaneous exposure to blood and body fluids at the patient's receiving hospital. Exposure forms for airborne pathogens will also be made available. HIV prophylaxis for significant exposures should be considered, and should be discussed with the Medical Control physician immediately after such an exposure.

CHILD, SPOUSE, ELDER ABUSE/NEGLECT

Child Abuse is the physical, sexual, or emotional maltreatment of a child by a parent, family member, other caregiver, or non-caregiver.

- Emotional abuse is defined as emotional damage for which the child's parent, guardian or legal custodian has neglected, refused or been unable, for reasons other than poverty, to obtain the necessary treatment or to take steps to ameliorate the symptoms.
- Physical abuse is the physical injury inflicted on a child by other than accidental means. Physical injury includes but is not limited to lacerations, fractured bones, burns, internal injuries, severe or frequent bruising or great bodily harm as defined under Wisconsin statute s.939.22 (14).

Child Neglect is the failure, refusal or inability on the part of the parent, guardian, legal custodian or other person exercising temporary or permanent control over a child, for reasons other than poverty, to provide necessary care, food, clothing, medical or dental care or shelter so as to seriously endanger the physical health of the child.

All suspected or actual cases of child abuse must be reported to police and/or Brown County Protective Services by all levels of health care providers under Wisconsin Statute Chapter 48.981. In addition spousal or elder abuse should be similarly handled, although not mandatory reportable. The primary objective of pre-hospital care is transport of the victim to the hospital.

Nothing should be said or done at the scene to arouse suspicions and prevent transport. A report should be made to the medical control physician on arrival at the hospital. If transport is refused in cases of abuse, the nearest police agency should be contacted for assistance.

DO NOT RESUSCITATE (DNR)

Purpose: To accurately identify patients who may not want life sustaining treatment initiated, and delineate the appropriate treatments to provide in this setting.

Indications: A valid pre-hospital DNR order in the Brown County EMS system is limited to the following:

1. A valid state DNR Bracelet or Necklace (Plastic or Metal)
2. A signed standardized state DNR form (Nursing homes, CBRF, Hospice)
3. Direct verbal order from the patient's primary care physician (in person or via phone)
4. A written, signed notation by the patient's primary care physician on the patient's record in a nursing home or extended care facility

Contra-indications: The following conditions invalidate a DNR order:

1. The patient expresses to any First Responder, EMT, Paramedic or health care provider the desire to be resuscitated. If this is done, the provider shall remove the DNR Bracelet.
2. The patient defaces, burns, cuts or otherwise destroys the DNR Bracelet.
3. The patient (or another individual at the patient's request) removes the DNR Bracelet.
4. The DNR bracelet appears to have been tampered with or removed.
5. Any Healthcare provider knows the patient to be pregnant.

Emergency Responders will/ can provide the following:

- Clear airway
- Control bleeding
- Administer oxygen
- Provide pain medication
- Position for comfort
- Provide emotional support
- Splint

Emergency Responders will **NOT** provide the following:

- Perform chest compressions
- Insert Advanced Airways
- Administer cardiac resuscitation drugs
- Provide ventilatory assistance
- Defibrillate

DO NOT RESUSCITATE (DNR) Cont.

Procedure:

1. Assess the patient.
2. If the patient is pulseless and non-breathing, check the patient's wrist for a DNR bracelet. If patient has no wrist/arms, check ankles and neck chain for possible do-not-resuscitate band attached.
3. If NO DNR bracelet is found on the patient's wrist or ankle or a neck chain, provide usual care.
 - A. If a DNR bracelet is found on the patient's wrist and the bracelet is NOT defaced, do not undertake life support measures and instead provide comfort care measures, such as clearing the airway, providing oxygen, positioning for comfort, control of bleeding, provision of emotional support and provision of pain medication
4. Contact Medical Control for further orders.
5. Document the patient contact on the Emergency Medical Record Ambulance Run Record, including details of type of DNR order present and any therapeutic measures provided.
6. Copies of all documentation of patient DNR status should accompany the patient to the hospital if the patient is transported.

Do Not Resuscitate (DNR)

Additional Information:

1. The patient's desire not to be resuscitated is controlling. In the event that a friend, or member of the patient's family requests that resuscitative measures be taken, that person's request does not supersede a valid DNR order.
2. If there is any question about the presence, validity or meaning of a DNR order (including "chemical code", "ventilate only" or evidence of revocation) EMS personnel shall initiate full resuscitate measures and immediately contact the online medical control physician for clarification and further orders.
3. The Wisconsin Declaration to Physicians (DOH 0060) Rev 5/86 or "Living Will" and Durable Power of Attorney are not valid for pre-hospital situations. If presented with these documents as evidence of DNR status, initiate resuscitation and contact medical control for clarification and further orders.

General Principles for Medical Care

The following measures shall be applied to help promote prompt and efficient emergency medical care to the sick, ill, injured or infirmed. They shall be utilized by EMS personnel in the field, in the Emergency Department, and when dealing with On-line Medical Control Physicians.

- 1) The Safety of EMS personnel is paramount. Each scene must be properly evaluated for crew safety and hazards upon arrival and throughout patient care. Assess the need for additional public safety resources as soon as possible after arrival.
- 2) Proper Personal Protective Equipment and Body Substance Isolation must be utilized according to agency and industry standard.
- 3) A patient is any person who is requesting and/or in need of medical attention or medical assistance of any kind.
- 4) A patient care encounter shall be considered any event when subjective or objective signs or symptoms, or a patient complaint, results in evaluation or treatment.
- 5) All patients in the care of EMS shall be offered transport by ambulance to the nearest appropriate hospital, regardless of the nature of the complaint. In the event a patient for whom EMS has responded to refuses transport to the hospital, a properly executed refusal process must be completed.
- 6) In accordance with department guidelines, the appropriate transport destination for EMS patients transported by ambulance is an Emergency Department. Additional details concerning hospital destination based on clinical criteria are outlined in specific protocols and policies.
- 7) For all medical calls, upon initial patient contact, be prepared for immediate medical intervention appropriate for the call level (defibrillation, airway management, drug therapy, etc.)
- 8) Upon arrival at a scene where an initial EMS crew is rendering patient care, all subsequent arriving EMS crews should immediately engage the on-scene crew. The goal is to determine the status of assessment, triage and seamlessly assist in patient care.
- 9) Prior to the transfer of care between crews, the provider rendering initial care should directly interface with the provider assuming care, to ensure all pertinent information is conveyed.
- 10) Try to always obtain verbal consent prior to treatment. Respect the patient's right to privacy and dignity. Courtesy, concern and common sense will ensure the best possible patient care.

General Principles for Medical Care Cont.

- 11) Generally, initial assessment and therapy should be completed within 10 minutes after patient contact. Except for extensive extrication, or atypical situations, trauma patients should be en route to the receiving facility within 10 minutes and medical patients should be en route to the receiving facility within 20 minutes. Additional therapy, if indicated, should be performed during transport.
- 12) For all 911 calls where EMTs and Paramedics are in attendance, the Paramedic shall make final patient care decisions.
- 13) Prior to the administration of medication, assess for the possibility of medication allergies. If any questions arise in reference to medication allergies, contact on-line Medical Control prior to giving any medications.
- 14) When caring for pediatric patients, use the Broselow-Luten® weight/length based system or Houston Haines Book to determine medication dosages and equipment sizes.
- 15) An EMS Patient Care Report will be generated at the conclusion of each patient encounter. Paper form "Hand Off" reports should be left at the receiving hospital in accordance with state requirements.
- 16) For cases that do not exactly fit into a treatment category, refer to the general illness protocol and contact On Line Medical Control (OLMC) as needed.
- 17) To perform as a Basic EMT or Paramedic, personnel must be knowledgeable and proficient in the scope of practice described and taught in the National Scope of Practice Standardized Curriculum, approved by the Wisconsin EMS Unit, and must maintain active state licensure.
- 18) Members of your service who are credentialed with and function with the department and are an RN, PA, or MD license may only practice within the scope of the agency's license.
- 19) Perform all procedures as per the department EMS Protocols, Procedures section. If a procedure that is not addressed in that section and is deemed necessary, contact OLMC for orders prior to proceeding.
- 20) If OLMC gives orders for performance of a procedure that is not covered in the departments EMS Protocols, Procedures section, but is within the providers scope of practice, follow the National Standard Curriculum.
- 21) For all patients requiring the administration of narcotics or sedative agents, continuous cardiac and oxygen saturation monitoring shall be performed.
- 22) The Poison Control Center should be contacted when handling calls involving poisonous/hazardous material exposures, overdoses or suspected envenomation. In the event that the Poison Control Center gives recommendations or orders that are not contained within these protocols, EMS providers are authorized to carry out their instructions. The Poison Control Center can be reached at 1.800.222.1222

General Principles for Medical Care Cont.

23) When using supplemental oxygen in accordance with adult or pediatric treatment protocols, adhere to the following:

- In patients who are non-critical, and have no evidence of respiratory distress, use only the concentration of oxygen needed to achieve oxygen saturation over 92%. Typically this may be accomplished by the use of a nasal cannula.
- For patients with serious respiratory symptoms, persistent hypoxia, or where otherwise specified by protocol, use 100% supplemental oxygen via non-rebreather mask or BVM. Use caution in instances of rising end-tidal CO₂.

24) Precautions:

For Bloodborne and Airborne Exposure and prevention refer to the departments SOP or SOG in regards to the details.

HOSPITAL DESTINATION

- All patients should be transported to the hospital of their choice (when operationally feasible) unless the patient is unstable.
- All patients whose condition is judged to be unstable will be transported to the closest appropriate receiving facility.
- If several hospitals are within the same approximate distance from the scene. Allow the patient, and/ or patients' family to select the receiving facility of their choice.
- Patients desiring admittance to Brown County Mental Health Center or Bellin Psychiatric Hospital must first be medically cleared at an Emergency Department unless prior arrangements have been made (i.e. direct admit).
- For transport destination of Stroke, STEMI, Trauma, or OB (>20weeks) patients, refer to the appropriate protocol.

Comprehensive Stroke Centers (Interventional/ Embolectomy)

- Aurora Bay Care
- St. Elizabeth's – Appleton
- Theda Care - Neenah

Primary Stroke Centers

- Bellin
- HSHS St. Mary's
- HSHS St. Vincent

Level II Trauma Centers (Major Trauma)

- Aurora Bay Care
- HSHS St. Vincent
- Theda Care – Neenah

Level III Trauma Centers

- Bellin
- HSHS St. Mary's

Primary Stroke Center and Thrombectomy

- HSHS St. Vincent

Pediatric Trauma <5 yrs old:

- HSHS St. Vincent

OB/ GYN:

- Aurora Bay Care – **(Level III NICU)**
- Bellin
- HSHS St. Mary's
- HSHS St. Vincent – **(Level III NICU)**

MEDICAL CONTROL COMMUNICATIONS

There are three modalities of EMS to hospital communication:

1. Cellular Phone

- Aurora Bay Care Medical Center 288-4070
288-4068
- Bellin Hospital 433-6007
- St. Vincent Hospital Emergency Department 433-0312
433-0347
433-0459
- St. Mary's Hospital Emergency Department 498-8842
498-1139

2. UHF Frequency

- Aurora Bay Care Medical Center - Med Channel 6
- Bellin Hospital - Med Channel 6 or 7
- St. Vincent Hospital Emergency Department - Med Channel 7
- St. Mary's Hospital Emergency Department - Med Channel 8

3. VHF Frequency of 155.340

Initial medical control contact should be made as follows:

- Basic Life Support: Report to medical control on all BLS calls on cellular phone or VHF frequency of 155.340.
- Advanced Life Support: Report to medical control on all ALS calls with either a cellular phone or UHF Med Channel 6, 7 or 8. If cellular phone is utilized, the speaker phone may be used during EMS reporting and but should then be taken off speaker phone for two-way communication.

NARCOTICS AND CONTROLLED SUBSTANCES

Medications utilized in the care of a patient or for medication replacement due to expiration:

Controlled Substance Exchange: When a controlled substance is utilized in the care of patient or has expired, the controlled substance may be exchanged in the hospital pharmacy. The paramedic must fill out the controlled substance exchange form which includes the date, patient name, run number, Medication and the amount administered (if possible a patient sticker from registration should accompany the form). This form will be presented with any remaining controlled substance to the pharmacy staff who will waste of any residual. Both the pharmacy staff and paramedic will then sign the form, and the controlled substance will be exchanged on a one for one basis. A current department issued identification or drivers liscense will be required and requested to fill a controlled substance at the hospital pharmacy.

Restocking of Outdated medications:

All medications that are outdated may be exchanged through the hospital pharmacies with whom the agencies contract for this service. The appropriate form will be filled out indicating the amount and types of medications needed for exchange. Any controlled substances will need to be surrendered to the pharmacists and exchanged on a one to one basis only, unless previously approved by the medical director or thier designee. This form should be faxed or emailed to the pharmacy in advance of picking the medications up. The medications exchanged will be charged to the services as per existing agreements. When exchanging medications that are not controlled substances the rescue agency may bring any outdated medications to the pharmacy for appropriate disposal by the pharmacies current operating procedures without cost to the agency.

*Note: The hospitals currently have very limited use for the medications exchanged and are typically not utilizing them if returned with a short shelf life left (e.g. 30 days). As such the agencies should wait until the medications are outdated before exchanging them.

NARCOTICS AND CONTROLLED SUBSTANCES Cont.

Stocking of a New Rescue Squad:

The agency should fax the medication request form, along with a prescription from the medical director for any controlled substances requested 24 hours in advance of picking the medications up. The medical director will submit a signed list of approved medications to the pharmacies on an annual basis or less if any changes are made. Only medications on this list will be dispensed unless accompanied by a signed prescription by the medical director.

No Resuscitation Indicated

Policy:

Resuscitation can be withheld in Medical Cardiopulmonary Arrest under the following circumstances:

- Adult patient >18 years of age AND
- Pulseless, Apneic and no other signs of life present AND
- Asystole verified in two (2) leads AND
- Not exposed to an environment likely to promote hypothermia AND
- The presence of one or more of the following:
 - Rigor Mortis
 - Decomposition of body tissues
 - Dependent lividity OR
 - When the patient has a valid State of Wisconsin DNR order/bracelet/wristband

If unknown DNR status or questions regarding validity of DNR status, initiate resuscitation and contact OLMC.

PATIENT REFUSAL FOR MEDICAL CARE/TRANSPORT

Policy:

If the patient refuses medical care at the scene or transport to the hospital, and in the opinion of the EMT-Basic or EMT-Paramedic team and/or the medical control physician, the patient requires immediate medical attention to prevent loss of life or permanent impairment, or the patient is not competent (i.e. drug/alcohol intoxication, medically compromised, psychotic etc.) transport should be initiated. The appropriate police agency should be contacted for assistance and preparation of an EM-1.

If the patient refuses medical care at the scene or transport to the hospital, and if the treating team does not believe a loss of life or permanent impairment will result and the patient is judged competent by the team, in consultation with medical control if appropriate, then the patient will be asked to sign a release form containing the following information at a minimum:

1. Patient's name, address and age
2. Chief complaint necessitating the initial response
3. Findings of the paramedic assessment including vital signs
4. Signature of witnesses (preferably a police officer or family member)

Documentation of care should be completed for all patients signing a release.

Release forms should also be completed for transported patients refusing portions of indicated medical care (i.e. cervical spine immobilization, IV etc.)

PHYSICIAN ON-SCENE

When a physician is present at the scene and offers their assistance, please inform the physician of the following policy:

“Thank you for your offer of assistance. Be advised these EMT’s are operating under the authority of Wisconsin Statute Chapter 256.15 No physician or other person may intercede in patient care without the medical control physician on duty relinquishing responsibility of the scene via radio or telephone. If responsibility is given to a physician at the scene, that physician is responsible for any and all care given at the scene of the incident and en route to the hospital and must sign the patient’s medical record.”

Allied health personnel such as nurse practitioners and PA-C’s may assist in the care of the patient to the level deemed appropriate by the EMS providers, but may not assume medical control or give orders to the EMS providers.

Exceptions*:

1. If the physician at the scene is the patient’s ***attending physician, including nephrology***, the medical control physician will be consulted first before granting or refusing responsibility to that physician.
2. If the physician at the scene is an emergency physician who routinely provides on line medical direction in the Brown County EMS System, the on line medical control physician will be consulted first before granting or refusing responsibility to that physician.

*If either of these situations occurs, the on-scene physician may contact medical control and transfer care of the patient back to the on-line medical control physician for treatment during transfer and does not have to accompany the patient to the hospital if the on-line medical control physician agrees.

PREFERRED RADIO REPORTING FORMAT

Basic Life Support: Identify EMS unit and that you are on a “BLS Call”.

1. Age and sex of patient
2. Chief complaint
3. Brief history of present illness or mechanism of injury
4. Level of consciousness
5. Vital signs, including pulse, blood pressure and respirations
6. Pulse oximetry and/or blood glucose reading if appropriate and available
7. Any therapeutic measures performed.

Advanced Life Support: Identify EMS Unit and state “ALS call”. For all major or potential major trauma, STEMI or stroke patients contact medical control as early as allowed by patient condition and relay a brief report, including patient age, sex, mechanism of injury, current vital signs to allow for early activation of the trauma, STEMI or stroke system. A complete report should follow when the management of the patient allows. The following along with the above BLS criteria, additional pertinent information should be reported on all ALS calls:

- Presence or absence of IV/IO access
- Type of immobilization, if appropriate
- Physical Exam
- Pupillary size and response
- Respiratory Distress
- Lung Sounds
- Skin Condition
- JVD
- Pedal Edema
- Pain Scale
- Relevant past medical history
- Medications
- Allergies
- 12 lead EKG findings if appropriate
- Any therapeutic measures performed.

Restraints

Violent, agitated or potentially violent patients who are medically unable to give consent should be restrained on the cot to prevent injury to the patient or paramedics. If a patient is refusing treatment, but deemed to be at threat for loss of life or permanent impairment by the paramedic team, the appropriate police agency should be contacted, assist with restraints as needed and prepare an EM-1. Notify receiving hospital about the nature of the patient and the need to restrain so they can prepare for arrival. (Once restrained, the restraints should remain in place until the patient is seen by a physician in the emergency department.)

The following content will be considered the standard of care for the patient who needs physical restraint:

- Protect patient, family, bystanders and EMS personnel from potential harm. Obtain additional help as necessary.
- Observe universal precautions.
- Evaluate the situation to determine the need for police presence as above.
- Assure clear airway, breathing and circulatory status.
- Complete the history and secondary physical assessment.
- Assess the patient's level of consciousness, level of activity, body language and affect.
- Evaluate suicidal potential.
- Attempt to rule out common physical causes for patient's abnormal behavior and treat accordingly.
 - hypoxia
 - hypoglycemia or other metabolic disorders
 - head trauma
 - alcohol intoxication
 - substance use/abuse
- Maintain non-threatening attitude toward patient.
- Contact your hospital base station physician for medical orders as needed.
- Provide appropriate medical care as ordered.
- Complete a run report, documenting all pertinent information received, procedures ordered/completed, results of interventions and changes in the patient's condition.
- Documentation must include:
 - A description of the circumstances/behavior which precipitated the use of restraints
 - A statement that the patient/significant others were informed of the reasons for the restraints and that their application was for the safety of the patient/bystanders or personnel and not as punishment for antisocial behavior.
 - A statement that no other less restrictive measure appeared appropriate and/or other measures were tried and failed

Restraints Cont.

- The time of application of the restraint device
 - The position in which the patient was restrained and transported
 - The type of restraint used
- Guidelines for application by EMT's include:
 - Restraint equipment applied by EMS personnel must be padded, four point, soft restraints and allow for quick release.
 - Restraints must be applied in such a manner that complete monitoring of vital signs is possible.
 - Restraints must not cause vascular or neurological compromise.

NO PATIENT SHALL BE TRANSPORTED PRONE!!

- **EMT's operating within the Brown County EMS System may NOT use:**
 - **Hard plastic ties or any restraint device which requires a key to remove**
 - **Backboard or scoop stretcher to "sandwich" the patient**
 - **Restraints which secure the patient's hands and feet behind the back ("hog-tie")**
 - **Any method or material applied in a manner that could cause vascular or neurological compromise.**
- For restraint devices applied by law enforcement officers:
 - The restraints and position must provide sufficient slack in the device to allow the patient to straighten the abdomen and chest to take full tidal volume.
 - An officer must be immediately available to the patient AT ALL TIMES at the scene as well as in the patient compartment of the transport vehicle.
- A left lateral lying position should be used whenever possible. The position of transport may not compromise respiratory or circulatory systems and must not interfere with necessary medical treatment. Patients should not be transported in a prone position.
- Restrained extremities should be evaluated for pulse quality, capillary refill time, color, nerve and motor function every 15 minutes. Restraints must be adjusted if compromise of any of these functions is discovered.
- Document reasons for any deviation from protocol on an Incident Report form.

Service Dog

This policy is designed to guide personnel to facilitate a service animal that would be required to accompany a patient. The only animal recognized as a service animal is a dog. A service dog should be registered and most will be identified by a collar or vest but are not required to have any identifier on them.

What is a service animal?

Under Americans with Disabilities Act (ADA) a service animal is defined as a dog that has been individually trained to do work or perform tasks for an individual with disabilities. The task(s) performed must be directly related to the person's disabilities.

When it is not obvious what the service dog provides, personnel may ask:

- Is the service dog required because of a disability?
- What work or tasks has the dog been trained to perform?

Personnel are NOT to ask the following regarding a service dog:

- About the person's disability
- For documentation as proof that the dog has been trained, certified or licensed before accepting it as legitimate service dog

Must a service animal be allowed to ride in the ambulance with its handler?

Generally, yes. However, if the space in the ambulance is crowded and the dog's presence would interfere with the emergency medical staff's ability to treat the patient, staff should make other arrangements to have the dog transported to the hospital.

Personnel can refuse transport of a service dog for any of the following reasons:

- If the service dog will "fundamentally alter" the personnel's ability to provide lifesaving care
- The service dog is out of control and doesn't take effective action to correct it
- The service dog is not "house broken". (term and definition used in the ADA documentation)

The patient is required to maintain control of the service dog at all times. This means that the dog must be harnessed, leashed or tethered, unless it interferes with the service dog's work or the patient's disability. In that case the patient must maintain control of the service dog through voice, signal or other effective controls

When the patient is unconscious or in a condition requiring critical lifesaving treatment and the service dog's presence would compromise the care or safety during transport, it is best to make other arrangements of transport for the service dog. Revert care of service dog to respective law enforcement or contact on-duty fire department supervisor.

****Source: U.S. Department of Justice, Civil Rights Division, Disability Rights Section****

Service Dog (Municipal) Transport to Care Facility

This policy, along with reference guide titled, "OPERATIONAL K9 EMERGENCY MEDICAL SERVICES FLIP CHARTS" is designed to give guidance in the evaluation, treatment, and transport criteria for municipal working dogs (police canine). The Wisconsin Legislature passed the following legislation into statute with regards to first aid treatment of domestic animals. It reads as follows:

256.155 First aid to domestic animals.

(1) Definition. In this section, "domestic animal" has the meaning given in s. 895.484 (1) (a). **(a)** *"Domestic animal" means a dog, cat, or other animal that is domesticated and kept as a household pet, but does not include a farm animal, as defined in s. 951.01 (3). "Farm animal" means any warm-blooded animal normally raised on farms in the United States and used or intended for use as food or fiber.*

(2) Rendering first aid allowed. An emergency medical services practitioner or emergency medical responder who, in the course of responding to a call for service, encounters a domestic animal that is sick or injured may render any first aid service to the domestic animal before the domestic animal is transferred to a veterinarian for further treatment if the service is in the scope of practice of the license or certification of that emergency medical services practitioner or emergency medical responder when applied to human beings.

(3) Immunity from liability.

(a) An ambulance service provider, emergency medical services practitioner, or emergency medical responder is immune from civil or criminal liability for any outcomes resulting from an emergency medical services practitioner or an emergency medical responder rendering first aid to a domestic animal in accordance with sub. (2).

(b) An ambulance service provider, emergency medical services practitioner, or emergency medical responder is immune from civil or criminal liability from declining to render first aid to a domestic animal.

In the event an Operational K9 is injured or is in need of medical attention, enlist assistance from the canine handler, K9 Flip Charts, and medical direction below. For Online Medical Control in the treatment and transport of the Operational K9, contact the veterinary specialist and/or EMS Medical Director below:

1. **Dr. Lisa Peters, DVM**, (Medical Director-Animal Emergency Center) **cell: 920.450.7915**
2. **Dr. Steve Stroman, MD** (if unable to reach Dr. Peters or for additional assistance):
cell: 920.655.2152

Level 1 Destination Facility: Appleton Referral Center of the Fox Valley (VECC Level 1 Facility)
4706 New Horizon Blvd
Appleton, WI 54914 920.993.9193

Green Bay Animal Emergency Center (stabilization only; use Appleton for Level 1 Care)
2141 Lime Kiln Road
Green Bay, WI 54311 920.494.9400

Ambulance Transport: An Operational K-9 may be transported by Ashwaubenon Public Safety or De Pere Fire Department ambulance to the Level 1 Appleton Animal Emergency Center under appropriate need.

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SEXUAL ASSAULT

The treatment of injuries is the primary care objective in potential sexual assault cases. Sexual Assault patients should be transported preferentially to St. Vincent Hospital for evaluation by a Sexual Assault Nurse Examiner. If the patient requests transfer to a different facility, patient choice should be honored.

Observe the following in treatment:

1. Do not clean the patient up or allow the patient to wash.
2. Do not question the patient concerning the incident.
3. Avoid cutting clothing. If clothing is removed, it should be placed in separate paper bags.

Termination of Resuscitation

Policy:

Unsuccessful cardiopulmonary resuscitation (CPR) and other advanced life support (ALS) interventions may be discontinued prior to transport or arrival at the hospital when this procedure is followed:

Note: When asystole is seen on the cardiac monitor, confirmation of the rhythm shall include a PRINTED rhythm strip, as well as documented interpretation of the rhythm strip in more than one lead. Low amplitude V-fib or PEA may be difficult to distinguish from asystole when using only the cardiac monitor display for interpretation.

Procedure:

1) Discontinuation of CPR and ALS intervention may be implemented by a Paramedic without Medical Control consultation in a non-hypothermic adult provided all following criteria exist:

- Initial rhythm is Asystole or PEA, confirmed in two leads on a printed strip
- Terminal rhythm is asystole confirmed in two leads on a printed strip
- Advanced airway (NVA or ETT) confirmed by digital capnography
- At least three doses of Epinephrine have been administered
- Cardiac Arrest refractory to minimum of 20 minutes of ACLS
- Quantitative EtCO₂ value is <10mmHg with effective CPR, after 20 minutes of ACLS
- Absence of ROSC (Return of Spontaneous Circulation) throughout resuscitation efforts.

2) Field termination if the above criteria are not met after 20 minutes of ACLS must be approved by Medical Control.

3) The paramedic has the discretion to **continue** resuscitation efforts if scene safety, location, patient's age, time of arrest, or bystander input compels this decision.

Documentation of Vital Signs

Policy:

Every patient encounter by EMS shall be documented. Vital signs are a key component in the evaluation of any patient and a complete set of vital signs is to be documented in the patient care report (PCR) for any patient who receives any assessment component.

To ensure:

- Objective evaluation of every patient's general clinical status
- Documentation of a complete set of vital signs

Procedure:

1. An initial complete set of vital signs includes:

- Pulse rate
- Systolic AND diastolic blood pressure (cap refill may be substituted in children < 3)
- Respiratory rate
- Pain / severity (when appropriate to patient complaint)
- GCS for Injured Patients

2. When no ALS treatment is provided, palpated blood pressures are acceptable for REPEAT vital signs.

3. Based on patient condition, complaint, and protocol used, vital signs may also include: Pulse Oximetry, Temperature, End Tidal CO₂, Breath Sounds, Level of Response

4. If the patient refuses evaluation, an assessment of capacity and a patient disposition form must also be completed. In addition, providers should record any vital signs that the patient or situation allows (e.g. a respiratory rate may be obtained by observation alone), and include an explanation of the clinical situation and refusal in the PCR narrative.

5. When any components of vital signs were obtained using the cardiac monitor, the data should be exported electronically to the PCR. Where values are inconsistent with manually obtained values, values may be appropriately edited to reflect the manually obtained values.

6. Document situations that preclude the evaluation of a complete set of vital signs. Generally, children > 3 years of age should have a BP measured, and cap refill measured for < 3 years of age. For young children, the need for BP measurement should be determined on a case by- case basis considering the provider's rapport with the child and the child's clinical condition. Blood pressure measurement is not required for all patients, but should be measured if possible, especially in critically ill patients in whom blood pressure measurement may guide treatment decisions.

7. Record the time vital signs were obtained; any abnormal vital sign should be repeated and monitored closely.

General Approach

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Scene Safety
Bring all necessary equipment to patients side
Demonstrate professionalism and courtesy

Be sure proper PPE is donned
(contact, droplet, airborne)

Initial Assessment
BLS Maneuvers
Consider Spinal Protection
Procedure

Adult-Airway Protocol

Vital Signs
BP, pulse, resp. rate at least every 15 minutes
Temperature if pt. with hx fever or hot to touch,
Monitor ECG, pulse ox, blood glucose and ETCO2
as appropriate

Consider Supplemental O2

Consider 12 Lead EKG and/or
Cardiac Monitor

Most Appropriate Protocol

Exhausted Standing Protocols?
Consult Medical Control

Cardiac Arrest Protocol

If in Cardiac Arrest

Pearls

RECOMMENDED EXAM: Vital signs, mental status with GCS and location of injury or complaint.....then to specific protocol

12 Lead EKG should be done EARLY on a possible STEMI patient.

- Vital signs include: Blood Glucose Reading – if any weakness, altered mental status or history of diabetes.
- Oxygen Saturation and Capnography if condition warrants
- Nothing by mouth, unless patient is a known diabetic with hypoglycemia and able to self-administer oral glucose paste or a glucose containing beverage or unless indicated by specific protocol.
- If evidence of dehydration or BP<90mmHg systolic administer 250ml 0.9% NaCl and refer to appropriate protocol. If hypoglycemic refer to diabetic emergency protocol.
- Any patient contact which does not result in an EMS transport must have a completed refusal form.
- Required vital signs on every patient include blood pressure, pulse, respirations, pain-severity.
- Pulse oximetry and temperature documentation is dependent on the specific complaint
- Timing of transport should be based on the patient's clinical condition and the transport policy.
- Never hesitate to consult medical control for patient who refuses

General Protocol

General Approach

History

- Location
- Onset
- Duration
- Quality
- Radiation
- Severity
- Precipitating events
- Modifying factors
- Associated symptoms
- S-A-M-P-L-E
- Past Medical/Surgery
- Family
- Social

Exam:

- Primary Assessment
- Airway
- Breathing
- Circulation
- Disability
- Expose
- Secondary Assessment
- HEENT
- Respiratory
- Cardiovascular
- Abdomen
- Extremities
- Neuro

Differential:

- Vascular
- Infectious/Inflammatory
- Trauma/Toxins
- Autoimmune
- Metabolic
- Idiopathic
- Neoplastic
- Congenital

Emergency Medical Responder

- Scene Safety
- PPE (consider contact, droplet, and/or airborne)
- Initial assessment (BLS maneuvers and consider c-spine immobilization)
- Establish patent airway
- Provide Supplemental oxygen to maintain SpO₂ ≥ 92 %, or if any respiratory signs or symptoms present
- Obtain, record and monitor vital signs

Basic-Perform/Confirm All Above Interventions

- Blood Glucose procedure if indicated
- Perform cardiac monitoring
- Perform a 12-lead ECG if chest pain, abdominal pain above the umbilicus or ischemic equivalent symptoms

Paramedic-Perform/Confirm All Above Interventions

- Refer to Airway-Adult Protocol if indicated
- IV Protocol if needed

Contact Medical Control with any questions or additional orders

LEGEND		
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Emergency Incident Rehab

NFPA Age Predicted 85% Maximum Heart Rate		
20-25		170
26-30		165
31-35		160
36-40		155
41-45		152
46-50		148
51-55		140
55-60		136
61-65		132

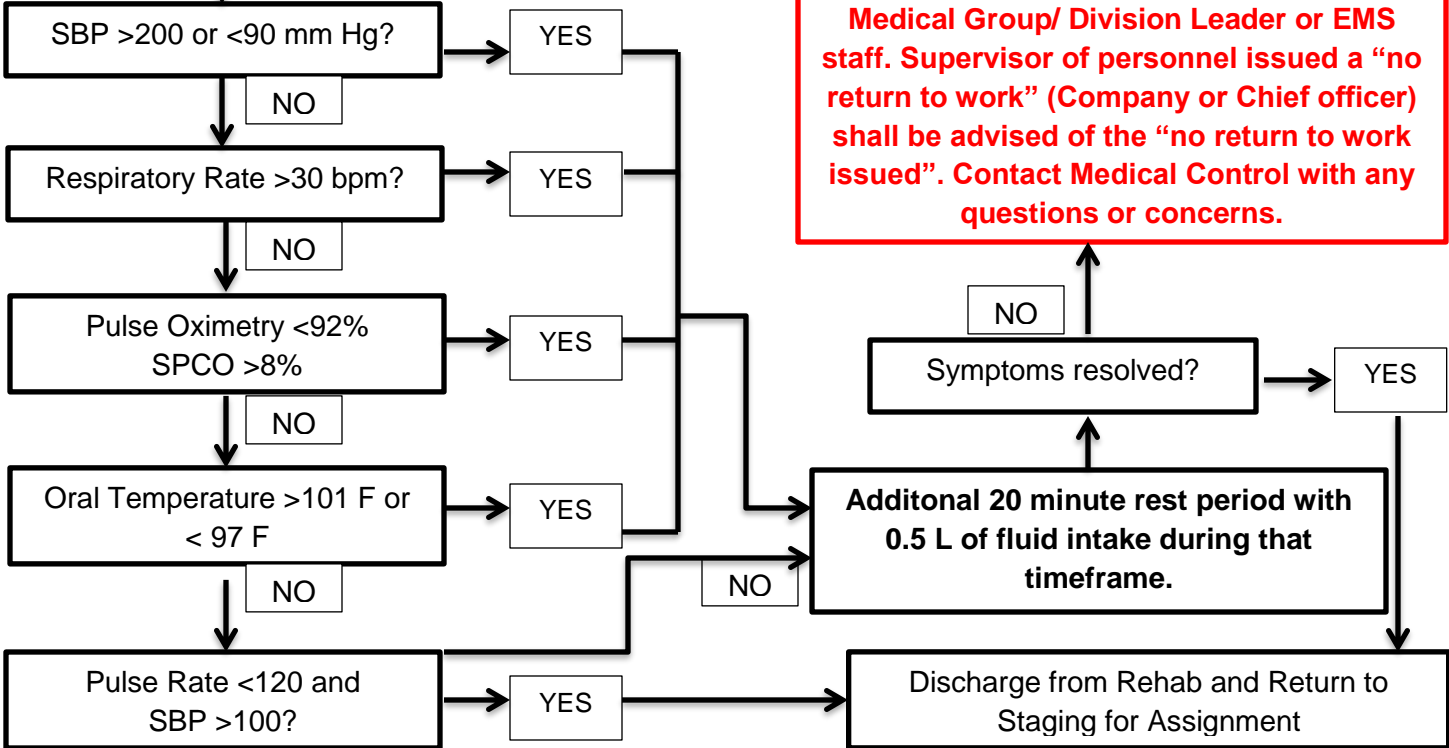
- Remove Any of the Following:
- PPE
 - Body Armor
 - Chemical Suits
 - SCBA
 - Turnout Gear
 - Other Specific Equipment

- Automatic Transport Criteria:**
- Chest Pain
 - Confusion
 - Shortness of Breath
 - Palpations or Irregular Heart Beat Sensations

E	General Approach Protocol	E
B	Pulse Ox Procedure	B
B	Temperature Procedure	B
B	Obtain SPCO if capable	B

20 minute rest period for all personnel in Rehab. Minimum of 0.5 L of fluid intake during the 20 minute timeframe.

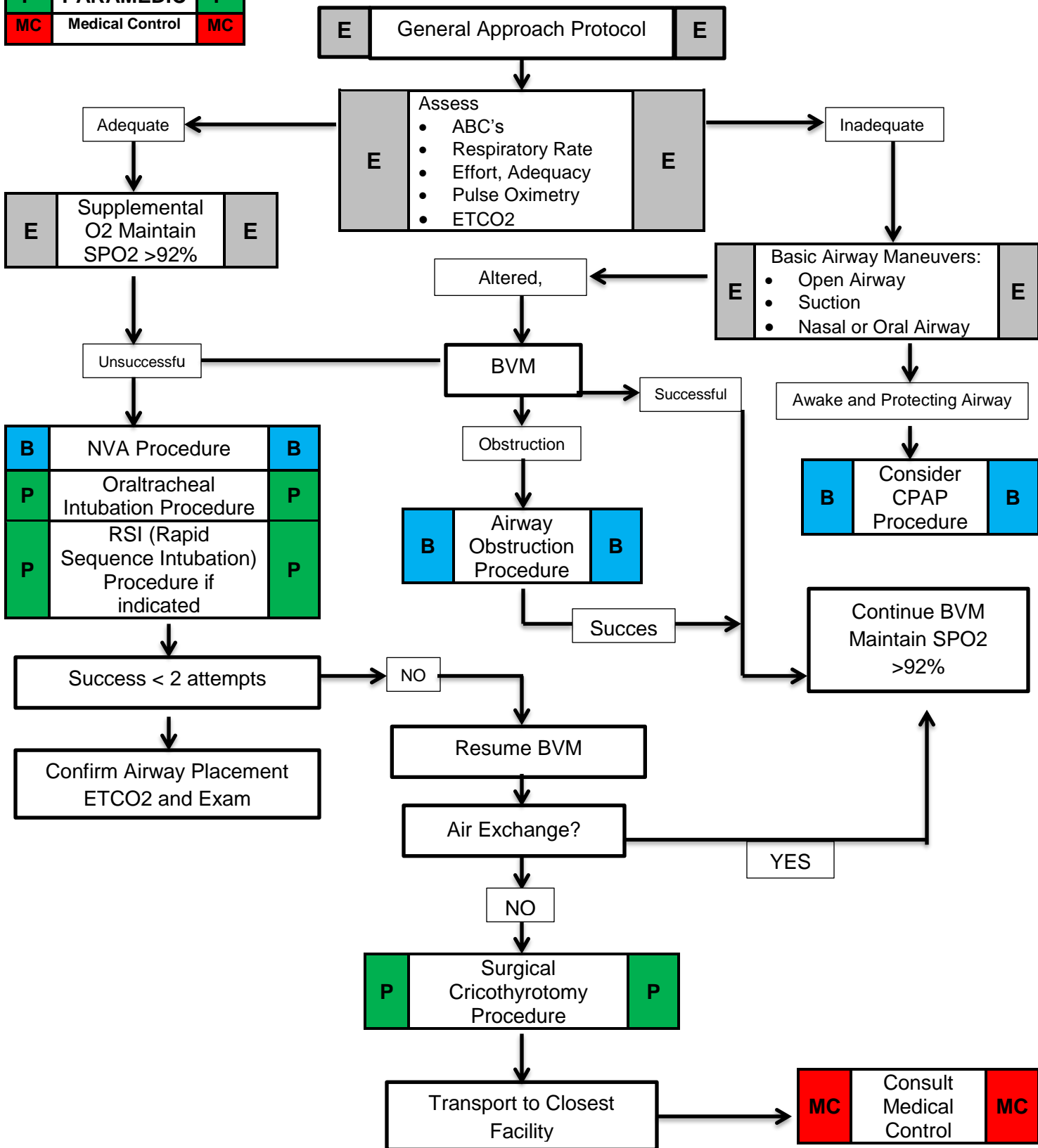
Further evaluation and reference to specific protocol should initiated. If personnel refuses transport, a "no return to work" for the incident may be issued by Medical Group/ Division Leader or EMS staff. Supervisor of personnel issued a "no return to work" (Company or Chief officer) shall be advised of the "no return to work issued". Contact Medical Control with any questions or concerns.



Emergency Incident Rehab

Airway-Adult

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC



Airway-Adult

Airway-Adult

Emergency Medical Responder

- General Approach Protocol
- Supplemental oxygen to maintain SPO₂ > 92%
- If suspicion of trauma, maintain C-spine protection.
- Suction all debris, secretions from the airway if necessary

Basic-Perform/Confirm All Above Interventions

- Refer to CPAP Procedure if indicated
- Perform Basic Airway Maneuvers: open airway, nasal/oral airway; BVM if needed.
- BVM:
 - Ventilate once every 5-6 seconds (10-12 times/minute)
- If signs of airway obstruction refer to Airway Obstruction Procedure
- If patient does not respond to above measures or deteriorates consider advanced airway placement
- Monitor oxygen saturation and end-tidal CO₂ continuously

Paramedic-Perform/Confirm All Above Interventions

- Follow algorithm if invasive airway intervention is needed (NVA/ETT):
 - Apnea
 - Decreased level of consciousness with respiratory failure (i.e. hypoxia [O₂ sat < 92%] not improved by 100% oxygen, and/or respiratory rate < 8)
 - Poor ventilatory effort (with hypoxia not improved by 100% oxygen)
 - Unable to maintain patent airway
 - Follow appropriate procedure (Video Laryngoscopy, King LTS-D, Direct Laryngoscopy, etc)
- Following placement of the ETT/NVA confirm proper placement:
 - Observe for presence of alveolar waveform on capnography
 - Assess for absence of epigastric sounds, presence of breath sounds, and chest rise and fall
 - Record tube depth and secure in place using a commercial holder if applicable
- Refer to Rapid Sequence Intubation Procedure if indicated
- Refer to Surgical Cricothyrotomy if indicated

Contact Medical Control for any additional questions or orders.

Airway-Asthma/ COPD

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

- History**
- Asthma; COPD -- chronic bronchitis, emphysema, congestive heart failure
 - Home treatment (oxygen, nebulizer)
 - Medications (theophylline, steroids, inhalers)
 - Toxic exposure, smoke inhalation

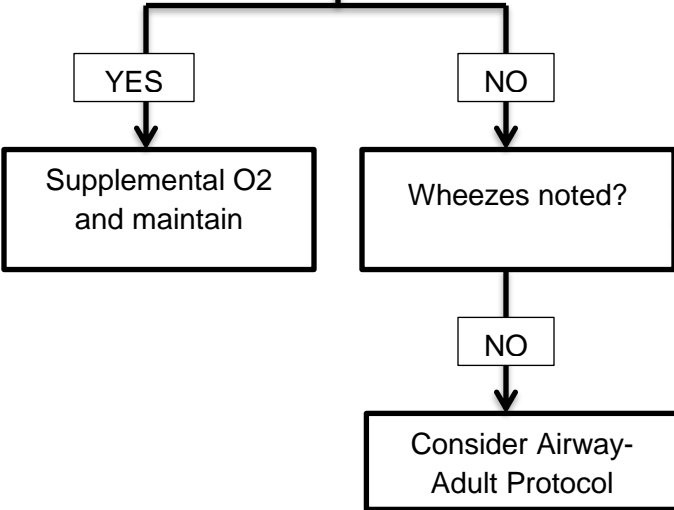
- Signs and Symptoms**
- Shortness of breath
 - Pursed lip breathing
 - Decreased ability to speak
 - Increased respiratory rate and effort
 - Wheezing, rhonchi
 - Use of accessory muscles
 - Fever, cough
 - Tachycardia

- Differential**
- Asthma
 - Anaphylaxis
 - Aspiration
 - COPD (Emphysema, Bronchitis)
 - Pleural effusion
 - Pneumonia
 - Pulmonary embolus
 - Pneumothorax
 - Cardiac (MI or CHF)
 - Pericardial tamponade
 - Hyperventilation
 - Inhaled toxin (Carbon monoxide, etc.)

E **General Approach Protocol** E

Signs/Symptoms consistent with Asthma/COPD

Airway Patent, Ventilation and Oxygenation Adequate?



B	Consider CPAP Procedure	B
B	Albuterol 2.5mg & Ipratropium 0.5 mg	B
B	Repeat Albuterol 2.5mg PRN	B
B	Consider in line neb w/ CPAP	B
B	12 Lead Procedure	B
P	IV Protocol	P
MC	Contact Medical Control for the consideration of administering either of the following two medications	MC
B	Epinephrine 1:1000 0.3 mg IM (Monitor patients >50 yrs of age, hx of CAD and cardiac hx closely)	B
P	Magnesium Sulfate 2grams in 100 mL NS IV over 10 minutes	P

Airway-Asthma/ COPD

History

- Asthma; COPD -- chronic bronchitis, emphysema, congestive heart failure
- Home treatment (oxygen, nebulizer)
- Medications (theophylline, steroids, inhalers)
- Toxic exposure, smoke inhalation

Signs and Symptoms

- Shortness of breath
- Pursed lip breathing
- Decreased ability to speak
- Increased respiratory rate and effort
- Wheezing, rhonchi
- Use of accessory muscles
- Fever, cough

Differential

- Asthma
- Anaphylaxis
- Aspiration
- COPD (Emphysema, Bronchitis)
- Pleural effusion
- Pneumonia
- Pulmonary embolus
- Pneumothorax
- Cardiac (MI or CHF)
- Pericardial tamponade
- Hyperventilation
- Inhaled toxin (Carbon monoxide, etc.)

Emergency Medical Responder

- General Approach Protocol
- Assess lung sounds
- Supplemental oxygen to maintain SPO2 > 92%

Basic-Perform/Confirm Above Interventions

- Consider CPAP if available and symptoms are moderate to severe
 - If history of Asthma or COPD, Start at 5cm of H2O and titrate up to maximum 10 cm of H2O for effect
- **Albuterol (Proventil) 2.5 mg/3 ml** and **Ipratropium Bromide 0.02% (Atrovent) 0.5 mg/2.5 ml** via nebulizer if wheezing or history of Asthma/COPD. Albuterol may be repeated to a maximum of 3 administrations.
- 12 Lead EKG Procedure if indicated
- If symptoms severe (not speaking, little or no air movement) consider:

Contact Medical Control for the consideration of administering Epinephrine 1:1000, 0.3 mg IM if available. Monitor patients >50 yrs of age or history of CAD closely

Paramedic-Perform/Confirm Above Interventions

- IV Protocol
- Observe for signs of impending respiratory failure: Refer to Airway-Adult Protocol if indicated:
 - Hypoxia (O2 sat < 92%) not improved with 100% O2
 - Poor ventilatory effort
 - Altered mental status/decreased level of consciousness
 - Inability to maintain patent airway

Contact Medical Control for the consideration of administering of Magnesium Sulfate. 2 grams IV in 100 mL of NS over 10 minutes.

****DO NOT use Magnesium Sulfate in patients with a history of Renal Failure****

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Airway-CHF/ Pulmonary Edema

History

- Congestive heart failure
- Past medical history
- Medications (digoxin, Lasix, Viagra / sildenafil, Levitra / vardenafil, Cialis / tadalafil)
- Cardiac history –past myocardial infarction

Signs and Symptoms

- Respiratory distress, bilateral rales
- Apprehension, orthopnea
- Jugular vein distention
- Pink, frothy sputum
- Peripheral edema, diaphoresis
- Hypotension, shock
- Chest pain

Differential

- Myocardial infarction
- Congestive heart failure
- Asthma
- Anaphylaxis
- Aspiration
- COPD
- Pleural effusion
- Pneumonia
- Pulmonary embolus
- Pericardial tamponade
- Toxic Exposure

E General Approach Protocol E

Following Commands?

YES

B	12 Lead EKG Procedure	B
P	IV Protocol	P
P	Nitroglycerin 0.4mg SL if SBP >90, every 3 minutes PRN. Total of 3 doses.	P
B	CPAP Procedure	B

NO

Consider Airway-Adult Protocol as needed

Symptoms Resolve?

YES

NO

Consider Cardiogenic Shock

Reassess & Monitor

P Epi Infusion 2-10 mcg/min Titrate to SBP >90 mmHg P

MC Consult Medical Control MC

Airway-CHF

Airway-CHF

History

- Congestive heart failure
- Past medical history
- Medications (digoxin, Lasix, Viagra / sildenafil, Levitra / vardenafil, Cialis / tadalafil)
- Cardiac history –past myocardial infarction

Signs and Symptoms

- Respiratory distress, bilateral rales
- Apprehension, orthopnea
- Jugular vein distention
- Pink, frothy sputum
- Peripheral edema, diaphoresis
- Hypotension, shock
- Chest pain

Differential

- Myocardial infarction
- Congestive heart failure
- Asthma
- Anaphylaxis
- Aspiration
- COPD
- Pleural effusion
- Pneumonia
- Pulmonary embolus
- Pericardial tamponade
- Toxic Exposure

Emergency Medical Responder

- General Approach Protocol
- Supplemental oxygen to maintain SPO₂ > 92%

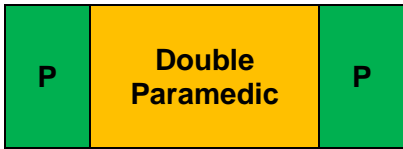
Basic-Confirm/Perform All Above Interventions

- Consider CPAP if available and symptoms are moderate to severe
 - If history of Asthma or COPD, Start at 5cm of H₂O.
- 12 Lead EKG Procedure

Contact Medical Control in regards to titrating up to 10 cm of H₂O for desired effect

Paramedic-Confirm/Perform All Above Interventions

- Observe for signs of impending respiratory failure: Refer to Airway-Adult Protocol if indicated:
 - Hypoxia (O₂ sat < 92%) not improved with 100% O₂
 - Poor ventilatory effort
 - Altered mental status/decreased level of consciousness
 - Inability to maintain patent airway
- IV Protocol
- **Nitroglycerin 0.4 mg SL every 3 min:**
 - Contraindicated if SBP <90 mmHg
 - within last 24 hours (Viagra, Levitra); 48 hours (Cialis)
- For Hypotension (systolic BP <90 mmHg):
 - Consider **Epi Infusion at 2-10 mcg/min** titrated to maintain SBP >90 mmHg



Airway-Rapid Sequence Intubation & Rapid Sequence Airway

Airway, Adult Protocol Unsuccessful

Preparation
 IV/IO, EKG, SPO2, BP
 Functioning Laryngoscope, BVM, O2, ETT, Rescue Airway, Suction, ETCO2
 Meds drawn and labeled (including post procedure sedation)

PreOxygenate
 100% O2 by passive flow (BVM/NRB). Administer high flow oxygen via nasal cannula continuous throughout intubation process.

Induction & Paralysis
Ketamine 1 mg/kg IV/IO over 1 minute or Versed 2 mg IV/IO over 1 minute
Succinylcholine 2 mg/kg

PLACEMENT with PROOF
 Place NVA/ETT, Confirm with: End Tidal CO2, Waveform, Auscultation, Physical findings
 Secure device, note position

Use **VERSED 2 mg IV/IO** when Ketamine is relatively contraindicated.

- Severe Hypertension with cardiac history
- Pregnancy
- Consider the use of versed in a patient in status epilepticus
- Versed may be utilized for continued sedation

Successful

Unsuccessful

Consider repositioning patient. Elevate the head and torso. Look at the axis of the head and neck for optimal placement. Consider switching providers for repeat attempts. If airway manipulations are unsuccessful, consider NV Airway

Continue BVM
Maintain SPO2

Refer to Airway-Surgical Cricothyrotomy Procedure if indicated

POST-PLACEMENT MANAGEMENT
Rocuronium 1mg/kg IV/IO
Fentanyl 50 mcg IV/IO
 After 30 minutes re-sedate **Versed 2mg IV/IO**

MC Consult Medical Control **MC**

Airway-Rapid Sequence Intubation & Rapid Sequence Airway

Airway-Rapid Sequence Intubation (RSI) & Rapid Sequence Airway

P

Double Paramedic Procedure (requires 2 Paramedics by patients side during procedure)

P

To facilitate oral endotracheal intubation of a patient when attempts without muscle relaxation are not successful and the airway cannot be adequately protected.

Indications (Possible Candidates for RSI):

- GCS <8 (decreased LOC)
- Potential for airway compromise
- Head-injured patients with airway compromise
- Status epilepticus not responding to anticonvulsants
- Patients unable to protect airway (trauma, CVA, obstruction, overdose, anaphylaxis, etc.)
- Severe Respiratory Distress (COPD, asthma, burns, etc.)
- Insufficient respirations (pulse ox. <85%, shallow respirations, cyanosis, air hunger, etc.)
- Patients with a defined salvage airway plan (BVM, supraglottic airway, or surgical airway)

Contraindications:

- Known allergy to necessary medications
- Suspected epiglottitis, edema, or retropharyngeal edema
- Severe oral, mandibular, or anterior neck trauma
- Conscious patient (with stable hemodynamics) who is maintaining an impaired airway
- Age less than 2 years old
- Cricothyrotomy contraindicated (potential contraindication)

PREPARATION:

1. Assumes oral intubation and failed airway equipment preparation (functioning laryngoscope, BVM, O₂, ETT, rescue airway, suction, ETCO₂)
2. Pre-oxygenate with 100% O₂ (initially NRB mask or NC, then BVM only if needed), avoid hyperventilation
3. Meds drawn and labeled (including post procedure sedation)

PREOXYGENATE:

1. 100% O₂ by passive flow (BVM/NRB). Administer high flow oxygenation via nasal cannula continuous throughout intubation process.

Airway-Rapid Sequence Intubation (RSI) & Rapid Sequence Airway Cont.

INDUCTION & PARALYSIS:

1. **KETAMINE (ketalar):** Dissociative anesthetic causing sedation and analgesia.
 - For use in patient requiring emergent intubation that Ketamine is not contraindicated.
 - May also consider for patients requiring intubation secondary to asthma .
 - **Adult- 1 mg/kg IV/IO** over 1 min.
 - **Pediatric- 1 mg/kg IV/IO** over 1 min.

Use **VERSED** when Ketamine is relatively contraindicated. ****Examples include:**

- **Severe Hypertension with cardiac history**
- **Pregnancy**
- **Consider the use of versed in a patient in status epilepticus**
- **Versed may be utilized for continued sedation**

OR

VERSED (midazolam): Short-acting benzodiazepine causing sedation and analgesia.

- **Adult - 2.0 mg IV/IO**, may repeat x 1.
- **Pediatric - 0.1 mg/kg IV/IO** (minimum dose 0.1mg) up to a single dose of 2 mg over 2 minutes (~ 1 mg for 10 kg pt)

1. **SUCCINYLCHOLINE (Anectine):** Depolarizing neuromuscular blocking agent which provides short term paralysis in order to facilitate intubation. Onset within 30-90 seconds. All protective reflexes will be absent (gag, cough, and swallow.)
 - **Adult – 2.0 mg/kg IV/IO**
 - **Pediatric: 2.0 mg/kg IV/IO******Succinylcholine is contraindicated in cases of neuromuscular disease, such as ALS, Myasthenia Gravis, and Guillain-Barre**

Airway-Rapid Sequence Intubation (RSI) & Rapid Sequence Airway Cont.

PLACEMENT:

1. Intubate by ETT or NVA orally at adequate paralysis/relaxation (usually 1.5- 2.0 min.)
2. Ventilate manually and confirm tube placement with bilateral anterior and axillary breath sounds, and absence of gastric sounds. Utilize a secondary means of confirmation, such as the EDD or EtCO₂. Secure the tube.
3. If unable to intubate after neuromuscular blockade (NMB), continue BVM ventilations with 100% O₂ and proceed to placement of salvage airway device (i.e. NVA or surgical airway). Surgical airway is indicated if endotracheal intubation and previous salvage airway attempts fail.

*****If unable to successfully intubate, Consider repositioning patient. Elevate the head and torso. Look at the axis of the head and neck for optimal placement. Consider switching providers for repeat attempts. If airway manipulations are unsuccessful, consider NVA*****

POST-PLACEMENT:

1. Continue paralysis with **ROCURONIUM**
 - Loading dose of **1 mg/kg** is needed.
 - Give additional dose every 30 minutes, or as directed by medical control.
2. Re-sedate after 30 minutes or as needed with VERSED
Adult - 2.0 mg IV/IO. Pediatric - 0.1 mg/kg IV/IO (minimum dose 0.1mg) up to a single dose of 2 mg over 2 minutes (~ 1 mg for 10 kg pt)
3. Continued analgesia with **FENTANYL 50mcg IV/IO** every 30 minutes, or as directed by medical control
4. Continuously re-assess the patient's airway status, vital signs, pulse oximetry, ETCO₂, and sedation levels.

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Cardiac-Cardiac Arrest

History:

- Events leading to arrest
- Estimated downtime
- Past Medical History
- Medications
- Existence of terminal illness
- Signs of lividity, rigor mortis
- DNR

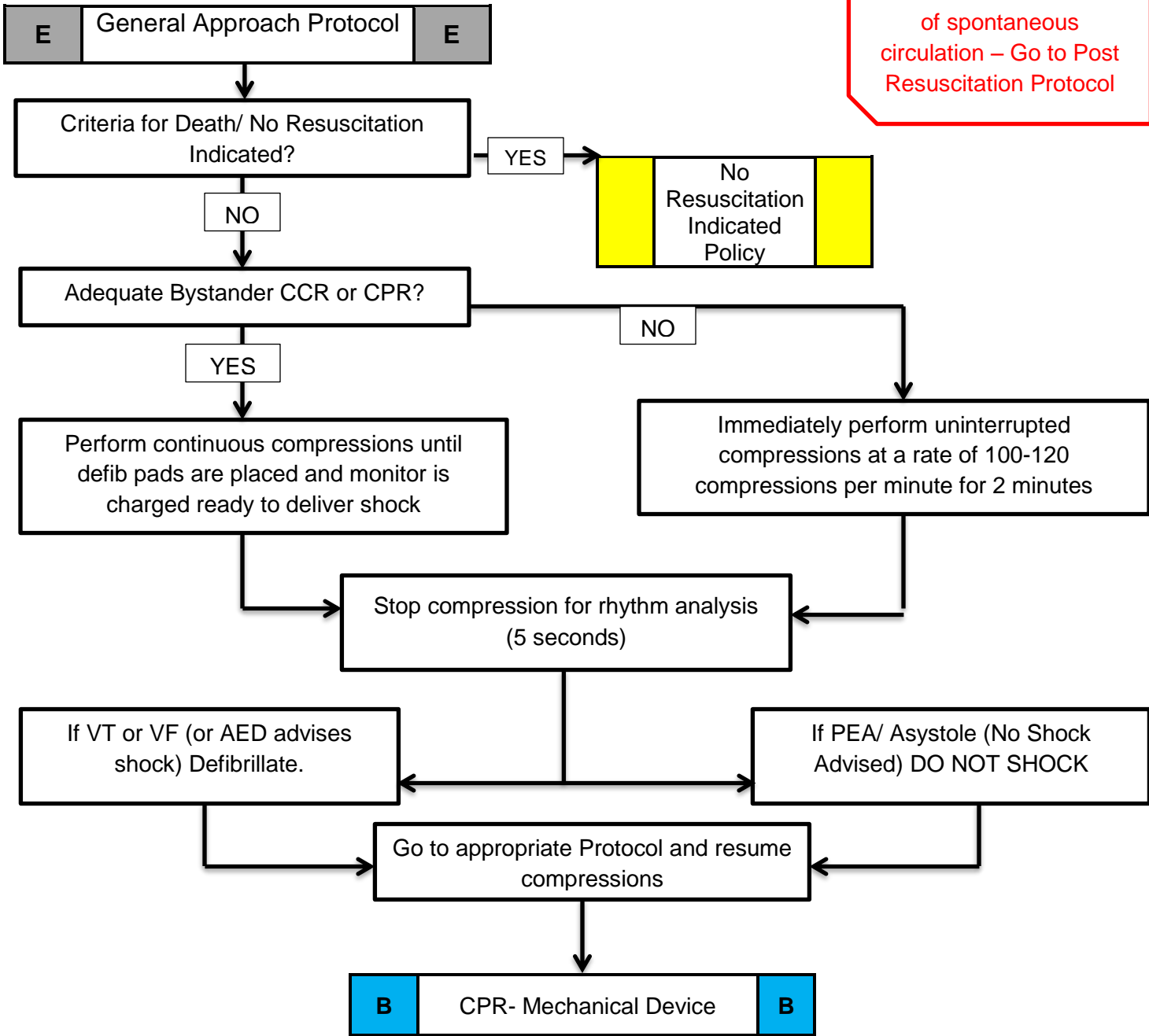
Signs and Symptoms

- Unresponsive
- Apneic
- Pulseless

Differential

- Medical or Trauma
- Vfib vs Pulseless Vtach
- Asystole
- Pulseless electrical activity (PEA)

AT ANY TIME Return of spontaneous circulation – Go to Post Resuscitation Protocol



Cardiac-Cardiac Arrest

Cardiac Arrest

History:

- Events leading to arrest
- Estimated downtime
- Past Medical History
- Medications
- Existence of terminal illness
- Signs of lividity, rigor mortis
- DNR

Signs and Symptoms

- Unresponsive
- Apneic
- Pulseless

Differential

- Medical or Trauma
- Vfib vs Pulseless Vtach
- Asystole
- Pulseless electrical activity (PEA)

- CCR is indicated in ADULT patients that have suffered cardiac arrest of a presumed cardiac nature. It is not indicated in those situations where other etiologies are probable (overdose, drowning, hanging etc.). In these instances CPR is indicated.
- Successful resuscitation requires planning and clear role definition.
- In the event a patient suffers cardiac arrest in the presence of EMS (EMS witnessed Cardiac Arrest), the absolute highest priority is to apply the AED/Defibrillator and deliver a shock immediately if indicated.
- Reassess airway frequently and with every patient move.
- DO NOT INTERRUPT CHEST COMPRESSIONS!

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Approach Protocol
- Check responsiveness and check for a carotid pulse
- If adequate bystander compressions ongoing, continue compressions until monitor pads in place and monitor charged. Stop compressions for rhythm analysis (< 5 sec)
- If VT or VF (or AED Advises Shock), defibrillate
- If PEA/Asystole, go to appropriate protocol and resume compressions
- Immediately after defibrillation, resume chest compressions with a different operator compressing. Do not pause for post-shock rhythm analysis. Stop compressions only for signs of life (patient movement) or rhythm visible through compressions on monitor or pre-defibrillation rhythm analysis every 2 minutes
- If compressions are not being performed upon arrival or if compressions are not deemed adequate, immediately perform compressions at a rate of 100-120 compressions per minute for 2 minutes.

Paramedic-Perform/Confirm All Above Interventions

- Consider IV Protocol
- Refer to respective Cardiac Rhythm Protocol
- Refer to No Resuscitation Policy or Termination of Resuscitation Policy if indicated
- If ROSC (Return of Spontaneous Circulation) refer to Cardiac- Post Resuscitation Protocol

Cardiac-Cardiac Arrest

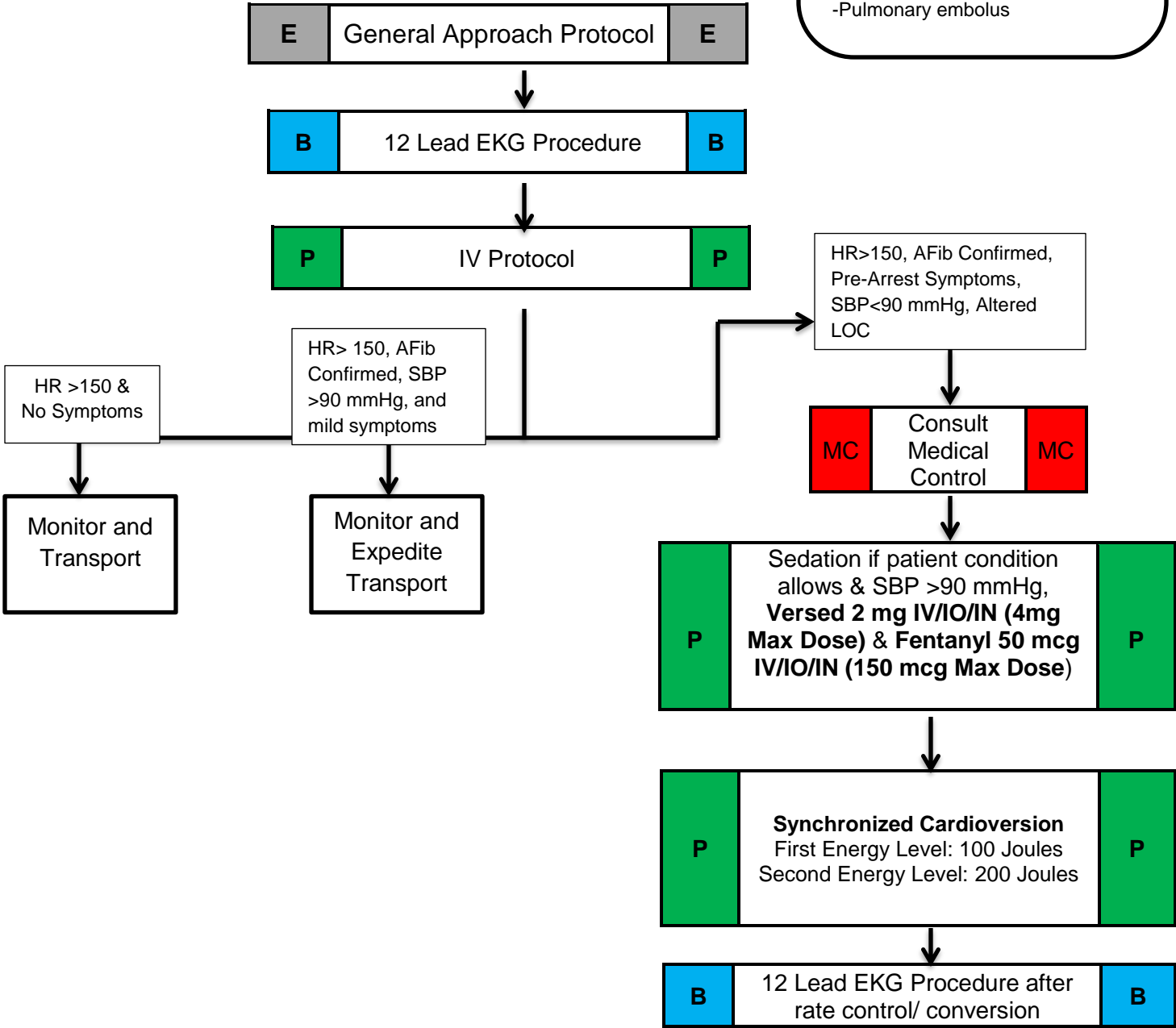
LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Cardiac-Atrial Fibrillation or Flutter

History:
 -Medications (Aminophylline, diet pills, thyroid supplements, decongestants, Digoxin)
 -Diet (caffeine, chocolate)
 -Drugs (nicotine, cocaine)
 -Past medical history
 -History of palpitations/heart racing

Signs and Symptoms
 -Tachycardia
 -QRS <0.12 sec
 -Dizziness, CP, SOB
 -Potential presenting rhythm
 -Sinus tachycardia
 -Atrial fibrillation/flutter
 -Multifocal atrial tachycardia

Differential
 -Heart Disease (WPW, Valvular)
 -Sick sinus syndrome
 -Myocardial Infarction
 -Electrolyte imbalance
 -Exertion, pain, emotional stress
 -Fever
 -Hypoxia
 -Hypovolemia or Anemia
 -Drug effect / OD (see HX)
 -Hyperthyroidism
 -Pulmonary embolus



Cardiac-Atrial Fibrillation or Flutter

Cardiac-Atrial Fibrillation or Flutter

History:

- Medications
- (Aminophylline, diet pills, thyroid supplements, decongestants, Digoxin)
- Diet (caffeine, chocolate)
- Drugs (nicotine, cocaine)
- Past medical history
- History of palpitations/heart racing

Signs and Symptoms

- Tachycardia
- QRS <0.12 sec
- Dizziness, CP, SOB
- Potential presenting rhythm
- Sinus tachycardia
- Atrial fibrillation/flutter
- Multifocal atrial tachycardia

Differential

- Heart Disease (WPW, Valvular)
- Sick sinus syndrome
- Myocardial Infarction
- Electrolyte imbalance
- Exertion, pain, emotional stress
- Fever
- Hypoxia
- Hypovolemia or Anemia
- Drug effect / OD (see HX)
- Hyperthyroidism
- Pulmonary embolus

Emergency Medical Responder

- General Patient Care Protocol

Basic-Perform/Confirm All Above Interventions

- 12 Lead EKG Procedure

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol

Stable

- HR > 150
- No Symptoms

Monitor and Transport

Borderline

- HR >150
- A-Fib confirmed
- SBP >90 mmHg
- mild symptoms i.e. CP, SOB, light headedness

Monitor and Expedite Transport

Contact Medical Control for Unstable A-Fib or A-Flutter for discussion of the following treatments

Cardiac-Atrial Fibrillation or Flutter

Unstable

- HR >150
- A-Fib confirmed
- Pre-Arrest Symptoms
- SBP < 90 mmHg
- Altered LOC
 - Sedation if patient condition and time allows (hold if SBP <90mmHg):
 - **Fentanyl 25-50 mcg and Midazolam 1-2 mg IV/IO**
 - Titrate to maximum total dose of **Fentanyl 150 mcg** and **Midazolam 4 mg**
 - Synchronized Cardioversion
 - 1st energy level: 100 Joules
 - 2nd energy level: 200 Joules
- 12 Lead EKG Procedure after rate control/ conversion

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LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

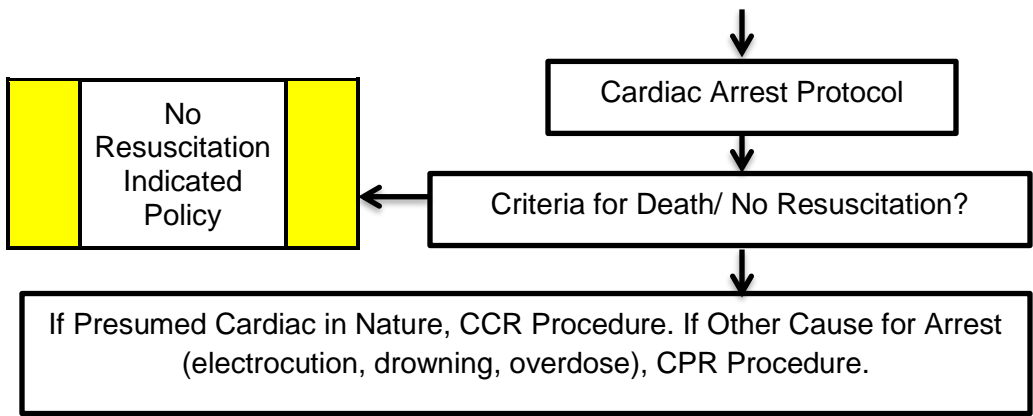
Cardiac-Asystole

- History:**
- Past Medical History
 - Medications
 - Events leading to arrest
 - End stage renal disease
 - Estimated downtime
 - Suspected hypothermia
 - Suspected Overdose
 - DNR

- Signs and Symptoms**
- Pulseless
 - Apneic
 - No electrical activity on ECG
 - No auscultated

- Differential**
- Medical or Trauma
 - Hypoxia
 - Potassium (hypo/hyper)
 - Drug Overdose
 - Acidosis
 - Hypothermia
 - Device (lead) error

E General Approach Protocol E



AT ANY TIME
Return of spontaneous circulation –
Go to Post Resuscitation Protocol

P IV/IO Protocol P
P Epinephrine 1mg 1:10,000 IV/IO Every 3-5 Minutes P

Consider Correctable Causes

Hypoxia – secure airway and ventilate
Hypoglycemia – Dextrose 25grams
Hyperkalemia – Sodium bicarbonate 1mEq/kg IV/IO, Calcium Chloride 1g IV/IO
Hypothermia – Active Rewarming
Calcium Channel and B-Blocker OD – Glucagon 2mg IV/IO
Calcium Channel Blocker OD – Calcium Chloride 1gram IV/IO (avoid if patient on Digoxin/Lanoxin)
Tricyclic antidepressant OD – Sodium Bicarbonate 1mEq/kg IV/IO
Possible Narcotic OD – Naloxone 2mg IV/IO

Termination of Resuscitation Protocol ← After 20 Minutes Criteria for Discontinuation

Continue Epinephrine and Correctable Causes H's & T's

MC Consult Medical Control MC

Cardiac-Asystole

Cardiac-Asystole

History:

- Past Medical History
- Medications
- Events leading to arrest
- End stage renal disease
- Estimated downtime
- Suspected hypothermia
- Suspected Overdose

Signs and Symptoms

- Pulseless
- Apneic
- No electrical activity on ECG
- No auscultated heart tones

Differential

- Medical or Trauma
- Hypoxia
- Potassium (hypo/hyper)
- Drug Overdose
- Acidosis
- Hypothermia
- Device lead error

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Approach Protocol
- Cardiac Arrest Protocol
- If presumed cardiac in nature, CCR Procedure. CPR Procedure for all other arrests (drowning, electrocution, overdose, etc.)

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol
- Consider and treat possible causes
- If indicated refer to No Resuscitation Indicated Policy

Potential Causes of Asystole	Treatment
<ul style="list-style-type: none"> • Hypoxia 	<ul style="list-style-type: none"> • Secure airway and ventilate
<ul style="list-style-type: none"> • Hypoglycemia 	<ul style="list-style-type: none"> • Dextrose 25grams IV/IO; repeat as needed to achieve blood glucose >60 mg/dL
<ul style="list-style-type: none"> • Hyperkalemia (end stage renal disease) 	<ul style="list-style-type: none"> • Sodium Bi-Carb 1 mEq/kg IV/IO • Calcium Chloride 1 gram IV/IO
<ul style="list-style-type: none"> • Hypothermia 	<ul style="list-style-type: none"> • Active Re-warming
<ul style="list-style-type: none"> • Tablets (drug overdose) 	<ul style="list-style-type: none"> • See below

- **Epinephrine 1 mg** IV/IO every 3-5 min during arrest
- Drug overdoses (see specific drug OD/toxicology section)
- **Glucagon 2 mg** IV/IO for calcium channel and B-blocker OD
- **Calcium Chloride 1 gram** IV/IO for calcium channel blocker OD
 - Avoid if patient on Digoxin/Lanoxin
- **Sodium Bicarbonate 1 mEq/kg**, IV/IO for Tricyclic antidepressant OD
- **Naloxone (Narcan) 2 mg** IV/IO for possible narcotic OD
- If no response to resuscitative efforts in 20 minutes consider discontinuation of efforts (see **Termination of Resuscitation Policy**)

Cardiac-Asystole

Cardiac-Bradycardia (HR <60)

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

History:

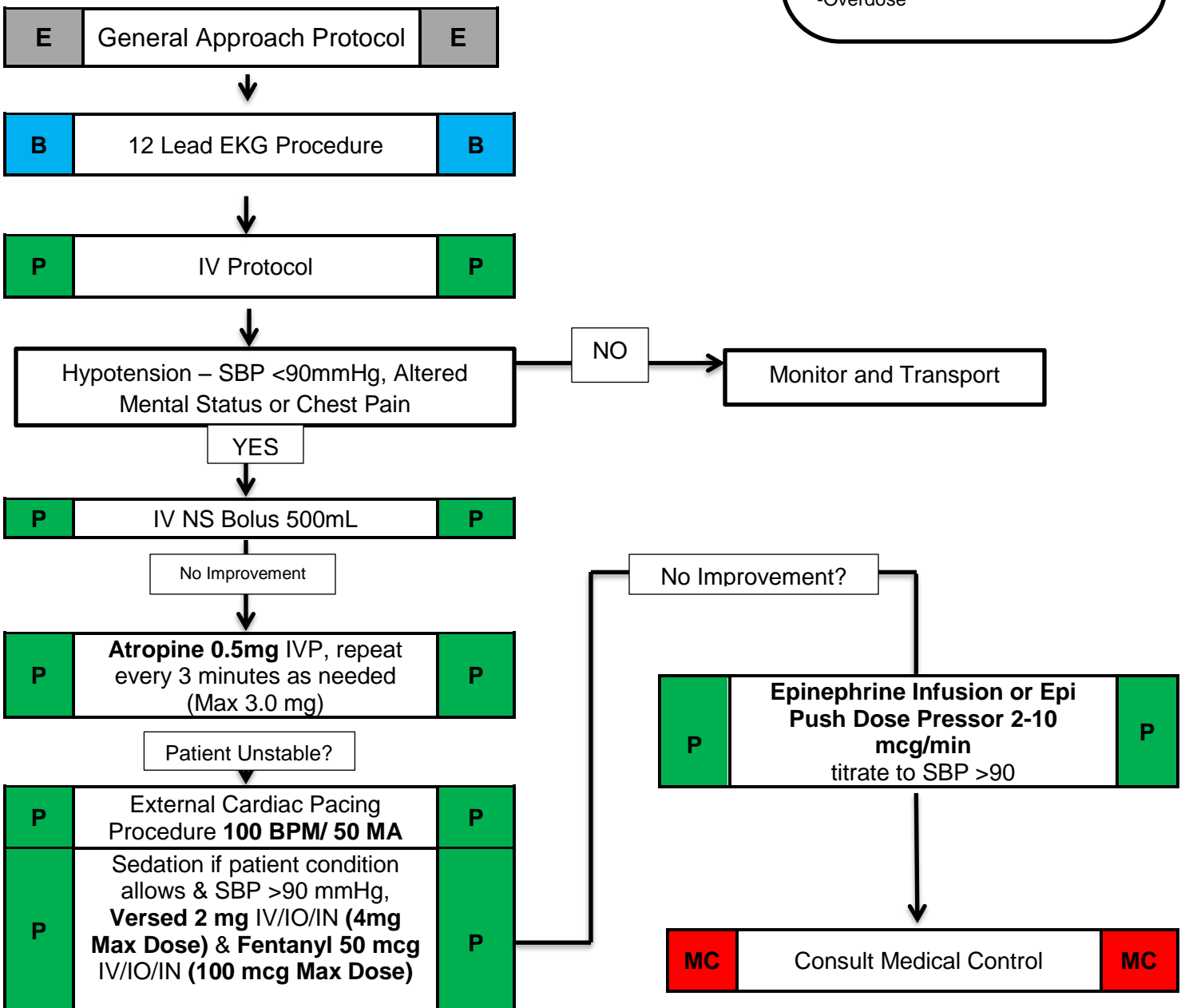
- Past medical history
- Medications
 - *Beta Blockers
 - *Calcium Channel blockers
 - *Clonidine
 - *Digoxin
 - Pacemaker

Signs and Symptoms

- HR <60/minute with hypotension, acute altered mental status, chest pain, acute CHF, seizures, syncope, or shock secondary to bradycardia
- Chest Pain
- Respiratory distress
- Hypotension or Shock
- Altered mental Status
- Syncope

Differential

- Acute Myocardial Infarction
- Hypoxia
- Pacemaker failure
- Hypothermia
- Sinus Bradycardia
- Athletes
- Head Injury (elevated ICP) or Stroke
- Spinal Cord Lesion
- Sick sinus syndrome
- AV Blocks (1°, 2°, 3°)
- Overdose



Cardiac-Bradycardia

Cardiac-Bradycardia

History:

- Past medical history
- Medications
 - Beta Blockers
 - Calcium Channel blockers
 - Clonidine
 - Digoxin
- Pacemaker

Signs and Symptoms

- HR <60/minute with hypotension,
- acute altered mental status, chest
- pain, acute CHF, seizures, syncope,
- or shock secondary to bradycardia
- Chest Pain
- Respiratory distress
- Hypotension or Shock
- Altered mental Status
- Syncope

Differential

- Acute Myocardial Infarction
- Hypoxia
- Pacemaker failure
- Hypothermia
- Sinus Bradycardia
- Athletes
- Head Injury (elevated ICP) or
- Stroke
- Spinal Cord Lesion
- Sick sinus syndrome
- AV Blocks (1°, 2°, 3°)
- Overdose

Emergency Medical Responder

- General Approach Protocol

Basic-Perform/Confirm All Above Interventions

- 12 Lead EKG Procedure

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol

Symptomatic (SBP<90mmHg, altered mental status or severe chest pain)

- IV Bolus of NS 500 mL
- **Atropine 0.5 mg IVP**, Repeat every 3 minutes as needed (Maximum dose 3mg)

If symptoms persist after Atropine or any delay in establishing IV:

- External Cardiac Pacing Procedure
 - **100 BPM & 50 mA**
- Sedation if patient condition and time allows (hold if SBP<90 mmHg)
- **Fentanyl 50 mcg** and **Midazolam 2 mg IV/IO**
- Titrate to maximum total dose of **Fentanyl 100 mcg** and **Midazolam 4 mg**

If above unsuccessful:

- **Epinephrine infusion or Epi Push Dose Pressor at 2-10 mcg/min** titrated to maintain SBP >90 mmHg.

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Cardiac-Chest Pain

- History**
- Age
 - Medications
 - Viagra, Levitra, Cialis
 - Past Medical History (MI, Angina, Diabetes, post menopausal)
 - Allergies (ASA, morphine, lidocaine)
 - Recent physical exertion
 - Palliation/Provocation
 - Quality (crampy, constant, sharp, dull, etc.
 - Region/Radiation/Referred
 - Severity (1-10)

- Signs and Symptoms**
- CP (pain, pressure, aching, vice like tightness)
 - Location (substernal, epigastric, arm, jaw, neck, shoulder)
 - Radiation of pain
 - Pale, diaphoresis
 - Shortness of Breath
 - Nausea, vomiting, dizziness
 - **TIME OF ONSET**

- Differential**
- Trauma vs. Medical
 - Angina vs. MI
 - Pericarditis
 - Pulmonary embolism
 - Pneumothorax Asthma / COPD
 - Aortic dissection or aneurysm
 - GE reflux or hiatal hernia
 - Esophageal spasm
 - Chest wall injury or pain
 - Pleural pain
 - OD (Cocaine) or Methamphetamine

E General Approach Protocol E

B	12 Lead EKG Procedure as soon as possible	B
P	Perform Right Sided 12 lead EKG if Inferior MI Present	P
B	ASA 324 mg PO	B
B	Oxygen via NC or NRB to maintain >92% SPO2	B
P	IV Protocol	P
P	0.4 mg of Nitroglycerin every 3-5 minutes if SBP >100 mmHg. (Max 3 doses)	P
P	Odansetron (Zofran) 4 mg IV for nausea or vomiting	P
P	50 mcg of Fentanyl w/ continued CP despite Nitroglycerin if SBP > 90 mmHg (150 mcg Max)	P
MC	Consult Medical Control	MC

- Place V4 on the right side of chest becoming V4R
- Withhold all Nitrates (Nitroglycerin) if elevation is noted in V4R
- Establish a second peripheral IV, large bore being optimal. Consider 250 bolus of NS
- If V4R has no elevation, consider administration of nitrates

Notify facility EARLY

IF symptoms for <12 hours, and any of the following:

- Paramedic interprets ST segment elevation >1mm in two or more contiguous leads
- Defib interpretation of "***ACUTE MI**" on EKG
- New Left BBB (confirmed by comparing to prior EKG)

STEMI ALERT

All Brown County Hospitals equipped with Cardiac Cath Labs

For hypotension not resolved by fluid refer to Shock (Non-Traumatic) protocol

For any arrhythmias that become present refer to respective protocol

Cardiac-Chest Pain

Cardiac-Chest Pain

History

- Age
- Medications
- Viagra, Levitra, Cialis
- Past Medical History (MI, Angina, Diabetes, post menopausal)
- Allergies (ASA, morphine, lidocaine)
- Recent physical exertion
- Palliation/Provocation
- Quality (crampy, constant, sharp, dull, etc.)
- Region/Radiation/Referred
- Severity (1-10)
- Time(onset/duration/repitition)

Signs and Symptoms

- CP (pain, pressure, aching, vice like tightness)
- Location (substernal, epigastric, arm, jaw, neck, shoulder)
- Radiation of pain
- Pale, diaphoresis
- Shortness of Breath
- Nausea, vomiting, dizziness
- **TIME OF ONSET**

Differential

- Trauma vs. Medical
- Angina vs. MI
- Pericarditis
- Pulmonary embolism
- Pneumothorax Asthma / COPD
- Aortic dissection or aneurysm
- GE reflux or hiatal hernia
- Esophageal spasm
- Chest wall injury or pain
- Pleural pain
- OD (Cocaine) or Methamphetamine

Emergency Medical Responder

1. Perform initial assessment to include:
 - Time of onset of symptoms or change in symptoms
 - Past Medical History of cardiac disease, diabetes or hypertension
 - Any interventions performed (previous medications, aspirin, nitroglycerin, etc)
2. Administer **Oxygen** at appropriate flow rate
3. Focused physical exam for cardiac patient, including baseline vital signs
4. Prepare for transport

Basic-Perform/Confirm All Above Interventions

1. If suspected cardiac etiology:
2. Apply cardiac monitor using monitoring electrodes.
3. Perform 12 Lead EKD Procedure
4. Administer four **81 mg** tablets of chewable **Aspirin (324 mg total)**.
5. Evaluate for assisting the patient in taking their own **Nitroglycerin**:
 - Contraindications:
 - Hypotension (SBP < 90 mm Hg)
 - Head injury
 - Recent use of erectile dysfunction drugs, such as Viagra, Cialis or Levitra
 - Patient has already taken 3 of his/her own nitroglycerin

Consult Medical Control

For authorization to assist the patient in taking their own Nitroglycerin.

- Place or spray under tongue
- Reassess vital signs for hypotension after each intervention and if the SBP remains above 90 mm Hg, may repeat every 3-5 minutes to a total of 3 doses

Chest Pain Cont.

6. Initiate transport, with close observation.
7. If cardiac etiology is not suspected,
8. Initiate Transport

Paramedic-Perform/Confirm All Above Interventions

- **If Myocardial Infarct is confirmed, activate STEMI CODE as soon as possible.**
 - If elevation is noted in leads II, III, & aVF, perform Right Sided 12 Lead EKG to confirm Inferior MI:
 - **Place V4 on right side of chest making it VR4**
 - **Withhold all Nitrates (Nitroglycerin) if elevation is noted in V4R**
 - **Establish a second peripheral IV, large bore being optimal. Consider 250 mL bolus of Normal Saline**
 - **If no elevation is noted in V4R, consider administration of nitrates**
 - If any dysrhythmias are noted refer to appropriate protocol.
1. IV Protocol
 2. Administer **Nitroglycerin** if SBP > 90 and patient has not already received 3 doses.
 - Place or spray under tongue
 - Reassess vital signs for hypotension after each intervention and if the SBP remains above 100 mm Hg, may repeat every 3-5 minutes to a total of 3 doses.
 3. For any nausea or vomiting administer **4 mg of Odansetron (Zofran) IV**
 4. Administer **Fentanyl (Sublimaze) 50 mcg IV** if patient has continued pain despite nitroglycerin and aspirin.
 - Reassess vital signs after each dose.
 - May repeat every 3- 5 minutes to a total dose of **150 mcg of Fentanyl (Sublimaze)** provided SBP remains above 90 mm Hg before each dose.

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Cardiac-Hypertensive Emergency

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

History:

- *Documented Hypertension
- *Related diseases: diabetes,
- *CVA, renal failure, cardiac
- *Medications (compliance ?)
- *Erectile dysfunction medication
- *Pregnancy

Signs and Symptoms

One of these

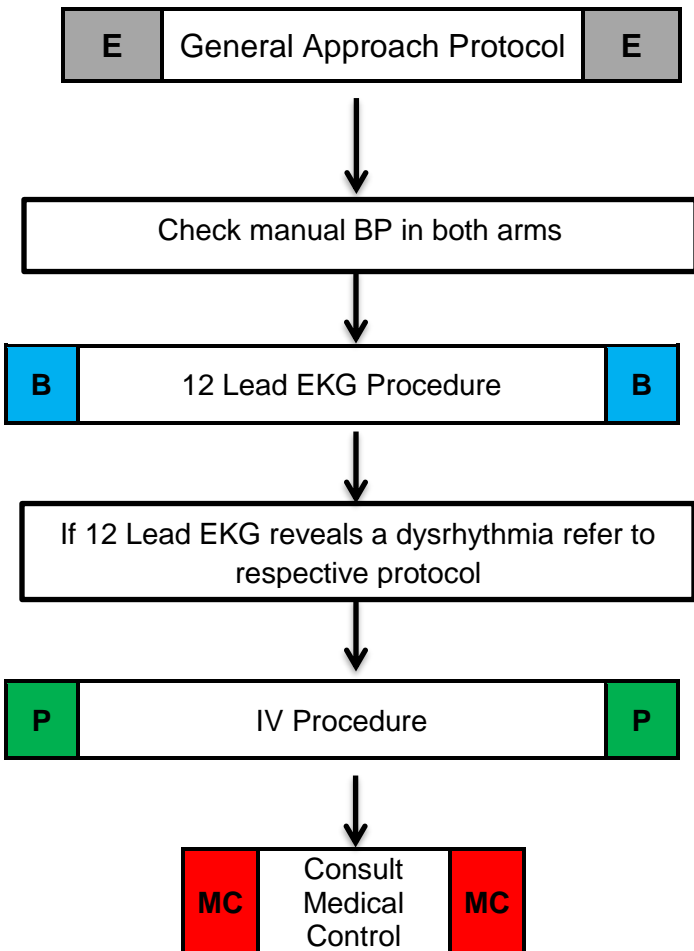
- Systolic BP 200 or greater
- Diastolic BP 110 or greater

And at least one of these

- Headache
- Nosebleed
- Blurred vision
- Dizziness

Differential

- Hypertensive encephalopathy
- Primary CNS injury (Cushings response = bradycardia with hypertension)
- Myocardial Infarction
- Aortic dissection (aneurysm)
- Pre-eclampsia/Eclampsia
- CVA



Cardiac-Hypertensive Emergency

History:

- Documented Hypertension
- Related diseases: diabetes, CVA, renal failure, cardiac
- Medications (compliance ?)
- Erectile dysfunction medication
- Pregnancy

Signs and Symptoms

One of these

- Systolic BP 200 or greater
- Diastolic BP 110 or greater

And at least one of these

- Headache
- Nosebleed
- Blurred vision
- Dizziness

Differential

- Hypertensive encephalopathy
- Primary CNS injury (Cushings response = bradycardia with hypertension)
- Myocardial Infarction
- Aortic dissection (aneurysm)
- Pre-eclampsia/Eclampsia

Emergency Medical Responder

- General Patient Care Protocol-Adult
- Manual BP taken on both arms

Basic-Perform/Confirm All Above Interventions

- 12 Lead EKG Procedure
 - If 12 Lead EKG reveals a dysrhythmia refer to respective protocol

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Cardiac-Pulseless Electrical Activity

History:

- Past medical history
- Medications
- Events leading to arrest
- End stage renal disease
- Estimated downtime
- Suspected hypothermia
- Suspected overdose
- DNR

Signs and Symptoms

- Pulseless
- Apneic
- Electrical activity on ECG
- No heart tones on auscultation

Differential

- Hypovolemia (trauma, AAA, other)
- Cardiac Tamponade
- Hypothermia
- Drug overdose (Tricyclics, Digitalis, Beta Blockers, Calcium channel blockers)
- Massive MI
- Hypoxia
- Tension pneumothorax
- Pulmonary embolus
- Acidosis
- Hyperkalemia

E General Approach Protocol E

Cardiac Arrest Protocol

If presumed cardiac in nature, CCR Procedure. If other cause for arrest (electrocution, drowning, overdose), CPR Procedure.

P	IV/IO Protocol	P
P	Epinephrine 1mg 1:10,000 IV/IO Every 3-5 Minutes	P

AT ANY TIME
Return of spontaneous circulation – Go to Post Resuscitation Protocol

P	Consider Correctable Causes	P
	Hypovolemia (most common) – NS 1-2L IV/IO	
	Hypoxia – secure airway and ventilate	
	Hydrogen Ion (acidosis) – Sodium Bicarbonate 1mEq/kg IV/IO	
	Hyperkalemia – Sodium bicarbonate 1mEq/kg IV/IO, Calcium Chloride 1gram IV/IO	
	Hypothermia – Active Rewarming	
	Calcium Channel and B-Blocker OD – Glucagon 2mg IV/IO	
	Calcium Channel Blocker OD – Calcium Chloride 1gram IV/IO (avoid if patient on Digoxin/Lanoxin)	
	Tricyclic antidepressant OD – Sodium Bicarbonate 1mEq/kg IV/IO	
	Possible Narcotic OD – Naloxone 2mg IV/IO	
Cardiac Tamponade – NS 1-2 L IV/IO and expedite transport		
Tension pneumothorax – Needle Decompression		
Coronary or Pulmonary Thrombosis – Expedite Transport		

Termination of Resuscitation Policy

MC Consult Medical Control MC

Cardiac-Pulseless Electrical Activity

Cardiac-Pulseless Electrical Activity

History:

- Past medical history
- Medications
- Events leading to arrest
- End stage renal disease
- Estimated downtime
- Suspected hypothermia
- Suspected overdose
- DNR

Signs and Symptoms

- Pulseless
- Apneic
- Electrical activity on ECG
- No heart tones on auscultation

Differential

- Hypovolemia (trauma, AAA, other)
- Cardiac Tamponade
- Hypothermia
- Drug overdose (Tricyclics, Digitalis, Beta Blockers, Calcium channel blockers)
- Massive MI
- Hypoxia
- Tension pneumothorax
- Pulmonary embolus
- Acidosis
- Hyperkalemia

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Approach Protocol
- Cardiac Arrest Protocol
- If presumed cardiac in nature, CCR Procedure. CPR Procedure for all other arrests (drowning, electrocution, overdose, ect.)

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol
- Consider and treat possible causes

Potential Causes of PEA	Treatment
Hypovolemia (most common)	Normal Saline 1-2 L IV/IO
Hypoxia	Secure airway and ventilate
Hydrogen Ion (acidosis)	Sodium Bicarbonate 1 mEq/kg IV/IO
Hyperkalemia (end stage renal disease)	Sodium Bicarbonate 1 mEq/kg IV/IO Calcium Chloride 1 gram IV/IO
Hypothermia	Active rewarming
Tablets (drug overdose)	See below:
Tamponade, Cardiac	Normal Saline 1-2 L IV/IO Expedite transport
Tension pneumothorax	Needle thoracostomy
Thrombosis, Coronary	Expedite transport
Thrombosis, Pulmonary	Expedite transport

Cardiac-Pulseless Electrical Activity Cont.

- **Epinephrine 1 mg** IV/IO every 3-5 min during arrest
- Drug overdoses (see specific drug OD/toxicology section)
 - **Glucagon 2 mg** IV/IO for calcium channel and B-blocker OD
 - **Calcium Chloride 1 gram** IV/IO for calcium channel blocker OD
 - Avoid if patient on Digoxin/Lanoxin
 - **Sodium Bicarbonate 1 mEq/kg**, IV/IO for Tricyclic antidepressant OD
 - **Naloxone (Narcan) 2 mg** IV/IO for possible narcotic OD
- If no response to resuscitative efforts in 20 minutes consider discontinuation of efforts (see **Termination of Resuscitation Policy**)

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Cardiac-Post Resuscitation

History:
 -Respiratory Arrest
 -Cardiac Arrest

Signs and Symptoms
 -Return of pulse

Differential
 -Continue to address specific differentials associated with the original dysrhythmia

Repeat Primary Assessment

Continue Ventilatory Support
 -Oxygen Sat's >92%
 -ETCO2 goal 40
 -RR <12
DO NOT HYPERVENTILATE

GCS & Vital Signs
 (Including Pulse Ox)

B	12 Lead EKG Procedure	B
P	IV Protocol	P

Continue anti-arrhythmic if ROSC was associated with its use

Hypotension <90 mmHg

Combative

Re-Arrest

P	Normal Saline Bolus up to 500 mL	P
---	---	---

P	Versed 1-2 mg slow IV/IO may repeat x1 (max dose 4 mg) & SBP > 90 mmHg	P
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Follow appropriate arrest protocol

P	If not improved by NS bolus Epi Infusion or Epi Push Dose Pressor 0.1-0.5 mcg/kg/min titrated to maintain SBP >90mmHg. (Ex: 70 kg or 154 lbs patient 10-50 mcg/min)	P
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MC	Consult Medical Control	MC
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Cardiac-Post Resuscitation

Cardiac-Post Resuscitation

History:

- Respiratory Arrest
- Cardiac Arrest

Signs and Symptoms

- Return of pulse

Differential

- Continue to address specific differentials associated with the original dysrhythmia

Emergency Medical Responder

- General Patient Care Protocol
- Maintain assisted ventilation as needed
- **Oxygen** as needed to maintain sat's>92%
- ETCO2 if available

Basic-Perform/Confirm All Above Interventions

- 12 Lead EKG Procedure

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol
- Monitor ETCO2, goal is 40mmHg, DO NOT HYPERVENTILATE
- For hypotension (systolic BP <90 mmHg) not improved by fluid boluses, or when fluid administration is contraindicated:
 - **Epi Infusion or Epi Push Dose Pressor 0.1-0.5 mcg/kg/min** titrated to maintain SBP >90mmHg. (Ex: 70 kg or 154 lbs patient 10-50 mcg/min)>90 mmHg
- If VF/pulseless VT occurred during arrest **AND** Amiodarone was administered, consider additional anti-arrhythmic infusion to prevent recurrence. recurs.
- If patient becomes combative, administer:
 - **Midazolam (Versed) 1-2 mg** slow IV/IO, may repeat X 1 (maximum 4 mg)
- Transport to nearest appropriate facility

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Cardiac-Supraventricular Tachycardia

History:

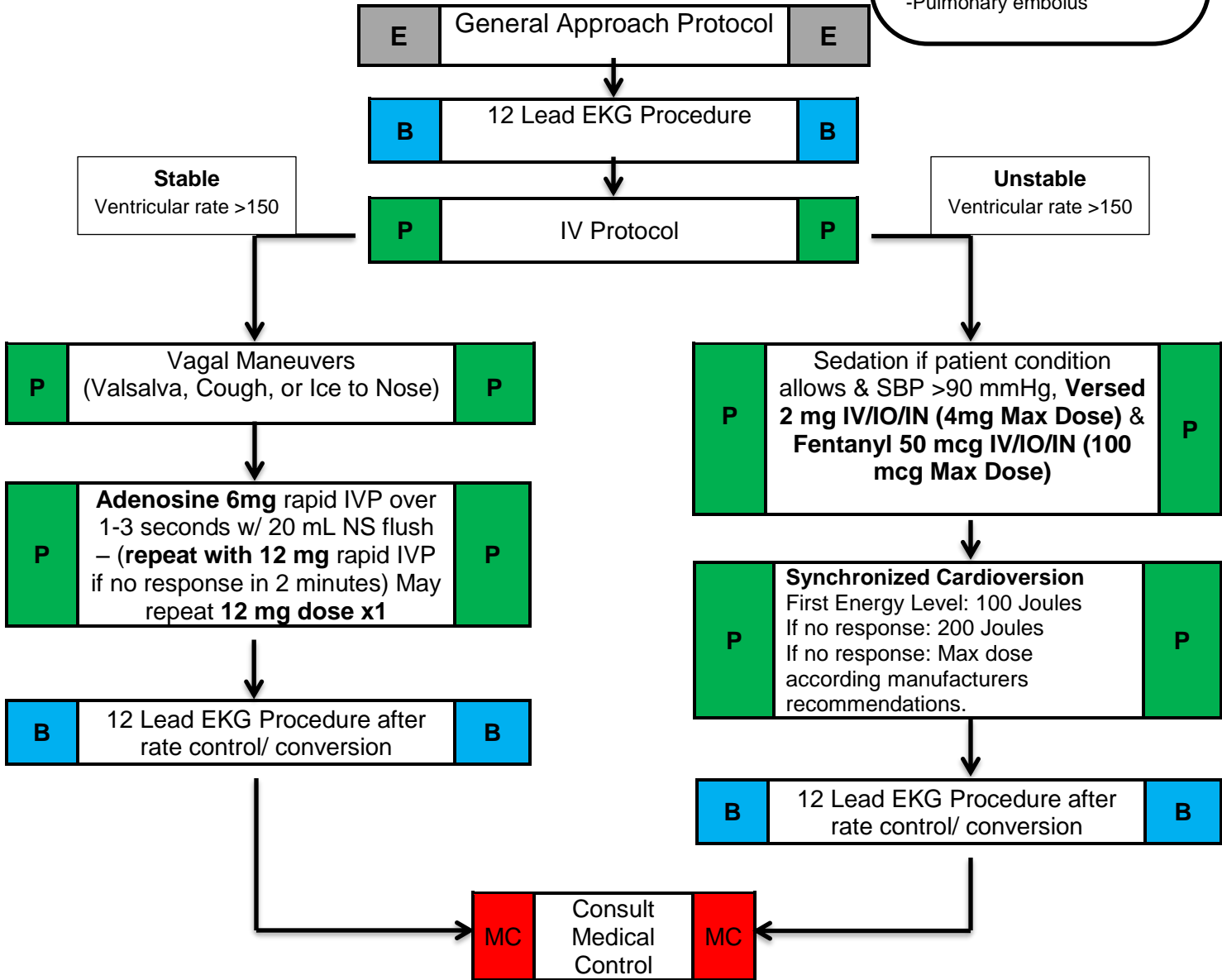
- Medications (Aminophylline, diet pills, thyroid supplements)
- Decongestants, Digoxin
- Diet (caffeine, chocolate)
- Drugs (nicotine, cocaine)
- Past medical history
- History of palpitations/heart racing
- Syncope / near syncope

Signs and Symptoms

- HR >150 bpm
- QRS <0.12 sec (if QRS >0.12 sec, go to V-Tach protocol)
- If history of WPW, go to V-Tach protocol
- Dizziness, CP, SOB
- Potential presenting rhythm
 - *Atrial/Sinus tachycardia
 - *Atrial fibrillation/flutter
 - *Multifocal atrial tachycardia

Differential

- Heart Disease (WPW, Valvular)
- Sick sinus syndrome
- Myocardial Infarction
- Electrolyte imbalance
- Exertion, pain, emotional stress
- Fever
- Hypoxia
- Hypovolemia or Anemia
- Drug effect / OD (see HX)
- Hyperthyroidism
- Pulmonary embolus



Cardiac-Supraventricular Tachycardia

Cardiac-Supraventricular Tachycardia

History:

- Medications
- (Aminophylline, diet pills, thyroid supplements,
- Decongestants, Digoxin)
- Diet (caffeine, chocolate)
- Drugs (nicotine, cocaine)
- Past medical history
- History of palpitations/heart racing
- Syncope / near syncope

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- If history of WPW, go to V-Tach protocol
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- Drug effect / OD (see HX)
- Hyperthyroidism
- Pulmonary embolus

Emergency Medical Responder

- General Approach Protocol

Basic-Perform/Confirm All Above Interventions

- 12 Lead EKG Procedure

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol

Stable or borderline (Ventricular rate >150)

- Vagal maneuvers (Valsalva or Cough)
- **Adenosine Phosphate (Adenocard) 6 mg** rapid IVP over 1-3 seconds with 20 ml Normal Saline flush
If no response within 2 minutes repeat **Adenosine Phosphate (Adenocard) 12 mg** rapid IVP.
May repeat **12mg dose 1x.**
- 12 Lead EKG Procedure after rate control/ conversion.

Unstable with serious signs and symptoms (Ventricular rate >150)

- May give brief trial of **Adenosine 6mg** rapid IVP over 1-3 seconds with 20 cc Normal Saline flush
- Sedation if patient condition and time allows (hold if SBP<90mmHg)
 - **Fentanyl 25-50 mcg** and **Midazolam 1-2 mg** IV/IO
 - Titrate to maximum total dose of **Fentanyl 200 mcg** and **Midazolam 4 mg**
- Synchronized Cardioversion
 - First energy level: 100 Joules
 - If no response: 200 Joules
 - If no response, max dose according to manufactures recommended setting

Cardiac-Supraventricular Tachycardia

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Cardiac-VF & Pulseless VT

History:
 -Estimated down time
 -Past medical history
 -Medications
 -Events leading to arrest
 -Renal failure / dialysis
 -DNR or living will

Signs and Symptoms
 -Unresponsive, apneic, pulseless
 -Ventricular fibrillation or ventricular tachycardia on EKG

Differential
 -Asystole
 -Artifact / Device failure
 -Cardiac
 -Endocrine / Metabolic
 -Drugs
 -Pulmonary

Cardiac Arrest Protocol

Defibrillate x1
 After defibrillation resume CCR without pulse check

AT ANY TIME
 Return of spontaneous circulation – Go to Post Resuscitation Protocol

Apply non-rebreather as soon as other care activities will not be interrupted

After 2 minutes of CCR
 Check rhythm – if VF/VT persists
Defibrillate Resume CCR Immediately

P	IV/IO Protocol	P
P	Epinephrine 1mg 1:10,000 IV/IO Every 3-5 Minutes	P

AT ANY TIME
 Rhythm Changes to Non-shockable Rhythm
 Go to appropriate Protocol

Treatment Priorities:
 Uninterrupted Chest Compressions, Defibrillation, then IV/IO access & Airway Management

After 2 minutes of CCR
 Check rhythm – if VF/VT persists
Defibrillate Resume CCR Immediately

Amiodarone 300mg IV/IO bolus. For persistent VT/VF give **Amiodarone 150mg IV/IO bolus** on second round.

Continue cycles per CCR Procedure

If Polymorphous VT or hypomagnesemic state- **Magnesium Sulfate 2 grams IV/IO** push over 1-2 min
 If suspected hyperkalemia or tricyclic OD- **Sodium Bicarbonate 1mEq/kg IV/IO**
 If suspected hyperkalemia – **Calcium Chloride 1 gram IV/IO**

If rhythm has not converted after 3rd shock consider

MC Consult Medical Control in Regards When to Terminate Resuscitation Efforts **MC**

Double Sequential Defibrillation Procedure

Cardiac-VF & Pulseless VT

Cardiac-Ventricular Fibrillation & Pulseless Ventricular Tachycardia

History:

- Estimated down time
- Past medical history
- Medications
- Events leading to arrest
- Renal failure / dialysis
- DNR or living will

Signs and Symptoms

- Unresponsive, apneic, pulseless
- Ventricular fibrillation or ventricular tachycardia on EKG

Differential

- Asystole
- Artifact / Device failure
- Cardiac
- Endocrine / Metabolic
- Drugs
- Pulmonary

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Approach Protocol
- Cardiac Arrest Protocol
- If presumed cardiac in nature, CCR Procedure. CPR Procedure for all other arrests (drowning, electrocution, overdose, ect.)
- Defibrillate for persistent VF/VT
 - use manufacturer recommended energy settings
 - Continue Chest Compressions immediately after shock (do not stop for pulse or rhythm check)
- Analyze rhythm after 2 minutes of continuous compressions; If VF/VT persists:
 - Defibrillate at manufacturers recommendations
 - Continue compressions immediately after shock (do not stop for pulse or rhythm check)

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol
- Consider and treat possible causes
- **Epinephrine 1 mg** IV/IO every 3-5 min during arrest
- Analyze rhythm after 2 minutes of continuous compressions; If VF/VT persists:
 - Defibrillate at manufacturers recommendations
 - Continue Chest Compressions immediately after shock (do not stop for pulse or rhythm check)
- **Amiodarone 300mg** IV/IO bolus
 - For persistent VT/VF give **Amiodarone 150 mg** IV/IO bolus on second round

Cardiac-Ventricular Fibrillation & Pulseless Ventricular Tachycardia

- Continue cycle of Compressions & Drug
 1. Rhythm Check
 2. Compressions
 3. Shock
 4. Compressions & Drug
 5. Rhythm Check
 6. Compression
 7. Shock as needed
 8. Start cycle over again
- Additional interventions to consider in special circumstances
 - **Magnesium Sulfate 2 grams** IV/IO push over 1-2 minutes only if suspected Polymorphous VT (torsades de pointes) or hypomagnesemic state (chronic alcohol or diuretic use)
 - **Sodium Bicarbonate 1 mEq/kg**, IV/IO if suspected hyperkalemia (dialysis patient) or tricyclic antidepressant OD
 - **Calcium Chloride 1 gram** IV/IO if suspected hyperkalemia (dialysis patient)
- If rhythm has not converted after third shock, consider Double Sequential Defibrillation Procedure
 - If no response to Double Sequential Defibrillation

Contact Medical Control for consultation of when to terminate resuscitation efforts

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LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Cardiac-Wide Complex Tachycardia

History:
 -Past medical history / medications, diet, drugs
 -Syncope / Near syncope
 -Palpitations
 -Pacemaker
 -Allergies: Lidocaine / Novocaine
 -CAD, CHF, Cardiomyopathy

Signs and Symptoms:
 -Ventricular Tachycardia on ECG (Runs or Sustained)
 -Conscious, rapid pulse
 -Chest Pain, Shortness of Breath
 -Dizziness
 -Rate usually 150-180 bpm for sustained VT

Differential:
 -Artifact / Device Failure
 -Cardiac
 -Endocrine/Electrolyte
 -Hyperkalemia
 -Drugs/Toxic exposure
 -Pulmonary disease

E General Approach Protocol E

Refer to VFib/
Pulseless VTach
Protocol

Palpable Pulse?
Wide, regular rhythm w/ QRS >.12 sec.

Unstable

- Chest Pain
- SOB
- SBP <90 mmHg
- Altered LOC

Stable

P IV Protocol P

P Sedation if patient condition allows & SBP >90 mmHg, **Versed 2 mg IV/IO/IN (4mg Max Dose) & Fentanyl 50 mcg IV/IO/IN (100 mcg Max Dose)** P

B 12 Lead EKG Procedure B

P **Synchronized Cardioversion**
First Energy Level: 100 Joules
Second Energy Level: 200 Joules
If no response, max dose according to manufacturers setting P

P **Amiodarone 150mg IV in 100 mL of NS over 10 minutes. May repeat every 15 minutes (max. total dose 450 mg)** P

P **Amiodarone 150mg IV in 100 mL of NS over 10 minutes. May repeat every 15 minutes (max. total dose 450 mg)** P

B 12 Lead EKG Procedure after rate control/ conversion B

P 12 Lead EKG Procedure after rate control/ conversion P

MC Consult Medical Control MC

P For Consideration of Torsades de Pointes **Magnesium Sulfate 2 grams in 100 mL of NS over 10 minutes** P

Cardiac-Wide Complex Tachycardia

Cardiac-Wide Complex Tachycardia

History:

- Past medical history / medications, diet, drugs
- Syncope / Near syncope
- Palpitations
- Pacemaker
- Allergies: Lidocaine / Novocaine
- CAD, CHF, Cardiomyopathy

Signs and Symptoms:

- Ventricular Tachycardia on ECG (Runs or Sustained)
- Conscious, rapid pulse
- Chest Pain, Shortness of Breath
- Dizziness
- Rate usually 150-180 bpm for sustained VT

Differential:

- Artifact / Device Failure
- Cardiac
- Endocrine/Electrolyte
- Hyperkalemia
- Drugs/Toxic exposure
- Pulmonary disease

Emergency Medical Responder

- General Approach Protocol

Basic-Perform/Confirm All Above Interventions

- 12 Lead EKG Procedure

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol

Stable and unknown wide complex or ventricular tachycardia likely (rate >150)

- **Amiodarone 150 mg** in 100 mL Normal Saline IV Piggyback over 10 minutes
- Repeat **Amiodarone 150 mg** in 100mL Normal Saline IV Piggyback over 10 minutes every 15 minutes (Maximum of 450 mg total)
- 12 Lead EKG Procedure after rate control/ conversion

Unstable wide complex tachycardia (rate >150)

- Sedation if patient condition and time allows (hold for SBP <90 mmHg)
 - **Fentanyl 50 mcg** and **Midazolam 2 mg** IV/IO
 - Titrate to maximum total dose of **Fentanyl 100 mcg** and **Midazolam 4 mg**
- Synchronized Cardioversion:
 - 1st energy level; 100 Joules
 - 2nd energy level: 200 Joules
 - If no response, max dose according to manufacturers setting
- If delays in synchronization occur and condition is critical, go immediately to unsynchronized shocks
- If wide complex tachycardia reoccurs following electrical cardioversion:
 - **Amiodarone 150 mg** in 100 mL Normal Saline IV Piggyback, over 10 minutes, every 15 minutes (maximum 450 mg cumulative total dose)
- 12 Lead EKG Procedure after rate control/ conversion
- For consideration of Torsades de Pointes administer **Magnesium Sulfate infusion 2 grams** in 100 mL of Normal Saline over 10 minutes.

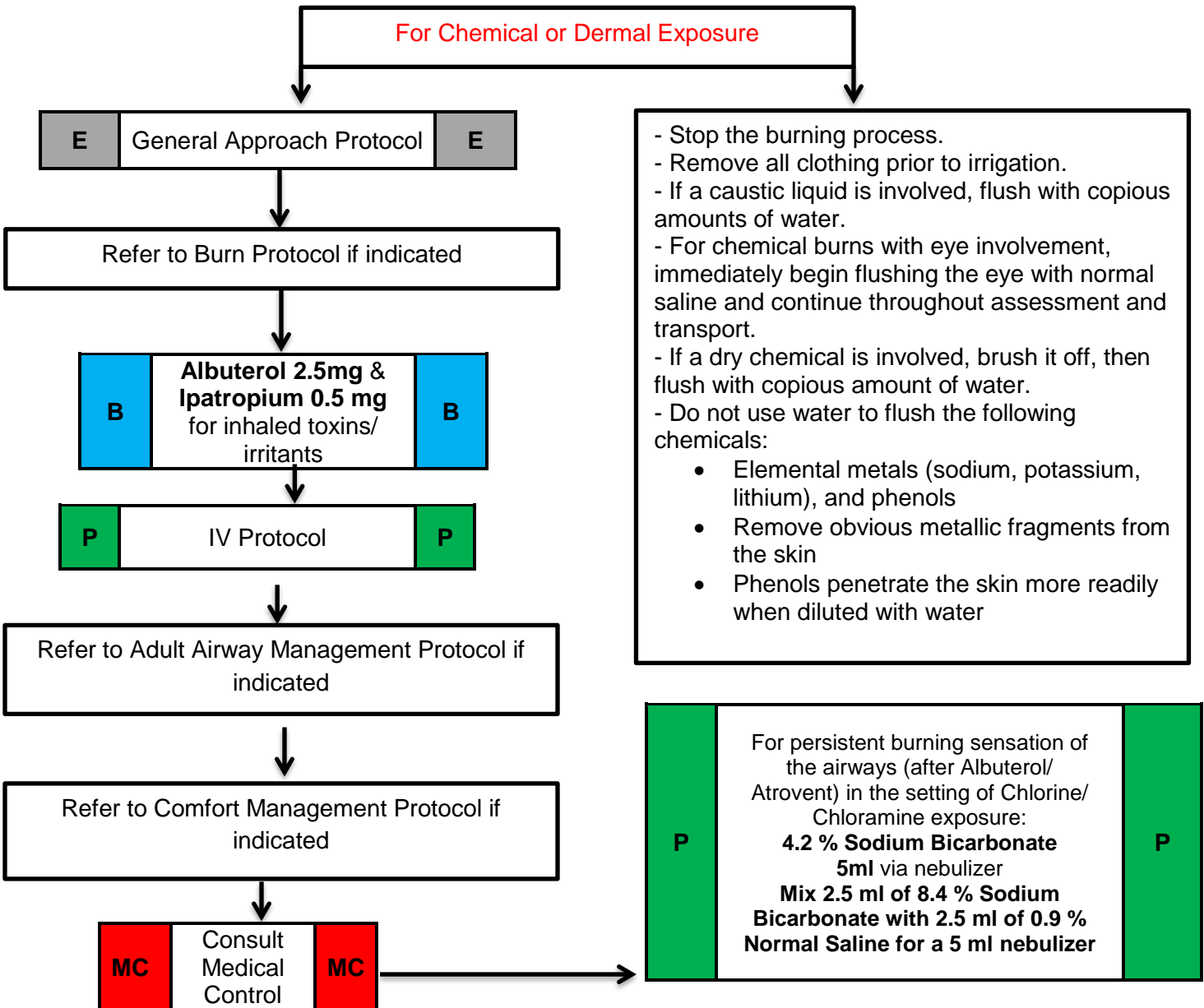
LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
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Hazmat - Basic

Consult Emergency Response Guidebook (ERG) before attempting to handle any toxic chemical exposure patient

Upon identifying a possible toxic exposure or overdose: Contact the Regional Poison Control Center (1-800-222-1222)

Upon identifying a possible hazmat exposure: Contact Green Bay Metro Hazmat Team via Brown County Communication Center



Hazmat-Basic

- Assure that local Fire Department is responding with EMS if appropriate.
- Consult Emergency Response Guidebooks (ERG) before attempting to handle any toxic chemical exposure patient
- Upon identifying a possible toxic exposure or overdose:
- Contact the Regional Poison Control Center (1-800-222-1222)
- Upon identifying a possible hazmat exposure: Contact Green Bay Metro Hazmat Team for chemical information via Brown County Communications Center

Other possible #'s for assistance:

Chemtrec: 1-800-424-9300

Chemtoll: 1-888-255-3924

Infotract: 1-800-535-5053

3E: 1-800-451-8346

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

Chemical Burns and Dermal Exposure

- General Approach Protocol
- Refer to the Burn Protocol
- Stop the burning process
- Remove all clothing prior to irrigation
- If a caustic liquid is involved, flush with copious amounts of water
- For chemical burns with eye involvement, immediately begin flushing the eye with normal saline and continue throughout assessment and transport
- If a dry chemical is involved, brush it off, then flush with copious amount of water
- Do not use water to flush the following chemicals:
 - Elemental metals (sodium, potassium, lithium), and phenols
 - Remove obvious metallic fragments from the skin
 - Cover the burn with mineral oil or cooking oil
 - Phenols penetrate the skin more readily when diluted with water
 - If available, dilute with the following (listed in order of efficacy)
 - Polyethylene glycol (PEG)
 - Glycerol
 - Vegetable Oil
 - As a last resort use extremely large amounts of soap and water with continuous irrigation until all phenols are removed
- Apply a burn sheet or dry sterile dressing to burn areas
- For inhaled toxin with acute bronchospasm:
 - **Albuterol (Proventil) 2.5 mg/3 ml** via nebulizer and **Ipratropium Bromide 0.02% (Atrovent) 0.5 mg/2.5 ml** via nebulizer

Hazmat-Basic

Paramedic

- **IV Protocol**
- Observe for signs of impending respiratory failure; Refer to the **Airway-Adult Protocol** if needed
- Refer to **Comfort Management Protocol** if needed

Contact Medical Control for any additional orders or questions

For persistent burning sensation of the airways (after Albuterol/Atrovent) in the setting of Chlorine/Chloramine exposure:

- 4.2 % Sodium Bicarbonate 5ml via nebulizer

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LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Hazmat-Cyanide Toxicity

Symptoms

- *Headache
- *Confusion
- *Shortness of breath
- *Chest pain or tightness
- *Nausea/vomiting

Signs

- *Altered mental status
- *Seizures or coma
- *Dyspnea/tachypnea
- *Respiratory distress/apnea
- *Hypertension (early)
- *Hypotension (late)
- *Cardiovascular collapse/Cardiac Arrest

E General Approach Protocol E

Remove patient from contaminated area

B Administer 100 % Oxygen B

B Carboxyhemoglobin SPCO Monitoring if available B

P IV Protocol and deliver a 500 mL bolus of NS P

B 12 Lead EKG Procedure B

P Administer Cyanokit ® 5g IV/IO over 15 minutes (use NaCl 0.9% as diluent per manufacturer's instructions) P

Expedite transport and treat other symptoms per appropriate protocol

MC Consult Medical Control and notify receiving hospital that a Cyanokit was administered and for instructions of a second dose of Cyanokit MC

Hazmat-Cyanide Toxicity

Hazmat-Cyanide Toxicity

Symptoms

- Headache
- Confusion
- Shortness of breath
- Chest pain or tightness
- Nausea/vomiting

Signs

- Altered mental status
- Seizures or coma
- Dyspnea/tachypnea
- Respiratory distress/apnea
- Hypertension (early)
- Hypotension (late)
- Cardiovascular collapse/Cardiac Arrest

Cyanide poisoning may result from inhalation, ingestion or dermal exposure to cyanide containing compounds, including smoke from closed-space fires. The presence and extent of the poisoning are often unknown initially. Treatment decisions must be made on the basis of clinical history and signs and symptoms of cyanide intoxication.

Not all patients who have suffered smoke inhalation from a closed-space fire will have cyanide poisoning. Other conditions such as burns, trauma or other toxic inhalations (e.g. carbon monoxide) may be the cause of symptoms. When smoke inhalation is the suspected source of cyanide exposure assess the patient for the following:

- Exposure to fire or smoke in an enclosed space
- Presence of soot around the mouth, nose or oropharynx
- Altered mental status

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

General Patient Care Protocol—Adult
Supplemental 100% **Oxygen**
SPCO Monitoring if available

Paramedic-Perform/Confirm All Above Interventions

Perform Full ALS Assessment and Treatment
IV Protocol

When clinical suspicion of Cyanide poisoning is high

- Administer **Cyanokit** **5 grams** IV/IO over 15 minutes
 - Use NaCl 0.9% as the diluent for Cyanokit as per manufacturer instructions
 - Contraindicated in patients with known anaphylactic reactions to hydroxocobalamin or cyanocobalamin

Expedite transport and treat other conditions as per appropriate.

Consult Medical Control and notify receiving hospital that a Cyanokit was administered and for instructions of a second dose of Cyanokit.

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

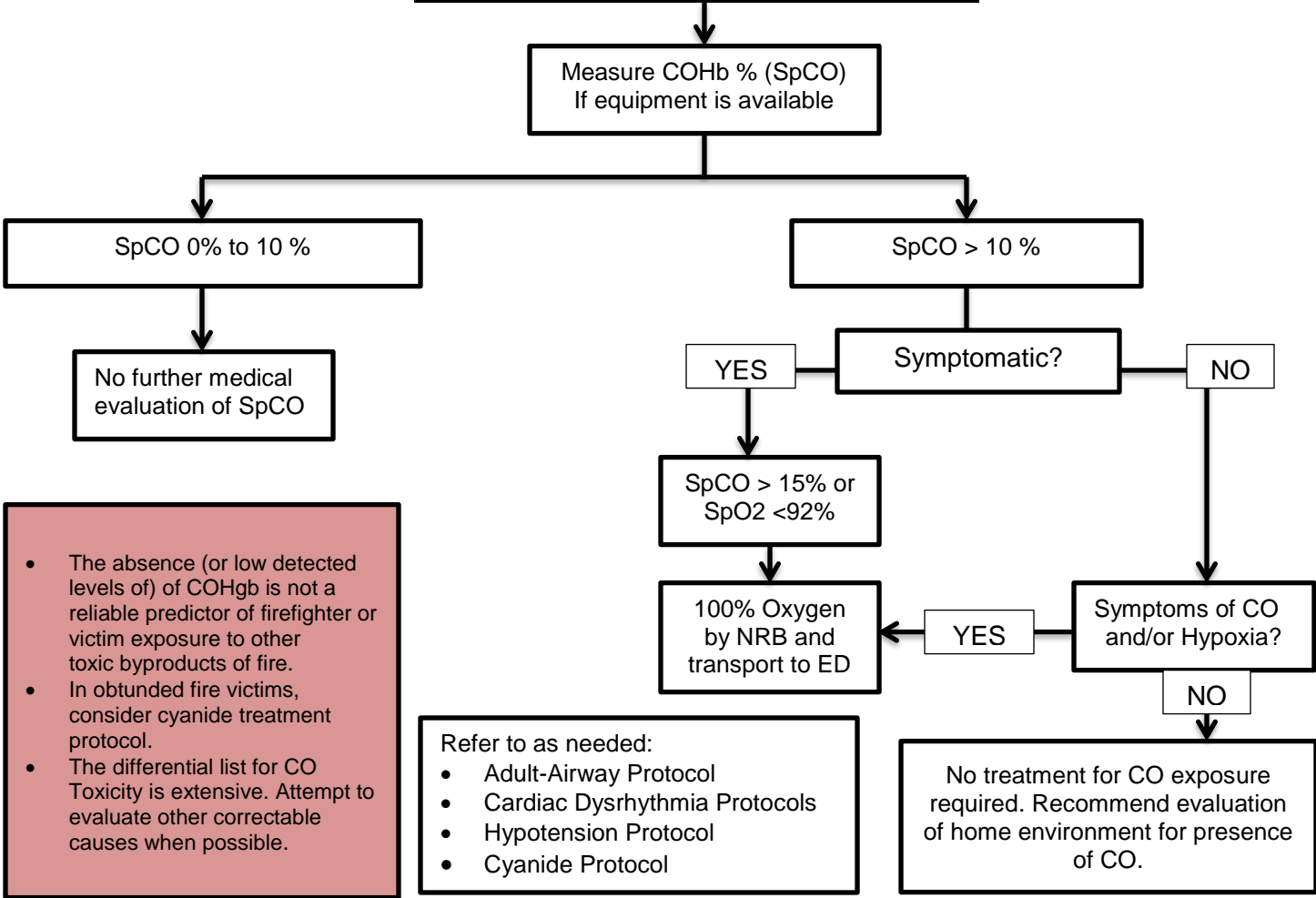
Hazmat-Carbon Monoxide Exposure

- History:**
- Known or suspected CO exposure
 - Suspected source/duration exposure
 - Age
 - Known or possible pregnancy
 - Reason (accidental, suicidal)
 - Measured atmospheric levels
 - Past medical history, medications

- Signs and Symptoms:**
- Altered mental status/dizziness
 - Headache, Nausea/Vomiting
 - Chest Pain/Respiratory distress
 - Neurological impairments
 - Vision problems/reddened eyes
 - Tachycardia/tachypnea
 - Arrhythmias, seizures, coma

- Differential:**
- Effects of other toxic fire byproduct
 - Acute cardiac event
 - Acute neurological event
 - Flu/GI illness
 - Acute intoxication
 - Diabetic Ketoacidosis
 - Headache of non-toxic origin

E General Approach Protocol **E**



• The absence (or low detected levels of) of COHgb is not a reliable predictor of firefighter or victim exposure to other toxic byproducts of fire.

• In obtunded fire victims, consider cyanide treatment protocol.

• The differential list for CO Toxicity is extensive. Attempt to evaluate other correctable causes when possible.

- Refer to as needed:
- Adult-Airway Protocol
 - Cardiac Dysrhythmia Protocols
 - Hypotension Protocol
 - Cyanide Protocol

Hazmat-Carbon Monoxide Exposure

Hazmat-Carbon Monoxide Exposure

History:

- Known or suspected CO exposure
- Suspected source/duration exposure
- Age
- Known or possible pregnancy
- Reason (accidental, suicidal)
- Measured atmospheric levels
- Past medical history, medications

Signs and Symptoms:

- Altered mental status/dizziness
- Headache, Nausea/Vomiting
- Chest Pain/Respiratory distress
- Neurological impairments
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- Arrhythmias, seizures, coma

Differential:

- Effects of other toxic fire byproduct
- Acute cardiac event
- Acute neurological event
- Flu/GI illness
- Acute intoxication
- Diabetic Ketoacidosis
- Headache of non-toxic origin

Emergency Medical Responder

Basic-Confirm/Perform All Above Interventions

- General Patient Care Protocol—Adult
- Wear appropriate PPE (SCBA) as indicated
- Remove the patient from the contaminated source
- Supplemental 100% **Oxygen**, document time oxygen started
- If CO monitoring available
 - Document initial CO level
 - Follow **Carboxyhemoglobin SpCo Monitoring Procedure**

Paramedic-Confirm/Perform All Above Interventions

- For smoke inhalation patients also consider Cyanide poisoning. Refer to **Hazmat-Basic Protocol** if indicated.

Follow flowchart in regards to SPCO levels to determine if transported

- Fetal hemoglobin has a greater attraction for CO than maternal hemoglobin. Females who are known to be pregnant or who could be pregnant should be advised that EMS-measured SpCO levels reflect the adults level and that fetal COHb levels may be higher. Recommend Hospital evaluation for any CO exposed pregnant person.
- The absence (or low detected levels of) of COHgb is not a reliable predictor of firefighter or victim exposure to other toxic byproducts of fire.
- In obtunded fire victims, initiate cyanide treatment protocol.

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

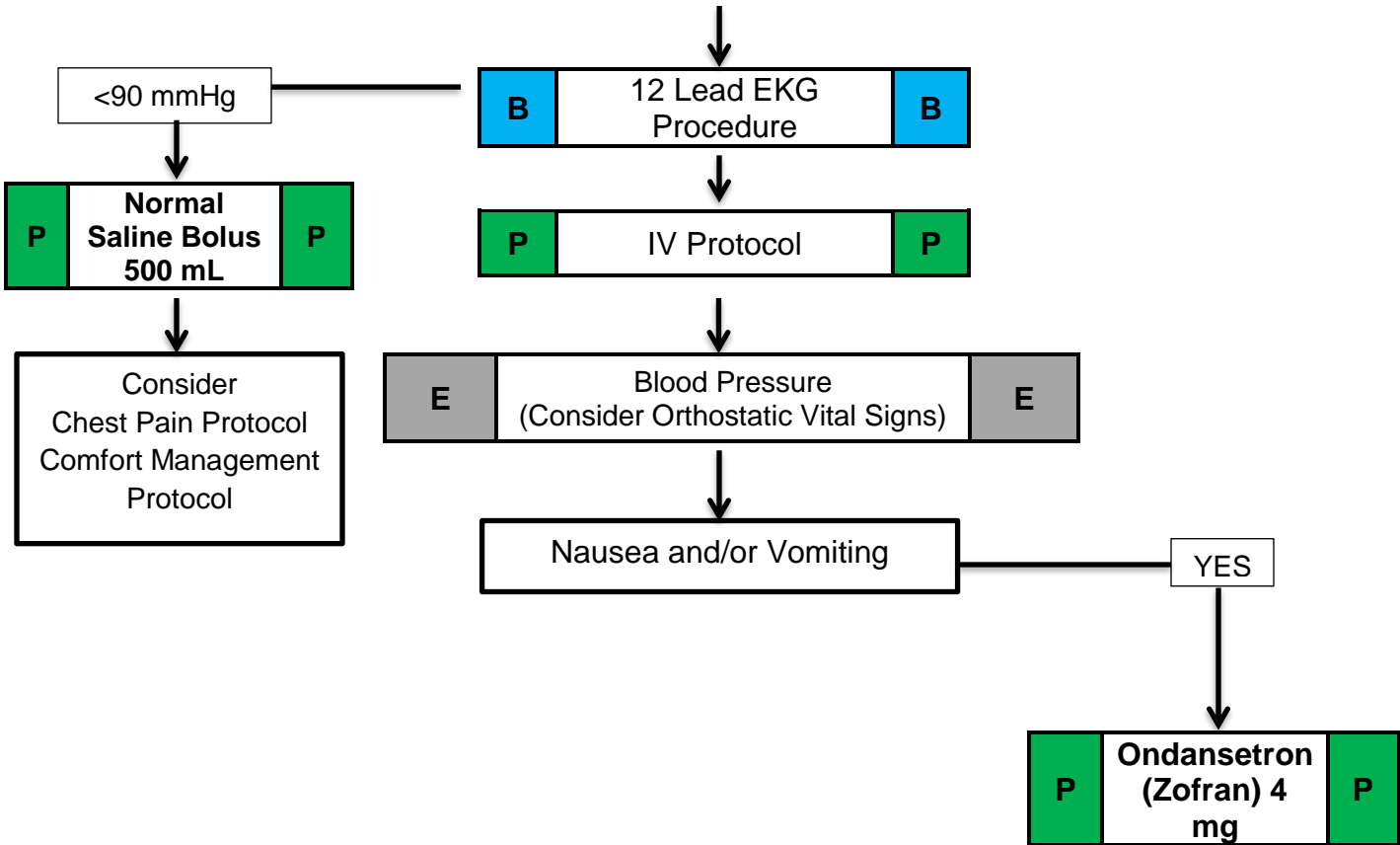
Abdominal Pain/ GI Bleeding

- History:**
- Age
 - Past Medical/surgical history
 - Medications
 - Onset
 - Provocation
 - Quality
 - Region / Radiation / Referred
 - Severity 1-10
 - Time
 - Fever
 - Last meal eaten
 - Last bowel movement
 - Menstrual history (pregnancy)

- Signs and Symptoms:**
- Pain
 - Tenderness
 - Nausea
 - Vomiting
 - Diarrhea
 - Dysuria
 - Constipation
 - Vaginal Bleeding/Discharge
 - Pregnancy
 - Other Symptoms:
 - Fever, Headache,
 - Weakness, malaise, myalgias,
 - cough,
 - Headache, rash, mental status

- Differential**
- Pneumonia or PE
 - Liver (hepatitis, CHF)
 - Peptic Ulcer disease / Gastritis
 - Gallbladder
 - MI
 - Pancreatitis
 - Kidney Stone
 - Abdominal Aneurysm
 - Appendicitis
 - Bladder/prostate disorder
 - Pelvic
 - Spleen enlargement
 - Diverticulitis
 - Bowel obstruction
 - Gastroenteritis

E General Approach Protocol E



Medical-Abdominal Pain/ GI Bleeding

Abdominal Pain/ GI Bleeding

History:

- Age
- Past Medical/surgical history
- Medications
- Onset
- Provocation
- Quality
- Region / Radiation / Referred
- Severity 1-10
- Time
- Fever
- Last meal eaten
- Last bowel movement
- Menstrual history (pregnancy)

Signs and Symptoms:

- Pain
- Tenderness
- Nausea
- Vomiting
- Diarrhea
- Dysuria
- Constipation
- Vaginal Bleeding/Discharge
- Pregnancy
- Other Symptoms:
- Fever, Headache,
- Weakness, malaise, myalgias,
- cough,
- Headache, rash, mental status

Differential

- Pneumonia or PE
- Liver (hepatitis, CHF)
- Peptic Ulcer disease / Gastritis
- Gallbladder
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- Pancreatitis
- Kidney Stone
- Abdominal Aneurysm
- Appendicitis
- Bladder/prostate disorder
- Pelvic
- Spleen enlargement
- Diverticulitis
- Bowel obstruction
- Gastroenteritis

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Patient Care Protocol—Adult
- Nothing by mouth
- Consider Orthostatic Vital Signs
- If pain is above the umbilicus, perform 12-lead EKG, refer to Chest Pain Protocol if indicated.

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol
- Consider Fluid Bolus-**500ml NS (max 2 liters)**
- For Patients with severe nausea or vomiting:
 - **Ondansetron (Zofran), 4 mg IV/IM**
- Refer to Comfort Management Protocol if indicated

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Allergic Reaction

History:

- Onset and location
- Insect sting or bite
- Food allergy / exposure
- Medication allergy / exposure
- New clothing, soap, detergent
- Past history of reactions
- Past medical history
- Medication history

Signs and Symptoms:

- Itching or hives
- Coughing / wheezing
- Respiratory distress
- Chest or throat constriction
- Difficulty swallowing
- Hypotension or shock
- Edema
- Nausea/vomiting

Differential:

- Urticaria (rash only)
- Anaphylaxis (systemic effect)
- Shock (vascular effect)
- Angioedema (drug induced)
- Aspiration / Airway obstruction
- Vasovagal event
- Asthma or COPD
- CHF

E General Approach Protocol E

Mild Reaction

- Hives/ Rash Only
- No Respiratory Component

P	IV Protocol	P
P	Diphenhydramine 25 mg IV 50 mg IM	P

Moderate Reaction

- Dyspnea, Wheezing,
Chest Tightness

B	Albuterol 2.5 mg & Ipratropium 0.5 mg. May repeat Albuterol 2.5 mg after 5 minutes	B
P	IV Protocol	P
P	Diphenhydramine 25 mg IV 50 mg IM	P
B	Epinephrine 0.3 mg 1:1000 SQ/IM	B

Perform appropriate Airway Management based on patient's condition

Severe Reaction

- Evidence of Impending Respiratory Distress or Shock
SBP <90 mmHg

E	Epinephrine 1:1000 Auto Injector	E
B	Albuterol 2.5 mg & Ipratropium 0.5 mg	B
P	IV Protocol. Administer 500 mL of NS	P
P	Diphenhydramine 25 mg IV 50 mg IM	P
B	Epinephrine 0.3 mg 1:1000 SQ/IM	B
MC	Consult Medical Control	MC
P	1 mL of Epinephrine 1:10000 IV w/ IV running wide open	P

Allergic Reaction

History:

- Onset and location
- Insect sting or bite
- Food allergy / exposure
- Medication allergy / exposure
- New clothing, soap, detergent
- Past history of reactions
- Past medical history
- Medication history

Signs and Symptoms:

- Itching or hives
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- Respiratory distress
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Differential:

- Urticaria (rash only)
- Anaphylaxis (systemic effect)
- Shock (vascular effect)
- Angioedema (drug induced)
- Aspiration / Airway obstruction
- Vasovagal event
- Asthma or COPD
- CHF

Emergency Medical Responder

1. Initial assessment.
 - It is useful, but not necessary to identify source of reaction.
 - Assess for latex allergy and utilize latex-free equipment as needed.
 - Time from onset. Severe reactions usually occur within 30 minutes.
 - History of anaphylaxis, epinephrine use or intubation.
2. Oxygen as indicated, if not already administered.
3. Patients with a systolic blood pressure of <90 mm Hg, difficulty breathing or swelling of the face, mouth and throat should be treated as anaphylactic shock. If the patient has not already used an EpiPen, administer an EpiPen if trained to do so. **Note that an EpiPen should only be used once unless specifically ordered differently by Medical Control.**

Basic-Perform/Confirm All Above Interventions

Mild Reaction: (isolated rash or subjective complaints with no physical findings and normal vital signs) No respiratory complaints:

- Reassure and begin transport under observation.

Moderate Reaction (has wheezing, dyspnea, chest tightness)

- Administer an **Albuterol (Ventolin)** or if available **Duo Neb (Albuterol & Atrovent)** nebulizer.

Severe Reaction (SBP < 90, swelling of face, mouth or throat or stridor):

- Elevate the patient feet above level of the heart if SBP <90 provided the position is tolerated by respiratory effort.
- Apply cardiac monitor.
- **Epi 1:1000** 0.3mg SQ/IM

Allergic Reaction

Paramedic-Perform/Confirm All Above Interventions

Mild Reaction (isolated rash or subjective complaints with no physical findings and normal vital signs) No Respiratory Complaints:

- IV Protocol
- Administration of **Diphenhydramine (Benadryl) 25 mg IV or 50 mg IM**
- Epinephrine is not used for itching and hives

Moderate Reaction with more than one system (rash and wheezing, mouth swelling and wheezing, respiratory distress and rash, GI symptoms and rash)

- Administer an **Albuterol (Ventolin)** or if available **Duo Neb (Albuterol & Atrovent)** nebulizer if not already given. **Albuterol (Ventolin)** may be repeated once after 5 minutes if wheezing persists.
- IV Protocol
- Administer **Diphenhydramine (Benadryl) 25 mg IV or 50 mg IM**
- Consider administration of **Epinephrine 1:1000** with a dose of 0.3 mg SQ/IM if no contraindications.

Severe Reaction (SBP < 90, swelling of face, mouth or throat or stridor):

- Administer **Epinephrine 1:1000 dose 0.3 mg** Auto Injector or SQ/IM if no contraindications
- Administer an **Albuterol (Ventolin)** or if available **Duo Neb (Albuterol & Atrovent)** nebulizer
- IV Protocol
- Administration of **Diphenhydramine (Benadryl) 25 mg IV or 50 mg IM**
- Administer a fluid bolus of **500 mL of NS** if SBP <90 mmHg

Consult Medical Control

Consider administration of Epinephrine 0.1 mL of 1:1,000 solution or 1 mL of 1:10,000 solution IV for refractory anaphylactic shock.

- Dilute with 9-10 mL NS or administer with IV running wide open
- Cardiac Monitoring required due to risk of cardiac dysrhythmias

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Altered Mental Status

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

History:

- Known Diabetic,
- Medic alert tag
- Drugs, drug paraphernalia
- Report of illicit drug
- Use or toxic ingestion
- Past medical history
- Medications
- History of Trauma
- Change in condition
- Changes in feeding or sleep habits

Signs and Symptoms:

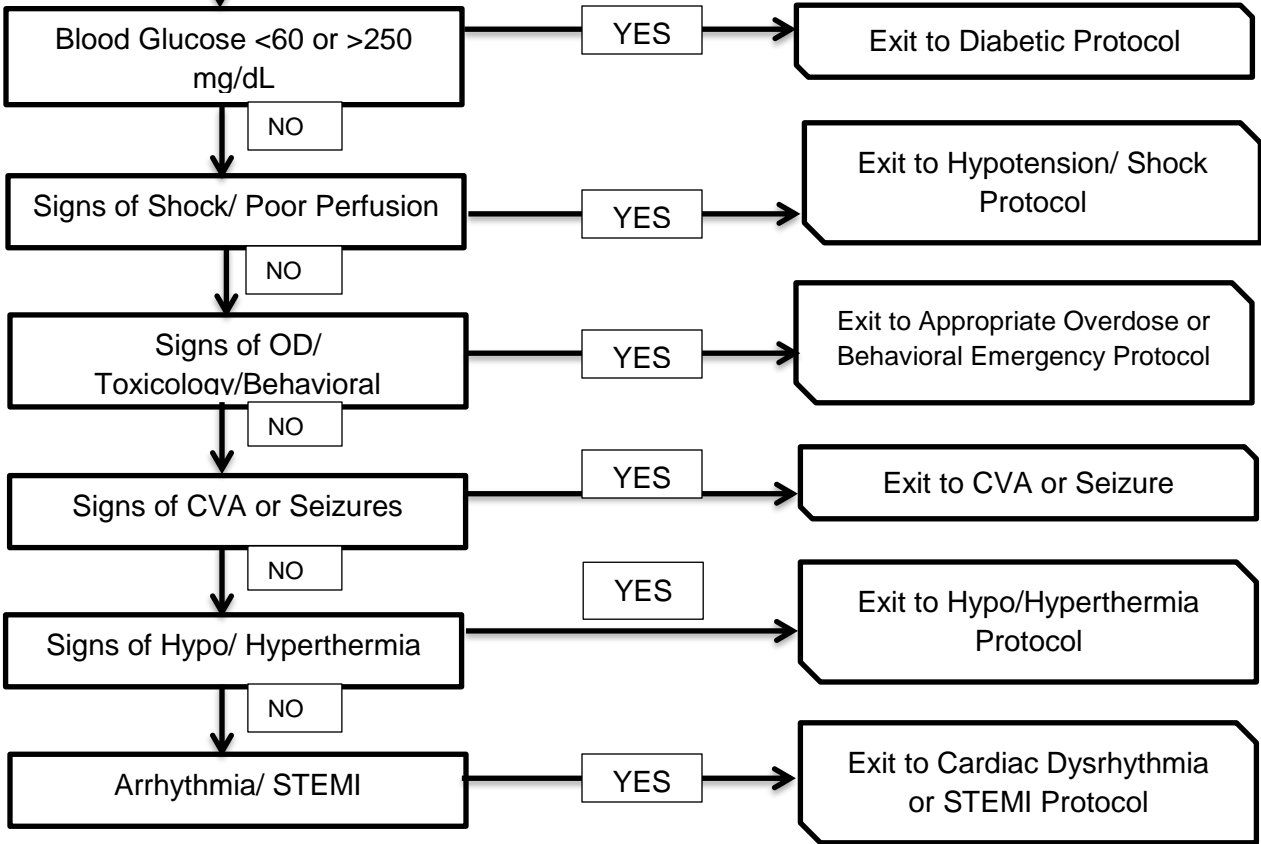
- Decreased mental status
- Lethargy
- Change in baseline mental status
- Bizarre behavior
- Hypoglycemia (cool/diaphoretic skin)
- Hyperglycemia (warm, dry skin, fruity breath, kussmaul respirations, signs of dehydration)
- Irritability

Differential

- Head Trauma
- CNS (stroke, tumor, seizure, infection)
- Cardiac (MI, CHF)
- Hypothermia
- Infection (CNS or other)
- Thyroid (hyper/hypo)
- Shock (septic, metabolic traumatic)
- Diabetes (hyper/hypo)
- Toxicological or Ingestion
- Acidosis/Alkalosis
- Environmental exposure
- Pulmonary (hypoxia)
- Electrolyte abnormality
- Psychiatric disorder

E General Approach Protocol E

B	Blood Glucose Procedure	B
P	12 Lead EKG Procedure	P
P	IV Protocol	P



Medical-Altered Mental Status

Altered Mental Status

History:

- Known Diabetic,
- Medic alert tag
- Drugs, drug paraphernalia
- Report of illicit drug
- Use or toxic ingestion
- Past medical history
- Medications
- History of Trauma
- Change in condition
- Changes in feeding or sleep habits

Signs and Symptoms:

- Decreased mental status
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- Hypoglycemia (cool/diaphoretic skin)
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Differential

- Head Trauma
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- Shock (septic, metabolic traumatic)
- Diabetes (hyper/hypo)
- Toxicological or Ingestion
- Acidosis/Alkalosis
- Environmental exposure
- Pulmonary (hypoxia)
- Electrolyte abnormality
- Psychiatric disorder

Emergency Medical Responder

- General Patient Care Protocol—Adult
- Blood Glucose
 - If hypoglycemic (Blood glucose < 60mg/dL)
 - **Glucose paste 15 g** or other oral glucose agent (e.g. orange juice) if patient alert enough to self-administer

Basic-Perform/Confirm All Above Interventions

- If hypoglycemic and unable to take oral glucose:
 - Consider **Glucagon 1mg IM**
- If stroke suspected refer to Stroke Protocol
- If head injury suspected refer to Trauma/Head Injury Protocol
- If cardiac arrhythmia present refer to Cardiac Arrhythmia Protocol
- If signs of shock or poor perfusion refer to Hypotension Non-Traumatic Shock Protocol.
- Signs of overdose, toxicity, behavioral or psychological refer to appropriate Overdose or Behavioral Emergency Protocols
- Signs of hypo/hyperthermia refer to Hypo/Hyperthermia Protocol

Paramedic-Perform/Confirm All Above Interventions

- 12 Lead EKG Procedure
- IV Protocol

Altered Mental Status

- If Clinically hypovolemic (orthostatic hypotension / dry mucous membranes) **IV bolus 500 ml x1.**
- If hypoglycemic (Blood glucose < 60 mg/dL) with IV access:
 - **Dextrose 12.5-25grams** IV or D10W 100mL IV
 - May repeat as needed every 5-10 minutes to blood glucose >100 mg/dL
- If hypoglycemic (Blood glucose < 60 mg/dL) without IV access:
 - **Glucose paste 15 grams** or other oral glucose agent (e.g. orange juice) if patient alert enough to self-administer
- If hypoglycemic and unable to take oral glucose:
 - **Glucagon 1 mg** IM
- If Drug (narcotic) overdose suspected:
 - **Naloxone (Narcan) 0.4 mg** IVP every 3 minutes (**maximum 2 mg**)
 - Naloxone (Narcan) can be administered in 0.4 mg increments titrated to respiratory drive and level of consciousness
 - **If IV access has not been established, Naloxone (Narcan) 2 mg IN via mucosal atomizer device. 1 mg in each nare.**

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Comfort Management

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

- History:**
- Age
 - Location
 - Duration
 - Severity (1-10)
 - Past Medical History
 - Medications
 - Drug allergies
 - Medications taken prior to arrival

- Signs and Symptoms:**
- Severity (pain scale)
 - Quality
 - Radiation
 - Relation to movement, respiration
 - Increased with palpation of area.

- Differential:**
- Per the specific protocol
 - Musculoskeletal
 - Visceral (abdominal)
 - Cardiac
 - Pleural / Respiratory
 - Neurogenic
 - Renal (colic)

E General Approach Protocol E

Patient care according to Protocol based on specific complaint. Consider conservative measures such as : ice, elevation and immobilization prior to movement.

B Pulse Oximetry Procedure B

P IV Protocol if indicated. Medications can be delivered by conservative methods first. P

Pain Control

Anxiety

Antiemetic

Conscious Sedation

P Fentanyl 50-100 mcg up to 150 mcg IV/IM/IN/IO P

P Versed 1 mg IV/IN/IM/IO. May repeat 1mg in 10 minutes up to 2 mg total. P

P Ondansetron (Zofran) 4mg IV/IO for nausea or vomiting P
 P Benadryl 25 mg IV for Dystonic Reactions P

- Painful extrication
- Amount of pain meds would cause hemodynamic compromise
- Severe Burns

Reassess pain level and SBP >90 mmHg after each dose

P After max dose of Fentanyl consider Ketamine 0.5mg/kg IV/IO/IN. P

Continuous SPO2 and respiratory monitoring

P Ketamine 1mg/kg IV/IO/IN or 4 mg/kg IM. P

Medical-Comfort Management

Comfort Management

History:

- Age
- Location
- Duration
- Severity (1-10)
- Past Medical History
- Medications
- Drug allergies
- Medications taken prior to arrival

Signs and Symptoms:

- Severity (pain scale)
- Quality
- Radiation
- Relation to movement, respiration
- Increased with palpation of area.

Differential:

- Per the specific protocol
- Musculoskeletal
- Visceral (abdominal)
- Cardiac
- Pleural / Respiratory
- Neurogenic
- Renal colic

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Patient Care Protocol
- Assess baseline pain level (0-10 scale: 0=no pain, 10=worst pain)
- Pulse Oximetry Procedure

Paramedic-Perform/Confirm All Above Interventions

- **IV Protocol**

Pain:

- Common complaints:
 - Trauma/isolated extremity injury
 - Burns (without airway, breathing or circulation compromise)
 - Sickle crisis
 - Acute Chest Pain, in accordance with the Chest Pain protocol
 - Kidney stone highly suspected, in accordance with the Abdominal Pain protocol
- Consider conservative methods such as: ice, elevation and immobilization prior to movement.
- **Fentanyl 50-100 mcg** slow IVP every 5 minutes until pain relief achieved (**Maximum 150 mcg**)
 - Contraindicated if SBP <90 mmHg
- Max dose of **Fentanyl (150 mcg)** is delivered, consider **Ketamine 0.5 mg/kg IV/IO/IN**

Comfort Management

- If available consider Intranasal administration, same dose as above *divided between nares*.
- After each drug dosage administration
 - Reassess and document the patient's pain level (0-10 scale)
 - Note adequacy of ventilation and perfusion
 - Assess and document vital signs
 - Continuously monitor oxygen saturation

Anxiety:

- Anxiety and muscle relaxant
- **Versed: 1mg IV/IN/IM/IO** repeat in 10 minutes not exceed 2mg.
 - Contraindicated with SBP<90 mmHg, decreased LOC and respiratory depression.

Nausea:

- **Zofran 4 mg IV/IO**
- Monitor for dystonia and restlessness
- Administer **25mg Diphenhydramine (Benadryl) IV** for dystonic reactions
 - Contraindications: Decreased LOC, hypotension, and respiratory depression.

Conscious Sedation:

- Consider **KETAMINE 1 mg/kg IV/IO/IN (4mg/kg IM)** for the following:
 - Painful Extrication from:
 - motor vehicle collision
 - industrial accident
 - building collapse
 - trench rescue situation
- Amount of pain medication/sedative required to provide comfort would potentially cause hemodynamic compromise.
- Severe burns

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Diabetic Emergencies Adult

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

History

- Past medical history
- Medications
- Recent blood glucose check
- Last meal

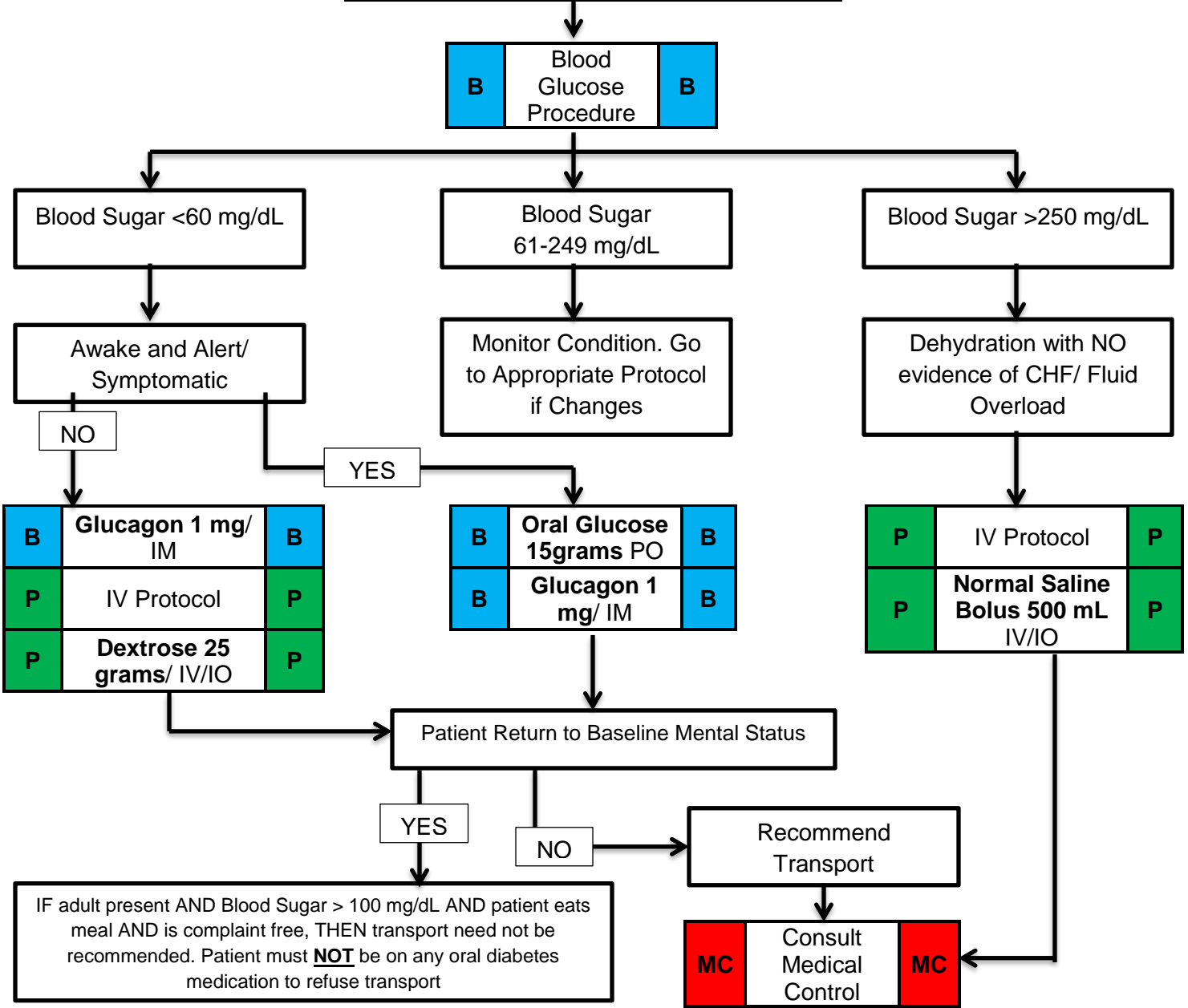
Signs and Symptoms

- Altered mental status
- Combative / irritable
- Diaphoresis
- Seizures
- Abdominal pain
- Nausea / vomiting
- Weakness

Differential

- Alcohol / drug use
- Toxic ingestion
- Trauma; head injury
- Seizure
- CVA
- Altered baseline mental status.

E General Approach Protocol E



Diabetic Emergencies Adult

History

- Past medical history
- Medications
- Recent blood glucose check
- Last meal

Signs and Symptoms

- Altered mental status
- Combative / irritable
- Diaphoresis
- Seizures
- Abdominal pain
- Nausea / vomiting
- Weakness

Differential

- Alcohol / drug use
- Toxic ingestion
- Trauma; head injury
- Seizure
- CVA
- Altered baseline mental status.

Emergency Medical Responder

- Last oral intake
- Assess whether or not the patient is on diabetic medications, and if so, when was the last dose.
- Symptoms onset
- Is there a history of recent infections, poor food intake and/or vomiting?

Basic-Perform/Confirm All Above Interventions

- Blood Glucose Analysis Procedure
 - If <60 mg/dL and patient is awake with an intact gag reflex, administer one tube (15g) of glucose
 - If <60 mg/dL and patient is unresponsive, administer **1 mg of Glucagon IM**

Paramedic-Perform/Confirm All above Interventions

- IV Protocol
- If blood glucose <60 mg/dL and patient is unresponsive, administer **25 grams of Dextrose 10% (250 mL)** IV/IO preferred site to be antecubital
- If blood glucose >250 mg/dL administer **500 mL of normal saline** IV/IO if evidence of CHF or fluid overload.
- IO access if patient is critical, IV cannot be established in a reasonable time frame and the patient is not responsive to glucagon.
- Hypoglycemic patients may refuse transport once back to usual mental status, but are at risk to become symptomatic again. Consideration should be given to transport, especially if patient does not have someone to watch them. Recommend transport for patients who are prescribed oral diabetes medications. If there is any question regarding need for transport contact medical control.
- Refer to **Refusal-Hypoglycemia Protocol** if indicated

Dialysis/ Renal Failure

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

History

- Peritoneal or Hemodialysis
- Anemia
- Catheter access noted
- Shunt access noted
- Hyperkalemia

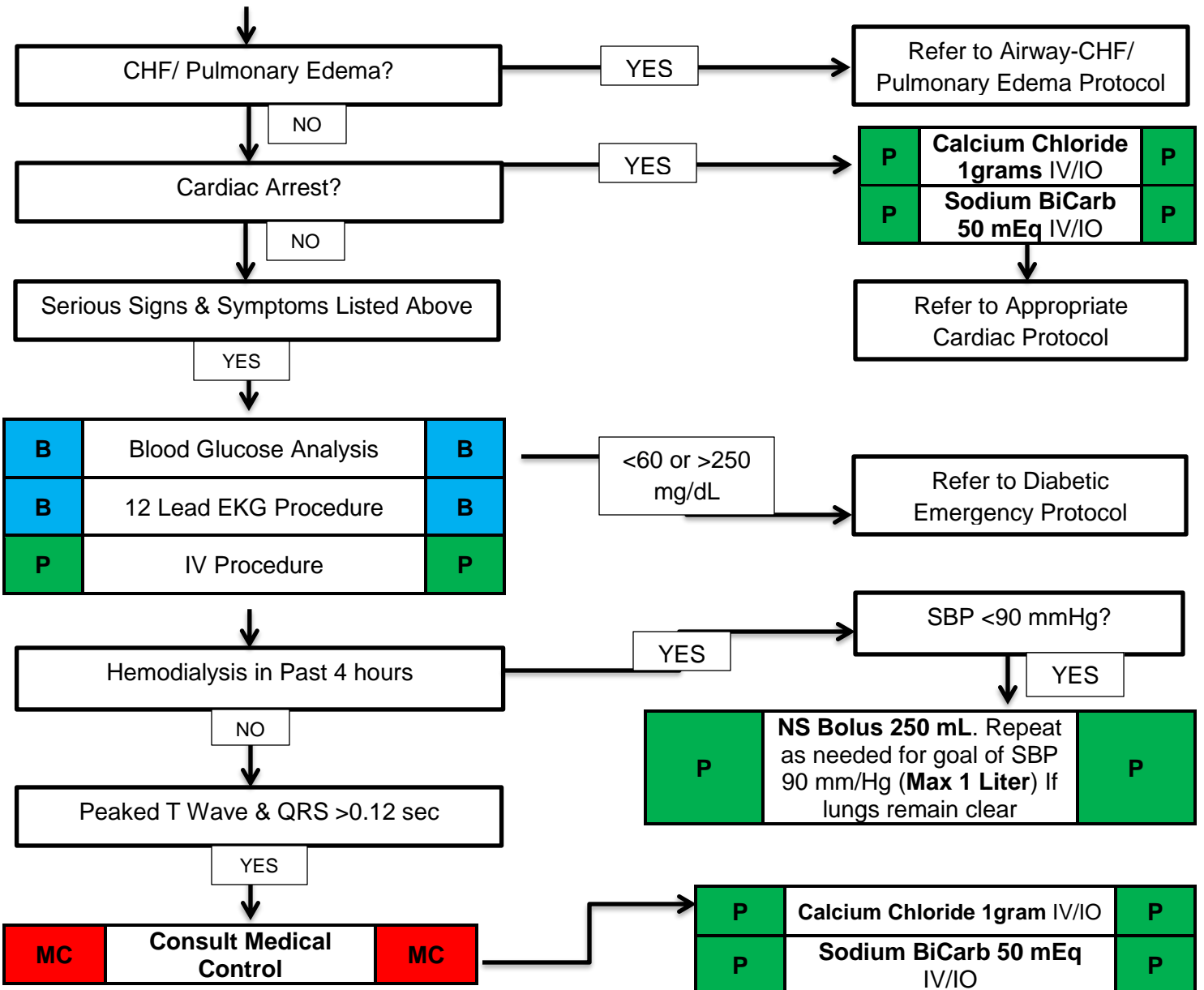
Signs and Symptoms

- Hypotension
- Bleeding
- Fever
- Electrolyte imbalance
- Nausea and / or vomiting
- Altered Mental Status
- Seizure
- Arrhythmia

Differential

- Congestive heart failure
- Pericarditis
- Diabetic emergency
- Sepsis
- Cardiac tamponade

E General Approach Protocol E



Medical-Dialysis/ Renal Failure

Dialysis/ Renal Failure

History

- Peritoneal or Hemodialysis
- Anemia
- Catheter access noted
- Shunt access noted
- Hyperkalemia

Signs and Symptoms

- Hypotension
- Bleeding
- Fever
- Electrolyte imbalance
- Nausea and / or vomiting
- Altered Mental Status
- Seizure
- Arrhythmia

Differential

- Congestive heart failure
- Pericarditis
- Diabetic emergency
- Sepsis
- Cardiac tamponade

Emergency Medical Responder

- General Patient Care Protocol-Adult
- Signs of CHF/Pulmonary Edema
 - If so refer to Airway-CHF/Pulmonary Edema Protocol
- Blood Glucose Analysis Procedure
 - <60 or >250 Refer to Diabetic Emergency Protocol
- Last hemodialysis and how much weight was taken off

Basic-Confirm/Perform All Above Interventions

- 12 Lead EKG Procedure

Paramedic-Confirm/Perform All Above Interventions

- IV Procedure
- 12 Lead EKG Procedure
- If hemodialysis was done in the past 4 hours and SBP is <90 mm/Hg
 - **Normal saline bolus of 250 mL.**
 - Repeat as needed for a goal of SBP90 mm/Hg (Max 1 Liter) if lung remain clear
- Refer to appropriate Cardiac Protocol
- If in cardiac arrest
 - **Calcium Chloride 1gram IV/IO**
 - **Sodium BiCarb 50 mEq IV/IO**

Contact Medical Control for the following symptom and treatment

- Peaked T waves and QRS > 0.12 seconds
 - **Calcium Chloride 1gram IV/IO**
 - **Sodium BiCarb 50 mEq IV/IO**
 - Refer to appropriate Cardiac Protocol

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Hyperthermia

History:

- *Age
- *Exposure to increased temperatures and/or humidity
- *Past medical history / medication
- *Extreme exertion
- *Time and length of exposure
- *Poor PO intake
- *Fatigue and/or muscle cramping

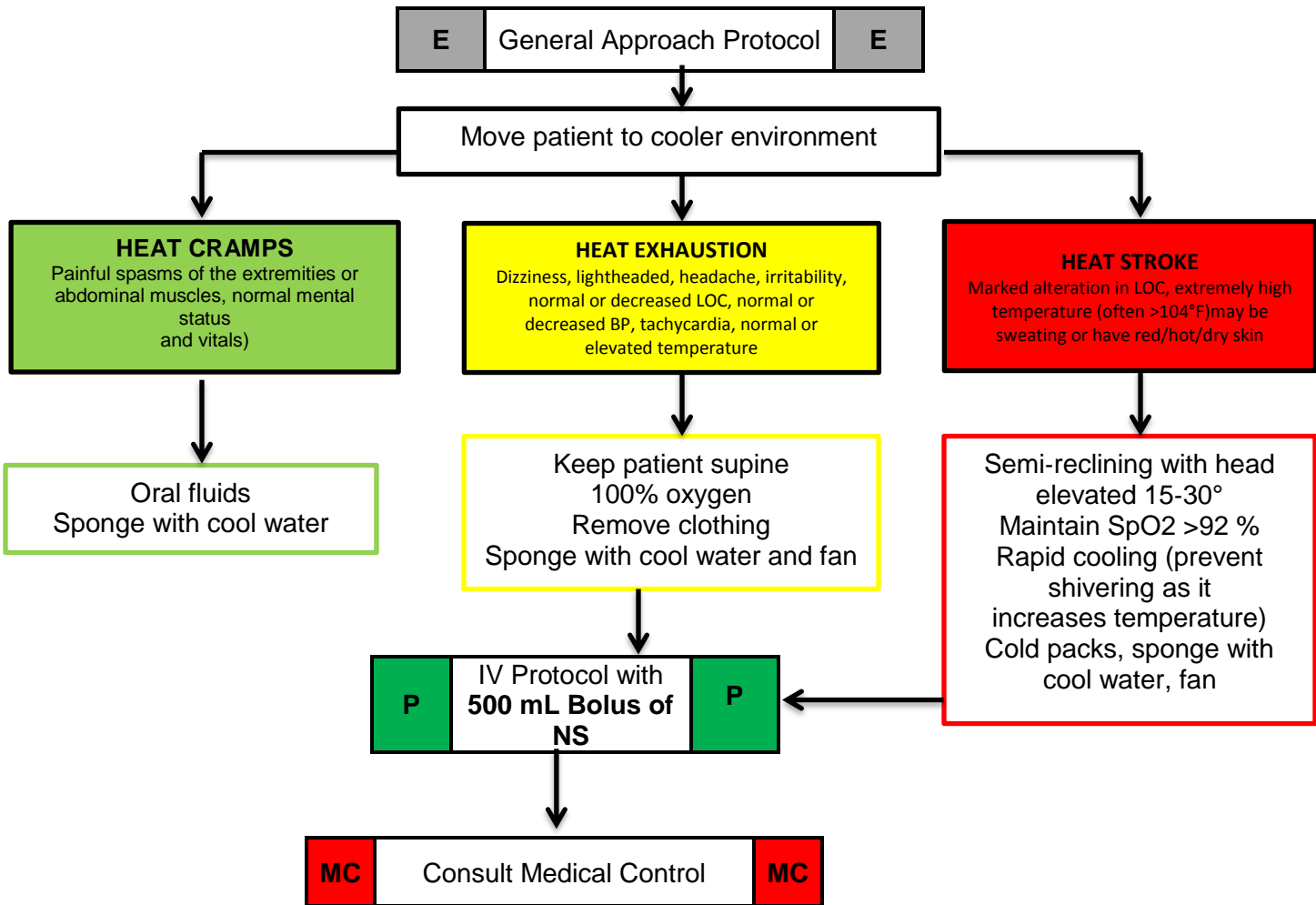
Signs and Symptoms

- *Altered mental status or unconsciousness
- *Hot, dry or sweaty skin
- *Hypotension or shock
- *Seizures
- *Nausea

Differential

- *Fever (Infection)
- *Dehydration
- *Medications
- *Hyperthyroidism (Storm)
- *Delirium tremens (DT's)
- *Heat cramps
- *Heat Exhaustion
- *Heat stroke
- *CNS lesions or trauma

*Overdose



Hyperthermia

History:

- *Age
- *Exposure to increased temperatures and/or humidity
- *Past medical history / medication
- *Extreme exertion
- *Time and length of exposure
- *Poor PO intake
- *Fatigue and/or muscle cramping

Signs and Symptoms

- *Altered mental status or unconsciousness
- *Hot, dry or sweaty skin
- *Hypotension or shock
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- *Nausea

Differential

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- *Medications
- *Hyperthyroidism (Storm)
- *Delirium tremens (DT's)
- *Heat cramps
- *Heat Exhaustion
- *Heat stroke
- *CNS lesions or trauma

- *Overdose

HEAT CRAMPS

Painful spasms of the extremities or abdominal muscles, normal mental status and vitals)

- Oral fluids
- Sponge with cool water

HEAT EXHAUSTION

Dizziness, lightheaded, headache, irritability, normal or decreased LOC, normal or decreased BP, tachycardia, normal or elevated temperature

- Keep patient supine
- 100% oxygen
- Remove clothing
- Sponge with cool water and fan

HEAT STROKE

Marked alteration in LOC, extremely high temperature (often >104°F) may be sweating or have red/hot/dry skin

- Semi-reclining with head elevated 15-30°
- Apply O2 to maintain SPO2 >92%
- Rapid cooling (prevent shivering as it increases temperature)
- Cold packs, sponge with cool water, fan

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Approach to All Adult Patients
- Move patient to cooler environment
- Follow colored criteria based on symptoms listed for each color
- Apply **Oxygen** to maintain SPO2 at 92%

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol with a **500 mL Bolus of Normal Saline**

Medical-Hyperthermia

Hypothermia

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

History:

- Past medical history
- Medications
- Exposure to environment even in normal temperatures
- Exposure to extreme cold
- Extremes of age
- Drug use: alcohol, barbituates
- Infections / sepsis
- Length of exposure/ wetness

Signs and Symptoms

- Cold, clammy
- Shivering
- Mental status changes
- Extremity pain or sensory abnormality
- Bradycardia
- Hypotension or shock

Differential

- Sepsis
- Environmental exposure
- Hypoglycemia
- CNS dysfunction
- Stroke
- Head Injury
- Spinal Cord Injury

Go to Appropriate Protocol Based on Patient Symptoms

E General Approach Protocol **E**

Remove Wet Clothing

B Temperature Procedure **B**

<95°F (35°C) >95°F (35°C)

Handle Patient Gently, Apply warm Blankets/ Hot Packs if Possible

B Temperature Procedure **B**

P IV Protocol (warm fluid if possible, max 2L) **P**

MC Consult Medical Control **MC**

Patients with Cardiac Arrest secondary to hypothermia should be transported to the nearest hospital w/ Cardiopulmonary Bi-Pass Capabilities (ABC, Bellin, SVH)

- If cardiac arrest occurs with core temp >88°F: refer to appropriate protocol, prolong interval between drugs to 5 minutes, if defibrillation is necessary, limit to one shock, continue CPR
- If cardiac arrest occurs with core temp <88°F contact Medical Control
- NO PATIENT IS DEAD UNTIL WARM AND DEAD
- Extremes of age are more susceptible (young and old)
- With temperatures less than 30°C (86°F) ventricular fibrillation is a common cause of death. Handling patients gently may prevent this from occurring
- If the temperature is unable to be measured, treat the patient based on the suspected temperature
- Hypothermia may produce severe bradycardia so take at least 45 seconds to palpate a pulse
- Hot packs can be activated and placed in the armpit and groin area if available. Care should be taken not to place the packs directly against the patients' skin
- Consider withholding CPR if patient has organized rhythm or has other signs of life. Discuss with medical control
- NVA/ ETT can cause ventricular fibrillation so it should be done gently by the most experienced person
- Do not hyperventilate the patient as this can cause ventricular fibrillation

Hypothermia

History:

- Past medical history
- Medications
- Exposure to environment even in normal temperatures
- Exposure to extreme cold
- Extremes of age
- Drug use: alcohol, barbituates
- Infections / sepsis
- Length of exposure/ wetness

Signs and Symptoms

- Cold, clammy
- Shivering
- Mental status changes
- Extremity pain or sensory abnormality
- Bradycardia
- Hypotension or shock

Differential

- Sepsis
- Environmental exposure
- Hypoglycemia
- CNS dysfunction
- Stroke
- Head Injury
- Spinal Cord Injury

- If cardiac arrest occurs with core temp $>88^{\circ}\text{F}$: refer to appropriate protocol, prolong interval between drugs to 5 minutes, if defibrillation is necessary, limit to one shock, continue CPR
- If cardiac arrest occurs with core temp $<88^{\circ}\text{F}$ contact Medical Control
- **NO PATIENT IS DEAD UNTIL WARM AND DEAD**
- Extremes of age are more susceptible (young and old)
- With temperatures less than 30°C (86°F) ventricular fibrillation is a common cause of death. Handling patients gently may prevent this from occurring
- If the temperature is unable to be measured, treat the patient based on the suspected temperature
- Hypothermia may produce severe bradycardia so take at least 45 seconds to palpate a pulse
- Hot packs can be activated and placed in the armpit and groin area if available. Care should be taken not to place the packs directly against the patients skin
- Consider withholding CPR if patient has organized rhythm or has other signs of life. Discuss with medical control
- Intubation can cause ventricular fibrillation so it should be done gently by the most experienced person
- Do not hyperventilate the patient as this can cause ventricular fibrillation

Emergency Medical Responder

- General Patient Care Protocol—Adult
- Remove wet clothing
- Measure temperature, If $< 95^{\circ}\text{F}$ (35C), handle gently
- Warm blankets/warm temperature

Basic-Perform/Confirm All Above Interventions

- 12 Lead EKG Procedure

Hypothermia

Paramedic-Perform/Confirm All above Interventions

- IV Protocol
 - If available, and no contraindications, **administer warmed 0.9% Normal saline (max 2L)**
- If Cardiac Arrest occurs with a temp > 88°F
 - Refer to appropriate protocol
 - Prolong interval between drugs to 5 minutes
 - If defibrillation is necessary, limit to one shock
 - Continue CPR
- If cardiac arrest with temp < 88°F
 - Contact OLMC

Patients with Cardiac Arrest secondary to hypothermia should be transported to the nearest hospital w/ Cardiopulmonary Bi-Pass Capabilities

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LEGEND		
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Intravenous Access

- Assess need for IV to administer IV Fluids, Medications in emergent or potentially emergent conditions.
- Peripheral IV is the access of choice, lower extremity peripheral IV should not be used in patients with vascular disease or diabetes.
- Place catheter per Venous Access Extremity, External Jugular or Intraosseous Procedures.
- When possible utilize 20g or larger on medical patients and 16 gauge or larger in trauma or hypovolemic shock patients.
- Once access obtained, monitor infusion site, unless administering fluid boluses, either saline lock the catheter or place at TKO rate. In patients <6 years of age utilize Buretrol Tubing.
- If extremity IV attempts are unsuccessful, reconsider need for IV access. Consider other alternatives for medication delivery: IN, IM, Oral and/ or IO.
- If patient hypotensive, but alert and responsive to pain – consider external jugular vein IV access. External Jugular is only indicated in patients >8 years of age.
- In post-mastectomy patients and patients with a working dialysis fistula, avoid IV attempts, blood draws, injections, and blood pressure measurements in the upper extremity on the affected side.
- If patient unstable, go directly to Intraosseous access.

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Psychiatric & Behavioral Emergencies

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

History:

- Situational crisis
- Psychiatric illness/medications
- Injury to self or threats to others
- Medic alert tag
- Substance abuse / overdose
- Diabetes

Signs and Symptoms

- Anxiety, agitation, confusion
- Affect change, hallucinations
- Delusional thoughts, bizarre behavior
- Combative / violent
- Expression of suicidal /homicidal thoughts

Differential

- See altered mental status differential
- Alcohol intoxication
- Toxin / substance abuse
- Medication effect / overdose
- Withdrawal syndromes
- Depression
- Bipolar (manic-depressive)
- Schizophrenia
- Anxiety disorders

Scene Safety!!

NEVER TRANSPORT OR RESTRAIN IN PRONE POSITION!!

E General Approach Protocol E

Remove patient from stressful environment (if able). Be calm and reassuring, establish a rapport.

Perform GCS and Pupil Assessment

Diabetic Emergency Protocol

<60 mg/dL

B Blood Glucose Procedure B

MC Consult Medical Control prior to second dose of **Ketamine** or post sedation w/ **Versed 2 mg IV/IN/IO** MC

>60 mg/dL

Consider Restraint Policy

For any signs of emergence phenomena, such as hallucinations, dreams, or delirium as the drug wears

P **Ketamine 4 mg/kg IM or 1 mg/kg IV/IO/IN if established** P

MC **Versed 2 mg IV/IN/IO** MC

P IV Protocol (if safe) P

Medical-Psychiatric & Behavioral Emergencies

Psychiatric & Behavioral Emergencies

History:

- Situational crisis
- Psychiatric illness/medications
- Injury to self or threats to others
- Medic alert tag
- Substance abuse / overdose
- Diabetes

Signs and Symptoms

- Anxiety, agitation, confusion
- Affect change, hallucinations
- Delusional thoughts, bizarre behavior
- Combative / violent
- Expression of suicidal /homicidal thoughts

Differential

- See altered mental status differential
- Alcohol intoxication
- Toxin / substance abuse
- Medication effect / overdose
- Withdrawal syndromes
- Depression
- Bipolar (manic-depressive)
- Schizophrenia
- Anxiety disorders

NEVER TRANSPORT IN PRONE POSITION!!

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

SCENE SAFETY!!

- General Patient Care Protocol—Adult
- Remove patient from stressful environment (if able). Be calm and reassuring, establish a rapport
- Blood Glucose Measurement if < 60 mg/dl, refer to Diabetic Emergency Protocol
- Assess pupils
- Assess GCS Apply physical restraints if needed to ensure patient/crew safety. Adhere to policy on Physical Restraint of Agitated Patients when this process is deemed necessary

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol if safe to conduct
- If chemical restraint is deemed necessary for protection of the patient from self-harm, crew, and law enforcement, proceed with the following:
 - Administer **KETAMINE 1mg/kg IV/IO/IN** or **4mg/kg IM**.
- Attempt to monitor vital signs if safety permits

- Provider may administer a second dose, only after contact with **MEDICAL CONTROL**.
- If post-ketamine sedation is necessary, **MEDICAL CONTROL** should be contacted with discussion of supplemental Versed.
- For any signs of emergence phenomena, such as hallucinations, dreams, or delirium as the drug wears off, contact **MEDICAL CONTROL** for administration of **Versed 2 mg IV**

Seizure

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

History:

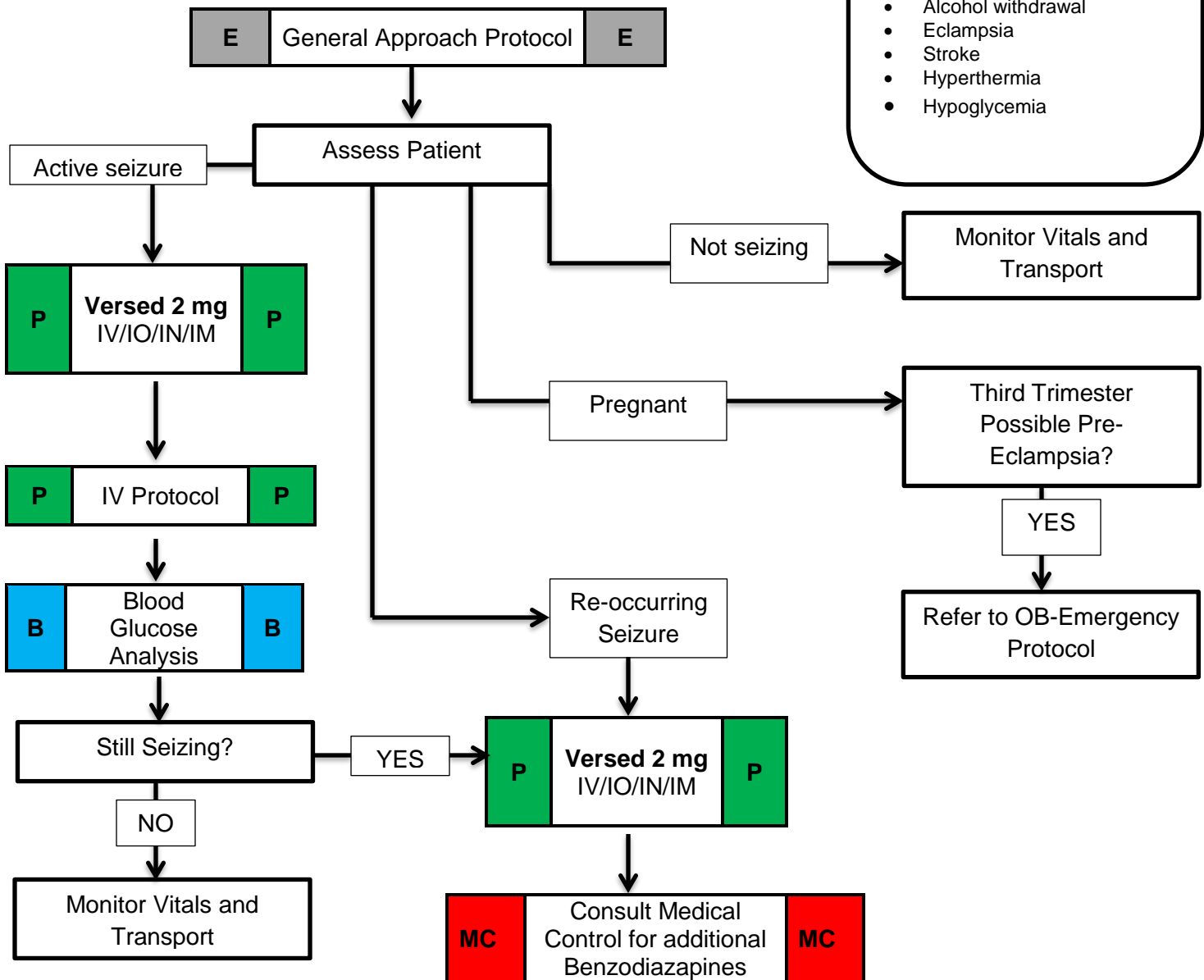
- Reported/witnessed seizure activity
- Previous seizure history
- Medical alert tag information
- Seizure medications
- History of Trauma
- History of Diabetes
- History of Pregnancy

Signs and Symptoms

- Decreased Mental Status
- Sleepiness
- Incontinence
- Observed seizure activity
- Evidence of trauma
- Unconscious

Differential

- CNS (Head) Trauma
- Tumor
- Metabolic, Hepatic, or Renal Failure
- Hypoxia
- Electrolyte abnormality (Na, Ca, Mg)
- Drugs, Medications, Non-compliance
- Infection/Fever
- Alcohol withdrawal
- Eclampsia
- Stroke
- Hyperthermia
- Hypoglycemia



Medical-Seizure

Seizure

History:

- Reported/witnessed seizure activity
- Previous seizure history
- Medical alert tag information
- Seizure medications
- History of Trauma
- History of Diabetes
- History of Pregnancy

Signs and Symptoms

- Decreased Mental Status
- Sleepiness
- Incontinence
- Observed seizure activity
- Evidence of trauma
- Unconscious

Differential

- CNS (Head) Trauma
- Tumor
- Metabolic, Hepatic, or Renal Failure
- Hypoxia
- Electrolyte abnormality (Na, Ca, Mg)
- Drugs, Medications, Non-compliance
- Infection/Fever
- Alcohol withdrawal
- Eclampsia
- Stroke
- Hyperthermia
- Hypoglycemia

Emergency Medical Responder

- General approach Protocol.
- If still seizing, protect patient from injury
 - Do not restrain the patient
 - Document closely type of seizure activity and eye deviation
- If postictal:
 - Avoid placing anything in the patient's mouth
 - Place in recovery position if no chance of spinal injury
 - Administer supplemental oxygen to maintain SPO₂ >92 % via any manner tolerated by the patient. Often, postictal patients are combative and only tolerate blow-by oxygen.
- Identify pregnancy or recent (within 2 weeks) delivery for Eclampsia, notify incoming ambulance ASAP.

Basic-Perform/Confirm All Above Interventions

- Isolated seizures need no specific treatment other than provision of airway care with supplemental oxygen during postictal phase.
- Perform Blood Glucose Analysis and refer to Diabetic Emergencies Protocol if indicated.

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol
- Consider IN or IO if patient is actively seizing and unable to obtain IV access.
- Perform appropriate airway management based on patient condition.
- Administer either **Midazolam (Versed) 2 mg** slow IV push for repeated seizures or active seizures lasting greater than 1 minute.
- If IV access is not available and the patient continues to seize, **Midazolam (Versed) 2 mg** may be given IM/IN/IO as an alternative.
- If patient is in third trimester of pregnancy and suspected Eclampsia, Refer to OB-Emergency Protocol

Consult Medical Control for administration of 2 grams of Magnesium Sulfate over 15

If seizures persists,

Consult Medical Control for administration of a total of 6 grams of Magnesium Sulfate

Medical-Seizure

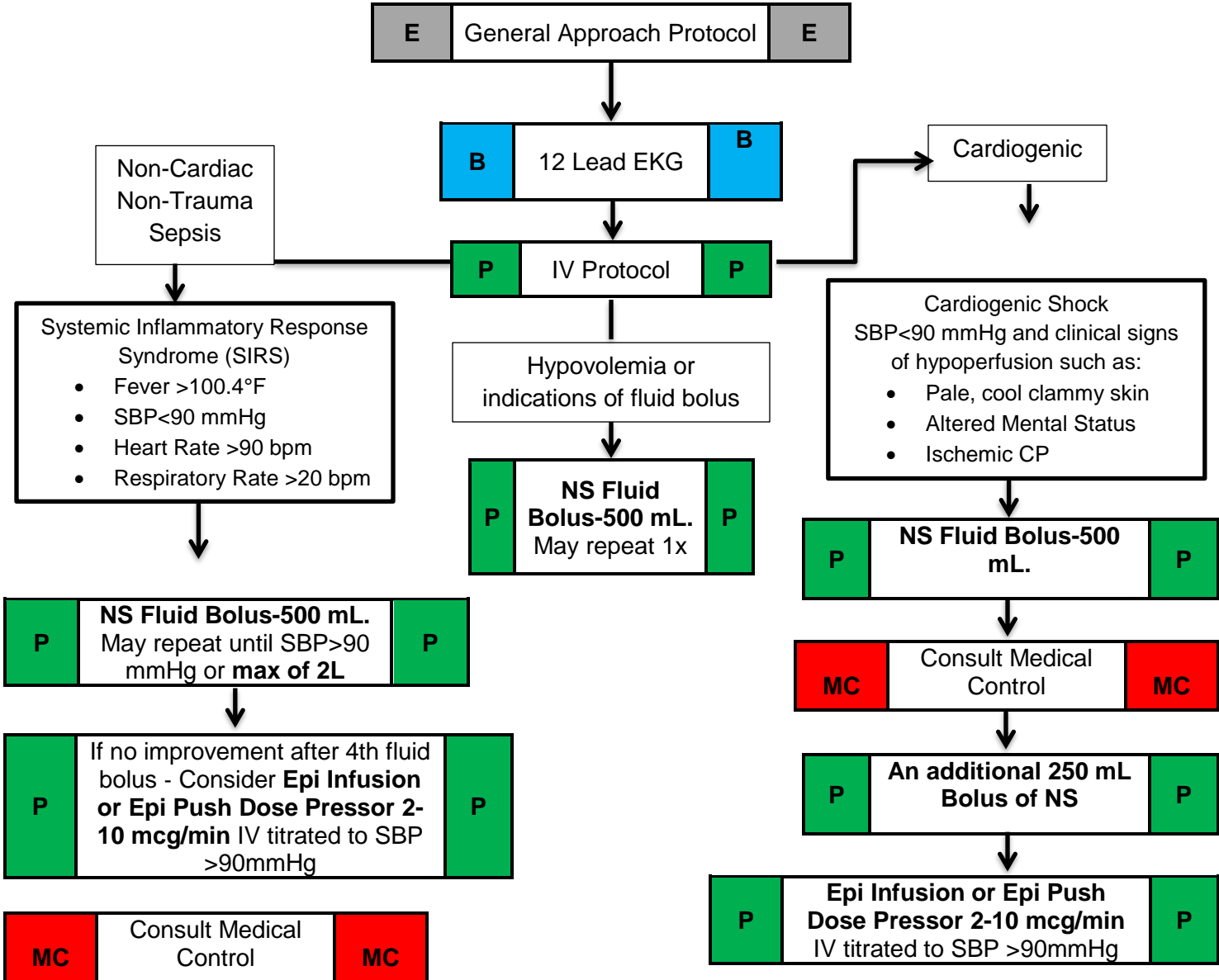
LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Shock (Non-Trauma)

- History:**
- Blood loss- vaginal or gastrointestinal bleeding, AAA, ectopic pregnancy
 - Fluid Loss- vomiting, diarrhea, fever
 - Infection
 - Cardiac ischemia (MI, CHF)
 - Medications
 - Allergic Reaction
 - Pregnancy

- Signs and Symptoms:**
- Restlessness, confusion
 - Weakness, dizziness
 - Hypotension
 - Weak, rapid pulse
 - Pale, cool, clammy skin
 - Delayed capillary refill
 - Coffee-ground emesis
 - Tarry stools

- Differential:**
- Shock
 - Ectopic pregnancy
 - Dysrhythmias
 - Pulmonary embolus
 - Tension pneumothorax
 - Toxic exposure



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History:

- Blood loss- vaginal or gastrointestinal bleeding, AAA, ectopic pregnancy
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- Coffee-ground emesis
- Tarry stools

Differential:

- Shock
- Ectopic pregnancy
- Dysrhythmias
- Pulmonary embolus
- Tension pneumothorax
- Toxic exposure

Shock is defined as a state of inadequate organ perfusion and tissue oxygenation. It is evidenced by the presence of any of the following signs and symptoms:

Hypotension	Mottled skin appearance
Narrow pulse pressure	Diaphoresis
Tachypnea	Cool clammy skin
Tachycardia	Pallor
Delayed capillary refill	Altered mental status

Signs and symptoms vary depending upon the stage of shock, which may be compensated (normal perfusion maintained) or decompensated (unable to maintain normal perfusion).

Categories of shock

- **Obstructive shock:** Caused by an obstruction that interferes with return of blood to the heart (e.g. tension pneumothorax, cardiac tamponade, massive pulmonary embolus)
- **Hypovolemic shock:** Caused by decreased blood or water volume. Hypovolemic shock may be hemorrhagic or non-hemorrhagic
- **Distributive shock:** Caused by abnormal distribution of blood resulting from vasodilation, vasopermeability or both. Distributive shock may result from anaphylactic reactions, sepsis, or spinal cord injury
- **Cardiogenic shock:** Caused as a result of cardiac pump failure, usually secondary to severe Left Ventricular failure. May result from massive MI

Perform the following in conjunction with protocols that apply to the specific etiology of the shock state (e.g. allergic reactions, STEMI, etc.):

Emergency Medical Responders

- General Approach Protocol

Shock (Non-Trauma) Cont.

Basic-Confirm/Perform All Above Interventions

- 12 Lead EKG

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol

Non-Cardiac, Non-Trauma, Sepsis

Systemic Inflammatory Response Syndrome (SIRS)

- Fever $>100.4^{\circ}\text{F}$
- SBP <90 mmHg
- Heart Rate >90 bpm
- Respiratory Rate >20 bpm

- **NS Fluid Bolus-500 mL.** May repeat until SBP >90 mmHg or **max of 2L**
- If no improvement after 4th fluid bolus - Consider **Epi Infusion or Epi Push Dose Pressor 2-10 mcg/min** IV titrated to SBP >90 mmHg

Cardiogenic:

SBP <90 mmHg and clinical signs of hypoperfusion such as:

- Pale, cool clammy skin
- Altered Mental Status
- Ischemic CP
- **NS Fluid Bolus-500 mL.**

Contact Medical Control in regards to the following treatment options

- An additional **250 mL Bolus of NS**
- **Epi Infusion or Epi Push Dose Pressor 2-10 mcg/min** IV titrated to SBP >90 mmHg

Hypovolemia or indication of a fluid bolus:

- **500 mL bolus of NS**
 - May repeat 1x if indicated

Suspected Stroke

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

- History:**
- Previous CVA, TIA's
 - Previous cardiac,/vascular surgery
 - Associated diseases: diabetes, hypertension, CAD
 - Atrial Fibrillation
 - Medications (blood thinners)
 - History of Trauma

- Signs and Symptoms**
- Altered mental status
 - Weakness / Paralysis
 - Blindness or other sensory loss
 - Aphasia / Dysarthria
 - Syncope
 - Vertigo / Dizziness
 - Vomiting
 - Headache
 - Seizures
 - Respiratory pattern change
 - Hypertension / Hypotension

- Differential**
- See Altered Mental Status
 - TIA (Transient Ischemic Attack)
 - Seizure
 - Hypoglycemia
 - Stroke
 - Thrombotic Embolic (~85%)
 - Hemorrhagic (~15%)
 - Tumor
 - Trauma

Diabetic Emergency Protocol

E General Approach Protocol E

Goal of Scene Time <10 Minutes

B Blood Glucose Analysis B

<60 ma/dL

- Cincinnati Stroke Assessment:**
- Facial Droop
 - Arm Drift
 - Slurred Speech
 - Time last seen normal

>60 mg/dL

B Stroke Screen Procedure (Cincinnati Stroke Assessment) B

Positive

If LAMS score is 4 or more, initiate Stroke Alert and consider transport to a Comprehensive Stroke Center (ABMC, St. Elizabeth's, Theda Care) or Primary Stroke Center w/ Thrombectomy (St. Vincent's). Inform patients primary receiving hospital if necessary.

Negative

B 12 Lead EKG B

LAMS Score

Facial droop		
Absent		0
Present		1
Arm drift		
Absent		0
Drifts down		1
Falls rapidly		2
Grip strength		
Normal		0
Weak grip		1
No grip		2

- Consider other protocols as indicated:
- Altered Mental Status
 - Hypertension
 - Shock (Non-Trauma)
 - Seizure
 - Overdose / Toxic Ingestion

P IV Protocol (18 gauge in Right AC if possible) P

MC Consult Medical Control MC

B 12 Lead EKG B

Medical-Suspected Stroke

Suspected Stroke

History:

- Previous CVA, TIA's
- Previous cardiac,/vascular surgery
- Associated diseases: diabetes,
- hypertension, CAD
- Atrial Fibrillation
- Medications (blood thinners)
- History of Trauma

Signs and Symptoms

- Altered mental status
- Weakness / Paralysis
- Blindness or other sensory loss
- Aphasia / Dysarthria
- Syncope
- Vertigo / Dizziness
- Vomiting
- Headache
- Seizures
- Respiratory pattern change
- Hypertension / Hypotension

Differential

- See Altered Mental Status
- TIA (Transient Ischemic Attack)
- Seizure
- Hypoglycemia
- Stroke
- Thrombotic Embolic (~85%)
- Hemorrhagic (~15%)
- Tumor
- Trauma

Early recognition and transport of stroke is essential to good patient outcomes. Any patient presenting with a normal blood glucose (> 60 mg/dL), a positive Cincinnati Pre-Hospital and a LAMS score of 4 or more, initiate Stroke Alert and consider transport to a Comprehensive Stroke Center (ABMC, St. Elizabeth's, Theda Care) or a Primary Stroke Center w/ Thrombectomy (St. Vincent's). Inform patients primary receiving hospital if necessary.

GOAL OF ON SCENE TIME LESS THAN 10 MINUTES

Emergency Medical Responder

- General Patient Care Protocol-Adult
- Supplemental oxygen via nasal cannula only if O2 saturation < 92%
- Check Blood Glucose
 - If <60 mg/dL, **1 tube or 15 g of Oral Glucose** if patient is able to self-administer
- Give nothing by mouth (oral glucose is permitted if patient is able to self-administer)
- Document Cincinnati Pre-Hospital Stroke Screen
- If patient blood glucose is >60 mg/dl, Cincinnati Pre-Hospital Stroke Screen is positive and onset of symptoms (when last seen normal) is < 7 hours, immediately notify incoming ambulance of a possible (**CODE STROKE**)

Basic-Perform/Confirm All Above Interventions

- If hypoglycemic and patient not able to self-administer Oral Glucose, **1 mg Glucagon IM** if blood glucose is <60 mg/dL
- 12 Lead EKG Procedure

Medical-Suspected Stroke

Suspected Stroke

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol **(18 gauge Right AC if possible)**
- Consider following protocols if indicated
 - Altered Mental Status
 - Diabetic Emergency
 - Hypertension
 - Shock (Non-traumatic)
 - Seizure
 - Overdose/ Toxic Ingestion

Left Blank

Syncope

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

History:

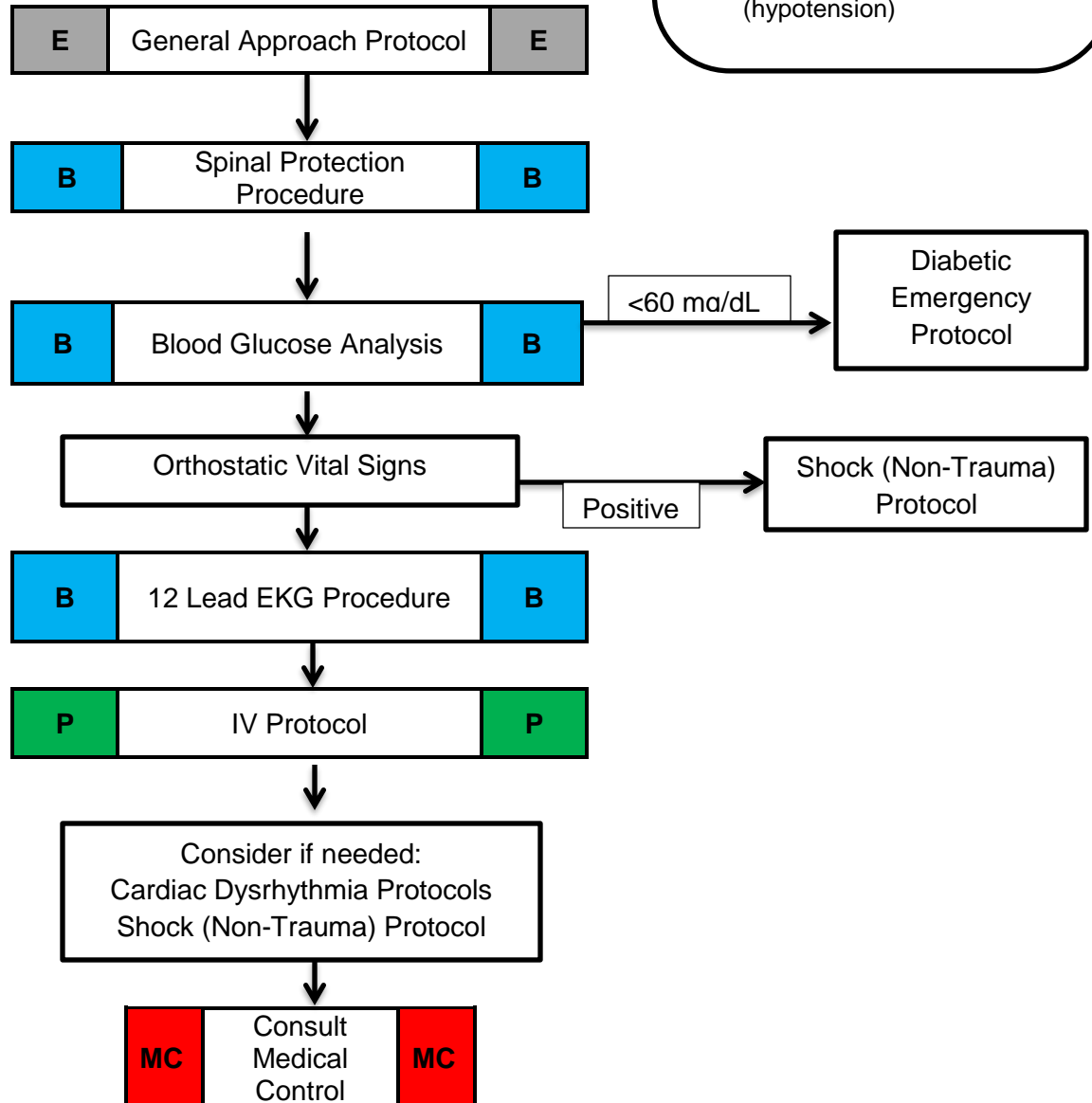
- Presyncopal symptoms
- Occult blood loss (GI, ectopic)
- LMP, vaginal bleeding
- Nausea, vomiting, diarrhea
- Chest pain/palpitations
- Shortness of breath
- PMHx: Cardiac, CVA, Sz
- New medications

Signs & Symptoms:

- Loss of consciousness with recovery
- Lightheadedness, dizziness
- Palpitations, slow or rapid pulse
- Pulse irregularity
- Decreased blood pressure

Differential:

- Vasovagal
- Hypotension/Shock
- Cardiac syncope
- Micturition / Defecation syncope
- Stroke
- Hypoglycemia
- Seizure
- Toxicologic
- Medication effect (hypotension)



Medical-Syncope

Syncope

History:

- Presyncopal symptoms
- Occult blood loss (GI, ectopic)
- LMP, vaginal bleeding
- Nausea, vomiting, diarrhea
- Chest pain/palpitations
- Shortness of breath
- PMHx: Cardiac, CVA, Sz
- New medications

Signs & Symptoms:

- Loss of consciousness with recovery
- Lightheadedness, dizziness
- Palpitations, slow or rapid pulse
- Pulse irregularity
- Decreased blood pressure

Differential:

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- Hypotension/Shock
- Cardiac syncope
- Micturition / Defecation syncope
- Stroke
- Hypoglycemia
- Seizure
- Toxicologic
- Medication effect (hypotension)

Emergency Medical Responder

- General Patient Care Protocol-Adult
- Orthostatic Vital Signs
- Blood Glucose Analysis Procedure
 - If hypoglycemic refer to Diabetic Emergency Protocol

Basic-Perform/Confirm All Above Interventions

- 12 Lead EKG Procedure if indicated

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol
- Spinal Protection Procedure
- Consider if needed:
 - Cardiac Dysrhythmia Protocols
 - Shock (Non-Trauma) Protocol
 - Diabetic Emergency Protocol

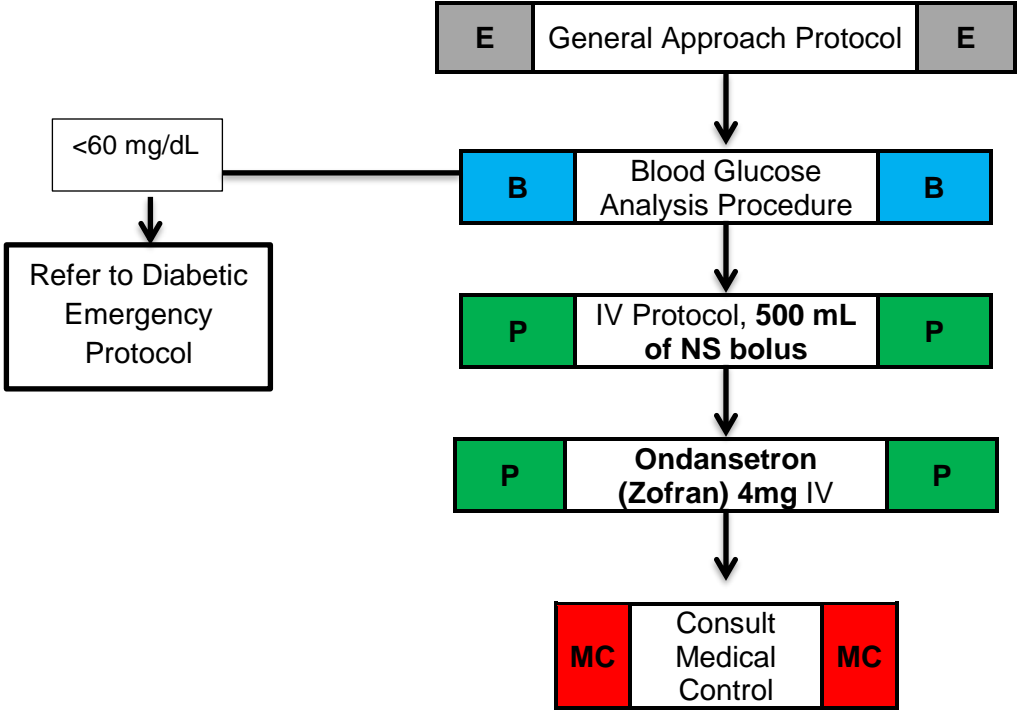
LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Vomiting and Diarrhea

- History:**
- Time of last meal
 - Last bowel movement / emesis
 - Improvement or worsening with food or activity
 - Other sick contacts
 - Past Medical History
 - Past Surgical History
 - Medications
 - LMP / Pregnancy
 - Travel history
 - Bloody Emesis or diarrhea
 - Untreated water
 - Suspected food poisoning

- Signs and Symptoms:**
- Fever
 - Pain
 - Constipation
 - Diarrhea
 - Anorexia
 - Hematemesis

- Differential:**
- CNS (Increased pressure, headache, stroke,
 - CNS Lesions, trauma or hemorrhage),
 - Vestibular
 - AMI
 - Drugs (NSAIDs, antibiotics, narcotics, chemotherapy.)
 - GI or Renal disorders
 - Diabetic Ketoacidosis
 - Uremia
 - Gynecologic disease (Ovarian Cyst / PID)
 - Infections (pneumonia, influenza)
 - Electrolyte abnormalities
 - Food or Toxin induced
 - Pregnancy



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History:

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- Uremia
- Gynecologic disease (Ovarian Cyst / PID)
- Infections (pneumonia, influenza)
- Electrolyte abnormalities
- Food or Toxin induced
- Pregnancy

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Approach to All Patients-Adult
- **Blood Glucose Analysis Procedure**
 - If blood glucose <60 mg/dL or >250 mg/dL refer to **Diabetic Emergency Protocol**

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol
- **500 mL bolus of normal saline** if no signs of CHF or fluid overload
- **4mg of Ondansetron (Zofran) IV** for nausea and/or vomiting

Contact Medical Control for an additional 4 mg of Ondansetron (Zofran) IV if symptoms persist

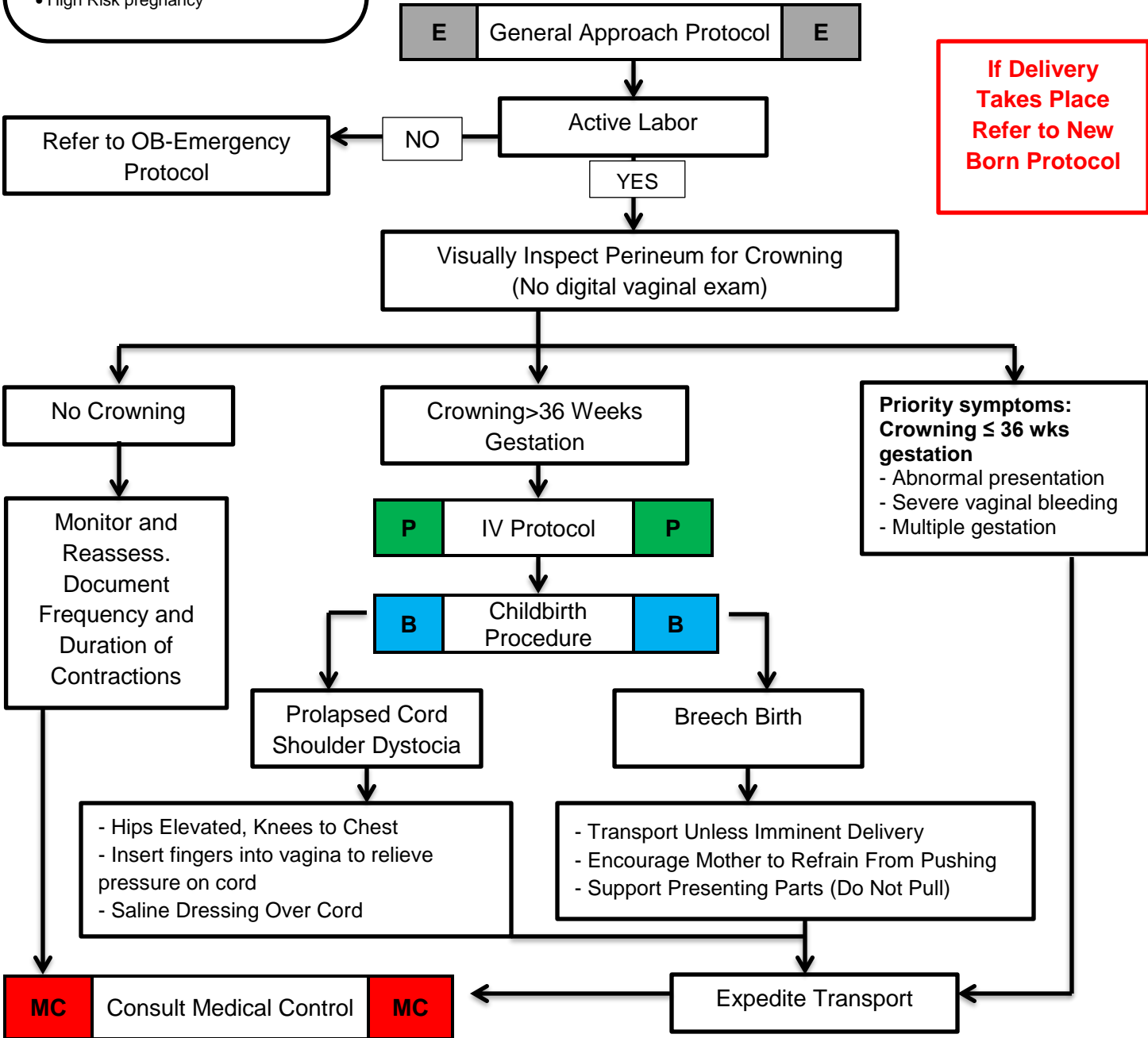
LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

OB-Childbirth/ Labor

- History**
- Due date
 - Time contractions started / how often
 - Rupture of membranes
 - Time / amount of any vaginal bleeding
 - Sensation of fetal activity
 - Past medical and delivery history
 - Medications
 - Gravida / Para Status
 - High Risk pregnancy

- Signs and Symptoms**
- Spasmodic pain
 - Vaginal discharge or bleeding
 - Crowning or urge to push
 - Meconium

- Differential**
- Abnormal presentation
 - Buttock
 - Foot
 - Hand
 - Prolapsed cord
 - Placenta previa
 - Abruptio placenta



OB-Childbirth/ Labor

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History

- Due date
- Time contractions started / how often
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- Medications
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- High Risk pregnancy

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- Meconium

Differential

- Abnormal presentation
 - Buttock
 - Foot
 - Hand
- Prolapsed cord
- Placenta previa
- Abruptio placenta

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Approach Protocol
- Supplemental oxygen
- Do not place fingers or hand inside the birth canal for assessment
- If active labor refer to Childbirth Procedure
- If no active labor but presenting symptoms refer to OB Emergency Protocol
- If presenting part is not the head (i.e., foot-, arm-, or buttock-first), immediately begin transport to the nearest OB receiving facility while further care continues
- If delivery takes place refer to Newborn Protocol

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol

OB Emergency

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

History

- Past medical history
- Hypertension meds
- Prenatal care
- Prior pregnancies / births
- Gravida / Para

Signs and Symptoms

- Vaginal bleeding
- Abdominal pain
- Seizures
- Hypertension
- Severe headache
- Visual changes
- Edema of hands and face

Differential

- Pre-eclampsia / Eclampsia
- Placenta previa
- Placenta abruptio
- Spontaneous abortion

E General Approach Protocol E

Active Labor? YES → Refer to Childbirth/ Labor Protocol

NO
 Vaginal Bleeding? YES along with SBP<90mmHg and signs of shock → Refer to Shock (Non-Trauma) Protocol

NO
 Suspected Eclampsia or Seizure Activity <60 mg/dL → Consider Diabetic Emergency Protocol

B Blood Glucose Analysis Procedure B

P IV Protocol P

P Magnesium Sulfate 2 grams IV/IO in 100 mL of NS over 5 minutes may repeat up to 4 grams total P

If still actively seizing

MC Consult Medical Control MC

P Versed 5 mg IV/IO/IN/IM P

- Severe headache, vision changes, or RUQ pain may indicate preeclampsia.
- In the setting of pregnancy, hypertension is defined as a BP greater than 140 systolic or greater than 90 diastolic, or a relative increase of 30 systolic and 20 diastolic from the patient's normal (pre-pregnancy) blood pressure.
- Maintain patient in a left lateral position to minimize risk of supine hypotensive syndrome, which may occur as the fetus gets large enough to compress the vena cava.
- Ask patient to quantify bleeding - number of pads used per hour.
- Magnesium may cause hypotension and decreased respiratory drive.
- A patient who is pregnant and seizing should be presumed to have eclampsia, a true medical emergency.
- Magnesium administration should be a priority in these patients. However, IN/IM benzodiazepines may be given first due to rapidity of IN/IM administration.
- **Do not delay IM/IN administration of Midazolam with difficult IV or IO access.**

OB Emergency

History

- Past medical history
- Hypertension meds
- Prenatal care
- Prior pregnancies / births
- Gravida / Para

Signs and Symptoms

- Vaginal bleeding
- Abdominal pain
- Seizures
- Hypertension
- Severe headache
- Visual changes
- Edema of hands and face

Differential

- Pre-eclampsia / Eclampsia
- Placenta previa
- Placenta abruptio
- Spontaneous abortion

- Severe headache, vision changes, or RUQ pain may indicate preeclampsia.
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- Ask patient to quantify bleeding - number of pads used per hour.
- Magnesium may cause hypotension and decreased respiratory drive.
- A patient who is pregnant and seizing should be presumed to have eclampsia, a true medical emergency.
- Magnesium administration should be a priority in these patients. However, IM benzodiazepines may be given first due to rapidity of IM administration.
- **Do not delay IM/IN administration of Midazolam with difficult IV or IO access.**

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Approach Protocol
- If vaginal bleeding and a SBP < 90 mmHg and signs of shock, refer to Shock (Non-Trauma) Protocol
- Suspect Eclampsia or Seizure Activity refer to below and Seizure Protocol
- Blood Glucose Analysis Procedure

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol
- For suspected eclampsia or seizure activity, **Magnesium Sulfate 2 grams IV/IO** in 100 mL of NS over 5 minutes. May repeat to a total of **4 grams** total.

Contact Medical Control for the consideration of the following below

- If still actively seizing after Magnesium Sulfate infusion
 - **Midazolam (Versed) 5 mg IV, IO, IN, IM**

OB Emergency

OB Newborn

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

History:

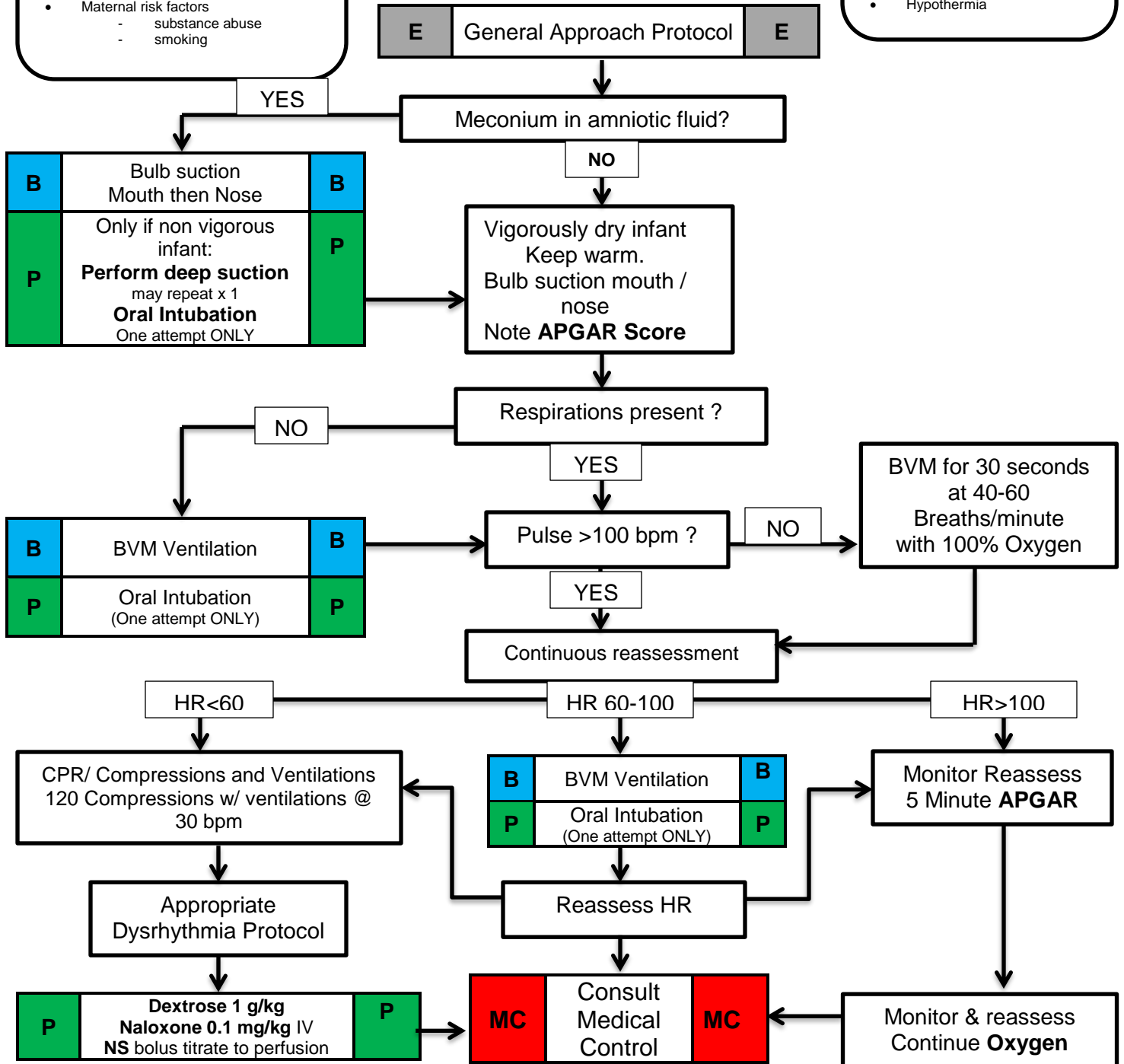
- Due date and gestational age
- Multiple gestation (twins etc.)
- Meconium
- Delivery difficulties
- Congenital disease
- Medications (maternal)
- Maternal risk factors
 - substance abuse
 - smoking

Signs and Symptoms:

- Respiratory distress
- Peripheral cyanosis or mottling (normal)
- Central cyanosis (abnormal)
- Altered level of responsiveness
- Bradycardia

Differential:

- Airway failure
- Secretions
- Respiratory drive
- Infection
- Maternal medication effect
- Hypovolemia
- Hypoglycemia
- Congenital heart disease
- Hypothermia



OB-Newborn Protocol

OB Newborn

History:

- Due date and gestational age
- Multiple gestation (twins etc.)
- Meconium
- Delivery difficulties
- Congenital disease
- Medications (maternal)
- Maternal risk factors
 - substance abuse
 - smoking

Signs and Symptoms:

- Respiratory distress
- Peripheral cyanosis or mottling (normal)
- Central cyanosis (abnormal)
- Altered level of responsiveness
- Bradycardia

Differential:

- Airway failure
- Secretions
- Respiratory drive
- Infection
- Maternal medication effect
- Hypovolemia
- Hypoglycemia
- Congenital heart disease
- Hypothermia

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Approach Pediatric Protocol
- Note gestational age, and if twin gestation is known
- Assess for presence of meconium
- Assess breathing or presence of crying
- Assess muscle tone
- Assess color
- Provide warmth
- Open airway and suction with bulb syringe as soon as infant is delivered.
- Suction mouth first then nasopharynx
- Dry, stimulate and reposition
- Administer supplemental blow-by oxygen
- Evaluate respirations, heart rate and color
- If apnea or HR < 100, provide positive pressure ventilation using BVM and supplemental oxygen
- If HR remain < 60, begin chest compressions
- Note APGAR scores at 1 and 5 minutes after birth and then sequentially every 5 minutes until VS have stabilized

Sign	0	1	2
Appearance	Blue, Pale	Extremities Blue	Pink Throughout
Pulse	0	<100/ minute	>100/ minute
Grimace	None	Movement	Cry
Activity	Limp	Some Flexion	Active Flexion
Respirations	0	Weak Cry	Strong Cry

OB-Newborn Protocol

OB Newborn

Paramedic-Perform/Confirm All Above Interventions

- If the fluid contains meconium and the newborn has absent or depressed respirations, decreased muscle tone or heart rate < 100 bpm
- Suction any visible meconium from the airway – refer to Childbirth Complication Procedure as appropriate.
- After suctioning, apply positive pressure ventilation using a BVM and 100% oxygen
- If apnea, or HR < 100, provide positive pressure ventilations with 100% oxygen
- If HR 60-100, and no increase with positive pressure ventilations with 100% oxygen
- Continue assisted ventilations
- Begin chest compressions
- **Naloxone (Narcan) 0.01 mg/kg**, IV/IO if respiratory depression in a newborn of a mother who received narcotics within 4 hours of delivery, use caution in infants born to opiate addicted mothers
- May Repeat **Naloxone (Narcan)** dose as needed to a **max of 0.03 mg/kg**
- Check blood glucose and treat glucose < 40 mg/dL
- **Dextrose 10% at 5 ml/kg**
- If HR < 60 begin chest compressions
- **IV 0.9% NaCl** KVO or lock
- If no IV access obtained after 3 attempts, or within 90 seconds, obtain IO access

Sign	0	1	2
Appearance	Blue, Pale	Extremities Blue	Pink Throughout
Pulse	0	<100/ minute	>100/ minute
Grimace	None	Movement	Cry
Activity	Limp	Some Flexion	Active Flexion
Respirations	0	Weak Cry	Strong Cry

Overdose

LEGEND

E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

History:

- Ingestion or suspected ingestion of a potentially toxic substance
- Substance ingested, route, quantity
- Time of ingestion
- Reason (suicidal, accidental, criminal)
- Available medications in home
- Post medical history, medications

Signs and Symptoms

- Mental Status Changes
- Hypotension / Hypertension
- Decreased respiratory rate
- Tachycardia, dysrhythmias
- Seizures
- Pupils

Differential

- Tricyclic antidepressants (TCAs)
- Acetaminophen (Tylenol)
- Aspirin
- Depressants
- Stimulants
- Anticholinergic
- Cardiac medications
- Solvents, alcohols, cleaning agents
- Insecticides (organophosphates)

E	General Approach Protocol	E
B	12 Lead EKG	B
P	IV Protocol	P

QRS >0.10 sec, hypotension or dysrhythmias: **Sodium Bicarb 1 mEq/kg** may repeat in 5-10 minutes

Tricyclic & Tetracyclic

Calcium Channel Blocker

Calcium Chloride 1g IV/IO

If no response may repeat 1x

Contact Medical Control for consideration of External Cardiac Pacing

Beta Blocker Toxicity

Glucagon 2 mg IV/IO

If no response Contact Medical Control for consideration of External Cardiac Pacing

Opiates

Narcan (Nalaxone) 0.4 mg increments IV, 2mg IN/IM up to 4 mg total

Organophosphate & Cholinergic Poisoning

Atropine 2 mg IVP every 5 minutes

Acute Dystonic Reaction

Diphenhydramine (Benadryl) 25 mg IV, may repeat 1x in 10 minutes if no response

Overdose

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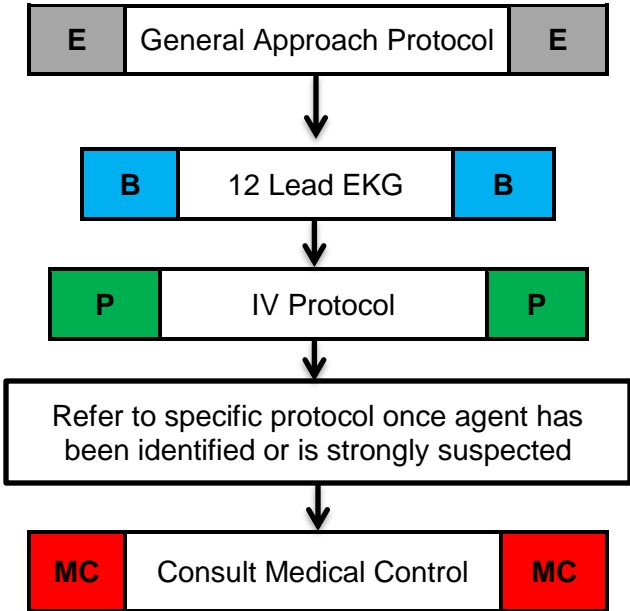
LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Overdose/ Toxic Ingestion

- History:**
- Ingestion or suspected ingestion of a potentially toxic substance
 - Substance ingested, route, quantity
 - Time of ingestion
 - Reason (suicidal, accidental, criminal)
 - Available medications in home
 - Post medical history, medications

- Signs and Symptoms**
- Mental Status Changes
 - Hypotension / Hypertension
 - Decreased respiratory rate
 - Tachycardia, dysrhythmias
 - Seizures
 - Pupils

- Differential**
- Tricyclic antidepressants (TCAs)
 - Acetaminophen (Tylenol)
 - Aspirin
 - Depressants
 - Stimulants
 - Anticholinergic
 - Cardiac medications
 - Solvents, alcohols, cleaning agents
 - Insecticides (organophosphates)



Bring bottles, contents, and emesis to ED

Tricyclic : 4 major areas of toxicity: seizures, dysrhythmias, hypotension, decreased mental status or coma; rapid progression from alert to death

Acetaminophen: initially normal or nausea/vomiting. If not detected and treated, causes irreversible liver failure

Aspirin: Early signs consist of abdominal pain and vomiting. Tachypnea and altered mental status may occur later. Renal dysfunction, liver failure and/or cerebral edema among other things can take place later

Depressants: decreased HR, decreased BP, decreased temperature, decreased respirations, non-specific pupils

Stimulants: increased HR, increased BP, increased temperature, dilated pupils, seizures

Anticholinergic: increased HR, increased temperature, dilated pupils, mental status changes

Cardiac Medications: dysrhythmias and mental status changes

Solvents: nausea, coughing, vomiting, and mental status changes

Insecticides: increased or decreased HR, increased secretions, nausea, vomiting, diarrhea, pinpoint pupils

Consider restraints if necessary for patient's and or personnel's protection per the restraint procedure

Consider contacting poison control center for advice **1-800-222-1222**

Overdose Protocol

Overdose-Toxic Ingestion

History:

- Ingestion or suspected ingestion of a potentially toxic substance
- Substance ingested, route, quantity
- Time of ingestion
- Reason (suicidal, accidental, criminal)
- Available medications in home
- Post medical history, medications

Signs and Symptoms

- Mental Status Changes
- Hypotension / Hypertension
- Decreased respiratory rate
- Tachycardia, dysrhythmias
- Seizures
- Pupils

Differential

- Tricyclic antidepressants (TCAs)
- Acetaminophen (Tylenol)
- Aspirin
- Depressants
- Stimulants
- Anticholinergic
- Cardiac medications
- Solvents, alcohols, cleaning agents
- Insecticides (organophosphates)

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Solvents: nausea, coughing, vomiting, and mental status changes

Insecticides: increased or decreased HR, increased secretions, nausea, vomiting, diarrhea, pinpoint pupils

Consider restraints if necessary for patient's and or personnel's protection per the restraint procedure

Consider contacting poison control center for advice **1-800-222-1222**

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Approach to All Patients-Adult
- Refer to specific protocol once agent has been identified or is strongly suspected

Paramedic-Perform/Confirm All Above Interventions

- 12 Lead EKG Procedure
- IV Protocol

Overdose-Antipsychotics & Acute Dystonic Reaction

Examples of commonly used medications that may result in acute dystonic reactions:

- Haloperidol
- Prolixin
- Thorazine
- Prochlorperazine (Compazine)
- Promethazine (Phenergan)

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Approach Protocol

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol
- **Diphenhydramine (Benadryl) 25 mg IV**
- Repeat **Diphenhydramine (Benadryl) 25 mg IV** if no response in 10 minutes

Overdose-Acute Dystonic & Antipsychotic

Overdose-Beta Blocker Toxicity

Single Agent Medication	Combination Medication
<ul style="list-style-type: none">• Propranolol (Inderal)• Atenolol (Tenormin)• Metoprolol (Lopressor, Toprol)• Nadolol (Corgard)• Timolol (Blocadren)• Labetalol (Trandate)• Esmolol (Brevibloc)	<ul style="list-style-type: none">• Corzide (Nadolol/bendroflumethlazide)• Inderide (Propranolol/HCTZ)• Lopressor HCT (Metoprolol/HCTZ)• Timolide (Timolo/HCTZ)• Ziac (Bisoprolol/HCTZ)• Tenoretic (Atenolol/Chlorthalidone)

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Approach Protocol

Paramedic-Perform/Confirm All Above Interventions

- 12 Lead EKG
- IV Protocol

Criteria for cardiovascular toxicity is defined by:
Chest Pain, SBP<90mmHg, **or** Altered Mental Status

AND

HR<60 or 2nd **or** 3rd degree heart blocks.

If the previous symptoms are presenting follow flow chart below

- If no response, **Glucagon 2 mg IV/IO**
 - If vomiting after **Glucagon**, administer **Ondansetron (Zofran) 4 mg IV**

Contact Medical Control for consideration of the following:

- If no response refer to and begin External cardiac Pacing Procedure

Overdose-Beta Blocker Toxicity

Overdose-Calcium Channel Blockers

Examples of commonly used Calcium Channel Blocker medication:

- Amlodipine (Norvasc)
- Felodipine (Plendil, Renedil)
- Isradipine (DynaCirc)
- Nicardipine (Cardene)
- Nifedipine (Procardia, Adalat)
- Verapamil (Calan)
- Diltiazem (Cardizem)

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Approach Protocol

Paramedic-Perform/Confirm All Above Interventions

- 12 Lead EKG
- IV Protocol

Criteria for cardiovascular toxicity is defined by:
Chest Pain, SBP<90mmHg, **or** Altered Mental Status

AND

HR<60 or 2nd or 3rd degree heart blocks.

If the previous symptoms are presenting follow flow chart below

- **Calcium Chloride 1 g IV/IO**

Contact Medical Control in regards to the following:

- If no response may repeat **Calcium Chloride 1 gram IV/IO**
- If no response refer to and begin External cardiac Pacing Procedure

Overdose-Calcium Channel Blocker Toxicity

Overdose-Cholinergic Poisoning/ Organophosphates

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Approach to All Patients-Adult
- Wear protective clothing including masks, gloves and eye protection
 - Toxicity to ambulance crew may result from inhalation or topical exposure
- Supplemental 100% oxygen
- Decontaminate patient
 - Remove all clothing and contain run-off of toxic chemicals when flushing

Paramedic-Perform/Confirm All Above Interventions

- 12 Lead EKG
- IV Protocol
- If severe signs of toxicity, (severe respiratory distress, bradycardia, heavy respiratory secretions) do not rely on pupil constriction to diagnose or titrate medications:
 - **Atropine 2 mg** IVP every 5 minutes, titrate dosing by assessing improvement in respiratory effort/bronchial secretions
- For hypotension (systolic BP < 90 mmHg) not improved by fluid boluses, or when fluid resuscitation is contraindicated
 - **Epi Infusion** at **2-10 mcg/min** titrated to maintain systolic BP > 90 mmHg
- If any of the following conditions occur, refer to the appropriate protocol:
 - Altered Mental Status Protocol
 - Seizure Protocol

Overdose-Opiates

Single Agent Medication	Combination Medication	Long Acting
<ul style="list-style-type: none">• Oxycodone• Hydrocodone• Morphine• Heroin• Dilaudid• Fentanyl• Codiene	<ul style="list-style-type: none">• Vicodin• Norcodin• Percocet• Darvocet• Vicoprofen	<ul style="list-style-type: none">• Oxycontin• MS Contin• Methadone

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Approach Protocol
- Symptoms for patients with Opiate toxidrome include:
 - Coma
 - Pin point pupils
 - Respiratory depression
- **Naloxone (Narcan) up to 4 mg total IV/IO/IN/IM every 3 minutes**
 - **Naloxone (Narcan)** can be administered in **0.4 mg increments** titrated to respiratory drive and level of consciousness
 - If IV access has not been established, **Naloxone (Narcan) 2 mg IM or IN. 1 mg per nare**
- Repeat every 3 minutes if signs and symptoms continue
- If respiratory depression does not improve, refer to Airway-Adult Protocol

Paramedic-Perform/Confirm All Above Interventions

- Full ALS Assessment and Treatment
- IV Protocol

Overdose-Tricyclic & Tetracyclic Antidepressant

Category	Drugs	Overdose Effects
Tricyclic Antidepressants	<ul style="list-style-type: none"> • Amitriptyline (Elavil, Endep, Vanatrip, Levate) • Clomipramine (Anafranil) • Doxepin (Sinequan, Zonalon, Tridapin) • Imipramine (Tofranil, Impril) • Nortriptyline (Aventyl, Pamelor, Norventyl) • Desipramine (Norpramin) • Protriptyline (Vivactil) • Trimipraine (Surmontil) • Amitriptyline+Chlordiazepoxide (Limbitrol) 	<ul style="list-style-type: none"> • Hypotension • Anti-cholinergic effects (tachycardia, seizures, altered mental status, mydriasis) • AV conduction blocks (prolonged QT interval, wide QRS) • VT and VF
Other Cyclic Antidepressants	<ul style="list-style-type: none"> • Maprotiline (Ludiomil) • Amoxapine (Asendin) • Bupropion (Wellbutrin) • Trazadone (Desyrel, Trazorel) 	<ul style="list-style-type: none"> • Similar to Tricyclics • Seizures
Selective Serotonin Reuptake Inhibitors (SSRIs)	<ul style="list-style-type: none"> • Citalopram (Celexa) • Fluoxetine (Prozac) • Fluvoxamine (Luvox) • Paroxetine (paxil) • Sertraline (Zoloft) 	<ul style="list-style-type: none"> • Hypertension, tachycardia, agitation, diaphoresis, shivering • Malignant Hyperthermia

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Approach Protocol

Paramedic-Perform/Confirm All Above Interventions

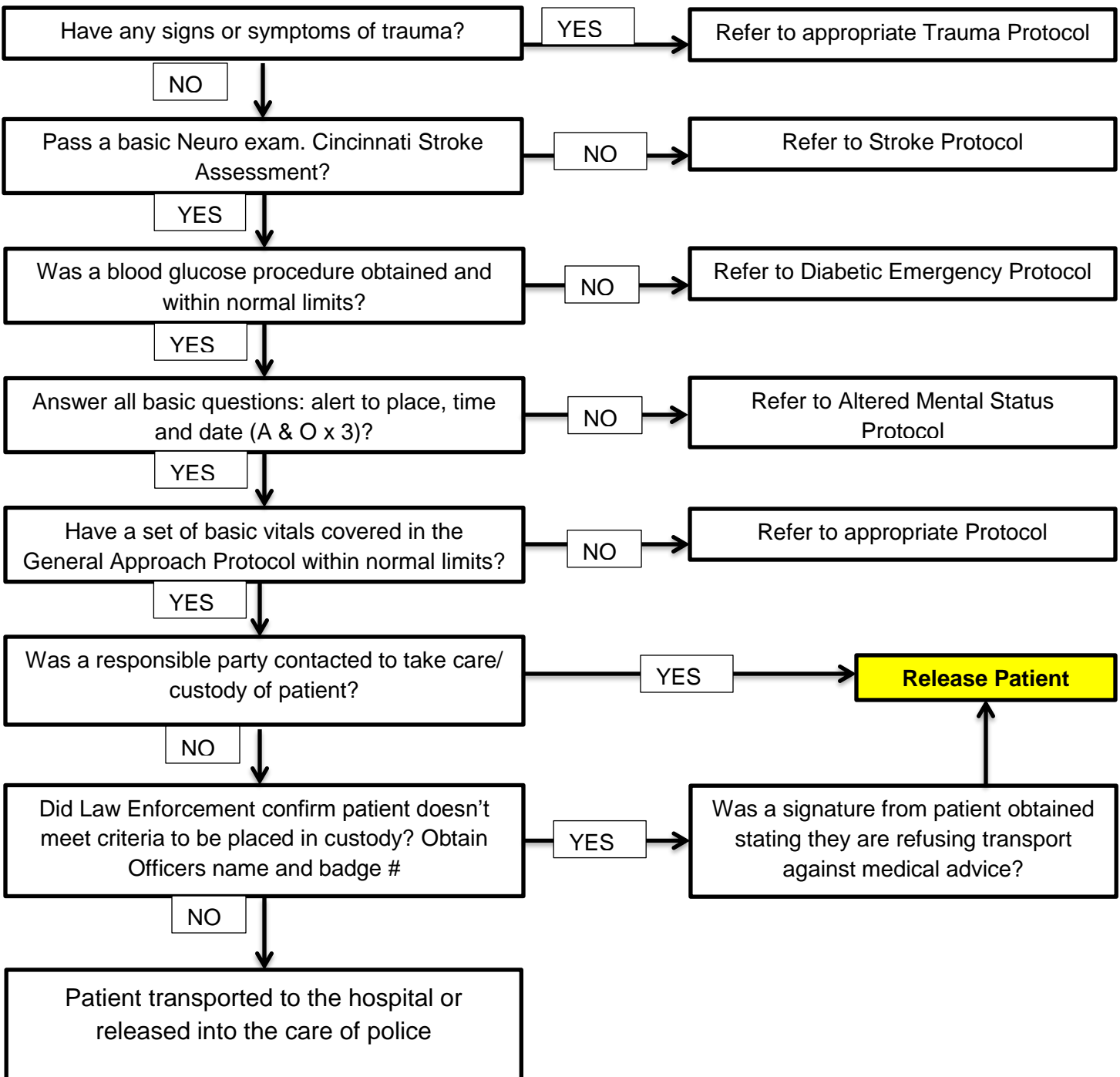
- 12 Lead EKG Procedure
- IV Protocol
 - **250 mL normal saline fluid bolus**
- If QRS complex >0.10 sec, hypotension or arrhythmias: **Sodium Bi-Carb 1mEq/kg** repeat in 5-10 min
- SBP <90 mmHg despite fluid bolus, **Epi Infusion 2-10 mcg/min** to maintain SBP >90 mmHg
- If VT, Altered Mental Status or Seizures Occur refer to appropriate protocol

Overdose Tricyclic & Tetracyclic Antidepressant

Medical Clearing of Impaired Patients

This document is a guideline and a reference tool in regards to covering all aspects of a release of liability from a patient who has admitted and is impaired by alcohol, medication, illegal substances or any other forms of impairment. If impaired patient refuses transport and police custody is not an option, all of the following shall be done and documented prior to patient release.

Did the patient:



Refusal-General

General guidelines for patient refusal of treatment and/or transport:

- A patient is any person who is requesting and/or is in need of medical attention or medical assistance of any kind.
- All patients shall be assessed and offered transport by ambulance to the nearest appropriate emergency department, regardless of the nature of the complaint.
- In the event a patient, or his/her guardian, refuses transport to the hospital, a properly executed refusal process must be completed.

Three-Step Process for EMS personnel when accepting a refusal of care:

Step 1: Determine if the patient is legally recognized as an informed decision maker.

Step 2: Determine if the patient's decision making capacity appears to be intact.

Step 3: Document the interaction well.

Step 1

To undergo the informed refusal of medical care process, the patient should be one of the following:

- A person \geq 18 years of age
- A court-emancipated minor
- A legally married person of any age
- An unwed pregnant female < 18 years of age only when the medical concern relates to her pregnancy
- A parent (of any age)/ or legal guardian on behalf of his/her child when the refusal of care does not place the child at risk
- Involve OLMC for any refusal involving a minor when the parent/legal guardian cannot be contacted

Step 2

To undergo the informed refusal of medical care process, the patient or his/her guardian's decision-making process cannot be impaired by medical or psychiatric conditions:

- All of the following must be present:

Awake, alert and oriented to person, place, time and situation (**A&OX4**). Patients decision making capacity to be intact.

- Is not experiencing a medical condition which may interfere with informed decision making capacity (e.g. hypoxia, hypoglycemia, head injury, sepsis etc.)
- Does not appear clinically intoxicated or under the influence of substances which may impair decision making and judgment
- Does not express suicidal or homicidal ideations, and does not otherwise pose an obvious threat to themselves or others
- Is not experiencing hallucination or other apparent thought disorder

Refusal-General

Step 3

The following items should be documented for every refusal:

- A mental status examination as detailed in Step 2 above
- A physical examination (including vital signs)
 - Perform blood glucose level and oxygen saturation when appropriate

Pediatric Refusals

- Patient is less than 18 years old
 - Have patient's parent –or–
 - Attempt to have parent or legal guardian respond to scene –or–
 - Obtain release by legal guardian patient must be released to an adult (i.e. other family member, chaperone, or childcare if over 18).
 - If patient is not with an adult try to release patient with law enforcement.
 - If the above options are not available hospital of choice, if known, or closest facility.
- The following scenarios require OLMC contact prior to completing the refusal process:
 - Refusals involving patients less than 1 year old
 - Pediatric refusals where significant vital sign/ or physical exam abnormalities are present
- In the event a parent or guardian refuses medical care for a minor when there is reasonable concern that this decision poses a threat to the well-being of the minor:
 - Contact the OLMC Physician for input
 - Enlist the aid of law enforcement personnel for patient and crew safety
 - If an immediately life threatening condition exists, transport the patient to the nearest appropriate emergency department.

Refusal of Transport After ALS Initiated:

- Contact OLMC for refusal situations that arise after advanced life support measures have been initiated (example: Narcan [Nalaxone administration])
- Exceptions to this requirement are: ⇒ Bronchospasm, resolved after nebulizer treatment (see protocol)
 - Insulin-induced hypoglycemia, resolved after glucose administration (see protocol)

Refusal-After Hypoglycemia Treatment

This protocol applies only to insulin dependent diabetic patients refusing transport after the resolution of insulin-induced hypoglycemia by the administration of intravenous glucose. This protocol cannot be used if the patient takes **any oral diabetes medications**. After treatment of insulin-induced hypoglycemia and return to an asymptomatic state, some patients will refuse transport to the hospital.

The following items should be accounted for and included in the assessment and documentation.

- The patient is on Insulin only (**does not take any oral diabetes medications**)
- The presentation is consistent with hypoglycemia
- Rapid improvement, and complete resolution of symptoms after glucose
- Vital signs within normal limits after glucose given (BP, pulse, respiratory rate, oxygenation and blood sugar > 100 mg/dL)
- There is no indication of an intentional overdose or dosing error
- A meal has been consumed by patient (example: tv dinner or peanut butter jelly sandwich)

Additional patient safety measures that should be considered:

- A family member or caregiver should be available to stay with the patient and assist if a relapse occurs
- Assure the patient understands transport has been offered and subsequently refused
- Inform the patient to follow-up with their physician as soon as possible and/or to re-contact 911 if symptoms reoccur

If the above are accounted for, a properly executed refusal of medical care can be accepted from the patient or custodian without contacting Medical Control.

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Adult Thermal Burn

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

History

- Type of exposure (heat, gas, chemical)
- Inhalation injury
- Time of Injury
- Past medical history and medications
- Other trauma
- Loss of consciousness
- Tetanus/Immunization status

Signs and Symptoms

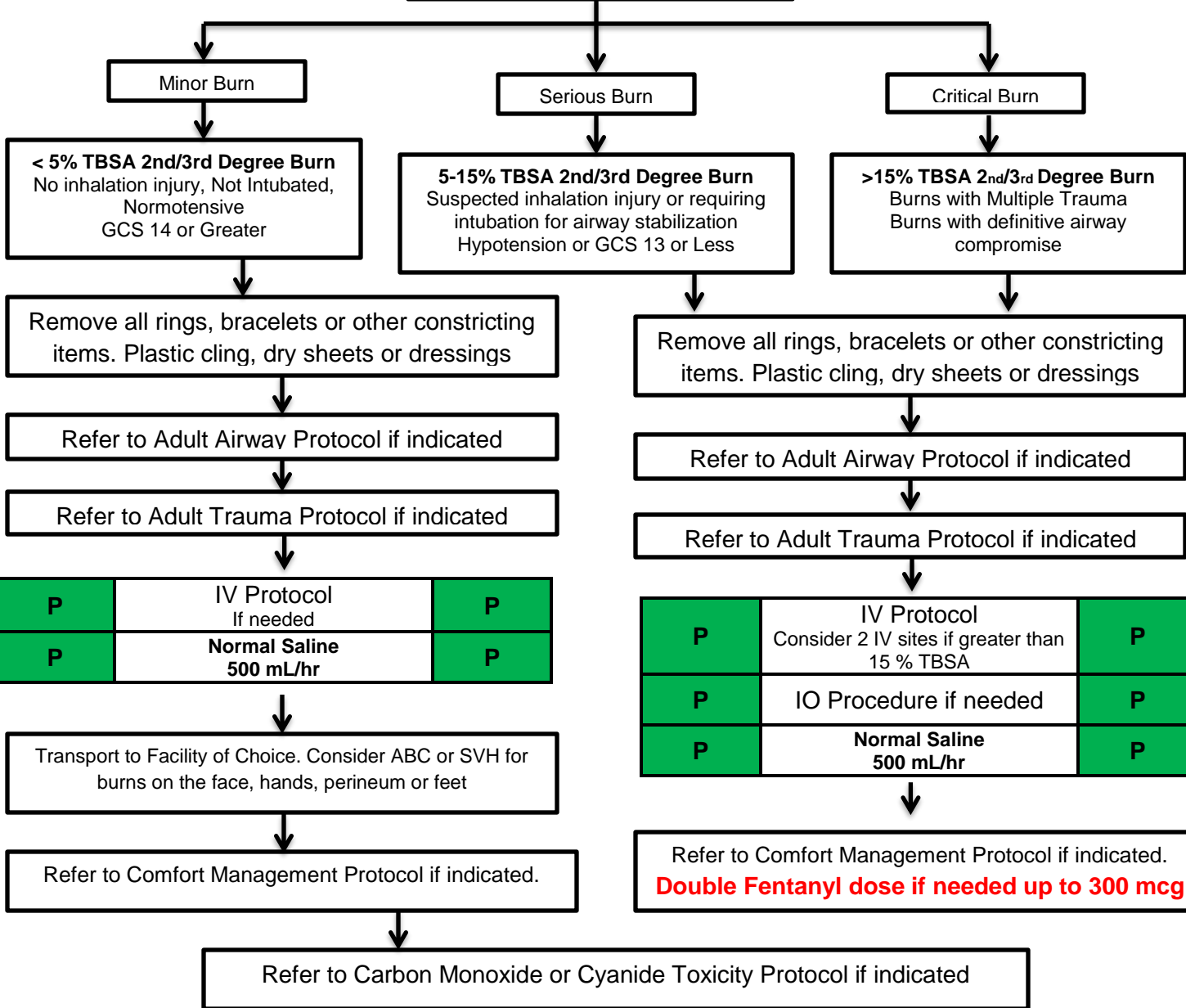
- Burns, pain, swelling
- Dizziness
- Loss of consciousness
- Hypotension/shock
- Airway compromise/distress could be indicated by hoarseness/wheezing

Differential

- Superficial (1st Degree) red - painful (Don't include in TBSA)
- Partial Thickness (2nd Degree) blistering
- Full Thickness (3rd Degree) painless/charred or leathery skin
- Thermal injury
- Chemical – Electrical injury
- Radiation injury
- Blast injury

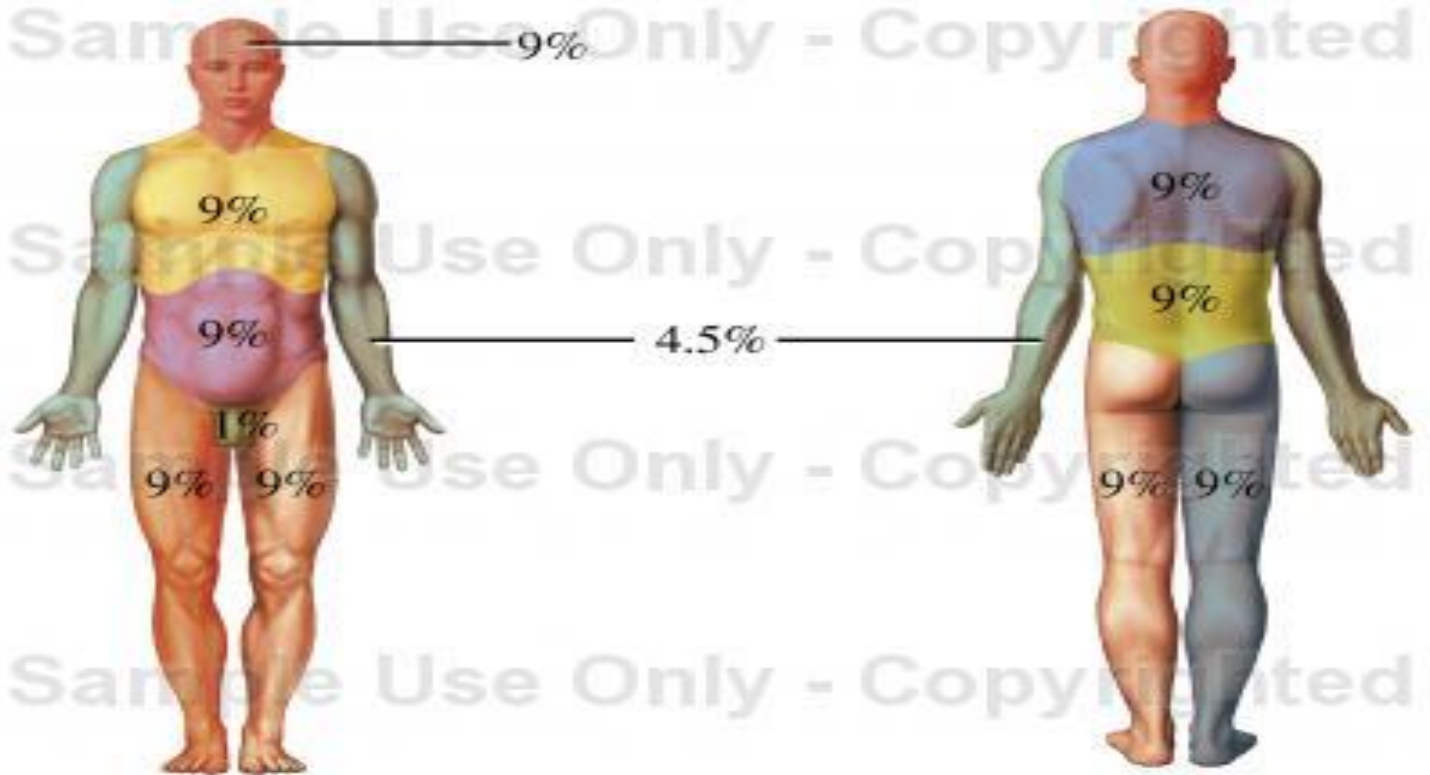
E **General Approach Protocol** E

Assess Burns and Severity



LEGEND		
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Adult Thermal Burns Cont.



•Critical or Serious Burns:

- 5-15% total body surface area (TBSA) 2nd or 3rd degree burns, or
 - 3rd degree burns > 5% TBSA for any age group, or
 - circumferential burns of extremities, or
 - electrical or lightning injuries, or
 - suspicion of abuse or neglect, or
 - inhalation injury, or
 - chemical burns, or
 - burns of face, hands, perineum, or feet
- Transport patients to ABC or SVH
 - Burn patients are often trauma patients, evaluate for multisystem trauma.
 - Assure whatever has caused the burn is no longer contacting the injury. (Stop the burning process!)
 - Early intubation is required when the patient experiences significant inhalation injuries. If the patient requires airway management that cannot be achieved in the field.
 - Signs and symptoms of inhalation injury: carbonaceous sputum, facial burns or edema, hoarseness, singed nasal hairs, agitation, anxiety, cyanosis, stupor or other signs of hypoxia
 - Circumferential burns to extremities are dangerous due to potential vascular compromise secondary to soft tissue swelling.
 - Burn patients are prone to hypothermia - never apply ice or cool the burn, must maintain normal body temperature.

Adult Thermal Burn

History

- Type of exposure (heat, gas, chemical)
- Inhalation injury
- Time of Injury
- Past medical history and Medications
- Other trauma
- Loss of Consciousness
- Tetanus/Immunization status

Signs and Symptoms

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- Thermal injury
- Chemical – Electrical injury
- Radiation injury
- Blast injury

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Approach Protocol
- Remove all clothing, contact lenses, and jewelry, especially rings
- Maintain core temperature. Keep patient warm and dry with sheets and blankets. Cover burns with plastic wrap, plastic chucks, or clean, dry dressings.
- If inhalation injury is suspected
 - Monitor ETCO₂ continuously (if available)
- Estimate Total Body Surface Area (TBSA)
 - Rule of Nines
 - For scattered burns, use the size of patient's hand, including fingers, to equal 1% burn.

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol
- Place large bore peripheral IV's in unburned skin if possible
- If TBSA % greater than 15% of 2nd and 3rd degree burns, initiate fluid resuscitation with **0.9% Normal Saline at 500ml/hour**, place 2 large bore peripheral IV's
- Refer to IO Procedure if indicated
- Observe for signs of impending loss of airway; Refer to the Airway-Adult Protocol as needed:
 - Hypoxia
 - Poor ventilatory effort
 - Altered Mental status/decreased level of consciousness
 - Inability to maintain patent airway
 - Signs or Symptoms of Inhalation injury
 - Carbonaceous sputum
 - Extensive facial burns or facial edema
 - Hoarseness
 - Singed nasal hairs
 - Agitation, anxiety, cyanosis, stupor or other signs of hypoxia
- If moderate to severe pain, see Comfort Management Protocol
 - **Double Fentanyl dose up to 300 mcg if needed**
- Refer to Hazmat-Carbon Monoxide Protocol if indicated
- Refer to Hazmat-Cyanide Toxicity Protocol if indicated

Trauma-Cardiac Arrest

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

History:
Patient who has suffered traumatic injury and is now pulseless

Signs and Symptoms:

- Evidence of penetrating trauma
- Evidence of blunt trauma

Differential:

- 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
- Retroperitoneal hemorrhage

E	General Approach Protocol	E
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Patient with injuries obviously incompatible with life (decapitation, incineration, obvious destruction to vital organs of head/torso). No resuscitation indicated on patients in Asystole or wide complex PEA < 30 BPM.

YES

Do **NOT** Initiate Transport. Contact Brown County Medical Examiner

NO

B	CPR Procedure	B
B	Spinal Protection Procedure	B

Initiate **TRAUMA ALERT**

Perform Interventions during Transport

P	IV Protocol	P
P	1000 mL Bolus of NS	P
P	Known/Suspected Chest Trauma, Bilateral Chest Decompression Procedure	P

Continue Fluid Bolus
Consider:

- Reduction of Long Bone Fracture
- Reduction of Pelvic Fracture
- Control of External Hemorrhage
- Consider ACLS H's & T's

Return of Pulse?

NO

Continue Expedited Transport

YES

Refer to Post Resuscitation Protocol

MC	Consult Medical Control	MC
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Trauma-Cardiac Arrest

History:

Patient who has suffered traumatic injury and is now pulseless

Signs and Symptoms:

- Evidence of penetrating trauma
- Evidence of blunt

Differential:

- 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
- Retroperitoneal hemorrhage

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Approach Protocol

CPR can be withheld in Traumatic Cardiopulmonary Arrest under the following circumstances:

- Pulseless, apneic, and no other signs of life present AND
- The presence of one or more of the following:
 - Rigor Mortis
 - Decomposition of body tissues
 - Dependent Lividity
 - Injuries incompatible with life (e.g. incineration, decapitation, hemicorporectomy)
 - Evidence of significant time lapse since pulselessness
 - No resuscitation indicated on patients in Asystole or wide complex PEA < 30 BPM

If this becomes the case at hand contact the Brown County Medical Examiner via Brown County Dispatch Center.

This criteria does not apply in the following scenarios:

- When the Cardiac Arrest is inconsistent with Cardiac Arrest due to trauma
- Lightning or other high voltage injuries
- Drowning
- Suspected hypothermia
- Transport has been initiated
- Perform **CPR Procedure** if indicated
- Refer to **Spinal Protection Procedure**

IF PATIENT MEETS TRANSPORT CRITERIA INITIATE TRAUMA ALERT AS SOON AS TIME ALLOWS.

Trauma-Cardiac Arrest

Paramedic-Perform/Confirm All Above Interventions

- Perform all interventions during transport
- IV Protocol
- **1000 mL bolus of Normal Saline**
- Known or suspected chest trauma, Bi-Lateral Chest Decompression Procedure

Continue Fluid Bolus

Consider:

- Reduction of Long Bone Fracture
 - Reduction of Pelvic Fracture
 - Control of External Hemorrhage
 - Consider ACLS H's & T's
- Expedite transport
 - Return of pulse at any time refer to Post Resuscitation Protocol

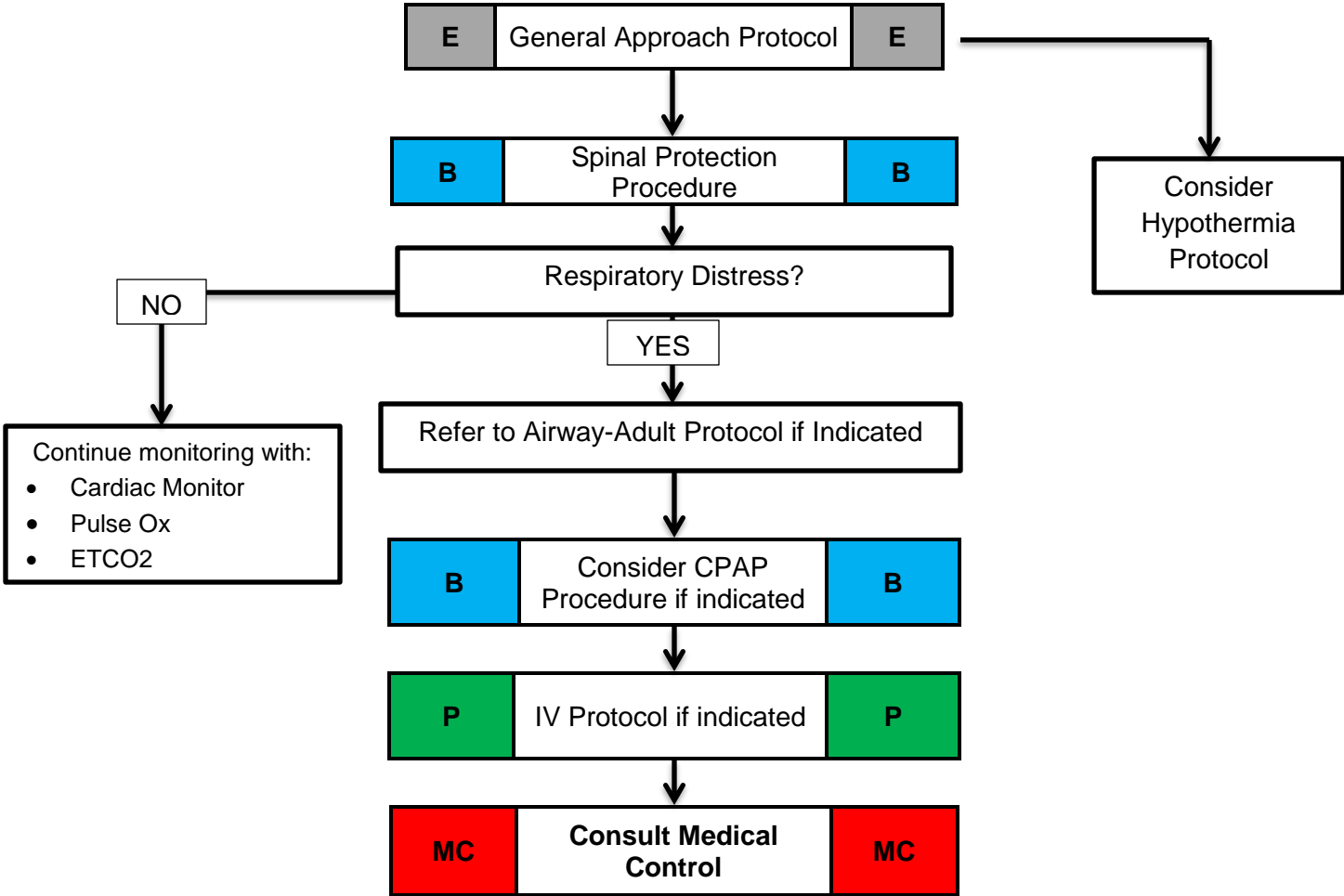
LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Drowning/ Submersion Injury

- History:**
- Submersion in water regardless of depth
 - Possible history of trauma ie: diving board
 - Duration of immersion
 - Temperature of water

- Signs and Symptoms:**
- Unresponsive
 - Mental status changes
 - Decreased or absent vital signs
 - Vomiting
 - Coughing

- Differential:**
- Trauma
 - Pre-existing medical problem
 - Pressure injury (diving)
 - Barotrauma
 - Decompression sickness



Drowning/ Submersion Injury

History:

- Submersion in water regardless of depth
- Possible history of trauma ie: diving board
- Duration of immersion
- Temperature of water
- Fresh/Salt Water

Signs and Symptoms:

- Unresponsive
- Mental status changes
- Decreased or absent vital signs
- Vomiting
- Coughing

Differential:

- Trauma
- Pre-existing medical problem
- Pressure injury (diving)
 - Barotrauma
 - Decompression sickness

Emergency Medical Responder

- General Approach Protocol
- Consider Hypothermia Protocol
- Spinal Immobilization Procedure
- If respiratory distress:
 - Refer to Airway Adult Protocol at any time if indicated

Basic-Perform/Confirm All Above Interventions

- If respiratory distress:
 - CPAP Procedure if indicated
 - Refer to Airway-Adult Protocol if indicated
- If no respiratory compromise, continue to monitor with:
 - Cardiac Monitor
 - Pulse Oximetry
 - ETCO2 monitoring

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol if indicated

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Trauma-Extremity

- History:**
- Type of injury
 - Mechanism: crush/penetrating/amputation
 - Time of injury
 - Open vs. closed wound / fracture
 - Wound contamination
 - Medical history
 - Medications

- Signs and Symptoms**
- Pain, swelling
 - Deformity
 - Altered sensation/motor function
 - Diminished pulse/capillary refill
 - Decreased extremity

- Differential**
- Abrasion
 - Contusion
 - Laceration
 - Sprain
 - Dislocation
 - Fracture
 - Amputation

E	General Approach Protocol	E
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B	Wound Care Procedure. (Control Hemorrhage with Pressure)	B
B	Tourniquet Procedure if Indicated	B
B	Splinting Procedure if Indicated	B

P	IV Protocol	P
P	250 mL NS Bolus to maintain SBP > 90mm/Hg. Max 1L	P

Comfort Management Protocol if Indicated

If amputation: clean amputated part and wrap part in sterile dressing soaked in NS and place in an air tight container, place container on ice if available

MC	Consult Medical Control	MC
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Apply commercially available tourniquet device as proximal on extremity as possible, commercial must be at least 1.5 inches wide, non-commercial must be at least 2 inches wide. Tighten tourniquet until bright red bleeding has stopped. Secure in place and expedite transport to Aurora Bay Care or St. Vincent. Document time of placement in patient care report and on device (if possible). Notify medical control of tourniquet use.

- Check distal pulses, capillary refill, sensation/movement prior to splinting: If pulse present, splint in position found if possible; If pulse absent, attempt to place the injury into anatomical position.
- Open wounds/fractures should be covered with sterile dressings and immobilized in the presenting position.
- Dislocations should be immobilized to prevent any further movement of the joint.
- Check distal pulses, capillary refill and sensation after splinting
 - Peripheral neurovascular status is important (CMS)
 - In amputations, time is critical. Transport and notify medical control immediately.
 - Hip dislocations and 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 six hours from the time of injury

Trauma Extremity

History:

- Type of injury
- Mechanism:
crush/penetrating/amputation
- Time of injury
- Open vs. closed wound / fracture
- Wound contamination
- Medical history
- Medications

Signs and Symptoms

- Pain, swelling
- Deformity
- Altered sensation/motor function
- Diminished pulse/capillary refill
- Decreased extremity

Differential

- Abrasion
- Contusion
- Laceration
- Sprain
- Dislocation
- Fracture
- Amputation

Apply commercially available tourniquet device as proximal on extremity as possible, commercial must be at least 1.5 inches wide, non-commercial must be at least 2 inches wide. Tighten tourniquet until bright red bleeding has stopped. Secure in place and expedite transport to Aurora Bay Care or St. Vincent. Document time of placement in patient care report and on device (if possible). Notify medical control of tourniquet use.

- Check distal pulses, capillary refill, sensation/movement prior to splinting: If pulse present, splint in position found if possible; If pulse absent, attempt to place the injury into anatomical position.
- Open wounds/fractures should be covered with sterile dressings and immobilized in the presenting position.
- Dislocations should be immobilized to prevent any further movement of the joint.
- Check distal pulses, capillary refill and sensation after splinting
 - Peripheral neurovascular status is important (CMS)
 - In amputations, time is critical. Transport and notify medical control immediately.
 - Hip dislocations and 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 six hours from the time of injury

Emergency Medical Responder

- General Approach Protocol
- Assess and maintain Scene Safety
- Selective Spinal Immobilization Procedure if indicated
- Control bleeding via Wound Care Procedure
- If bleeding is still uncontrolled after Wound Care Procedure, refer to Tourniquet Procedure
- Do not utilize injured extremity for BP measurement
- Focused assessment of injury:
 - Deformity
 - Swelling, discoloration
 - Distal pulses
 - Gross sensory examination
 - Presence of open wounds over possible fracture sites.
 - Remove restrictive clothing and jewelry if possible.
- Apply manual stabilization, refer to Splinting Procedure
- If an amputation, clean amputated part and wrap part in sterile dressing soaked in normal saline and place in air tight container on ice if available.

Trauma Extremity

Basic-Perform/Confirm All Above Interventions

- Treat for shock as necessary

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol
 - **250 mL normal saline bolus** to maintain SBP>90 mmHg, **Max 1 liter.**
- Refer to Comfort Management Protocol if indicated.

Consult Medical Control if needed

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LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Trauma-Head Injury

- History:**
- Type of injury
 - Mechanism (blunt vs. penetrating)
 - Loss of consciousness
 - Bleeding
 - Past medical history
 - Medications
 - Evidence of multi-trauma

- Signs and Symptoms**
- Pain, swelling, bleeding
 - Altered mental status
 - Unconscious
 - Respiratory distress / failure
 - Vomiting
 - Major traumatic mechanism of injury
 - Seizure

- Differential**
- Skull fracture
 - Brain injury (concussion, contusion, hemorrhage, or laceration)
 - Epidural hematoma
 - Subdural hematoma
 - Subarachnoid hemorrhage
 - Spinal injury
 - Abuse

E General Approach Protocol E

Restraint Policy if Indicated
 B Spinal Protection Procedure B

Obtain and Record GCS and initiate **TRAUMA ALERT** if indicated

P IV Protocol P

Adult Airway Protocol

Maintain Pulse Ox >92%
 ETCO2 target 35-40 mm/Hg

Refer to Seizure Protocol if indicated

Monitor and Reassess

MC Consult Medical Control MC

DO NOT HYPERVENTILATE
 Ventilate 8 – 10 Breaths per minute to maintain EtCO2 35 – 45 mmHg

Brain Herniation

- Acute unilateral dilated and non-reactive pupil
- Abrupt deterioration in mental status
- Abrupt onset of motor posturing
- Abrupt increase in blood pressure
- Abrupt decrease in heart rate

Hyperventilate 16-20 breaths per minute to maintain ETCO2 30-35 mmHg

Severe Agitation/Combative?

P 1-2mg Versed IV/IO (max 4mg) P

Refer to Airway-RSI Protocol if Indicated

Trauma-Head Injury

History:

- Type of injury
- Mechanism (blunt vs. penetrating)
- Loss of consciousness
- Bleeding
- Past medical history
- Medications
- Evidence of multi-trauma

Signs and Symptoms

- Pain, swelling, bleeding
- Altered mental status
- Unconscious
- Respiratory distress / failure
- Vomiting
- Major traumatic mechanism of injury
- Seizure

Differential

- Skull fracture
- Brain injury (concussion, contusion, hemorrhage, or laceration)
- Epidural hematoma
- Subdural hematoma
- Subarachnoid hemorrhage
- Spinal injury
- Abuse

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Patient Care Protocol-Adult
- Supplemental **Oxygen** to maintain SPO2 >92%
- Restrain Policy as needed
- Spinal Protection Procedure
- Initiate TRAUMA ALERT if indicated
- Obtain and record GCS
- If Hypertensive elevate cot 15° to 30°

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol
- Observe for signs of impending respiratory failure; Refer to the Airway-Adult Protocol if needed:
 - Hypoxia
 - Poor ventilatory effort
 - Altered mental status/decreased level of consciousness
 - Inability to maintain patent airway

For patients with assisted ventilation

- Titrate to target an ETCO2 of 35 to 40 mmHg
- Acute herniation should be suspected when the following signs are present:
 - Acute unilateral dilated and non-reactive pupil
 - Abrupt deterioration in mental status
 - Abrupt onset of motor posturing
 - Abrupt increase in blood pressure
 - Abrupt decrease in heart rate

Trauma-Head Injury

- Hyperventilation (ventilatory rate of 20) is a temporizing measure which is only indicated in the event of acute herniation
- If signs of herniation develop, increase ventilatory rate to 20/minute and target an ETCO_2 of 30-35 mmHg
- If severely agitated/combatative and unable to de-escalate by any other means consider **1-2 mg Midazolam (Versed) max 4 mg.**
- Refer to RSI Protocol if indicated

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LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Trauma-Multiple Trauma

History

- Time and mechanism of injury
- Damage to structure or vehicle
- Location in structure or vehicle
- Others injured or dead
- Speed and details of MVC
- Restraints / protective equipment
- Past medical history
- Medications

Signs and Symptoms

- Pain, swelling
- Deformity, lesions, bleeding
- Altered mental status or unconscious
- Hypotension or shock
- Arrest

Differential (Life threatening)

- Chest: Tension pneumothorax
 - Flail chest
 - Pericardial tamponade
 - Open chest wound
 - Hemothorax
- Intra-abdominal bleeding
- Pelvis / Femur fracture
- Spine fracture / Cord injury
- Head injury (see Head Trauma)
- Extremity fracture / Dislocation
- HEENT (Airway obstruction)
- Hypothermia

Assessment of Serious Signs/Symptoms ABC & LOC

Refer to Airway-Adult if Indicated

B	Spinal Protection Procedure	B
P	IV Protocol	P

Vital Signs, Perfusion, GCS

Normal

Abnormal

Repeat Initial Assessment

B	Splinting Procedure if Indicated	B
B	Wound Care Procedure if Indicated	B

Monitor & Reassess

Transport to ABC or SVH

MC Consult Medical Control MC

Rapid Transport to ABC or SVH. Limit Scene Time <10 minutes Provide TRAUMA ALERT Early!

Trauma-Head Injury Protocol if Indicated

B	Splinting Procedure if Indicated	B
B	Wound Care Procedure if Indicated	B
P	NS Bolus of 250 mL IV/IO. May Repeat to maintain SBP >90 mm/Hg Max 1L	P
P	Chest Decompression Procedure if Indicated	P

Trauma-Multiple Trauma

Trauma-Multiple Trauma

History

- Time and mechanism of injury
- Damage to structure or vehicle
- Location in structure or vehicle
- Others injured or dead
- Speed and details of MVC
- Restraints / protective equipment
- Past medical history
- Medications

Signs and Symptoms

- Pain, swelling
- Deformity, lesions, bleeding
- Altered mental status or unconscious
- Hypotension or shock
- Arrest

Differential (Life threatening)

- Chest: Tension pneumothorax
 - Flail chest
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 - Open chest wound
 - Hemothorax
- Intra-abdominal bleeding
- Pelvis / Femur fracture
- Spine fracture / Cord injury
- Head injury (see Head Trauma)
- Extremity fracture / Dislocation
- HEENT (Airway obstruction)
- Hypothermia

Assess all patients for major trauma criteria. Major trauma patients should have transport initiated within 10 minutes of arrival on scene whenever possible. In the setting of major trauma, DO NOT prolong scene time to perform procedures unless immediately necessary to stabilize patient (e.g. hemorrhage control). Initiate all other procedures en-route to the trauma center.

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Approach Protocol
- Refer to Airway-Adult Protocol if indicated
- Selective Spinal Immobilization Procedure if indicated
- Supplemental oxygen if any respiratory symptoms to maintain SPO2 >92%
- Examine patient for obvious bleeding
- Control active bleeding with direct pressure, Wound Care Procedure if indicated
- Assess disability-neurologic status/record Glasgow coma score
- Head to toe examination to assess for injuries
- Restraint Policy if indicated
- Trauma Head Injury Protocol if indicated

Trauma-Multiple Trauma

Paramedic-Perform/Confirm All Above Interventions

- IV Procedure
 - If SBP < 90 mmHg, administer boluses of **0.9%NaCl at 250 ml** until SBP > 90 mmHg **up to 1 liter**
- Assess for Tension Pneumothorax
- Tension Pneumothorax Procedure should be suspected in patients who exhibit:
 - Severe respiratory distress with hypoxia
 - Unilateral decreased or absent lung sounds (may see tracheal deviation away from collapsed lung field)
 - Evidence of hemodynamic compromise (e.g. shock, hypotension, tachycardia, altered mental status)
- Refer to Pneumothorax Procedure if indicated

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Pediatric General Approach

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Child shall be defined as the following:

- Age <12 years of age or weight <40 kg (if age unknown)
- No signs of puberty if age/weight not able to be determined

Scene Safety
Bring all necessary equipment to patient's side
Demonstrate professionalism and courtesy

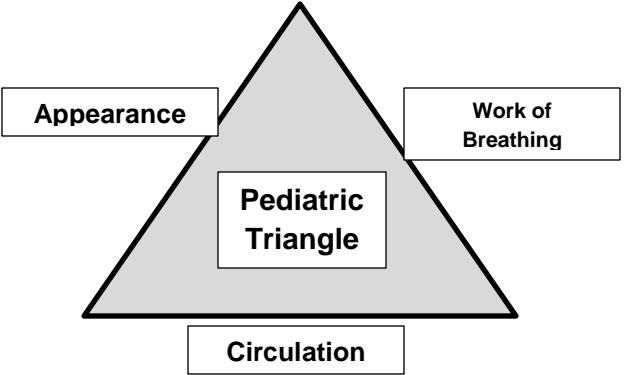
Be sure proper PPE is donned
(Contact, droplet, airborne)

E	<p>Initial Assessment BLS Maneuvers Consider Spinal Protection Procedure</p>	E
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Vital Signs
BP as appropriate pulse, resp. rate at least every 15 minutes
Temperature if pt. with hx fever or hot to touch,
Monitor ECG, pulse ox, blood glucose, GCS, capillary refill

Pediatric-Airway Protocol if indicated

E	Consider Supplemental O2 to maintain SPO2 >92%	E
B	Consider 12 Lead EKG and/or Cardiac Monitor	B
B	ETCO2 Procedure as Appropriate	B
P	IV Protocol if indicated	P



Age Group	Respiratory Rate	Heart Rate	Systolic BP
Newborn	30-60	120-180	>60
Infant (1-12 months)	20-40	100-140	>70
Toddler (1-3 years)	20-34	90-130	>75
Preschooler (3-5 years)	20-30	80-120	>80
School Age (6-12 years)	18-30	70-110	>80
Adolescent (13 + years)	12-20	60-100	>90

Pediatric-Cardiac Arrest Protocol

If Pediatric has absent pulses, initiate compressions

Unless specified in protocol, all medication dosages and equipment sizes should be calculated using the Broselow-Luten or Houston-Haines system

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric General Approach

The following measures will apply to the management of all pediatric patients:

A Child shall be defined as:

- Age <12 years of age or weight <40 kg (if age unknown)
- No signs of puberty if age/weight not able to be determined

Age Group	Respiratory Rate	Heart Rate	Systolic BP
Newborn	30-60	120-180	>60
Infant (1-12 months)	20-40	100-140	>70
Toddler (1-3 years)	20-34	90-130	>75
Preschooler (3-5 years)	20-30	80-120	>80
School Age (6-12 years)	18-30	70-110	>80
Adolescent (13 + years)	12-20	60-100	>90

Emergency Medical Responder

- Ensure scene safety
- Scene survey to determine environmental conditions, mechanism of injury or illness and potential for hazardous conditions
- Form general impression of patient's condition
- Establish patient responsiveness
- Immobilize spine if cervical or other spine injury suspected
- Assess airway and breathing, manage as appropriate
- Supplemental 100% Oxygen if any respiratory signs or symptoms and to maintain >92%
- Assess circulation and perfusion by measuring heart rate, and observing skin color, temperature, capillary refill and the quality of central/peripheral pulses.
 - For children with absent pulses, initial cardiopulmonary resuscitation
- Control hemorrhage using direct pressure or a pressure dressing
- Measure Blood Pressure in children as appropriate
- Evaluate mental status including pupil reaction, motor function and sensation
- For mental status, use the AVPU scale:
 - A- The patient is alert and oriented (age appropriate)
 - V – The patient is responsive to verbal stimulus
 - P – The patient is responsive to painful stimulus
 - U – The patient is unresponsive to any stimulus
- Expose the child only as necessary to perform further assessments
- Maintain the child's body temperature throughout assessment
- Utilize the Broslow-Luten® or Houston-Haines system for estimating patient weight

Basic-Perform/Confirm All Above Interventions

- Airway/ventilatory management as needed
- Perform cardiac monitoring
- Record and monitor O2 saturation to maintain >92%
- Record and monitor End-tidal CO2 if applicable

Pediatric-General Approach

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

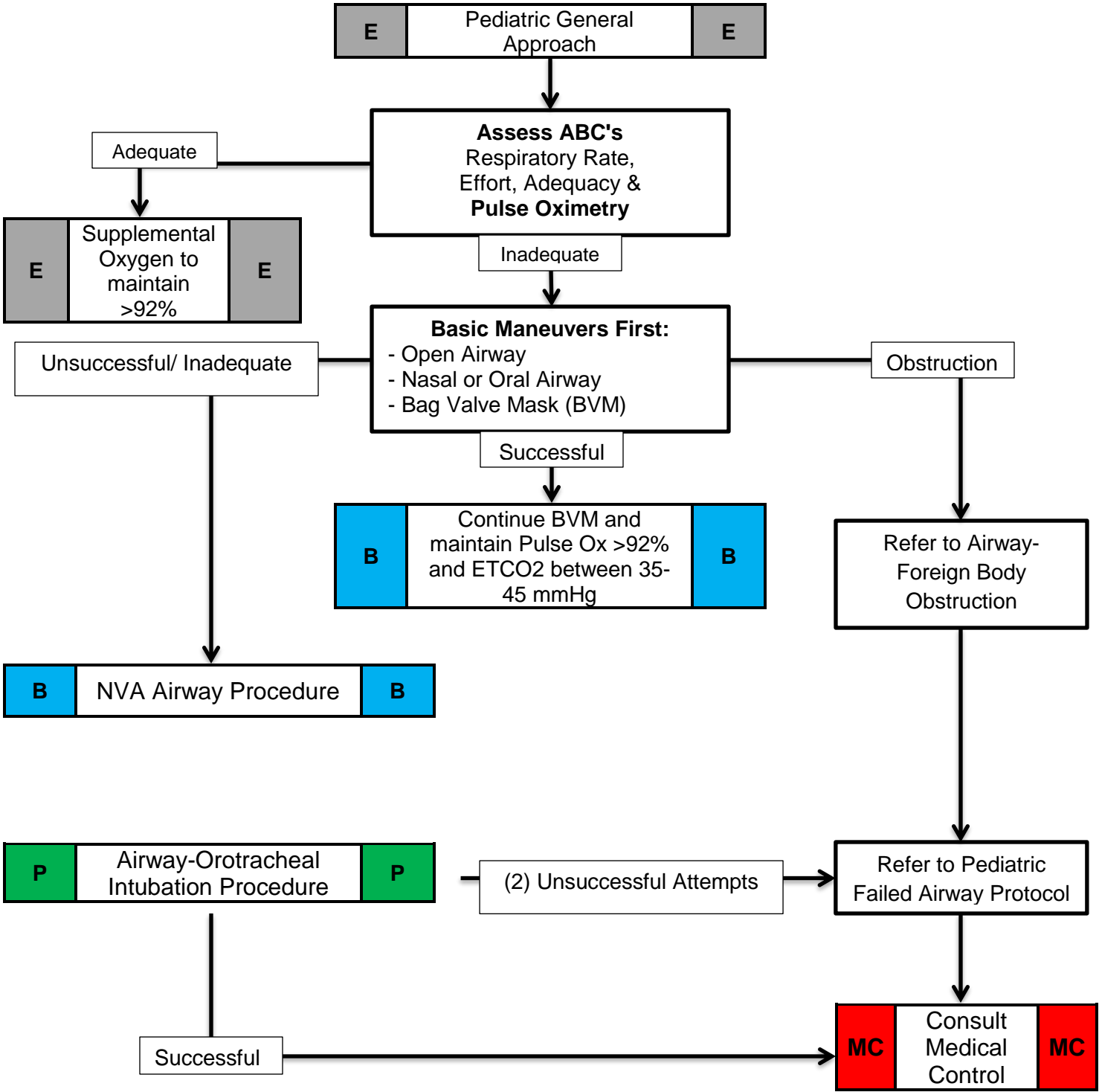
Pediatric General Approach Cont.

Paramedic- Perform/Confirm All Above Interventions

- Consider IV/IO Protocol if indicated
- Unless specified in protocol, all medication dosages and equipment sizes should be calculated using the Broselow-Luten or Houston-Haines system
- Reassess the patient frequently

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Airway



LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Airway

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- General Pediatric Approach Protocol
- If suspicion of trauma, maintain spinal protection
- Suction all debris, secretions from airway
- Bag valve mask ventilate as needed
- Ventilate at a rate of 20 breaths/minute for all ages
- Supplemental 100% O2 to maintain >92%
- Monitor end-tidal CO2 and oxygen saturation continuously

Paramedic- Perform/Confirm All Above Interventions

- Address cardiac rhythm abnormalities per appropriate protocol
- Monitor end-tidal CO2 and oxygen saturation continuously
- Following placement of ETT or NVA confirm proper placement
 - Assess epigastric sounds, breath sounds and chest rise and fall
 - Observe for presence of alveolar waveform on capnography
 - Record tube depth and secure in place using a commercial tube holder
 - Utilize head restraint device (i.e. "head blocks") or rigid cervical collar and long spine board as needed to help secure airway in place
 - Digital capnography (waveform) is the system standard for ETCO2 monitoring.
 - Continuous ETCO2 monitoring is a MANDATORY component of invasive airway management.

Foreign Body Airway Obstruction

1. Immediate transport is indicated
2. If unresponsive open airway using a head tilt/chin lift (if no trauma)
3. If < 1 year old, administer up to 5 back blows and 5 chest thrusts
4. If 1 to 8 years, administer compressions and attempts at ventilation until the foreign body is dislodged
5. If ventilation is unsuccessful (O2 saturations cannot be kept > 92 %) perform in the following order:
6. Reposition airway and attempt bag valve mask assisted ventilation again
7. If unsuccessful, establish direct view of object with laryngoscope and attempt to remove it with Magill forceps
8. If unsuccessful, re-attempt BVM ventilation; If oxygen saturation > 92% with BVM proceed no further and expedite transport
9. If patient cannot be ventilated/oxygenated with the above measures,
10. **Paramedics- simultaneously contact medical control and perform needle cricothyrotomy and needle jet insufflation as a last resort.**
11. Expedite transport to nearest emergency department

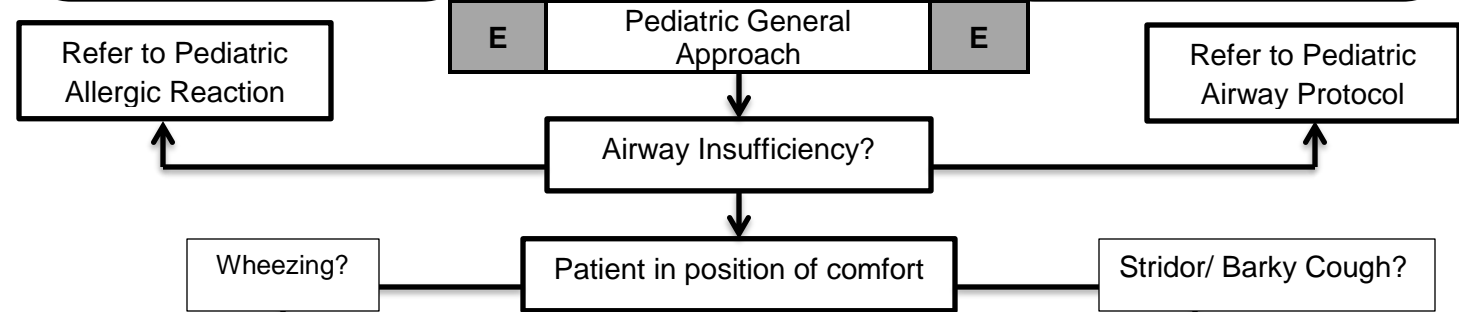
Pediatric-Airway, Dyspnea

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

- History:**
- Time of onset
 - Foreign body airway obstruction
 - Fever or infection
 - Sick contacts
 - Asthma
 - Treatment (oxygen, nebulizer)
 - Medications steroids, inhalers
 - Toxic exposure
 - Trauma

- Signs and Symptoms**
- Wheezing or stridor
 - Respiratory retractions
 - Increased heart rate
 - Altered level of consciousness
 - Anxious appearance

- Differential (Life Threatening)**
- Allergic reaction
 - Asthma
 - Aspiration
 - Foreign body
 - Infection
 - Pneumonia, croup, epiglottitis
 - Congenital heart disease
 - Medication or toxin
 - Trauma



B	Duo Neb Albuterol 2.5mg & Ipratropium Bromide 0.5mg	B
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Continued Respiratory Distress?

B	Albuterol 2.5 mg Nebulizer Repeat PRN	B
B	Consider CPAP Procedure	B
B	Epinephrine 1:1000 0.01mg/kg IM (Max dose 0.3 mg)	B
P	IV Protocol	P
P	Mag Sulfate 50 mg/kg IV/IO over 20 minutes. (Max dose 2g)	P
P	Consider Fluid Bolus 20 mL/kg	P

B	Nebulized Saline	B
P	IV Protocol	P
P	Consider Fluid Bolus 20 mL /kg	P
MC	Contact Medical Control for consideration of the following below	MC
P	Epinephrine Nebulizer 3 mg (3 mL) of 1:1,000	P

- **Bronchiolitis** is a viral infection typically affecting infants which results in wheezing which may not respond to beta-agonists. Consider Epinephrine if patient <18 months and not responding to initial beta-agonist treatment
- **Croup** typically affects children <2years 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, patient wants to sit up to keep airway open, drooling is common. Avoid any agitation of the child. Airway manipulation may worsen the condition.

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Airway, Dyspnea

History:

- Time of onset
- FBAO
- Fever or infection
- Sick contacts
- Asthma
- Treatment (oxygen, nebulizer)
- Medications steroids, inhalers
- Toxic exposure
- Trauma

Signs and Symptoms

- Wheezing or stridor
- Respiratory retractions
- Increased heart rate
- Altered level of consciousness
- Anxious appearance

Differential (Life Threatening)

- Allergic reaction
- Asthma
- Aspiration
- Foreign body
- Infection
- Pneumonia, croup, epiglottitis
- Congenital heart disease
- Medication or toxin
- Trauma

Emergency Medical Responder

- Pediatric General Approach Protocol
- Determine if airway is insufficient, if yes:
 - Refer to Pediatric-Allergic Reaction Protocol
 - Refer to Pediatric-Airway Protocol
- Place patient in position of comfort

Basic-Perform/Confirm All Above Interventions

- Assess lung sounds.
- Wheezing noted:
 - Duo Neb Albuterol 2.5mg & Atrovent 0.5mg
- Continued Respiratory Distress and >2 yrs of age:
 - Albuterol 2.5mg. May repeat PRN.
- Consider CPAP Procedure
- Continued Respiratory Distress and >2 yrs of age:
 - 0.01mg/kg Epi 1:1000 IM (Max 0.3mg)
- If patient <2 yrs of age or stridor noted upon lung assessment
 - Nebulized Normal Saline

Paramedic- Perform/Confirm All Above Interventions

- Wheezing noted and >2 yrs of age:
 - IV Protocol
 - 50mg Magnesium Sulfate IV/IO over 20 minutes (Max dose 2 g)
 - Consider NS bolus 20 ml/kg
- Stridor, barky croupy cough noted or patient is <2 yrs of age and is continuing to have respiratory distress after one Albuterol treatment:
 - IV Protocol
 - Consider Fluid Bolus 20 mL /kg

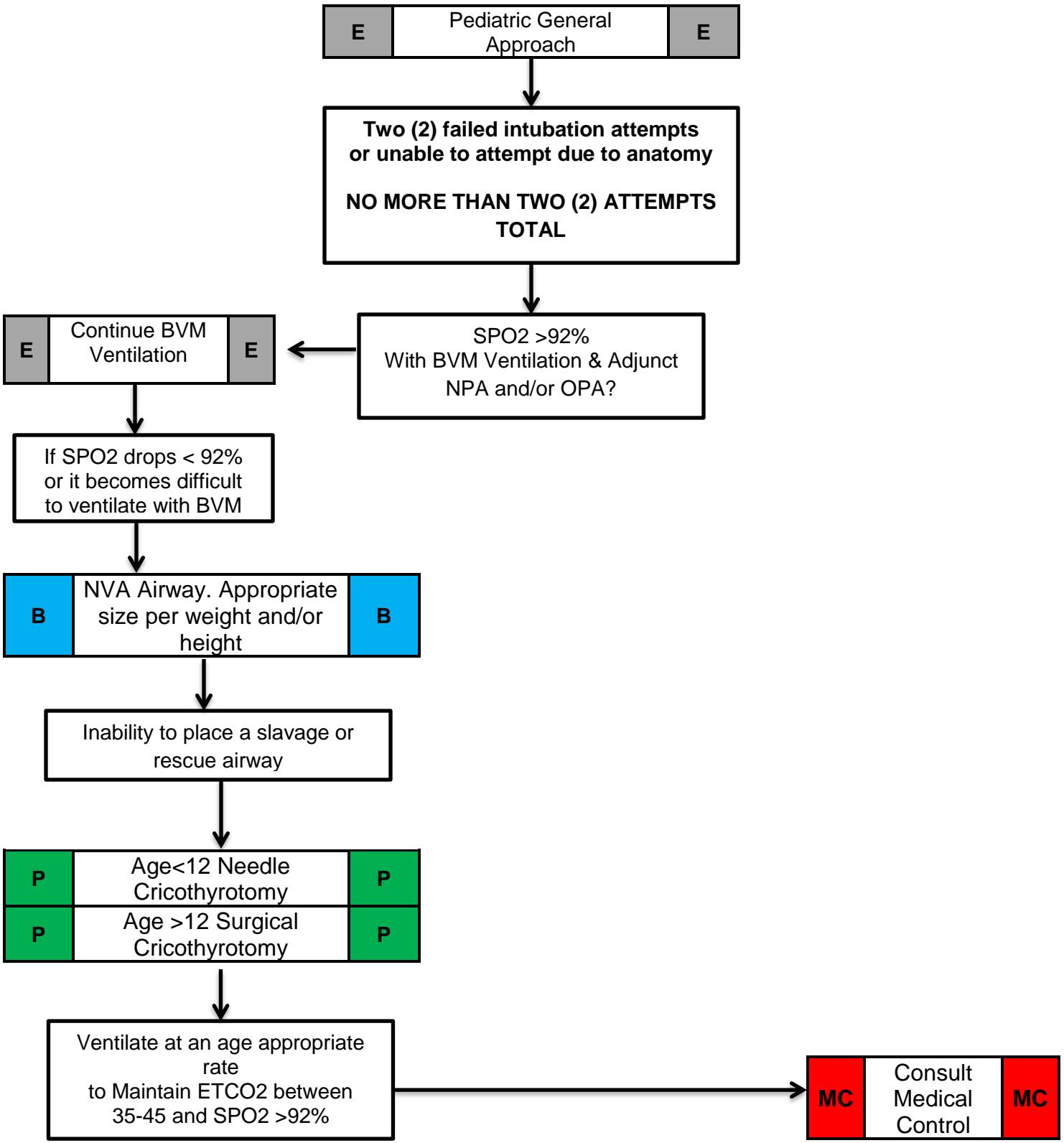
Contact Medical Control for Consideration of the following:

- Epinephrine Nebulizer 3 mg (3 mL) of 1:1,000 solution

Pediatric-Dypsnea

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Airway, Failed



Pediatric-Failed Airway

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Airway, Failed

Emergency Medical Responder

- Pediatric General approach Protocol
- Maintain SPO2 >92% with BVM Ventilations with adjunct airway of NPA or OPA
- Continue BVM Ventilations

Basic-Perform/Confirm All Above Interventions

- If SPO2 drops <92% or it becomes difficult to ventilate with BVM and/or facial trauma/ swelling prevents the use of adjunct airway NPA or OPA
 - NVA Airway. Appropriate size per weight and/or height

Paramedic- Perform/Confirm All Above Interventions

- Two (2) failed intubation attempts or are unable to intubate due to anatomy
NO MORE THAN TWO (2) ATTEMPTS TOTAL
- If Basic Procedure of NVA fails or is unsuccessful:
 - <12 yrs of age, Needle Cricothyrotomy
 - >12 yrs of age, Surgical Cricothyrotomy
- Ventilate at an age appropriate rate to maintain ETCO2 between 35-45 mmHg and SPO2 >92%

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Cardiac Arrest

History

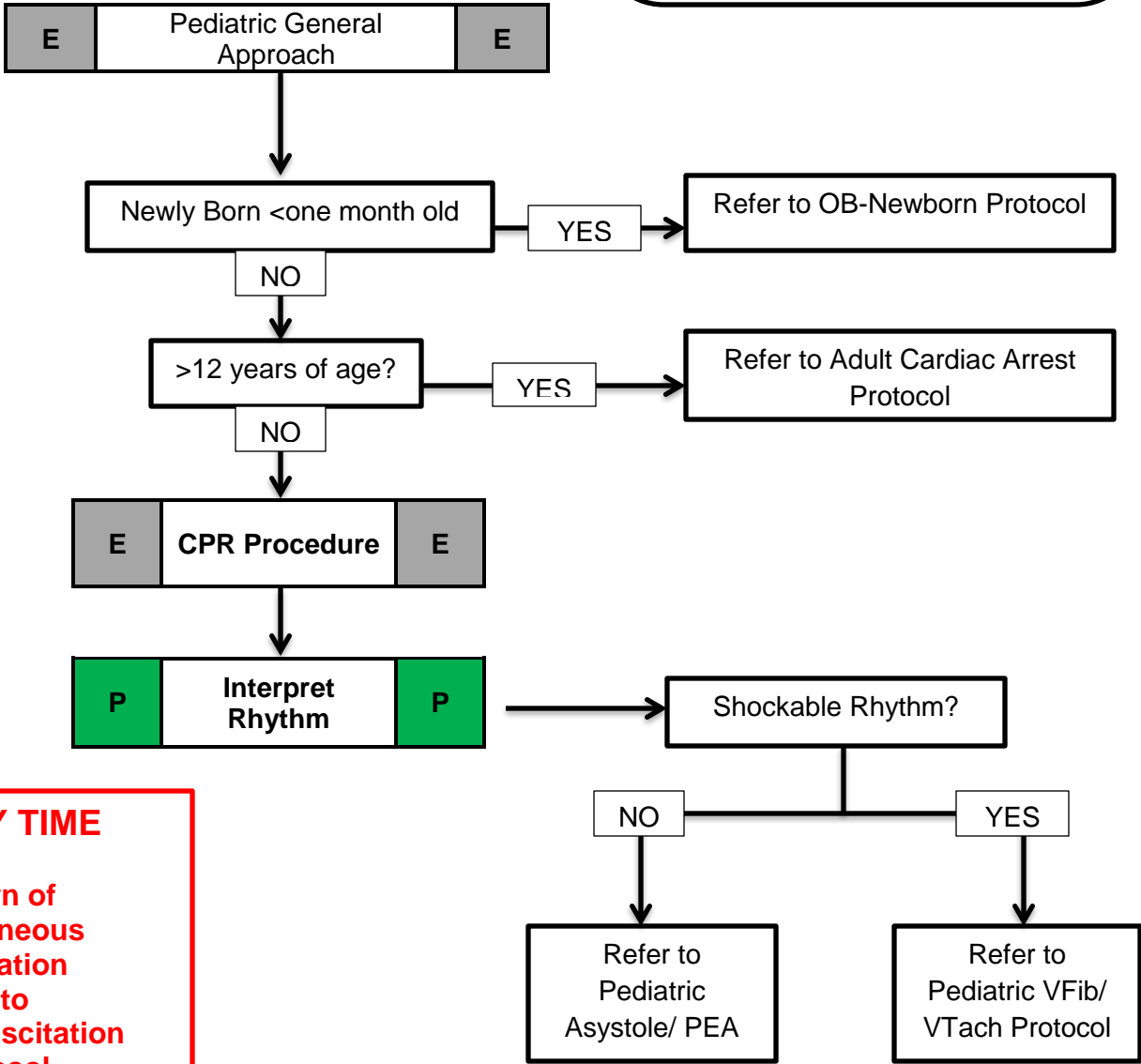
- Time of arrest
- Medical history
- Medications
- Possibility of foreign body
- Hypothermia

Signs and Symptoms

- Unresponsive
- Cardiac arrest

Differential

- Respiratory failure
- Foreign body, Secretions, Infection (croup, epiglottitis)
- Hypovolemia (dehydration)
- Congenital heart disease
- Trauma
- Tension pneumothorax, cardiac tamponade, pulmonary embolism
- Hypothermia
- Toxin or medication
- Electrolyte abnormalities (Glucose, Potassium)
- Acidosis



AT ANY TIME

Return of Spontaneous Circulation
Go to Post Resuscitation Protocol

Pediatric-Cardiac Arrest

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Cardiac Arrest

History

- Time of arrest
- Medical history
- Medications
- Possibility of foreign body
- Hypothermia

Signs and Symptoms

- Unresponsive
- Cardiac arrest

Differential

- Respiratory failure
- Foreign body, Secretions, Infection (croup, epiglottitis)
- Hypovolemia (dehydration)
- Congenital heart disease
- Trauma
- Tension pneumothorax, cardiac tamponade, pulmonary embolism
- Hypothermia
- Toxin or medication
- Electrolyte abnormalities (Glucose, Potassium)
- Acidosis

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- Pediatric General Approach Protocol
- If under one month old, refer to OB Newborn Protocol
- If over 12 yrs of age, refer to Adult Cardiac Arrest Protocol
- Determine patient is apneic and pulseless and perform **CPR** Procedure

Paramedic- Perform/Confirm All Above Interventions

- Interpret Rhythm
- If rhythm is shockable, refer to Pediatric VFib/ VTach Protocol
- If rhythm is non-shockable, refer to Asystole / PEA Protocol

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Asystole/PEA

- History:**
- Events leading to arrest
 - Estimated downtime
 - Past medical history
 - Medications
 - Existence of terminal illness
 - Foreign Body Airway Obstruction
 - Hypothermia

- Signs & Symptoms:**
- Unresponsive
 - Cardiac Arrest
 - Signs of lividity or rigor

- Differential:**
- Respiratory failure
 - Foreign body
 - Hyperkalemia
 - Infection (croup, epiglottitis)
 - Hypovolemia (dehydration)
 - Congenital heart disease
 - Trauma
 - Tension pneumothorax
 - Hypothermia
 - Toxin or medication
 - Hypoglycemia
 - Acidosis

E Pediatric General Approach E

Pediatric Cardiac Arrest Protocol

E CPR Procedure E

Pediatric Airway Protocol

P	IV Protocol. Consider IO early if IV access is not easily obtained.	P
P	Epinephrine 0.01 mg/kg IV/IO (max 1mg) (0.1 mL/kg of 1:10,000)	P
P	Identify Correctable Causes	P

- Look for treatable causes:**
- Hypoxia**
 - Hypothermia**
 - Hypovolemia**
(NS 20mL/kg IV/IO may repeat x 1)
 - Hypoglycemia**
1g/kg Dextrose Infusion
Per Chart CR - 21
D10W Premixed 250mL Bag,
Titrate to patient condition and response.
 - Acidosis**
(Sodium Bicarbonate 1meq/kg IV/IO)
 - Hyperkalemia**
(Sodium Bicarbonate 1meq/kg IV/IO)
 - OD Calcium channel/Beta blocker**
(Epinephrine infusion 0.1mcg/kg/min)
(Glucagon 0.1mg/kg IV/IO max 1mg)
 - Tension Pneumothorax**
(Chest Decompression)

Yes — [ROSC?] — No — MC Consult Medical Control MC

Refer to Post Resuscitation Protocol

Pediatric-Asystole/ PEA

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Asystole/PEA

History:

- Events leading to arrest
- Estimated downtime
- Past medical history
- Medications
- Existence of terminal illness
- Foreign Body Airway Obstruction
- Hypothermia

Signs & Symptoms:

- Unresponsive
- Cardiac Arrest
- Signs of lividity or rigor

Differential:

- Respiratory failure
- Foreign body
- Hyperkalemia
- Infection (croup, epiglottitis)
- Hypovolemia (dehydration)
- Congenital heart disease
- Trauma
- Tension pneumothorax
- Hypothermia
- Toxin or medication
- Hypoglycemia
- Acidosis

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- Pediatric General Approach Protocol
- Pediatric Cardiac Arrest Protocol
- CPR Procedure
- Pediatric Airway Protocol

Paramedic- Perform/Confirm All Above Interventions

- IV Protocol. Consider IO early if IV access is not easily obtained.
- Epinephrine 0.01mg/kg (Max 1mg) (0.1mL/kg of 1;10,000)
- Repeat Epinephrine every 3 to 5 minutes same dose
- Flush medication with 10-20 mL of NS after each administration
- Identify correctible causes listed to the right:
- If pre-hospital ROSC (Return of Spontaneous Circulation) Is noted, refer to Post Resuscitation Protocol

Look for treatable causes:

Hypoxia

Hypothermia

Hypovolemia

(NS 20mL/kg IV/IO may repeat x 1)

Hypoglycemia

1g/kg Dextrose Infusion

Per Chart CR - 21

D10W Premixed 250mL Bag,

Titrate to patient condition and response.

Acidosis

(Sodium Bicarbonate 1meq/kg IV/IO)

Hyperkalemia

(Sodium Bicarbonate 1meq/kg IV/IO)

OD Calcium channel/Beta blocker

(Epinephrine infusion 0.1mcg/kg/min)

(Glucagon 0.1mg/kg IV/IO max 1mg)

Tension Pneumothorax

(Chest Decompression)

Pediatric-Bradycardia

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

History:

- Past Medical History
- Medications
- Events Leading to Current Status

Signs & Symptoms:

- HR <60/min with hypotension, acute altered LOC, chest pain,
- CHF, Sz, syncope or shock
- secondary to bradycardia
- Altered LOC
- Shock/Hypotension
- Syncope

Differential:

- Respiratory effort
- Respiratory obstruction
- Foreign body
- Secretions
- Croup
- Epiglottitis
- Hypovolemia
- Hypothermia
- Hypoxia
- Infection / Sepsis
- Medication or Toxin
- Hypoglycemia
- Trauma

E Pediatric General Approach E

Pediatric Airway Protocol

Poor perfusion, Decreased blood pressure, Respiratory insufficiency

NO

Monitor and reassess

YES

E	HR <60 and poor perfusion despite airway intervention begin CPR Procedure	E
P	IV Protocol. NS bolus, 20 mL/kg (May repeat 1 x)	P
P	Epinephrine 0.01 mg/kg IV/IO q 3-5 min (0.1 mL/kg of 1:10,000) Epinephrine infusion 0.1-1 mcg/kg/min	P
P	Atropine 0.02 mg/kg IV/IO (Min 0.1 mg / Max 1mg) May repeat x 1 in 5 min	P

MC Consult Medical Control MC

Pediatric-Bradycardia

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Bradycardia

History:

- Past Medical History
- Medications
- Events Leading to Current Status

Signs & Symptoms:

- HR <60/min with hypotension, acute altered LOC, chest pain,
- CHF, Sz, syncope or shock
- secondary to bradycardia
- Altered LOC
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Differential:

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- Respiratory obstruction
- Foreign body
- Secretions
- Croup
- Epiglottitis
- Hypovolemia
- Hypothermia
- Hypoxia
- Infection / Sepsis
- Medication or Toxin
- Hypoglycemia
- Trauma

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- Pediatric General approach Protocol
- Refer to Pediatric-Airway Protocol
- If patient has Poor perfusion, Decreased blood pressure, Respiratory insufficiency
- HR <60 and poor perfusion despite airway intervention begin CPR Procedure

Paramedic- Perform/Confirm All Above Interventions

- IV Protocol
- **Epinephrine** 0.01 mg/kg IV/IO q 3-5 min (0.1 mL/kg of 1:10,000) mg/kg
- **Epinephrine infusion 0.1-1 mcg/kg/min**
- **Atropine** 0.02 mg/kg IV/IO (Min 0.1 mg / Max 1mg)
 - May repeat x 1 in 5 min

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Post Resuscitation

History

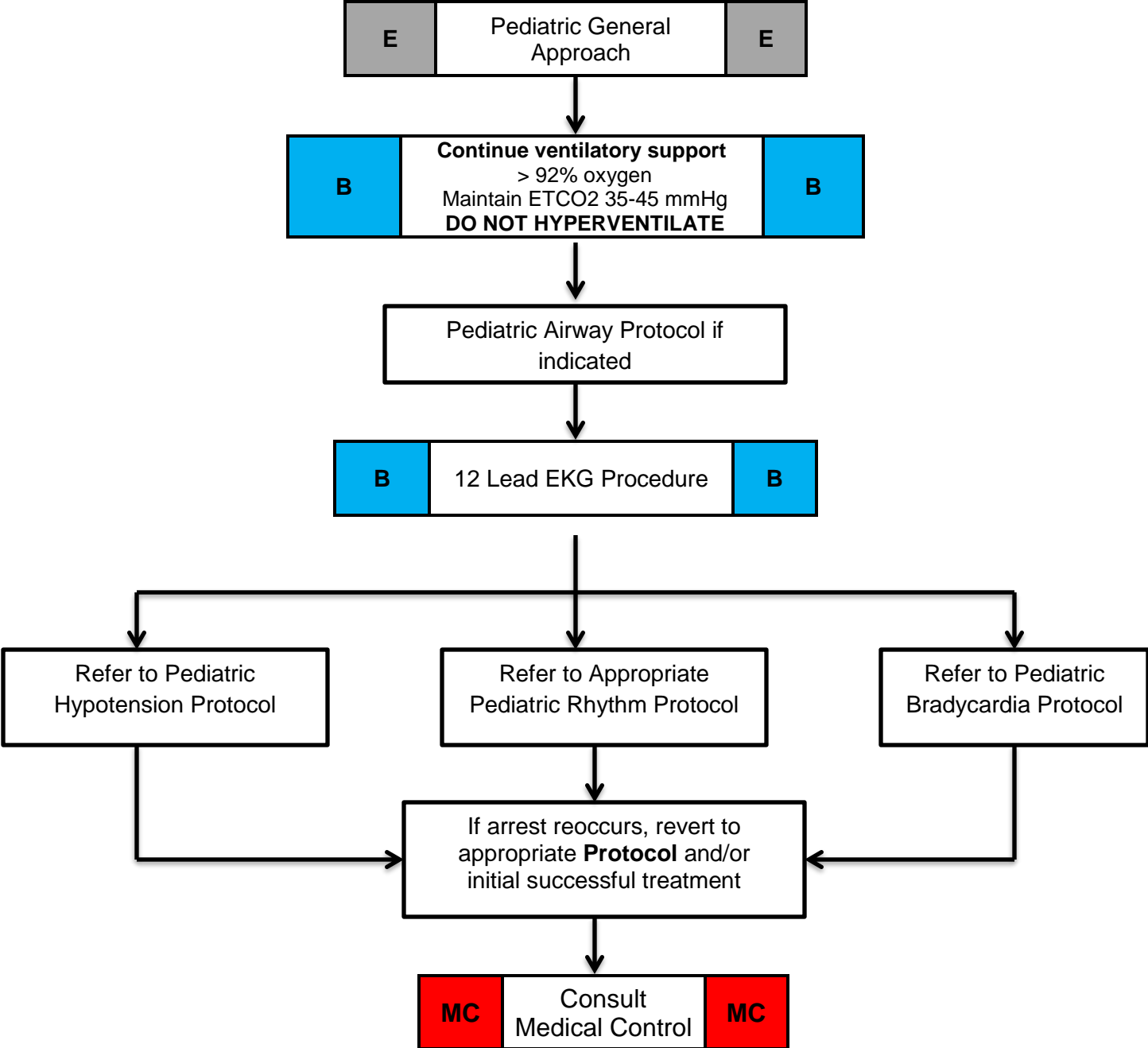
- Respiratory Arrest
- Cardiac Arrest

Signs & Symptoms

- Return of pulse

Differential

- Continue to address specific differentials associated with original dysrhythmia



Pediatric-Post Resuscitation

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Post Resuscitation

History

- Respiratory Arrest
- Cardiac Arrest

Signs & Symptoms

- Return of pulse

Differential

- Continue to address specific differentials associated with original dysrhythmia

Emergency Medical Responder

- Pediatric General Approach Protocol
- Refer to Pediatric-Airway Protocol if indicated
- Refer to Pediatric Hypotension Protocol
- Refer to Appropriate Pediatric Rhythm Protocol
- Refer to Pediatric Bradycardia Protocol
- If arrest reoccurs, revert to appropriate Protocol and/or initial successful treatment

Basic-Perform/Confirm All Above Interventions

Paramedic- Perform/Confirm All Above Interventions

- **Continue ventilatory support**
- >92% oxygen
- Maintain ETCO2 at 35-45 mmHg
- Age appropriate Respiratory Rate
- **DO NOT HYPERVENTILATE**
- 12 Lead EKG Procedure

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Supraventricular Tachycardia

History:

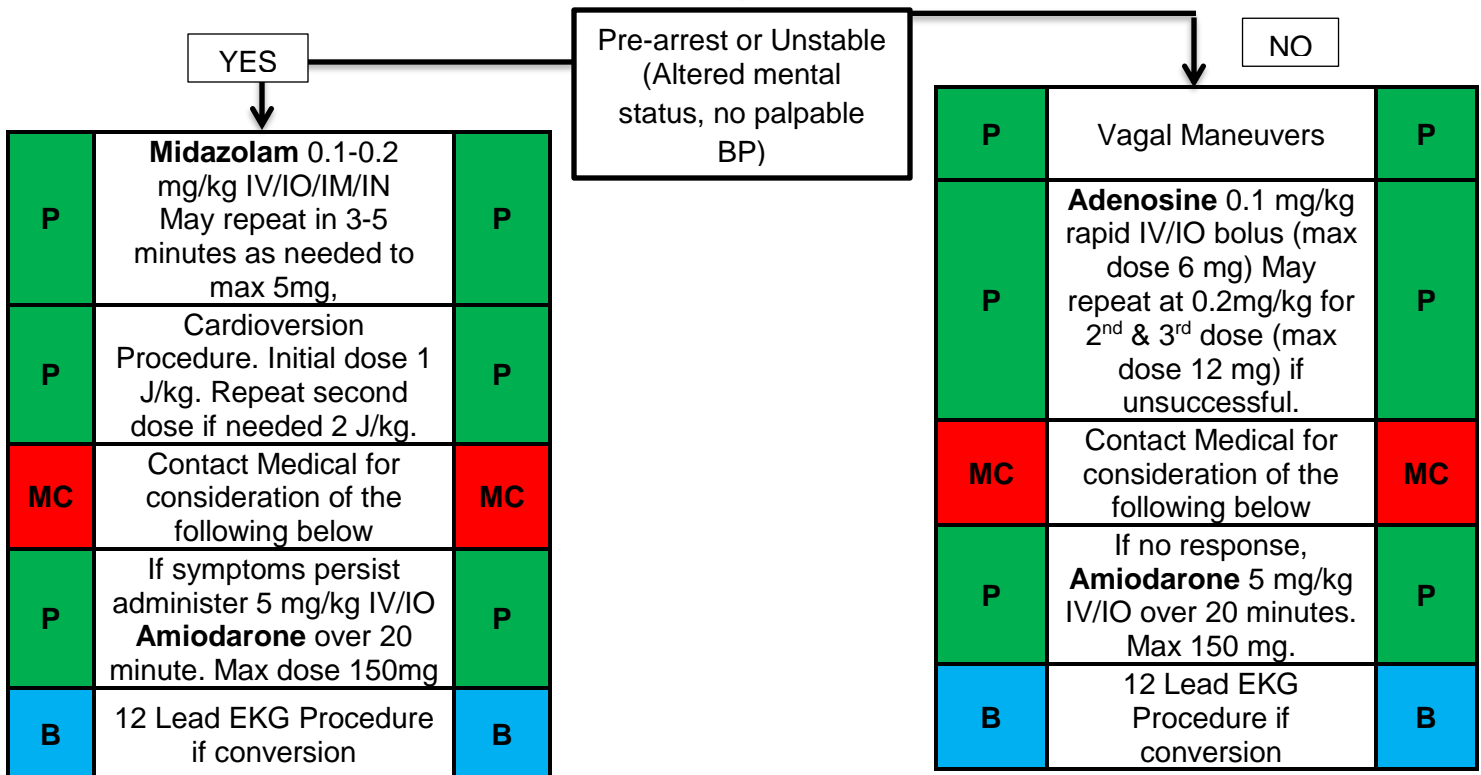
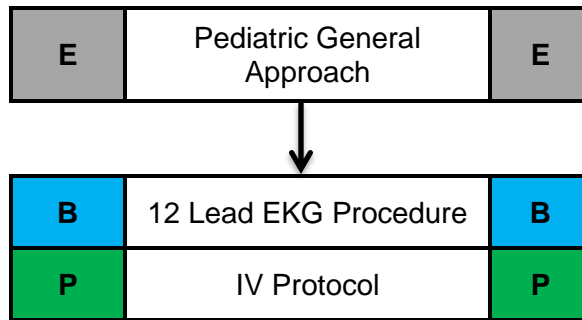
- Medications
- (Aminophylline, Diet pills,
- Thyroid supplements,
- Decongestants, Digoxin)
- Diet (caffeine, chocolate)
- Toxic ingestions
- History of palpitations / heart racing
- Syncope / near syncope

Signs and Symptoms:

- Heart Rate: Child > 180/bpm
Infant >220/bpm
- Pale or Cyanosis
- Diaphoresis
- Tachypnea
- Vomiting
- Hypotension
- Altered Level of Consciousness
- Pulmonary Congestion
- Syncope

Differential:

- Heart disease (WPW, Valvular)
- Electrolyte imbalance
- Exertion, Pain, Emotional stress
- Fever / Infection / Sepsis
- Hypothermia / Hyperthermia
- Hypoxia
- Hypovolemia or Anemia
- Drug effect / Overdose (see Hx)
- Pulmonary embolus
- Trauma / Tension Pneumothorax



Pediatric-Supraventricular Tachycardia

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Supraventricular Tachycardia

History:

- Medications
- (Aminophylline, Diet pills,
- Thyroid supplements,
- Decongestants, Digoxin)
- Diet (caffeine, chocolate)
- Toxic ingestions
- History of palpitations / heart racing
- Syncope / near syncope

Signs and Symptoms:

- Heart Rate: Child > 180/bpm
Infant >220/bpm
- Pale or Cyanosis
- Diaphoresis
- Tachypnea
- Vomiting
- Hypotension
- Altered Level of Consciousness
- Pulmonary Congestion
- Syncope

Differential:

- Heart disease (WPW, Valvular)
- Electrolyte imbalance
- Exertion, Pain, Emotional stress
- Fever / Infection / Sepsis
- Hypothermia / Hyperthermia
- Hypoxia
- Hypovolemia or Anemia
- Drug effect / Overdose (see Hx)
- Pulmonary embolus
- Trauma / Tension Pneumothorax

Emergency Medical Responder

- Pediatric General Approach Protocol
- Supplemental O2 via NRB or Blow By as patient allows

Basic-Perform/Confirm All Above Interventions

- Perform 12 Lead EKG Procedure

Paramedic- Perform/Confirm All Above Interventions

Note: Infants with heart rates < 220 and children with heart rates < 180 typically will respond when the precipitating cause is treated (e.g. fever, dehydration)

- IV Protocol
- If patient is Pre-arrest or Unstable (Altered mental status, no palpable BP) perform the following:
 - If time permits, Midazolam 0.1-0.2 mg/kg IV/IO/IM/IN May repeat in 3-5 minutes as needed to max 5 mg.
 - Cardioversion Procedure. Initial dose 1 J/kg. Repeat second dose if needed 2 J/kg.

Contact Medical Control for consideration of the following:

- If symptoms persist administer 5 mg/kg IV/IO **Amiodarone** over 20 minute. Max dose 150mg
- 12 Lead EKG Procedure if conversion
- If patient is **NOT** Pre-arrest or Unstable (Altered mental status, no palpable BP) perform the following:
 - Vagal Maneuvers
 - **Adenosine** 0.1 mg/kg rapid IV/IO bolus (max dose 6 mg) May repeat at 0.2mg/kg for 2nd & 3rd dose (max dose 12 mg) if unsuccessful.

Contact Medical Control for consideration of the following:

- If no response, **Amiodarone** 5 mg/kg IV/IO over 20 minutes. Max 150 mg.
- 12 Lead EKG Procedure if conversion

Pediatric-Supraventricular Tachycardia

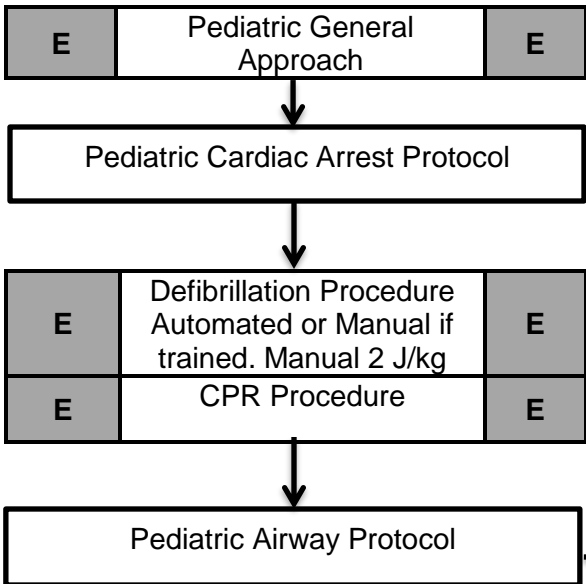
Pediatric-VFib/VTach

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

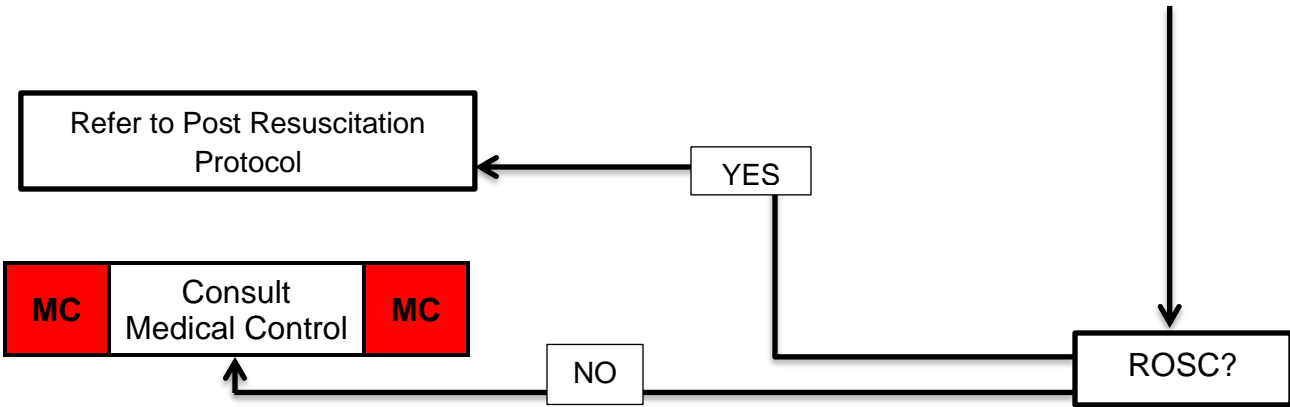
- History:**
- Events leading to arrest
 - Estimated downtime
 - Past medical history
 - Medications
 - Existence of terminal illness
 - FBAO
 - Hypothermia

- Signs & Symptoms:**
- Unresponsive
 - Cardiac Arrest

- Differential:**
- Respiratory failure
 - Foreign body
 - Hyperkalemia
 - Infection (croup, epiglottitis)
 - Hypovolemia (dehydration)
 - Congenital heart disease
 - Trauma
 - Tension pneumothorax
 - Hypothermia
 - Toxin or medication
 - Hypoglycemia
 - Acidosis



P	IV Protocol. Consider IO early if IV access is not easily obtained.	P
P	Epinephrine 0.01 mg/kg IV/IO (max 1mg) (0.1 mL/kg of 1:10,000)	P
E	Resume CPR Procedure	E
E	Defibrillation Procedure Automated or Manual if trained. Manual 4 J/kg	E
P	Amiodarone 5mg/kg IV/IO (max 300 mg). May repeat 1x (max dose 150 mg)	P
P	IF torsades de pointes: Magnesium Sulfate 50% 50 mg/kg slow IV/IO May repeat same dose q- 5 minutes until a maximum total dose of 2 grams.	P



Pediatric-VFib/VTach

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-VFib/VTach

History:

- Events leading to arrest
- Estimated downtime
- Past medical history
- Medications
- Existence of terminal illness
- FBAO
- Hypothermia

Signs & Symptoms:

- Unresponsive
- Cardiac Arrest

Differential:

- Respiratory failure
- Foreign body
- Hyperkalemia
- Infection (croup, epiglottitis)
- Hypovolemia (dehydration)
- Congenital heart disease
- Trauma
- Tension pneumothorax
- Hypothermia
- Toxin or medication
- Hypoglycemia
- Acidosis

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- Pediatric General Approach Protocol
- Refer to Pediatric Cardiac Arrest Protocol
- Defibrillation procedure (AED) when advised to do so
- CPR Procedure as needed in between shocks.
- Refer to Pediatric-Airway Protocol early as potential cause of cardiac arrest can stem from an airway issue
- Perform CPR Procedure and Defibrillation Procedure according to algorithm above and in cooperation with Paramedics

Paramedic- Perform/Confirm All Above Interventions

- Confirm the presence of ventricular fibrillation/pulseless ventricular tachycardia
- IV Protocol
- Defibrillate at 2 J/kg (maximum of 200J)
 - Continue compressions while defibrillator charges
 - Immediately resume CPR after shock
 - Check rhythm after 2 minutes of CPR
- Using the most readily available route (give drug during CPR)
 - Epinephrine 1:10,000 at 0.01 mg/kg IV/IO
 - Repeat Epinephrine as above every 3-5 minutes
 - Flush medication with 10-20 ml of normal saline after each dose
- If shockable rhythm persists, Defibrillate at 4 J/kg
 - Continue compressions while defibrillator charges
 - Immediately resume CPR after shock
 - Check rhythm after 2 minutes of CPR
 - Amiodarone 5 mg/kg IV/IO bolus (give during CPR) (max dose 300mg)
 - Magnesium 50 mg/kg IV/IO bolus for suspected torsades de pointes (max dose 2g)
- If shockable rhythm persists, Defibrillate at 4 J/kg
 - Continue compressions while defibrillator charges
 - Immediately resume CPR after shock
 - Check rhythm after 2 minutes of CPR
- Continue cycle
- If ROSC is obtained refer to Pediatric-Post Resuscitation Protocol

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Wide Complex Tachycardia

History:

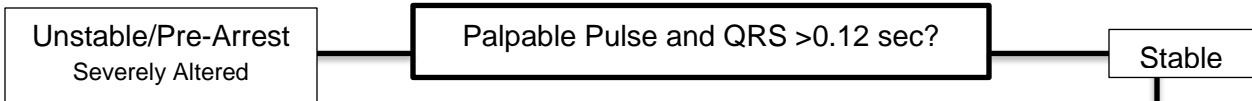
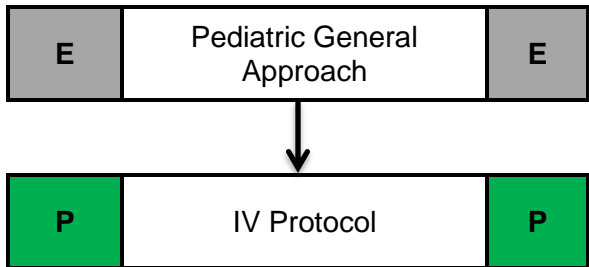
- Past medical history /medications, diet, drugs
- Syncope / Near syncope
- Palpitations
- Pacemaker
- Allergies: Lidocaine /Novocaine

Signs and Symptoms:

- Ventricular Tachycardia on ECG (Runs or Sustained)
- Conscious, rapid pulse
- Chest Pain, Shortness of Breath
- Dizziness
- Rate usually 150-180 bpm for sustained VTach
- QRS > 0.12 sec

Differential:

- Artifact / Device Failure
- Cardiac
- Endocrine/Electrolyte
- Drugs/Toxic exposure
- Pulmonary disease



P	Midazolam 0.1 mg/kg IV/IO/IM/IN May repeat in 3-5 minutes as needed to max 5mg,	P
P	Cardioversion Procedure. Initial dose 1 J/kg. Repeat second dose if needed 2 J/kg.	P
P	If symptoms persist administer 5 mg/kg IV/IO Amiodarone over 20 minute. Max dose 150mg	P
B	12 Lead EKG Procedure if conversion	B

B	12 Lead EKG Procedure	B
P	Amiodarone 5 mg/kg IV/IO over 20 minutes. Max 150 mg.	P
B	12 Lead EKG Procedure if conversion	B
MC	Contact Medical Control for consideration of the following:	MC
P	For Torsades de Pointes consider Magnesium Sulfate 50 mg/kg IV/IO over 20 minutes. (Max dose 2 grams)	P

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Wide Complex Tachycardia

History:

- Past medical history /medications, diet, drugs
- Syncope / Near syncope
- Palpitations
- Pacemaker
- Allergies: Lidocaine /Novocaine

Signs and Symptoms:

- Ventricular Tachycardia on ECG (Runs or Sustained)
- Conscious, rapid pulse
- Chest Pain, Shortness of Breath
- Dizziness
- Rate usually 150-180 bpm for sustained VTach
- QRS > 0.12 sec

Differential:

- Artifact / Device Failure
- Cardiac
- Endocrine/Electrolyte
- Drugs/Toxic exposure
- Pulmonary disease

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- Pediatric General Approach Protocol

Paramedic- Perform/Confirm All Above Interventions

- IV Protocol
- Palpable Pulse and QRS >0.12 sec?
- If patient is Unstable/Pre-Arrest Severely Altered perform the following:
 - If time permits, Midazolam 0.1-0.2 mg/kg IV/IO/IM/IN May repeat in 3-5 minutes as needed to max 5 mg.
 - Cardioversion Procedure. Initial dose 1 J/kg. Repeat second dose if needed 2 J/kg.
 - If symptoms persist administer 5 mg/kg IV/IO **Amiodarone** over 20 minute. Max dose 150mg
 - 12 Lead EKG Procedure if conversion
- If patient is **NOT** Pre-arrest or Unstable (Altered mental status) perform the following:
 - 12 Lead EKG Procedure
 - If symptoms persist administer 5 mg/kg IV/IO **Amiodarone** over 20 minute. Max dose 150mg
 - 12 Lead EKG Procedure if conversion

Contact Medical Control for consideration of the following:

- For Torsades de Pointes consider **Magnesium Sulfate** 50 mg/kg IV/IO over 20 minutes. (Max dose 2 grams)

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Allergic Reaction

History

- Medication history
- Onset and location
- Past medical history
- Past history of reactions
- New clothing, soap, detergent
- Medication allergy / exposure
- Food allergy / exposure
- Insect sting or bite

Signs & Symptoms

- Edema / Voice Changes
- Itching or hives
- Coughing / wheezing or respiratory distress
- Chest or throat constriction
- Difficulty swallowing
- Hypotension or shock

Differential

- Urticaria (rash only)
- Anaphylaxis (systemic effect)
- Shock (vascular effect)
- Angioedema (drug induced)
- Aspiration / Airway obstruction
- Vasovagal event
- CHF
- Asthma or COPD

E	Pediatric General Approach	E
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→ Pediatric Airway Protocol

Mild Reaction

- Hives/Rash Only
- No Respiratory Component

Moderate Reaction

- Dyspnea, Wheezing, Chest Tightness

Severe Reaction

- Evidence of Impending Respiratory Distress or Shock

P	Diphenhydramine 1 mg/kg IM Max 50 mg	P
P	IV Protocol if indicated for Diphenhydramine 1mg/kg IV. Max 25 mg	P

E	≥ 30kg Adult Epi Pen IM < 30 kg Epi Pen Jr IM	E
P	Epinephrine 1:1000 0.01mg/kg IM (max single dose 0.3 mg)	P
B	Duo Neb, Albuterol 2.5 mg & Atrovent 0.5 mg	B
P	IV Protocol	P
P	NS Bolus 20 ml/kg. May repeat 1 x	P
P	Diphenhydramine 1 mg/kg IV. Max 25 mg	P

E	≥ 30kg Adult Epi Pen IM < 30 kg Epi Pen Jr IM	E
P	Epinephrine 1:1000 0.01mg/kg IM (max single dose 0.3 mg)	P
B	Duo Neb, Albuterol 2.5 mg & Atrovent 0.5 mg	B
P	IV Protocol	P
P	NS Bolus 20 ml/kg. May repeat 1 x	P
P	Diphenhydramine 1 mg/kg IV. Max 25 mg	P
MC	Contact Medical Control	MC
P	Consider Epinephrine (1:10000 0.01mg/kg) (Equals to 0.1 mL/kg)	P

Pediatric-Allergic Reaction

Pediatric-Allergic Reaction

History

- Medication history
- Onset and location
- Past medical history
- Past history of reactions
- New clothing, soap, detergent
- Medication allergy / exposure
- Food allergy / exposure
- Insect sting or bite

Signs & Symptoms

- Edema / Voice Changes
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Differential

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- Shock (vascular effect)
- Angioedema (drug induced)
- Aspiration / Airway obstruction
- Vasovagal event
- CHF
- Asthma or COPD

Emergency Medical Responder

- Pediatric General Approach Protocol
- Pediatric-Airway Protocol

Mild Reaction- *Hives/Rash Only, No Respiratory Component*

- Supplemental O2 as tolerated

Moderate Reaction- *Dyspnea, Wheezing, Chest Tightness*

- <30 kg, Epi Pen Jr IM
- >30kg, Epi Pen Adult IM

Severe Reaction- *Evidence of Impending Respiratory Distress or Shock*

- <30 kg, Epi Pen Jr IM
- >30kg, Epi Pen Adult IM

Basic-Perform/Confirm All Above Interventions

Mild Reaction- *Hives/Rash Only, No Respiratory Component*

- Confirm Above Interventions

Moderate Reaction- *Dyspnea, Wheezing, Chest Tightness*

- Duo Neb, Albuterol 2.5 mg & Atrovent 0.5 mg

Severe Reaction- *Evidence of Impending Respiratory Distress or Shock*

- Duo Neb, Albuterol 2.5 mg & Atrovent 0.5 mg

Pediatric-Allergic Reaction Cont.

Paramedic- Perform/Confirm All Above Interventions

Mild Reaction- *Hives/Rash Only, No Respiratory Component*

- Diphenhydramine 1 mg/kg IM Max 50 mg
- IV Protocol if indicated for Diphenhydramine 1 mg/kg IV. Max 25 mg

Moderate Reaction- *Dyspnea, Wheezing, Chest Tightness*

- Epinephrine 1:1000, 0.01mg/kg IM (max single dose 0.3mg)
- IV Protocol
- NS bolus 20 mL/kg
- Diphenhydramine 1 mg/kg IM Max 50 mg

Severe Reaction- *Evidence of Impending Respiratory Distress or Shock*

- Epinephrine 1:1000, 0.01mg/kg IM (max single dose 0.3mg)
- IV Protocol
- NS bolus 20 mL/kg
- Diphenhydramine 1 mg/kg IM Max 50 mg

Contact Medical Control for the consideration of the following:

- Consider Epinephrine (1:10,000 0.01mg/kg) (***Equals to 0.1 mL/kg***)

Pediatric-Altered Mental Status

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

History:

- Known Diabetic
- Drugs, Drug Paraphernalia
- Report of illicit drug use or toxic ingestion
- Past medical history
- Medications
- History of trauma
- Change in condition
- Changes in feeding or sleep habits

Signs and Symptoms

- Decreased mental status or Lethargy
- Change in baseline mental status
- Bizarre behavior
- Hypoglycemia (cool/diaphoretic skin)
- Hyperglycemia (warm, dry skin, fruity breath, kussmaul respirations, signs of dehydration)
- Irritability

Differential

- Head Trauma
- CNS (stroke, tumor, seizure, infection)
- Cardiac (MI, CHF)
- Hypothermia
- Infection (CNS or other)
- Thyroid (hyper/hypo)
- Shock (septic, metabolic, traumatic)
- Diabetes (hyper/hypo)
- Toxicologic or Ingestion
- Acidosis/Alkalosis
- Environmental exposure
- Pulmonary (hypoxia)
- Electrolyte abnormality
- Psychiatric disorder

E	Pediatric General Approach	E
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Refer to Pediatric Airway Protocol if Indicated

B	Blood Glucose Analysis Procedure	B
P	IV Protocol	P
B	Spinal Protection Procedure if Indicated	B
B	12 Lead EKG Procedure	B

Blood Glucose <60 or >250 mg/dL

Refer to Pediatric Diabetic Protocol

Refer to Appropriate Pediatric Cardiac Protocol

Signs of Shock or Poor Perfusion

Refer to Pediatric Hypotension (Non-Shock)

Signs of OD or Toxicology Related

Refer to Pediatric Overdose, Poisoning, Ingestion Protocol

Signs of Hypo/Hyperthermia

Refer to Pediatric Hypo/Hyperthermia Protocol

Pediatric-Altered Mental Status

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Altered Mental Status

History:

- Known Diabetic
- Drugs, Drug Paraphernalia
- Report of illicit drug use or toxic ingestion
- Past medical history
- Medications
- History of trauma
- Change in condition
- Changes in feeding or sleep habits

Signs and Symptoms

- Decreased mental status or
- Lethargy
- Change in baseline mental status
- Bizarre behavior
- Hypoglycemia (cool/diaphoretic skin)
- Hyperglycemia (warm, dry skin, fruity breath, kussmaul respirations, signs of dehydration)
- Irritability

Differential

- Head Trauma
- CNS (stroke, tumor, seizure, infection)
- Cardiac (MI, CHF)
- Hypothermia
- Infection (CNS or other)
- Thyroid (hyper/hypo)
- Shock (septic, metabolic, traumatic)
- Diabetes (hyper/hypo)
- Toxicologic or Ingestion
- Acidosis/Alkalosis
- Environmental exposure
- Pulmonary (hypoxia)
- Electrolyte abnormality
- Psychiatric disorder

Emergency Medical Responder

- Pediatric General approach Protocol
- Refer to Pediatric Airway Protocol if indicated
- If any concerns with 12 Lead EKG Procedure, refer to appropriate cardiac rhythm protocol
- If any signs of shock or poor perfusion, refer to Pediatric Hypotension (Non-Shock) Protocol
- If any signs of overdose or toxicology related issues, refer to Pediatric Overdose, Poisoning, Ingestion Protocol
- If any signs of hypo/hyperthermia, refer to Pediatric Hypo/Hyperthermia Protocol

Basic-Perform/Confirm All Above Interventions

- Blood Glucose Analysis Procedure
 - If <60 mg/dL or >250 mg/dL refer to Pediatric Diabetic Protocol
- 12 Lead EKG Procedure
- Spinal Protection Procedure if indicated

Paramedic- Perform/Confirm All Above Interventions

- IV Protocol

Pediatric-Diabetic Emergencies

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

History

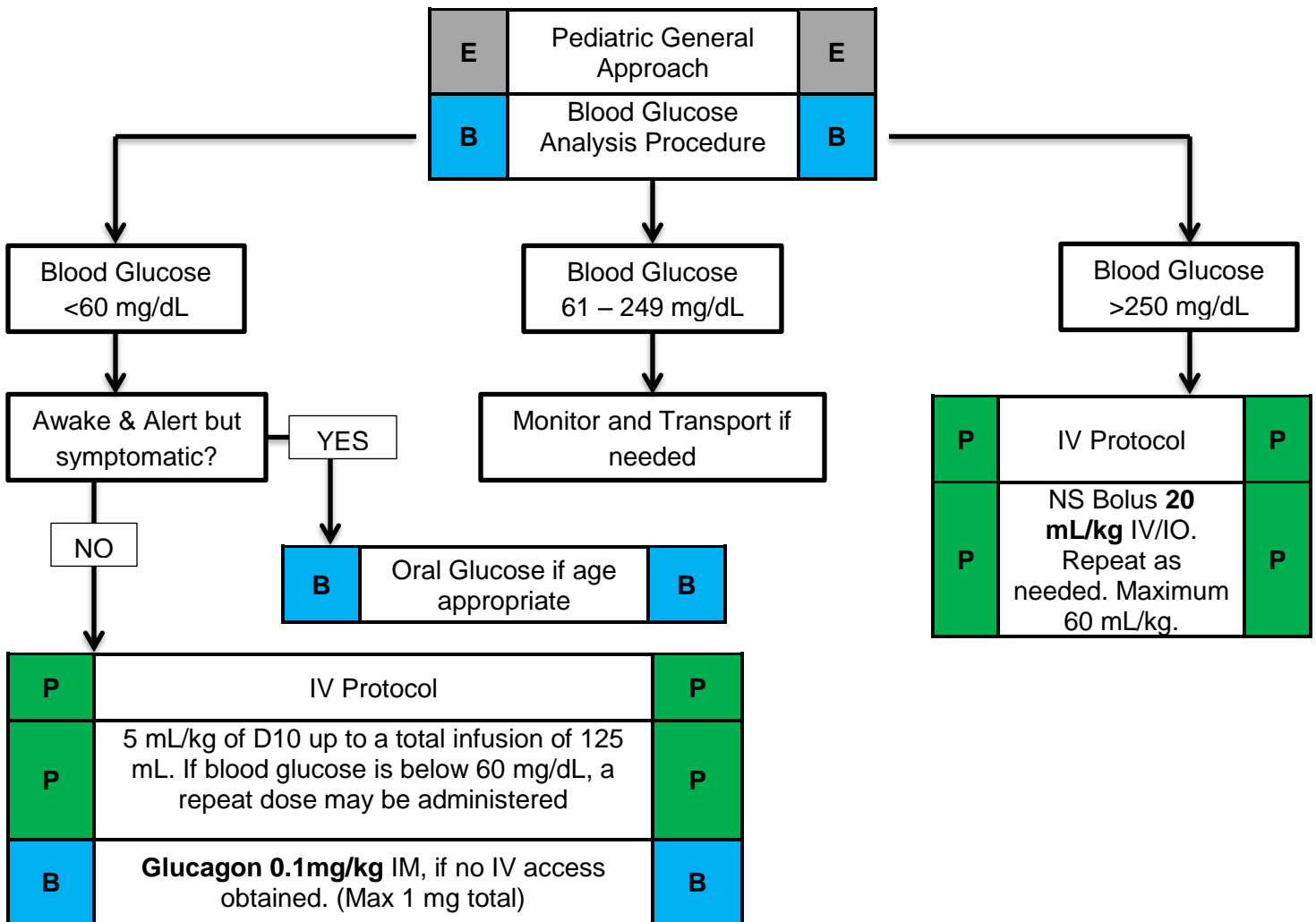
- Past medical history
- Medications
- Recent blood glucose check
- Last meal

Signs and Symptoms

- Altered mental status
- Combative / irritable
- Diaphoresis
- Seizures
- Abdominal pain
- Nausea / vomiting
- Weakness
- Dehydration
- Deep / rapid breathing

Differential

- Alcohol / drug use
- Toxic ingestion
- Trauma; head injury
- Seizure
- CVA
- Altered baseline mental status.



Pediatric-Diabetic Emergencies

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

History

- Past medical history
- Medications
- Recent blood glucose check
- Last meal

Signs and Symptoms

- Altered mental status
- Combative / irritable
- Diaphoresis
- Seizures
- Abdominal pain
- Nausea / vomiting
- Weakness
- Dehydration
- Deep / rapid breathing

Differential

- Alcohol / drug use
- Toxic ingestion
- Trauma; head injury
- Seizure
- CVA
- Altered baseline mental status.

Emergency Medical Responder

- Pediatric General Approach Protocol

Basic-Perform/Confirm All Above Interventions

- If blood glucose is <60 mg/dL, determine if patient is awake and alert and symptomatic
 - If patient is awake and alert, administer 15g or tube of oral glucose if age appropriate
 - If patient is unresponsive or showing signs of hypoglycemia, Glucagon 0.1mg/kg IM up to 1 mg total
- If blood glucose is 61-250 mg/dL monitor patient and transport if indicated
- If blood glucose is above 250mg/dL refer to Paramedic criteria

Paramedic- Perform/Confirm All Above Interventions

- IV Protocol
- If blood glucose is <60 mg/dL
 - 5 mL/kg of D10 up to a total infusion of 125 mL. If blood glucose is below 60 mg/dL, a repeat dose may be administered
 -
- If blood glucose is 61-250 mg/dL monitor patient and transport if indicated
- If blood glucose is >250 mg/dL
 - 20 mL/Kg NS bolus. May repeat up to total 60 mL/kg

If needed:

As needed per available Dextrose Concentration:

****Make D12..5 by removing 25 mL of D25 and dilute with 25 mL of NS***

**** Make D25 by removing 25 mL of D50 and dilute with 25 mL of NS***

Pediatric-Shock (Non-Trauma)

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

History:

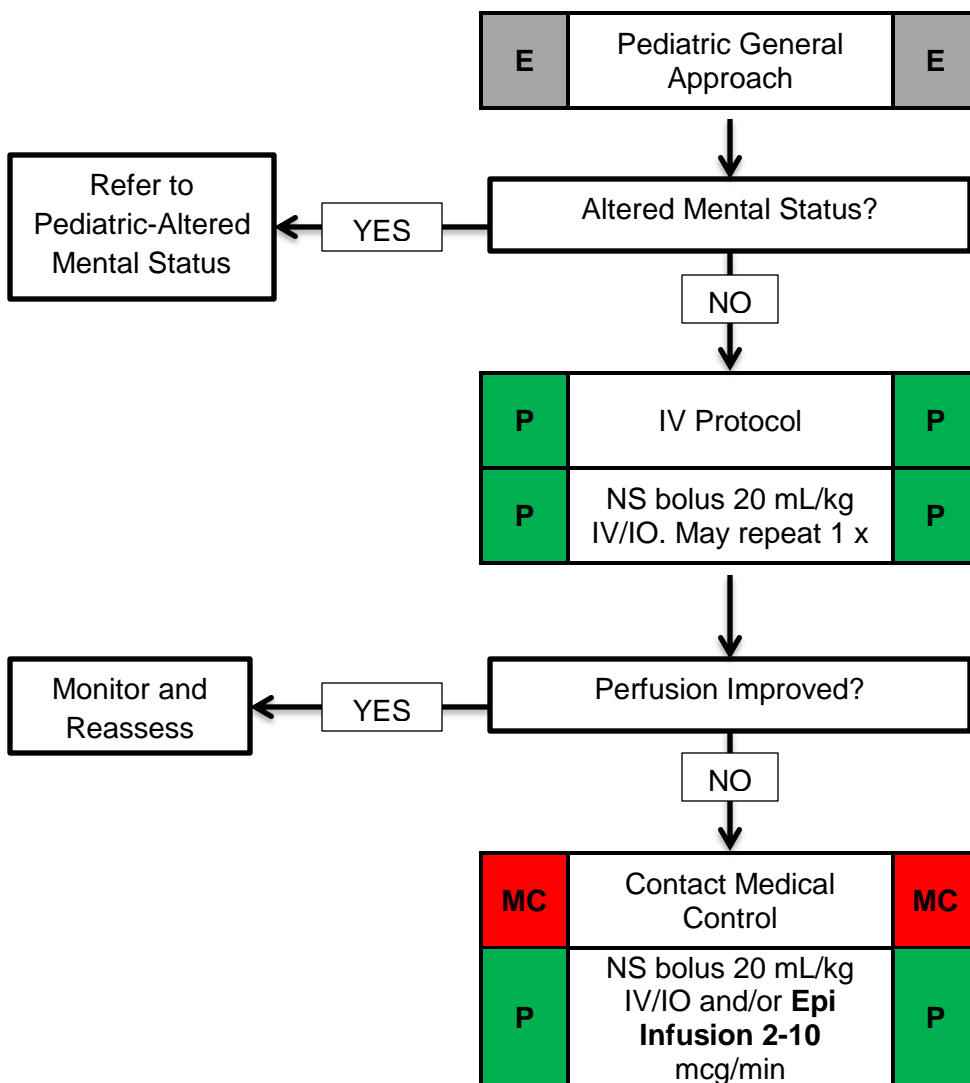
- Vomiting
- Diarrhea
- Fever
- Infection
- Sick contacts
- PO intake
- Last wet diaper/urine

Signs and Symptoms:

- Restlessness, confusion, weakness
- Syncope
- Tachycardia
- Diaphoresis
- Pale, cool, clammy skin
- Delayed capillary refill

Differential:

- Infection/Sepsis
- Dehydration
- Vomiting
- Diarrhea
- Congenital heart disease
- Medication or Toxin
- Anaphylaxis
- Meningitis



Pediatric-Shock (Non-Trauma)

Pediatric-Shock (Non-Trauma)

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

History:

- Vomiting
- Diarrhea
- Fever
- Infection
- Sick contacts
- PO intake
- Last wet diaper/urine

Signs and Symptoms:

- Restlessness, confusion, weakness
- Syncope
- Tachycardia
- Diaphoresis
- Pale, cool, clammy skin
- Delayed capillary refill

Differential:

- Infection/Sepsis
- Dehydration
- Vomiting
- Diarrhea
- Congenital heart disease
- Medication or Toxin
- Anaphylaxis
- Meningitis

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- Pediatric General Approach Protocol
- If patient has an altered mental status, refer to Pediatric Altered Mental Status Protocol

Paramedic- Perform/Confirm All Above Interventions

- IV Protocol
- NS bolus 20 mL/kg IV/IO. May repeat 1x.
- Has perfusion improved?
 - If so, monitor and reassess
 - If **NOT**,

Contact Medical Control for the consideration of the following:

- NS bolus 20 mL/kg IV/IO and/or **Epi Infusion 2-10 mcg/min IV/IO**

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Seizures

- History:**
- Sick contacts
 - Prior history of seizures
 - Medication compliance
 - Recent head trauma
 - Whole body vs unilateral seizure activity
 - Duration
 - Single/multiple

- Signs & Symptoms:**
- Fever
 - Seizure activity
 - Incontinence
 - Tongue trauma
 - Rash
 - Nuchal rigidity
 - Altered mental status

- Differential:**
- Febrile seizure
 - Infection
 - Head trauma
 - Medication or Toxin
 - Hypoxia or Respiratory failure
 - Hypoglycemia
 - Metabolic abnormality / acidosis
 - Tumor

E Pediatric General Approach E

Refer to Pediatric Altered Mental Status Protocol if indicated

Pediatric-Airway Protocol

Weight range in Kilograms		325mg Suppository Dose
11	13	½ sup
14	21	¾ sup
22	26	1 sup
33	43	1 ½ sup

E Blood Glucose Procedure E

Active Seizure?

YES

NO

P	Midazolam (Versed) 0.1mg/kg IV/IO/IN Max 2 mg or 0.2 mg/kg IM Max dose 4 mg	P
P	IV Protocol if indicated	P

B	Rectal Temperature Procedure	B
P	If rectal temp >100.4°F, consider Acetaminophen Suppositories. See chart above for dosage.	P
MC	Contact Medical Control if patient is < 8 weeks of age prior to giving Acetaminophen	MC

Pediatric-Seizure

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Seizures

- History:**
- Sick contacts
 - Prior history of seizures
 - Medication compliance
 - Recent head trauma
 - Whole body vs unilateral seizure activity
 - Duration
 - Single/multiple

- Signs & Symptoms:**
- Fever
 - Seizure activity
 - Incontinence
 - Tongue trauma
 - Rash
 - Nuchal rigidity
 - Altered mental status

- Differential:**
- Febrile seizure
 - Infection
 - Head trauma
 - Medication or Toxin
 - Hypoxia or Respiratory failure
 - Hypoglycemia
 - Metabolic abnormality / acidosis
 - Tumor

Emergency Medical Responder

- Pediatric General Approach Protocol
- Pediatric-Airway Protocol
- Refer to Pediatric Altered Mental Status Protocol if indicated
- Blood Glucose Analysis Procedure

Basic-Perform/Confirm All Above Interventions

- If patient was previously seizing, perform Rectal Temperature Procedure

Paramedic- Perform/Confirm All Above Interventions

- Patient is currently not seizing and if rectal temp >100.4°F,
 - Acetaminophen Suppositories. See chart below for dosage.

Contact Medical Control if patient is <8 weeks of age prior to administration of Acetaminophen

Weight range in Kilograms		325mg Suppository Dose
11	13	½ sup
14	21	¾ sup
22	26	1 sup
33	43	1 ½ sup

- If patient is actively seizing,
 - Midazolam (Versed) 0.1mg/kg IV/IO/IN Max dose 2mg or 0.2 mg/kg IM. Max dose up to 4 mg
- IV Protocol if indicated

Pediatric-Seizure

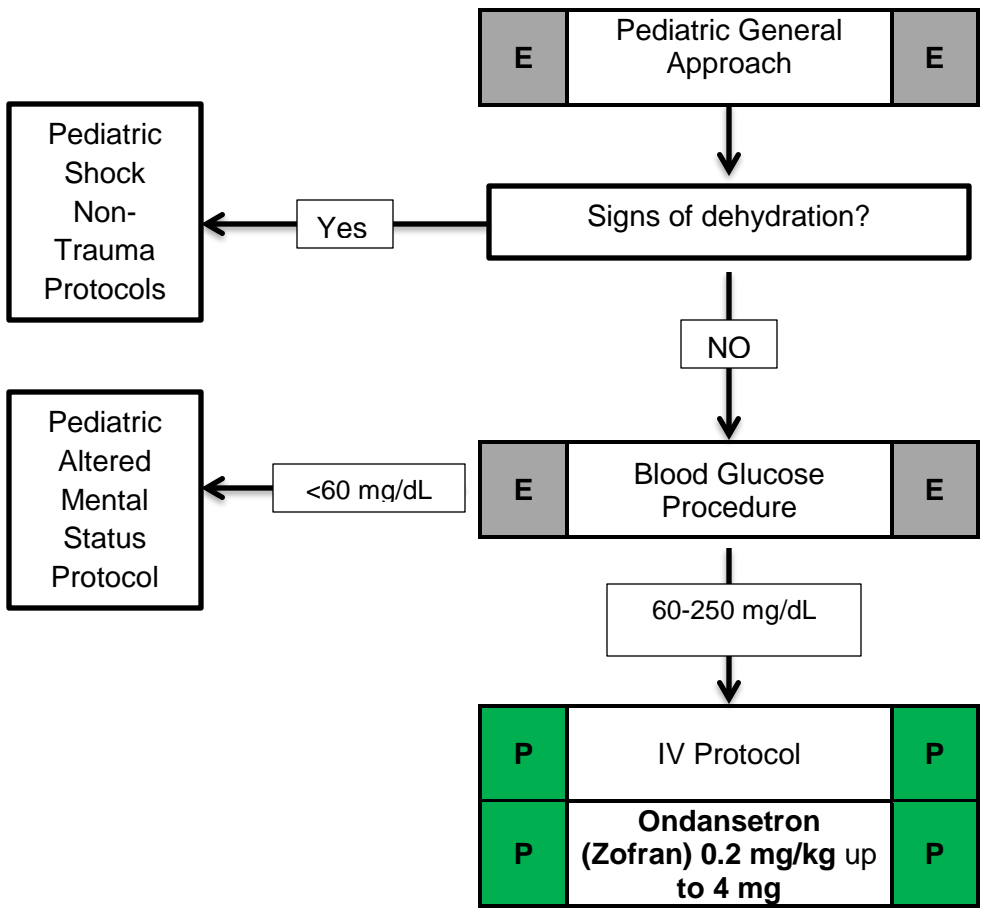
LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric Nausea & Vomiting

- History:**
- Age
 - Time of last meal
 - Last bowel movement / emesis
 - Improvement or worsening with food or activity
 - Other sick contacts
 - Past Medical History
 - Past Surgical History
 - Medications
 - Travel history
 - Bloody Emesis or diarrhea

- Signs and Symptoms:**
- Pain
 - Distension
 - Constipation
 - Diarrhea
 - Anorexia
 - Fever
 - Cough,
 - Dysuria

- Differential:**
- CNS (Increased pressure, headache, tumor, trauma or hemorrhage)
 - Drugs
 - Appendicitis
 - Gastroenteritis
 - GI or Renal disorders
 - Diabetic Ketoacidosis
 - Infections (pneumonia, influenza)
 - Electrolyte abnormalities



LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric Nausea & Vomiting

History:

- Age
- Time of last meal
- Last bowel movement / emesis
- Improvement or worsening with food or activity
- Other sick contacts
- Past Medical History
- Past Surgical History
- Medications
- Travel history
- Bloody Emesis or diarrhea

Signs and Symptoms:

- Pain
- Distension
- Constipation
- Diarrhea
- Anorexia
- Fever
- Cough,
- Dysuria

Differential:

- CNS (Increased pressure, headache, tumor, trauma or hemorrhage)
- Drugs
- Appendicitis
- Gastroenteritis
- GI or Renal disorders
- Diabetic Ketoacidosis
- Infections (pneumonia, influenza)
- Electrolyte abnormalities

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- Pediatric General Approach Protocol
- If signs of dehydration, refer to Pediatric Shock (Non-Trauma) Protocol
- Blood Glucose Analysis Procedure
 - If <60 mg/dL refer to Pediatric Altered Mental Status Protocol

Paramedic- Perform/Confirm All Above Interventions

- IV Protocol
- **Ondansetron (Zofran) 0.2 mg/kg up to 4 mg**

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Pain Management

- History:**
- Age
 - Location
 - Duration
 - Severity (1-10)
 - Past Medical History
 - Medications
 - Drug allergies
 - Medications taken prior to arrival

- Signs and Symptoms:**
- Severity (pain scale)
 - Quality
 - Radiation
 - Relation to movement, respiration
 - Increased with palpation of area.

- Differential:**
- Per the specific protocol
 - Musculoskeletal
 - Visceral (abdominal)
 - Cardiac
 - Pleural / Respiratory
 - Neurogenic
 - Renal (colic)

E Pediatric General Approach E

B Pulse Oximetry Procedure B

P IV Protocol if indicated. Medications can be delivered by conservative methods first. P

P	Fentanyl 1 mcg/kg IV/IM/IN Repeat 0.5 mcg/kg PRN q 5 min (Max total 100 mcg) with SBP >70 + (age in years x 2) mmHg	P
MC	Contact Medical Control for consideration of the following:	MC
P	Ketamine 0.25 mg/kg IV/IO or 0.5 mg/kg IM	P

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Pain Management

- History:**
- Age
 - Location
 - Duration
 - Severity (1-10)
 - Past Medical History
 - Medications
 - Drug allergies
 - Medications taken prior to arrival

- Signs and Symptoms:**
- Severity (pain scale)
 - Quality
 - Radiation
 - Relation to movement, respiration
 - Increased with palpation of area.

- Differential:**
- Per the specific protocol
 - Musculoskeletal
 - Visceral (abdominal)
 - Cardiac
 - Pleural / Respiratory
 - Neurogenic
 - Renal (colic)

Emergency Medical Responder

- Pediatric General Approach Protocol

Basic-Perform/Confirm All Above Interventions

- Pulse Oximetry Procedure

Paramedic- Perform/Confirm All Above Interventions

- IV Protocol if indicated. Medications can be delivered by conservative methods first.
- **Fentanyl 1 mcg/kg IV/IM/IN**
 - Repeat 0.5 mcg/kg PRN q 5 min
 - (Max total 100 mcg) with SBP >70 + (age in years x 2) mmHg

Contact Medical Control for consideration for the following:

- **Ketamine** 0.25 mg/kg IV/IN or 0.5 mg/kg IM

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Overdose, Poisoning, Ingestion

History

- Ingestion or suspected ingestion of potentially toxic substance
- Substance ingested, route, quantity
- Time of Ingestion is important
- Reason (suicidal, accidental, criminal)
- Available medications in home
- Past medical history, medications, past psychiatric history

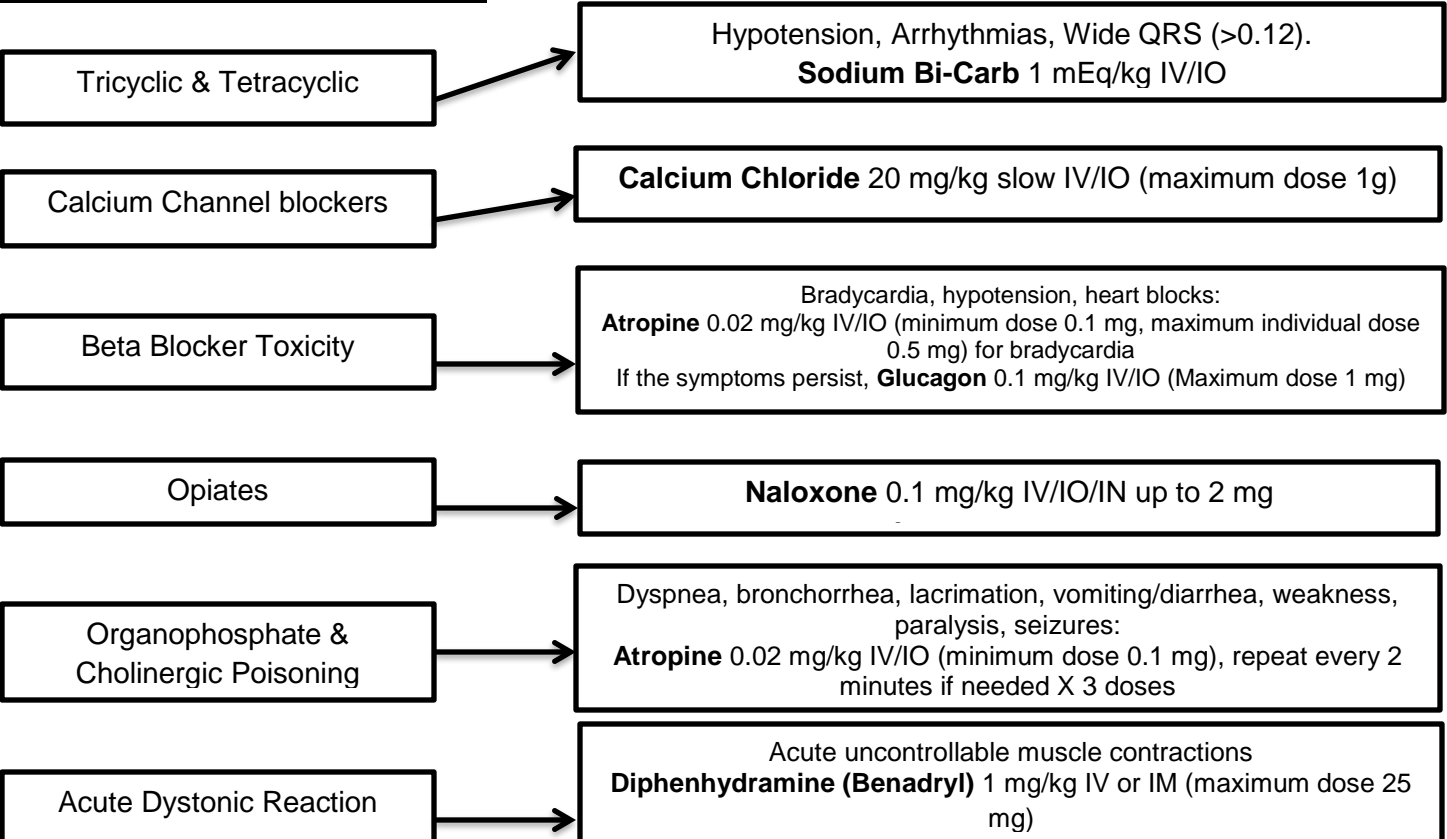
Signs and Symptoms

- Mental status changes
- Hypotension / hypertension
- Decreased respiratory rate
- Tachycardia, dysrhythmias
- Seizures
- **S**alivation, **L**acrimation, **U**rination; increased, loss of control, **D**efecation / **D**iarrhea, **G**I Upset; Abdominal pain / cramping, **E**mesis, **M**uscle Twitching

Differential

- Tricyclic antidepressants
- Acetaminophen
- Depressants
- Stimulants
- Anticholinergic
- Cardiac medications
- Solvents, Alcohols, Cleaning agents
- Insecticides (organophosphates)

E	Pediatric General Approach	E
B	Blood Glucose Analysis Procedure	B
B	12 Lead EKG Procedure	B
P	IV Protocol	P



Pediatric-Overdose, Poisoning, Ingestion

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LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric Overdose Tricyclic & Tetracyclic

Category	Drugs	Overdose Effects
Tricyclic Antidepressants	<ul style="list-style-type: none"> Amitriptyline (Elavil, Endep, Vanatrip, Levate) Clomipramine (Anafranil) Doxepin (Sinequan, Zonalon, Tridapin) Imipramine (Tofranil, Impril) Nortriptyline (Aventyl, Pamelor, Norventyl) Desipramine (Norpramin) Protriptyline (Vivactil) Trimipraine (Surmontil) Amitriptyline+Chlordiazepoxide (Limbitrol) 	<ul style="list-style-type: none"> Hypotension Anti-cholinergic effects (tachycardia, seizures, altered mental status, mydriasis) AV conduction blocks (prolonged QT interval, wide QRS) VT and VF
Other Cyclic Antidepressants	<ul style="list-style-type: none"> Maprotiline (Ludiomil) Amoxapine (Asenden) Bupropion (Wellbutrin) Trazadone (Desyrel, Trazorel) 	<ul style="list-style-type: none"> Similar to Tricyclics Seizures
Selective Serotonin Reuptake Inhibitors (SSRIs)	<ul style="list-style-type: none"> Citalopram (Celexa) Fluoxetine (Prozac) Fluvoxamine (Luvox) Paroxetine (paxil) Sertraline (Zoloft) 	<ul style="list-style-type: none"> Hypertension, tachycardia, agitation, diaphoresis, shivering Malignant Hyperthermia

Emergency Medical Responder

- Pediatric General Approach Protocol

Basic-Perform/Confirm All Above Interventions

- Blood Glucose Analysis Procedure
- 12 Lead EKG Procedure

Paramedic-Perform/Confirm All Above Interventions

- IV Protocol
- Hypotension, Arrhythmias, Wide QRS (>0.12). **Sodium Bi-Carb** 1 mEq/kg IV/IO

Pediatric-Overdose Tricyclic & Tetracyclic

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric Overdose Calcium Channel Blockers

Examples of commonly used Calcium Channel Blocker medication:

- Amlodipine (Norvasc)
- Felodipine (Plendil, Renedil)
- Isradipine (DynaCirc)
- Nicardipine (Cardene)
- Nifedipine (Procardia, Adalat)
- Verapamil (Calan)
- Diltiazem (Cardizem)

Emergency Medical Responder

- Pediatric General Approach Protocol

Basic-Perform/Confirm All Above Interventions

- Blood Glucose Analysis Procedure
- 12 Lead EKG Procedure

Paramedic- Perform/Confirm All Above Interventions

- IV Protocol
- **Calcium Chloride** 20 mg/kg slow IV/IO (maximum dose 1g)

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric Overdose Beta Blocker Toxicity

Single Agent Medication	Combination Medication
<ul style="list-style-type: none"> • Propranolol (Inderal) • Atenolol (Tenormin) • Metoprolol (Lopressor, Toprol) • Nadolol (Corgard) • Timolol (Blocadren) • Labetalol (Trandate) • Esmolol (Brevibloc) 	<ul style="list-style-type: none"> • Corzide (Nadolol/bendroflumethlazide) • Inderide (Propranolol/HCTZ) • Lopressor HCT (Metoprolol/HCTZ) • Timolide (Timolo/HCTZ) • Ziac (Bisoprolol/HCTZ) • Tenoretic (Atenolol/Chlorthalidone)

Emergency Medical Responder

- Pediatric General Approach Protocol

Basic-Perform/Confirm All Above Interventions

- Blood Glucose Analysis Procedure
- 12 Lead EKG Procedure

Paramedic- Perform/Confirm All Above Interventions

- IV Protocol
- Bradycardia, hypotension, heart blocks:
 - **Atropine** 0.02 mg/kg IV/IO (minimum dose 0.1 mg, maximum individual dose 0.5 mg) for bradycardia
 - If the symptoms persist, **Glucagon** 0.1 mg/kg IV/IO (Maximum dose 1 mg)

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric Overdose Opiates

Single Agent Medication	Combination Medication	Long Acting
<ul style="list-style-type: none"> • Oxycodone • Hydrocodone • Morphine • Heroin • Dilaudid • Fentanyl • Codiene 	<ul style="list-style-type: none"> • Vicodin • Norcodin • Percocet • Darvocet • Vicoprofen 	<ul style="list-style-type: none"> • Oxycontin • MS Contin • Methadone

Emergency Medical Responder

- Pediatric General Approach Protocol

Basic-Perform/Confirm All Above Interventions

- Blood Glucose Analysis Procedure
- 12 Lead EKG Procedure

Paramedic- Perform/Confirm All Above Interventions

- IV Protocol
- **Naloxone** 0.1 mg/kg IV/IO/IN up to 2 mg

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric Overdose Organophosphate & Cholinergic Poisoning

Emergency Medical Responder

- Pediatric General Approach Protocol
- Wear protective clothing including masks, gloves and eye protection
 - Toxicity to ambulance crew may result from inhalation or topical exposure
- Supplemental 100% oxygen
- Decontaminate patient
 - Remove all clothing and contain run-off of toxic chemicals when flushing

Basic-Perform/Confirm All Above Interventions

- Blood Glucose Analysis Procedure
- 12 Lead EKG Procedure

Paramedic- Perform/Confirm All Above Interventions

- IV Protocol
- Dyspnea, bronchorrhea, lacrimation, vomiting/diarrhea, weakness, paralysis, seizures:
 - **Atropine** 0.02 mg/kg IV/IO (minimum dose 0.1 mg), repeat every 2 minutes if needed X 3 doses
- If any of the following conditions occur, refer to the appropriate protocol:
 - **Altered Mental Status Protocol**
 - **Seizure Protocol**

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Overdose Acute Dystonic Reaction

Examples of commonly used medications that may result in acute dystonic reactions:

- Haloperidol
- Prolixin
- Thorazine
- Prochlorperazine (Compazine)
- Promethazine (Phenergan)

Emergency Medical Responder

- Pediatric General Approach Protocol

Basic-Perform/Confirm All Above Interventions

- Blood Glucose Analysis Procedure
- 12 Lead EKG Procedure

Paramedic- Perform/Confirm All Above Interventions

- Acute uncontrollable muscle contractions
 - **Diphenhydramine (Benadryl)** 1 mg/kg IV or IM (maximum dose 25 mg)

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Extremity Trauma

History:

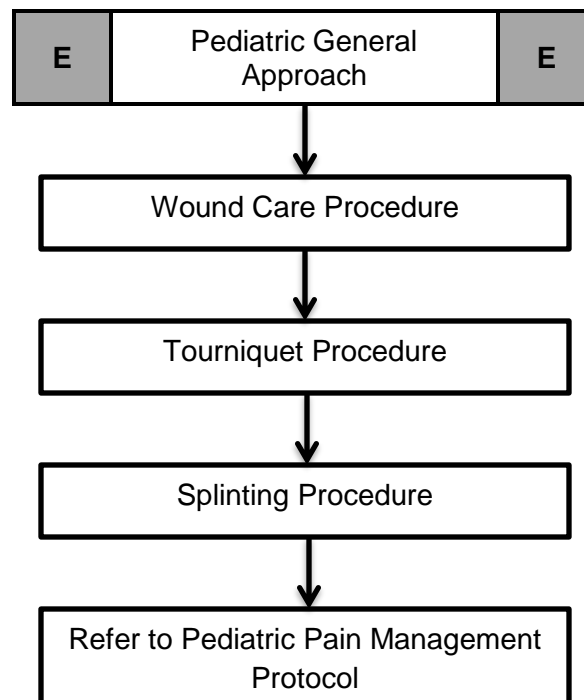
- Type of injury
- Mechanism: crush / penetrating / amputation
- Time of injury
- Open vs. closed wound / fracture
- Wound contamination
- Medical history
- Medications

Signs & Symptoms:

- Pain, swelling
- Deformity
- Altered sensation / motor function
- Diminished pulse / capillary refill
- Decreased extremity temperature

Differential:

- Abrasion
- Contusion
- Laceration
- Sprain
- Dislocation
- Fracture
- Amputation



If amputation:

- **Do not delay transport for tissue retrieval**
- Rinse amputated part with sterile (saline or water)
- Wrap part in saline moistened gauze
- Place tissue into plastic bag or container
- Place bag / container on ice

Pearls:

- Peripheral neurovascular status should be documented on all extremity injuries and before and after splinting procedures.
- If pulseless extremity a single attempt at realignment may be performed.
- In amputations, time is critical. Transport and notify medical control immediately, so that the appropriate destination can be determined.
- If an amputation is incomplete, splint affected digit or limb in physiologic position.
- Hip dislocations and 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 should be evaluated for repair as soon as possible after injury.

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Extremity Trauma

- History:**
- Type of injury
 - Mechanism: crush / penetrating / amputation
 - Time of injury
 - Open vs. closed wound / fracture
 - Wound contamination
 - Medical history
 - Medications

- Signs & Symptoms:**
- Pain, swelling
 - Deformity
 - Altered sensation / motor function
 - Diminished pulse / capillary refill
 - Decreased extremity temperature

- Differential:**
- Abrasion
 - Contusion
 - Laceration
 - Sprain
 - Dislocation
 - Fracture
 - Amputation

Emergency Medical Responder
Basic-Perform/Confirm All Above Interventions
Paramedic- Perform/Confirm All Above Interventions

- Pediatric General Approach Protocol
- Wound Care Procedure
- Tourniquet Procedure
- Splinting Procedure
- Refer to Pain Management Protocol if indicated

- If amputation:**
- **Do not delay transport for tissue retrieval**
 - Rinse amputated part with sterile (saline or water)
 - Wrap part in saline moistened gauze
 - Place tissue into plastic bag or container
 - Place bag / container on ice

- Pearls:**
- Peripheral neurovascular status should be documented on all extremity injuries and before and after splinting procedures.
 - If pulseless extremity a single attempt at realignment may be performed.
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 - Urgently transport any injury with vascular compromise.
 - Blood loss may be concealed or not apparent with extremity injuries.
 - Lacerations should be evaluated for repair as soon as possible after injury.

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

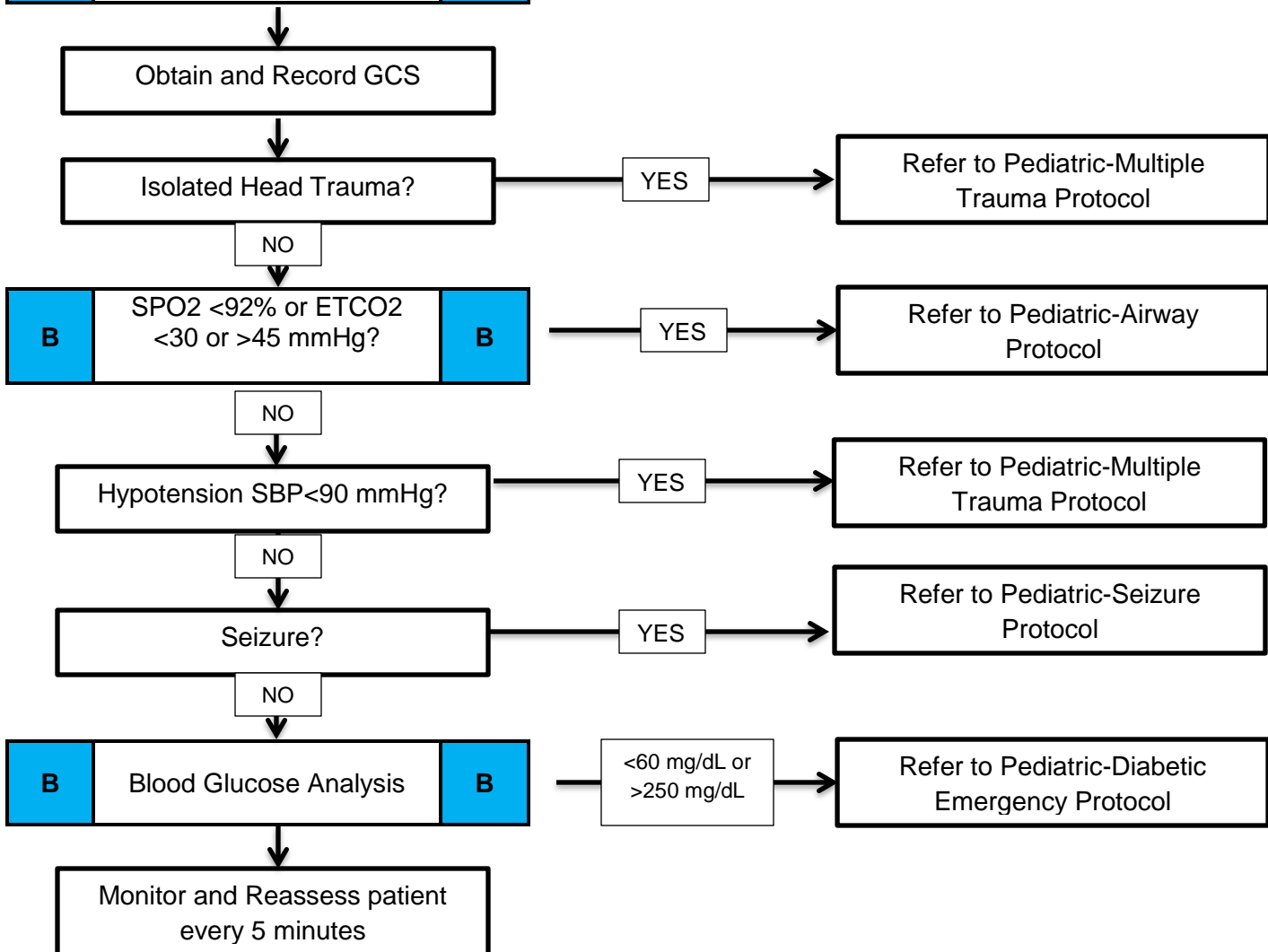
Pediatric-Head Trauma

- History:**
- Time of injury
 - Mechanism: blunt / penetrating
 - Loss of consciousness
 - Bleeding
 - Medical history
 - Medications
 - Allergies
 - Evidence of multi-trauma
 - Helmet use or damage to helmet

- Signs and Symptoms:**
- Pain, swelling, bleeding
 - Altered mental status
 - Unconscious
 - Respiratory distress / failure
 - Vomiting
 - Significant mechanism of injury
 - Pupillary abnormalities
 - CSF leaking from ears, nose, mouth

- Differential:**
- Skull fracture
 - Brain injury (concussion, contusion, hemorrhage, or laceration)
 - Epidural/subdural hematoma
 - Alcohol Intoxication
 - Subarachnoid/intracranial hemorrhage
 - Spinal injury
 - Abuse

E	Pediatric General Approach	E
B	Spinal Protection Procedure	B



Pediatric-Head Trauma

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Head Trauma

- History:**
- Time of injury
 - Mechanism: blunt / penetrating
 - Loss of consciousness
 - Bleeding
 - Medical history
 - Medications
 - Allergies
 - Evidence of multi-trauma
 - Helmet use or damage to helmet

- Signs and Symptoms:**
- Pain, swelling, bleeding
 - Altered mental status
 - Unconscious
 - Respiratory distress / failure
 - Vomiting
 - Significant mechanism of injury
 - Pupillary abnormalities
 - CSF leaking from ears, nose, mouth

- Differential:**
- Skull fracture
 - Brain injury (concussion, contusion, hemorrhage, or laceration)
 - Epidural/subdural hematoma
 - Alcohol Intoxication
 - Subarachnoid/intracranial hemorrhage
 - Spinal injury
 - Abuse

Emergency Medical Responder

- Pediatric General Approach

Basic-Perform/Confirm All Above Interventions

Paramedic- Perform/Confirm All Above Interventions

- Obtain and record GCS
- Isolated Head Trauma
 - Refer to Pediatric-Multiple Trauma Protocol
- SPO2 <92% or ETCO2 <30 mmHg or >45 mmHg?
 - Refer to Pediatric-Airway Protocol
- Hypotension SBP<90 mmHg?
 - Refer to Pediatric-Multiple Trauma Protocol
- Seizure?
 - Refer to Pediatric-Seizure Protocol
- Blood Glucose Analysis <60 mg/dL or >250 mg/dL
 - Refer to Pediatric-Diabetic Emergency Protocol

- **GCS is a key performance measure used to evaluate protocol compliance and care**
- **If GCS < 12 consider air / rapid transport and if GCS < 9 intubation should be anticipated.**
- **Hyperventilate the patient only if evidence of herniation (blown pupil, decorticate / decerebrate posturing, bradycardia, decreasing GCS). If hyperventilation is needed (35 / minute for infants <1 year and 25 / minute for children >1 year) EtCO2 should be maintained between 30 - 35 mmHg.**
- Increased intracranial pressure (ICP) may cause hypertension and bradycardia (Cushing's Response).
- Hypotension usually indicates injury or shock unrelated to the head injury and should be treated aggressively.
- An important item to monitor and document is a change in the level of consciousness by serial examination.
- Concussions are traumatic brain injuries involving any of a number of symptoms including confusion, LOC, vomiting, or headache. Any prolonged confusion or mental status abnormality which does not return to normal within 15 minutes or any documented loss of consciousness should be evaluated by a physician ASAP.
- Fluid resuscitation should be titrated to maintain at least a systolic BP of > 70 + 2 x the age in years.

Pediatric-Head Trauma

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Multiple Trauma

- History:**
- Time and mechanism of injury
 - Damage to structure or vehicle
 - Location in structure or vehicle
 - Others injured or dead
 - Speed and details of MVC
 - Restraints / protective equipment
 - Past medical history
 - Medications

- Signs & Symptoms:**
- Pain, swelling
 - Deformity, lesions, bleeding
 - Altered mental status or unconscious
 - Hypotension or shock
 - Cardiac Arrest

- Differential (Life threatening):**
- Chest
 - Tension pneumothorax
 - Flail chest
 - Pericardial tamponade
 - Open chest wound
 - Hemothorax
 - Intra-abdominal bleeding
 - Pelvis / Femur fracture
 - Spine fracture / Cord injury
 - Head injury (see Head Trauma)
 - Extremity fracture / Dislocation
 - HEENT (Airway obstruction)
 - Hypothermia

E Pediatric General Approach E

Perform Rapid Trauma Assessment and Notify **Trauma Alert** to SVH or ABC

Patients under 5 years of age transport to SVH

Pediatric-Airway Protocol if indicated

B Spinal Protection Procedure B

Hypotension?

Vital Signs & GCS

Stable?

B	Tourniquet Procedure if indicated	B
P	IV Protocol	P
P	Compressible Hemorrhage: NS Bolus to maintain SBP >90 mmHg	P
P	Non-Compressible Hemorrhage: NS Bolus to maintain SBP >70 mmHg	P
P	Chest Decompression Procedure if indicated	P

Ongoing Assessment

B	Wound Care Procedure if Indicated	B
B	Splinting Procedure if Indicated	B
B	Tourniquet Procedure if Indicated	B

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Multiple Trauma

History:

- Time and mechanism of injury
- Damage to structure or vehicle
- Location in structure or vehicle
- Others injured or dead
- Speed and details of MVC
- Restraints / protective equipment
- Past medical history
- Medications

Signs & Symptoms:

- Pain, swelling
- Deformity, lesions, bleeding
- Altered mental status or unconscious
- Hypotension or shock
- Cardiac Arrest

Differential (Life threatening):

- Chest
 - Tension pneumothorax
 - Flail chest
 - Pericardial tamponade
 - Open chest wound
 - Hemothorax
- Intra-abdominal bleeding
- Pelvis / Femur fracture
- Spine fracture / Cord injury
- Head injury (see Head Trauma)
- Extremity fracture / Dislocation
- HEENT (Airway obstruction)
- Hypothermia

Scene times should not be delayed for procedures. These should be performed en route when possible. Rapid transport of the unstable trauma patient to the appropriate facility is the goal.

- **Bag valve mask is an acceptable method of managing the airway if pulse oximetry can be maintained $\geq 92\%$**
- Age specific blood pressure 0 – 28 days > 60 mmHg, 1 month - 1 year > 70 mmHg, 1 - 10 years > 70 + (2 x age) mm Hg and 12 years and older > 90 mmHg.
- Consider Chest Decompression with signs of shock and injury to torso and evidence of tension pneumothorax.
- Severe bleeding from an extremity not rapidly controlled with direct pressure may necessitate the application of a tourniquet.
- Do not overlook the possibility of child abuse.

Patients under 5 years of age transport to SVH

Emergency Medical Responder

- Pediatric General Approach
- Perform Rapid Trauma Assessment
- Notify ABC or SVH of **Trauma Alert**
 - If <5 yrs of age notify SVH of Trauma Alert and transport to SVH
- Refer to Pediatric-Airway Protocol if indicated

Basic-Perform/Confirm All Above Interventions

- Refer to Spinal Protection Procedure if indicated
- Determine if vital signs and GCS are stable or unstable
 - Stable:
 - Conduct on going assessment
 - Refer to Wound Care Procedure if indicated
 - Refer to Splinting Procedure if indicated
 - Refer to Tourniquet Procedure if indicated

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric-Multiple Trauma Cont.

Basic-Perform/Confirm All Above Interventions

- Unstable/ Hypotension:
 - Refer to Tourniquet Procedure if indicated

Paramedic- Perform/Confirm All Above Interventions

- Unstable/ Hypotension:
 - IV Protocol
 - Compressible Hemorrhage:
 - NS Bolus to maintain SBP >90 mm/Hg
 - Non-Compressible Hemorrhage:
 - NS Bolus to maintain SBP>70 mmHg
 - Chest Decompression Procedure if indicated

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric Thermal Burn

- History**
- Type of exposure (heat, gas, chemical)
 - Inhalation injury
 - Time of Injury
 - Past medical history and Medications
 - Other trauma
 - Loss of Consciousness
 - Tetanus/Immunization status

- Signs and Symptoms**
- Burns, pain, swelling
 - Dizziness
 - Loss of consciousness
 - Hypotension/shock
 - Airway compromise/distress could be indicated by hoarseness/wheezing

- Differential**
- Superficial (1st Degree) red - painful (Don't include in TBSA)
 - Partial Thickness (2nd Degree) blistering
 - Full Thickness (3rd Degree) painless/charred or leathery skin
 - Thermal
 - Chemical – Electrical

E Pediatric General Approach E

Assess Severity of Burns & Trauma Alert

Minor Burn

< 5% TBSA 2nd/3rd Degree Burn
No inhalation injury, Not Intubated, Normotensive
GCS 14 or Greater

Serious Burn

5-15% TBSA 2nd/3rd Degree Burn
Suspected inhalation injury or requiring intubation for airway stabilization
Hypotension or GCS 13 or Less
(When reasonably accessible, transport to a Burn Center)

Critical Burn

>15% TBSA 2nd/3rd Degree Burn
Burns with Multiple Trauma
Burns with definitive airway compromise
(When reasonably accessible, transport to a Burn Center)

Remove all rings, bracelets or other constricting items. Plastic cling, dry sheets or dressings

Refer to Adult Airway Protocol if indicated

Refer to Adult Trauma Protocol if indicated

Remove all rings, bracelets or other constricting items. Plastic cling, dry sheets or dressings

Refer to Adult Airway Protocol if indicated

Refer to Adult Trauma Protocol if indicated

P	IV Protocol If Indicated	P
P	Normal Saline 250 mL/hr	P

P	IV Protocol Consider 2 IV sites if greater than 15 % TBSA	P
P	IO Procedure if needed	P
P	Normal Saline 250 mL/hr	P
P	Double Fentanyl Dose. Up to 200 mcg total	P

Refer to Pediatric-Pain Management Protocol if Indicated

Refer to Adult Carbon Monoxide or Cyanide Toxicity Protocol if indicated

Pediatric-Thermal Burn

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric Thermal Burn

- History**
- Type of exposure (heat, gas, chemical)
 - Inhalation injury
 - Time of Injury
 - Past medical history and Medications
 - Other trauma
 - Loss of Consciousness
 - Tetanus/Immunization status

- Signs and Symptoms**
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- Differential**
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 - Partial Thickness (2nd Degree) blistering
 - Full Thickness (3rd Degree) painless/charred or leathery skin
 - Thermal
 - Chemical – Electrical

Emergency Medical Responder

Basic-Perform/Confirm All Above Interventions

- Pediatric General Approach
- Remove all clothing, contact lenses and jewelry especially rings
- Maintain core temperature. Keep patient warm and dry with sheets and blankets. Cover burns with plastic wrap, plastic chucks or clean dry dressings.
- If inhalation injury is suspected
 - Monitor ETCO2 continuously (if available)
- Estimate Total Body Surface Area (TBSA)
- Rule of Nines
 - For scattered burns, use the size of patient's hand, including fingers, to equal 1% burn.

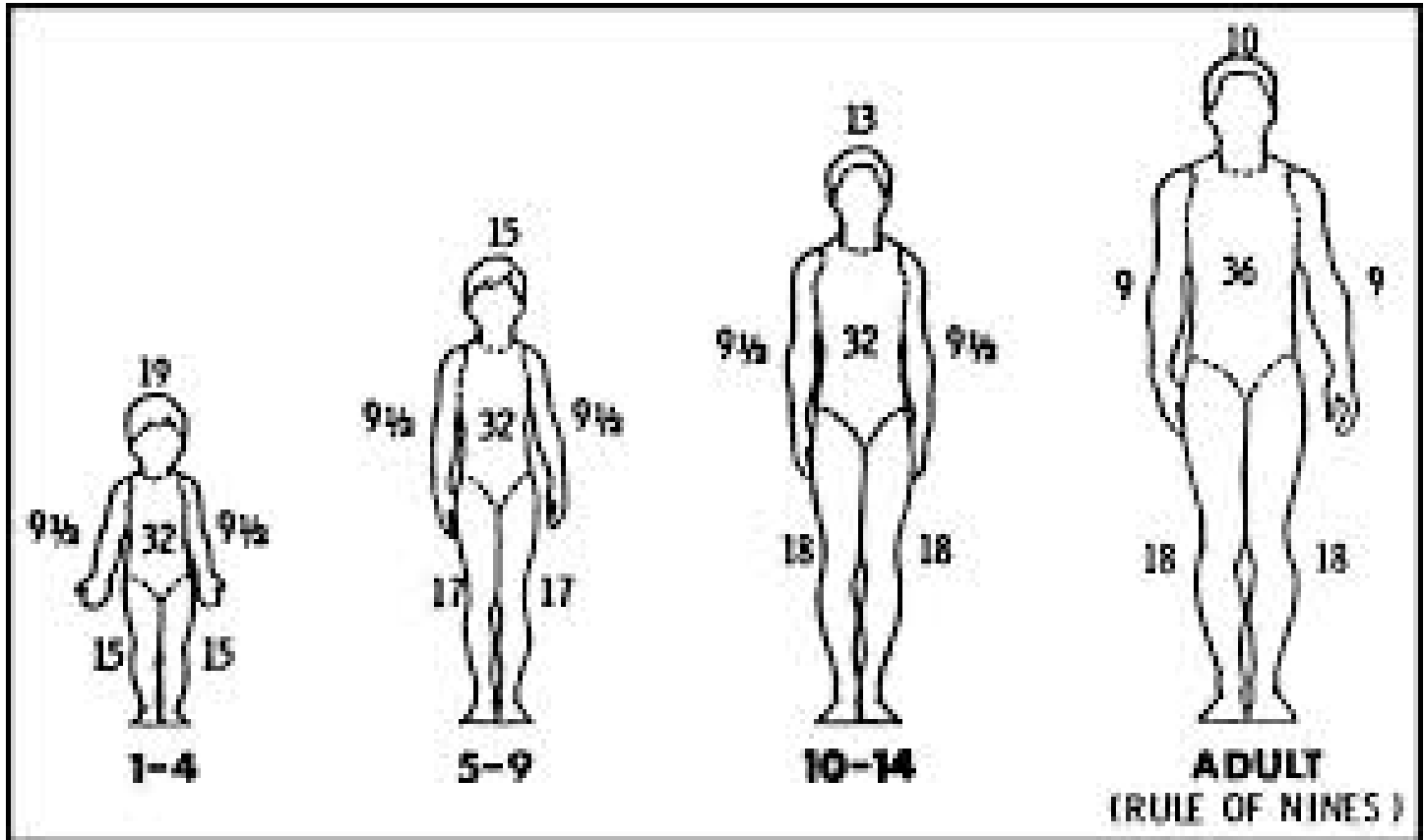
Paramedic- Perform/Confirm All Above Interventions

- Place large bore peripheral IV's in unburned skin if possible
- Refer to **IO Procedure** if indicated
- NS Bolus 250 mL/hr
- Observe for signs of impending loss of airway; Refer to the **Pediatric-Airway Protocol** as needed:
 - Hypoxia
 - Poor ventilatory effort
 - Altered Mental status/decreased level of consciousness
 - Inability to maintain patent airway
 - Signs or Symptoms of Inhalation injury
 - Carbonaceous sputum
 - Extensive facial burns or facial edema
 - Hoarseness
 - Singed nasal hairs
 - Agitation, anxiety, cyanosis, stupor or other signs of hypoxia
- **Double Fentanyl Dose. Up to 200 mcg total**
- Refer to **Adult Hazmat-Carbon Monoxide Protocol** if indicated
- Refer to **Adult Hazmat-Cyanide Toxicity Protocol** if indicated

Pediatric-Thermal Burn

LEGEND		
E	EMR	E
B	EMT	B
P	PARAMEDIC	P
MC	Medical Control	MC

Pediatric Thermal Burn



Pearls:

- Evaluate BSA : Use chart or use one side of patients hand = 1% BSA
- Critical Burns:
 - >20% 2° and 3° body surface area (BSA) age > 10;
 - >10% BSA age < 10 or > 50;
 - 3° burns >5% BSA;
 - 2° and 3° burns to face, eyes, hands or feet or genitalia; electrical burns; respiratory burns; deep chemical burns;
 - Burns with extremes of age or chronic disease; and burns with associated major traumatic injury.
- Minor burns (< 5% BSA 2nd and 3rd) not complicated by airway compromise or trauma do not require transport to a trauma center.
- Potential CO exposure should be treated with 100% oxygen.
- Circumferential burns to extremities are dangerous due to potential vascular compromise 2° to soft tissue swelling.
- Burn patients are prone to hypothermia - Never apply ice or cool burns that involve >10% body surface area.
- Do not overlook the possibility of multiple system trauma or child abuse with burn injuries.
- 2nd or 3rd degree burn >10% BSA – Fluid 250 mL/hr

12 Lead EKG

B	EMT	B
P	PARAMEDIC	P

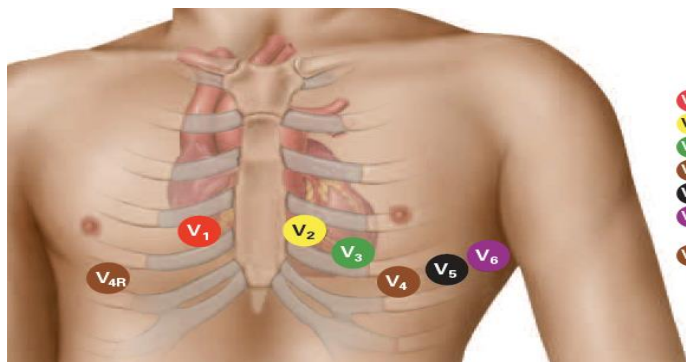
Clinical Indications:

- Suspected cardiac patient
- Suspected tricyclic overdose
- Electrical injuries
- Syncope
- CHF
- Abdominal pain above the umbilicus
- Undifferentiated respiratory complaints

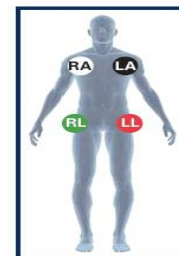
Procedure:

- 1) Assess patient and monitor cardiac status
- 2) If patient is unstable, definitive treatment is the priority. If patient is stable or stabilized after treatment, perform a 12-Lead EKG
- 3) Prepare EKG monitor and connect patient cable to electrodes
- 4) Expose chest and prep as necessary. Modesty of the patient should be respected.
- 5) Apply chest leads and extremity leads using the following landmarks:
 - RA: Right arm or as directed by manufacturer
 - LA: Left arm or as directed by manufacturer
 - RL: Right leg
 - LL: Left leg
 - V1: 4th intercostal space at right sternal border
 - V2: 4th intercostal space at left sternal border
 - V3: Directly between V2 and V4
 - V4: 5th intercostal space at midclavicular line
 - V5: Level with V4 at left anterior axillary line
 - V6: Level with V5 at left midaxillary line
- 6) Instruct patient to remain still
- 7) Press the appropriate button to acquire the 12-Lead EKG (complete age and gender questions correctly)
- 8) Print data as per guidelines and attach a copy of the 12-Lead to the PCR. Place the name and age of the patient on the paper copy of the EKG

If STEMI identified, notify STEMI Hospital immediately. Report STEMI alert and a detailed report to follow.



- V₁ 4th intercostal space to the right of the sternum
- V₂ 4th intercostal space to the left of the sternum
- V₃ directly between the leads V₂ & V₄
- V₄ 5th intercostal space at midclavicular line
- V₅ level with V₄ at left anterior axillary line
- V₆ level with V₅ at left midaxillary line (directly under the midpoint of the armpit)
- V_{4R} 5th intercostal space, right midclavicular line



- RA Right Arm
- LA Left Arm
- LL Left Leg
- RL Right Leg

Procedure 1

Airway- Nebulizer Inhalation Therapy

B	EMT	B
P	PARAMEDIC	P

Clinical Indications:

Patients experiencing bronchospasm.

Procedure:

1. Gather the necessary equipment.
2. Assemble the nebulizer kit.
3. Instill the premixed drug (such as Albuterol or other approved drug) 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 of the nebulizer. The patient needs to have a good lip seal around the mouthpiece. A mask may also be utilized.
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 of the solution.
7. Monitor the patient for medication effects. This should include the patient's assessment of his/her response to the treatment and reassessment of vital signs, ECG, and breath sounds.
8. Assess and document peak flows before and after nebulizer treatments.
9. Document the treatment, dose, and route on/with the patient care report (PCR).
10. Along with pulse oximetry, ETCO₂ monitoring should also be considered.

Airway-Bougie (Endotracheal Tube Introducer)

Clinical Indications:

P PARAMEDIC P

- Patients meet clinical indications for oral intubation
- Initial intubation attempt for medical indication unsuccessful
- Predicted difficult intubation

Contraindications:

- ETT size less than 6.5mm.
- Already failed twice on medical indicated intubation attempts or failed on one trauma intubation attempt DO NOT UTILIZE BOUGIE.

Procedure:

1. Prepare, position, and oxygenate the patient with 100% Oxygen
2. Select proper ET tube without stylette, test cuff and prepare suction
3. Lubricate the distal end and cuff of the endotracheal tube (ETT) and the distal ½ of the endotracheal tube introducer (Bougie) (note: failure to lubricate the Bougie and the ETT may result in being unable to pass the ETT)
4. Using laryngoscopic techniques, visualize the vocal cords if possible using Sellick's/BURP as needed.
5. Introduce the Bougie with curved tip anteriorly and visualize the tip passing the vocal cords or above the arytenoids if the cords cannot be visualized
6. Once inserted, gently advance the Bougie until you meet resistance or "hold-up" (if you do not meet resistance you have a probable esophageal intubation and insertion should be re-attempted or the failed airway protocol implemented as indicated.
7. Withdraw the Bougie ONLY to a depth sufficient to allow loading of the ETT while maintaining proximal control of the Bougie
8. Gently advance the Bougie and loaded ET tube until you have hold-up again, thereby assuring tracheal placement and minimizing the risk of accidental displacement of the Bougie.
9. While maintaining a firm grasp on the proximal Bougie, introduce the ET tube over the Bougie passing the tube to its appropriate depth
10. If you are unable to advance the ETT into the trachea and the Bougie and ETT are adequately lubricated, withdraw the ETT slightly and rotate the ETT 90 degrees COUNTER clockwise to turn the bevel of the ETT posteriorly. If this technique fails, to facilitate passing of the ETT you may attempt direct laryngoscopy while advancing the ETT (this will require an assistant to maintain the position of the Bougie and, if so desired, advance the ETT)
11. Once the ETT is correctly placed, hold the ET tube securely and remove the Bougie
12. Confirm tracheal placement with capnography according to the intubation protocol. Inflate the cuff, auscultate for equal breath sounds and reposition accordingly.
13. When final position is determined secure the ET tube, continuously record and monitor capnography, reassess breath sounds and monitor patient to assure continued tracheal intubation.
14. If there is any question regarding placement of ETT (Esophageal vs. Tracheal) remove immediately and ventilate with BVM.

Airway-Capnography Waveform

B	EMT	B
P	PARAMEDIC	P

Clinical Indications:

- Capnography shall be used when available with the use of all invasive airway procedures including endotracheal, nasotracheal, cricothyrotomy, or Blind Insertion Airway Devices (BIAD).
- Capnography should also be used when possible with CPAP.
- Capnography should also be used on all patients treated with magnesium and/or epinephrine for respiratory distress.

Procedure:

1. Attach capnography sensor to the BIAD, endotracheal tube, or any other oxygen delivery device, including bag-valve mask and nasal cannula.
2. Note CO₂ level and waveform changes. These will be documented on each respiratory failure, cardiac arrest or respiratory distress patient.
3. The capnometer shall remain in place with the airway and be monitored throughout the prehospital care and transport.
4. Any loss of CO₂ detection or waveform indicates an airway problem and should be documented.
5. The capnogram should be monitored as procedures are performed to verify or correct the airway problem.
6. Document the procedure and results on/with the Patient Care Report (PCR) and the Airway Evaluation Form.

Airway-Continuous Positive Airway Pressure (CPAP)

Clinical Indications:

B	EMT	B
P	PARAMEDIC	P

For patients with Acute Bronchospastic Disorders (acute or chronic bronchitis, emphysema, or asthma) or Acute Pulmonary Edema, who have hypoxemia and/or respiratory distress that does not quickly improve with pharmaceutical treatment.

Inclusion Criteria: Any patient who is in respiratory distress with signs and symptoms consistent with asthma, COPD, pulmonary edema, CHF, or pneumonia and who is:

1. Awake and able to follow commands
2. Is over 12 years old and is able to fit the CPAP mask
3. Has the ability to maintain an open airway
4. And exhibits two or more of the following;
 - A. a respiratory rate greater than 25 breaths per minute
 - B. SPO₂ of less than 94% at any time
 - C. use of accessory muscles during respirations

Exclusion Criteria:

1. Patient is in respiratory arrest/apneic
2. Patient is suspected of having a pneumothorax or has suffered trauma to the chest
3. Patient has a tracheostomy
4. Patient is actively vomiting or has upper GI bleeding
5. Patient has an altered mental status

Procedure:

1. Ensure adequate oxygen supply to ventilation device.
2. Explain the procedure to the patient.
3. Consider placement of a nasopharyngeal airway.
4. Place the delivery mask over the mouth and nose. Oxygen should be flowing through the device at this point.
5. Secure the mask with provided straps starting with the lower straps until minimal air leak occurs.
6. Ensure continuous pulse oximetry is initiated.
7. Initiate procedure with 5 cm H₂O of PEEP.
8. Evaluate the response of the patient assessing breath sounds, oxygen saturation, and general appearance.
9. Encourage the patient to allow forced ventilation to occur. Observe closely for signs of complications. The patient must be breathing for optimal use of the CPAP device.
10. Document time and response on patient care report (PCR).

Removal Procedure:

1. CPAP therapy needs to be continuous and should not be removed unless the patient cannot tolerate the mask or experiences respiratory arrest or begins to vomit.
2. Ensure that patient maintains adequate ventilation and if not, consider alternative airway procedure/protocol.

Airway-Foreign Body Obstruction

B	EMT	B
P	PARAMEDIC	P

Clinical Indications:

Sudden onset of respiratory distress often with coughing, wheezing, gagging, or stridor due to a foreign-body obstruction of the upper airway.

Procedure:

1. Assess the degree of foreign body obstruction
 - Do not interfere with a mild obstruction allowing the patient to clear their airway by coughing.
 - In severe foreign-body obstructions, the patient may not be able to make a sound. The victim may clutch his/her neck in the universal choking sign.
2. For an infant, deliver 5 back blows (slaps) followed by 5 chest thrusts repeatedly until the object is expelled or the victim becomes unresponsive.
3. For a child, perform a subdiaphragmatic abdominal thrust (Heimlich Maneuver) until the object is expelled or the victim becomes unresponsive.
4. For adults, a combination of maneuvers may be required.
 - First, subdiaphragmatic abdominal thrusts (Heimlich Maneuver) should be used in rapid sequence until the obstruction is relieved.
 - If abdominal thrusts are ineffective, chest thrusts should be used. Chest thrusts should be used primarily in morbidly obese patients and in the patients who are in the late stages of pregnancy.
5. If the victim becomes unresponsive, begin CPR immediately but look in the mouth before administering any ventilations. If a foreign-body is visible, remove it.
6. Do not perform blind finger sweeps in the mouth and posterior pharynx. This may push the object farther into the airway.
7. In unresponsive patients, Paramedic level professionals should visualize the posterior pharynx with a laryngoscope to potentially identify and remove the foreign-body using Magill forceps.
8. Document the methods used and result of these procedures in the patient care report (PCR).

Airway-iGel

Clinical Indication:

B	EMT	B
P	PARAMEDIC	P

To establish control of the patient's airway and to facilitate ventilation for the listed indications.

Indications:

When an alternative airway device is needed in the management of respiratory failure in patients.

Contraindications:

- Intact gag reflex

Equipment:

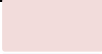
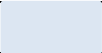





- Correctly sized iGel (see chart below)
- Bag valve mask
- Suction device
- End Tidal CO₂ and oxygen saturation monitoring devices

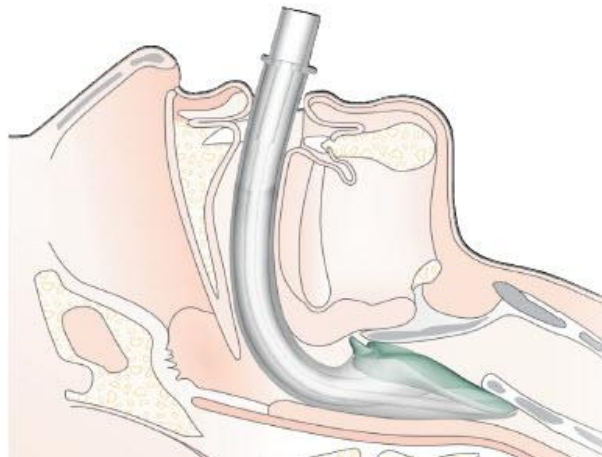
Procedure:

1. Pre-oxygenate patient with 100% Oxygen via Bag Valve Mask or spontaneous ventilation to achieve O₂ saturation of >93% if possible
2. Lubricate the posterior distal tip of the device with a thin layer of water soluble lubricant q 3. Place patient in neutral sniffing position (if no Cervical Spine/Spinal Injury suspected)
 - For patient with suspected Cervical Spine injury, perform two-person insertion technique
 - One person maintains manual in-line cervical spine stabilization while the other person proceeds with procedure
4. Pull mandible down to open mouth
5. Insert device into oral cavity with midline or a lateral technique
6. Advance the tip behind the base of the tongue with the i-gel cuff outlet facing toward the chin of the patient
 - NOTE: If necessary, the upper airway should be suctioned prior to attempted insertion
7. Without exerting excessive force, advance tube downwards and backwards along the hard palate with a continuous but gentle push until definitive resistance is felt.
 - WARNING: Do not apply excessive force on the device during insertion.
8. The incisors should be resting on the device integrated bite block.
9. Attach the BVM to the i-gel.
10. If resistance is felt while bagging the patient, gently withdraw the tube until ventilation becomes easy and free flowing (large tidal volume with minimal airway pressure).
11. Obtain End-Tidal CO₂ (waveform), auscultate breath sounds bilaterally, look for chest excursion, and check oxygen saturation
12. Secure in the midline to help maintain a good seal over the larynx.
13. Place orogastric tube in side port and advance to appropriate position. Attach to low continuous suction as directed in the applicable procedure to assist in gastric decompression

Airway-iGel Cont.

14. Ensure C-spine is still immobilized
15. If repeated attempts are made, oxygenate with 100% O₂ for 2 minutes between attempts
16. ****Follow manufacturers suggested guidelines at all times****
17. Document ETCO₂ waveform and reading continuously at time of EACH patient movement, including waveform and reading at time of transfer of care at the Emergency Department.

iGels			
Color	iGel Size	Patient Size	Patient Weight
	1	Neonate	2-5 kg
	1.5	Infant	5-12 kg
	2	Small Pediatric	10-25 kg
	2.5	Large Pediatric	25-35 kg
	3	Small Adult	30-60 kg
	4	Medium Adult	50-90 kg
	5	Large Adult	90 kg



Airway-Needle Cricothyrotomy

P PARAMEDIC P

Clinical Indications:

- Patients <12 years of age
- With obstructed airway or in whom all conventional methods of oxygenation have failed

Contraindications:

- Anytime a less invasive maneuver would allow oxygenation of the patient
- Tracheal transection

Notes/Precautions:

- Cricothyroid membrane is located by:
- Palpating the protuberant midline portion of the thyroid cartilage (“Adams apple”)
- Move the fingertip inferiorly until it rests in the soft, flat depression between the thyroid cartilage and the cricoid cartilage
- In order to minimize the risk of dislodgement:
- The individual completing the procedure should direct any/all patient movement
- BVM is to be disconnected from the ET tube adapter any patient movement
- The catheter is to be reassessed following any patient movement
- Appropriate size angiocath is generally 14-18 gauge, depending on size of the child

Procedure:

1. Position patient supine with head slightly extended unless contraindicated due to suspected cervical spine injury.
2. Prepare anterior surface of the neck with Chlorohexadine.
3. Locate the cricothyroid membrane.
4. Place thumb and index finger of non-dominant hand on either side of the tracheal cartilage to stabilize the trachea and anchor and stretch the skin slightly.
5. Connect appropriate sized angiocath to a 12 cc syringe.
6. Pierce the skin and cricothyroid membrane at a 45-degree angle, directing the catheter tip inferiorly while pulling suction on the syringe until air is aspirated freely.
7. Advance the catheter to the skin and withdraw needle.
8. Connect catheter to 3.0 mm pediatric ET tube adapter.
9. With a BVM attached to 100% oxygen begin ventilating and confirm proper placement.
10. With hub of catheter snug against the neck, tape catheter firmly in place.
 - Catheter and ET tube adapter are to be secured at all times by hand
 - Catheter should be secured with tape and benzoin to prevent slipping
11. Providers may continue to use backboards to assist

Airway-Orotracheal Intubation

Clinical Indications:

P PARAMEDIC P

- Respiratory or Cardiac Arrest
- Inadequate ventilation with Bag Valve Mask
- Impending respiratory failure:
 - Decreased level of consciousness with hypoxia unimproved by 100% oxygen, apnea, and/or respiratory rate <8
 - OR poor ventilatory effort (with hypoxia unresponsive to 100% Oxygen)
 - OR unable to maintain patent airway
- Airway obstruction

Equipment:

- Laryngoscope handle with appropriate size blade.
- Proper size endotracheal tube (ETT) plus back up ETT 0.5-1.0 mm smaller
- Water-soluble lubrication gel, (lubricate distal end of tube at cuff)
- 10cc syringe (larger syringe if low pressure cuff)
- Stylet, (insert into ET tube and do not let stylet extend beyond tip of ET tube)
- Tape or ETT securing device
- Proper size oral pharyngeal airway
- BVM
- Oxygen source
- Suction device
- Stethoscope
- Capnography
- Oxygen saturation monitor

Procedure:

Patient/equipment preparation:

- Maintain cervical alignment and immobilization, as necessary
- Attach proper blade to laryngoscope handle and check light
- Check endotracheal tube cuff
- Raise gurney so that patient's nose is at intubator's xiphoid (if possible)
- Confirm patient attached to cardiac monitor and oxygen saturation monitor
- Ready ETCO₂ detection device
- Specify personnel to:
 - apply cricoid pressure
 - maintain cervical alignment and immobilization during procedure
 - watch cardiac and oxygen saturation monitors

Continued Page 2

Airway-Orotracheal Intubation Cont.

Intubation:

- preoxygenate patient with 100% Oxygen (BVM or NRB) before intubation attempt to achieve O₂ saturation >93% for 5 minutes or 8 vital capacity breaths. Have assistant apply cricoid pressure (Sellick's maneuver) during entire procedure.
- Remove all foreign objects, such as dentures, oral pharyngeal airways, etc. and suction the patient's airway if needed. (Do not remove an esophageal located ETT if in place from prior attempt)
- Grasp laryngoscope handle in left hand.
- Grasp ET tube in right hand
- Insert the blade into the right side of the patient's mouth sweeping the tongue to the left side
- Visualize the vocal cords while avoiding any pressure on the teeth
- Insert the endotracheal tube until the cuff passes the vocal cords. (Insert far enough so that at balloon port tubing is even with lips)
- Typical depth = tube size (ID) x3 (example would be tube depth of 24 for a 8.0mm tube)
- Remove the laryngoscope blade
- Inflate the endotracheal cuff with the syringe with 5-10cc of air (low pressure cuff may require larger volume) and remove the syringe from inflation valve
- Confirm tube placement
- Ventilate with BVM and:
 - observe immediate (within 6 breaths) ETCO₂ waveform and number with capnography
 - watch for chest rise AND
 - listen to abdomen to ensure tube is not esophageal
- Then, listen for bilateral breath sounds
- Observe oxygen saturation

Note: regardless of the apparent presence of lung sounds, tube misting and chest rise, or lack of gastric sounds, if ETCO₂ does not indicate proper tube location (alveolar waveform), ETT must be removed.

- If unilateral right sided breath sounds are heard consider:
 - Right mainstem intubation
 - If present, deflate the cuff and withdraw tube 1-2cm
 - Repeat auscultation procedure as above for breath sounds
- If bowel sounds heard with bagging or ETCO₂ device does not indicate proper ETT placement, deflate cuff, remove tube and ventilate with BVM for two minutes
- If intubation attempt unsuccessful, refer to the next step in the Airway, Adult Protocol
- If successful tube placement:
 - Secure tube using an endotracheal securing device
 - Document depth of tube
 - Reassess lung sounds and patient clinical status
 - Insert oral pharyngeal airway, or use ET tube holder with built in bite block (if available)
 - Ensure c-spine is immobilized
 - Continue ventilations
 - Document ETCO₂ waveform and reading continuously at time of EACH patient movement, including waveform and reading at time of transfer of care at the emergency department.

Airway-RSI (Rapid Sequence Intubation)



Indications

- GCS <8 (decreased LOC)
- Potential for airway compromise
- Head-injured patients with airway compromise
- Status epilepticus not responding to anticonvulsants
- Patients unable to protect airway (trauma, CVA, obstruction, overdose, anaphylaxis, etc.)
- Severe Respiratory Distress (COPD, asthma, burns, etc.)
- Insufficient respirations (pulse ox. <85%, shallow respirations, cyanosis, air hunger, etc.)
- Patients with a defined salvage airway plan (BVM, supraglottic airway, or surgical airway)

Contraindications

- Known allergy to necessary medications
- Suspected epiglottitis, edema, or retropharyngeal edema
- Severe oral, mandibular, or anterior neck trauma
- Conscious patient (with stable hemodynamics) who is maintaining an impaired airway
- Age less than 2 years old
- Cricothyrotomy contraindicated (potential contraindication)

PREPERATION (T-8 minutes)

- Monitoring (continuous EKG, SPO2, Blood Pressure)
- Patent IV/IO
- Functioning Laryngoscope and BVM with high flow O2
- Endotracheal tube(s), stylet, syringe(s)
- LTA(s) and appropriate syringe(s)
- Alternative/Rescue Airway (LMA and surgical airway kit) immediately available
- All medications drawn up and labeled (including post-procedure sedation)
- Suction – turned on and functioning
- End Tidal CO2 device on
- Assess for difficult airway – LEMON

Airway-RSI (Rapid Sequence Intubation)

PREOXYGENATE

100% O₂ x5 minutes (NRB) or 8 vital capacity breaths with 100% O₂ (BVM/NRB)

PRETREATMENT (T-2 minutes)

- Evidence of head injury or stroke
- Lidocaine 1.5mg/kg IV/IO (max 100mg)
- All patients < age 12 – Atropine 0.02 mg/kg IV/IO (minimum 0.1 mg)

PARALYSIS and INDUCTION (T=0)

- Ketamine 1 mg/kg IV/IO over 1 minute. If Ketamine is contraindicated see box below in regards to Versed.
 - Versed 2.0 mg IV/IO may repeat 1x
- Succinylcholine 2 mg/kg

Use VERSED when Ketamine is relatively contraindicated. **Examples include:

- Severe Hypertension with cardiac history
- Known increased intracranial or intraocular pressure
- Pregnancy
- Consider the use of versed in a patient in status epilepticus
- Versed may be utilized for continued sedation

PLACEMENT with PROOF (T+30 seconds)

- Place LTA/ETT
- Confirm with:
 - End Tidal CO₂ Waveform
 - Auscultation
 - Physical findings
- Secure device, note position

POST-PLACEMENT MANAGEMENT (T+1 minute)

- Rocuronium 1mg/kg IV/IO
- Fentanyl 50 mcg IV/IO
- After 30 minutes re-sedate Versed 2mg IV/IO

Airway-Suctioning: Advanced

P PARAMEDIC P

Clinical Indications:

Obstruction of the airway (secondary to secretions, blood, or any other substance) in a patient currently being assisted with an airway adjunct such as a LTA/LMA, endotracheal tube, tracheostomy tube, or a cricothyrotomy tube.

Procedure:

1. Ensure suction device is in proper working order with suction tip in place
2. Preoxygenate the patient.
3. Attach suction catheter to suction device, keeping sterile plastic covering over catheter.
4. For all devices, use the suprasternal notch as the end of the airway. 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 (i.e. BVM) from the airway.
6. With the thumb port of the catheter uncovered, insert the catheter through the airway device.
7. Once the desired depth (measured in #4 above) has been reached, occlude the thumb port and remove the suction catheter slowly.
8. Small volume (<10ml) of normal saline lavage may be used as needed.
9. Reattach ventilation device (i.e. BVM) and ventilate or assist the patient.
10. Record the time and result of the suctioning procedure in the patient care report (PCR)

Airway-Suctioning: Basic

Clinical Indications:

B	EMT	B
P	PARAMEDIC	P

Obstruction of the airway (secondary to secretions, blood, or any other substance) in a patient who cannot maintain or keep the airway clear.

Procedure:

- 1) Ensure suction device is in proper working order with suction tip in place.
- 2) Preoxygenate the patient.
- 3) Explain the procedure to the patient if they are coherent.
- 4) Examine the oropharynx and remove any potential foreign bodies or material that may occlude the airway if dislodged by the suction device.
- 5) If applicable, remove ventilation devices (i.e. BVM) from the airway.
- 6) Use the suction device to remove any secretions, blood, or other substances
The alert patient may assist with this procedure.
- 7) Reattach ventilation device (i.e. BVM) and ventilate or assist the patient.
- 8) Record the time and result of the suctioning procedure in the patient care report (PCR)

Airway-Surgical Cricothyrotomy

P PARAMEDIC P

Clinical Indications:

- Failed Airway Protocol
- Management of an airway when standard airway procedures cannot be performed or have failed in a patient > 12 years old.

Procedure:

1. Have suction and supplies available and ready.
2. Locate the cricothyroid membrane utilizing anatomical landmarks.
3. Prep the area with an antiseptic swab (Betadine).
4. 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.
5. Make a horizontal stabbing incision approx. 1-inch through the membrane.
6. Using (skin hook, tracheal hook, or gloved finger) to maintain surgical opening, insert the cuffed tube into the trachea. (#6 endotracheal tube is usually sufficient).
7. Inflate the cuff with 5-10cc of air and ventilate the patient while manually stabilizing the tube.
8. All of the standard assessment techniques for insuring tube placement should be performed (auscultation, chest rise & fall, end-tidal CO2 detector, etc.) Esophageal bulb devices are not accurate with this procedure.
9. Secure the tube.
10. Apply end tidal carbon dioxide monitor (Capnography) and record readings on scene, en route to the hospital, and at the hospital.

Document ETT size, time, result (success), and placement location by the centimeter marks either at the patient's teeth or lips on/with the patient care report (PCR). Document all devices used to confirm initial tube placement and after each movement of the patient.

It is required that the airway be monitored continuously through waveform Capnography and Pulse Oximetry.

Airway-Video Laryngoscopy

Clinical Indications:

P PARAMEDIC P

- Respiratory or Cardiac Arrest
- Inadequate ventilation with Bag Valve Mask
- Impending respiratory failure:
 - Decreased level of consciousness with hypoxia unimproved by 100% oxygen, apnea, and/or respiratory rate <8
 - OR poor ventilatory effort (with hypoxia unresponsive to 100% Oxygen)
 - OR unable to maintain patent airway
- Airway obstruction
- Rapid Sequence Intubation (RSI)

Equipment:

- Mc Grath ® Video Assisted Laryngoscope (VAL) with appropriate size blade.
- Proper size endotracheal tube (ETT) and back up ETT 0.5-1.0 mm smaller
- Water-soluble lubrication gel, (lubricate distal end of tube at cuff)
- 10cc syringe (larger syringe if low pressure cuff)
- Stylet if compatible with VAL device (insert into ET tube and do not let stylet extend beyond tip of ET tube)
- Tape or ETT securing device
- Proper size oral pharyngeal airway
- BVM
- Oxygen source
- Suction device
- Stethoscope
- Capnography
- Oxygen saturation monitor

Procedure:

Utilize Mc Grath ® Video Assisted Laryngoscope (VAL) with appropriate size blade as primary laryngoscope and have standard issued handle and blades for secondary/ backup. Follow Airway-Orotracheal Procedure.

Blood Glucose Analysis

Clinical Indications:

B	EMT	B
P	PARAMEDIC	P

Patients with suspected hypoglycemia (diabetic emergencies, altered/change in mental status, bizarre behavior, etc.).

Procedure:

1. Gather and prepare equipment
2. Blood samples for performing blood glucose analysis should be obtained simultaneously with intravenous access when possible
3. Place correct amount of blood on test strip per manufacturer's instructions
4. Allow glucometer to analyze sample per manufacturer's instructions
5. Document the glucometer reading and treat the patient as indicated by the appropriate protocol
6. If reading appears incorrect, redraw and repeat analysis
7. Repeat glucose analysis as indicated for reassessment after treatment and as per protocol.

Carboxyhemoglobin SPCO Monitoring

B	EMT	B
P	PARAMEDIC	P

Clinical Indications:

Persons with suspected or known exposure to carbon monoxide

Procedure:

1. Apply probe to patient's middle finger or any other digit as recommended by the manufacturer. If near strobe lights, cover the finger to avoid interference and/or move away from lights if possible.
2. Where the manufacturer provides a light shield it should be used.
3. Allow machine to register percent circulating carboxyhemoglobin values
4. Verify pulse rate on machine with actual palpable pulse of the patient.
5. Record levels in patient care report or on the scene rehabilitation form.
 - If CO <5%, assess for other possible illness or injury
 - If CO >5% to <15% and symptomatic from Carbon Monoxide – treat per Carbon Monoxide Exposure Protocol

Signs and Symptoms - Altered mental status / dizziness, headache, nausea/vomiting, chest pain/respiratory distress, neurological impairments, vision problems/reddened eyes, tachycardia/tachypnea, arrhythmias, seizures, coma

- If CO >15% = Treat per Overdose and Poisoning: Carbon Monoxide Protocol and Transport.
6. Monitor critical patients continuously with pulse ox and SpCO until arrival at the hospital.
 7. Document percent of carboxyhemoglobin values every time vital signs are recorded during therapy for exposed patients.
 8. 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 relevant protocol for guidance.
 9. The pulse oximeter reading should never be used to withhold Oxygen from a patient in respiratory distress
 10. Factors which may reduce the reliability of the reading include:
 - Poor peripheral circulation (blood volume, hypotension, hypothermia)
 - Excessive external lighting, particularly strobe/flashing lights
 - Excessive 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

Cardioversion

P PARAMEDIC P

Clinical Indications:

- Unstable patient with tachydysrhythmia (rapid atrial fibrillation, supraventricular tachycardia, ventricular tachycardia)
- Patient is not pulseless (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 medication or sedatives per protocol.
- 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 be 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. Follow the procedure for Defibrillation-Manual
- 9) If the patient’s condition is unchanged, repeat steps 2-8 above, using escalating energy settings per protocol.
- 10) Repeat per protocol until maximum setting or until efforts succeed.
- 11) Note procedure, response, and times in the PCR.

Cardio Cerebral Resuscitation

B	EMT	B
P	PARAMEDIC	P

Clinical Indications:

- Age > 18 years of age (CCR causes worse outcomes in the pediatric population)
- Suspected cardiac cause of arrest (not respiratory-OD, drowning, etc.)

It occurs with Ventricular Fibrillation or Pulseless Ventricular Tachycardia, with PEA and with Asystole. You must assume there is no blood perfusing the brain and heart...which is bad for survival. Your patient needs both a pump (chest compressions) and diastolic pressure support (to perfuse the coronary arteries). Time spend doing other things (such as prolonged airway management) at the expense of not delivering pump support is not good for the patient. Determine as close as possible when the patient collapsed, and document this. Also look for any signs of patient gasping prior to and/or during resuscitation, and document this. If gasping is present, note pupil reaction and document also. It is also important to remember that not all Pulseless patients are the result of cardiac related events. Other mechanisms such as trauma, drowning, hypothermia, choking and other respiratory problems, etc. must be considered as a possible cause for the arrest and should be addressed with immediate, appropriate airway intervention.

Key points in the Cardio Cerebral Resuscitation (CCR) approach:

- Survival is determined by a functional recovery of two organs: the heart and the brain
 - Without adequate blood flow neither organ will survive.
 - that makes properly performed chest compressions (CC) the single most important determinant of survival.
 - Anything that interrupts or otherwise decreases the quality of CC contributes to the death of your patient.
 - This concept – continuous maximal quality CC – must become the foundation of all you think and do during resuscitation.
 - All patients are treated the same during the first two minutes of the code.
 - They get uninterrupted continuous CC (CCC) while other interventions are performed.
 - The cardiac rhythm is irrelevant during this period.
- The cardiac rhythm determines subsequent management.
 - It is analyzed (using manual interpretation) briefly AFTER each set of 200 CCC
 - It is either shockable or non-shockable - don't make it more complicated than that.
- CCCs are to be resumed immediately following a rhythm assessment + shock.
 - The rhythm observed after a shock is not – meaning NOT – to be treated.
 - Otherwise deadly pauses in CCC will be introduced in an attempt to gather information that is irrelevant to survival!
- The initial rhythm (after 200 CCC) determines subsequent treatments:
 - When to initiate invasive airway insertion and positive pressure ventilation.
 - Need for anti-arrhythmic medications
 - How long to remain on scene.

Cardio Cerebral Resuscitation Cont.

- Success depends on:
 - Leadership
 - Delegation of a limited set of specific tasks
 - Timely focused completion of these specific tasks by rescuers
- Interventions that are critical to survival **MUST** whenever possible be performed by two persons solely dedicated to that task.
 - One to perform it and a second person to assure quality performance.
 - This applies especially to chest compressions and it is also important in the management of an invasive airway + ventilations.

Code Commander:

- Someone must assume the role of code commander. This person is responsible for delegating tasks, is the only person interpreting the rhythm, and is responsible for monitoring/critiquing the overall performance of the team.
- Other members must work as a team and take direction from the code commander. They must focus on their assigned tasks and let the code commander manage the overall response (in other words, keep their noses out of other rescuers business)

Critical First Tasks: (delegated and performed in first two minutes if at all possible)

- **MCMAID – a prioritized sequence consisting of:**
 - **M** = Metronome (100/min)
 - **C** = Chest compressions (focus on rate, recoil and depth)
 - **M** = Monitor (turn on in defib mode, pads on, joules set at maximum)
 - **A** = Airway (OPA, ensure patency, NRB @ 15/lpm)
 - **I** = Intravenous or Intraosseous access
 - **D** = Drugs (Epi, Vasopressin, Amiodarone) (be ready to administer when needed and monitor timing for repeat doses)

Chest Compressions: MCMAID

- Metronome should be turned on to assure a rate of 100/minute.
- CCC should be started ASAP after arrival.
- A two-person task if at all possible
 - Switch compressors rapidly/frequently (every 1-2 minutes)
 - The non-compressor continuously monitors the quality of CCC: rate, depth and recoil
- CCC should be continuous = not interrupted
 - The only valid reasons for interrupting compressions are for analyzing the rhythm and shocking.
 - All other requests to pause CCC must be cleared by the code commander, and the reason and duration documented in the run report.

Cont. next page

Cardio Cerebral Resuscitation Cont.

Monitor/Defibrillator: MCMAID

- Initial:
 - Turn unit on when compressions are started and set mode to defib.
 - Ensure joules are set to maximum allowed
 - Place pads in sternum/apex position without interruption of chest compressions.
- Defibrillation Process:
 - Charge defibrillator during the last 10 seconds of 200 CCC.
 - Ensure all rescuers will be clear if a shock is needed.
 - Pause a few seconds only for analysis – determine if it is shockable or not.
 - If indicated, immediately deliver a single (not stacked) shock at maximum joules.
 - If no shock is indicated, dump the charge by either decreasing the energy level and immediately returning back to maximum energy setting (200J or 360J), OR switching the mode to monitor and then quickly back to defib mode.
 - Immediately resume CCC after analysis + shock.
 - The pause from stopping CCC to resumption of CCC should be less than 5 seconds.

Airway: MCMAID

- Initially:
 - Insert OPA, apply NRB @15 lpm (look for misting), ensure patency (listen for exhausted air with compressions. If unsure, give one single breath with BVM, looking for chest rise and fall for compliance).
- When to insert invasive airway depends on the initial rhythm:
 - If non-shockable, initiate immediately after first rhythm analysis.
 - If shockable – ONLY after three cycles (2 min. of CCC + analysis + shock). NOT earlier, even if second rhythm is non-shockable.
- Once the invasive airway is in place, the airway persons sole task is to perform/monitor that task and no other.
- Invasive airway monitoring includes attention to:
 - Proper placement
 - Apply Capnography and verify waveform/presence of ETCO₂.
 - Avoidance of any interruption of CCC
 - Ventilation rate of 6 per minute. Each breath must be timed – aim for 10 seconds between each breath. Excessive ventilation rates are deadly!
 - Volume should be ~500cc.
 - Delivery of breath should be over one second.
- Use an LTA if placing an endotracheal tube is met with any problems or delays.
- If the initial rhythm is shockable, seriously consider using the LTA instead of an ETT because these patients cannot tolerate even brief periods of less than optimal CCC.
- Assure that oxygen is attached.

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Cardio Cerebral Resuscitation Cont.

Intravenous/Intraosseous access: MCMAID

- Consider intraosseous route whenever there are any delays in IV insertion.
- Consider spiking a bag en route and having it ready on arrival.

Drugs: MCMAID

- The individual assigned to the Drug "Task":
 - Initially ensures medications are available and ready to administer.
 - Is responsible for:
 - The rapid administration when indicated.
 - Re-dosing at appropriate intervals.
 - Detecting when V-Fib is persistent or recurrent, and therefore indicating the use of Amiodarone.
 - Accurate timing of when meds are to be given (to the second – using elapsed time since defibrillator was turned on.)
- Vasopressors should be given ASAP after analysis + shock, so their effect will be seen after the next 200 chest compressions.
- **Epinephrine first!**
 - **The one exception is the patient who you suspect may get return of spontaneous circulation with the first shock. Such patients may include those with short down times or those who have had excellent chest compression generated perfusion. A clue to this is the presence of regular agonal respirations (gaspings). In these patients consider giving Vasopressin initially, and reserving Epinephrine until the Code Commander observes persistent pulseless V-fib/Tach after the first shock – or until another 200 CCC cycle has been completed.
 - Epi dose is 1mg IV/IO. Endotracheal administration is not to be utilized – start an IO instead
 - If repeating doses, administer every other cycle of 200 compressions. (equivalent to every 4 min)
- **Amiodarone** is administered for persistent or recurrent pulseless V-fib/Tach. This should be administered immediately during the next 200 chest compression cycle if a second shock was indicated and delivered at the time of analysis. The Code Commander may visualize return of fibrillation during the 200 CCC and as such may order Amiodarone earlier since it has recurred.
 - Dose is 300mg IV/IO
 - Repeat doses are 150mg IV/IO
- **Additional Treatments to consider:**
 - Consider possible renal failure (hyperkalemia) or suspected Tricyclic antidepressant overdose. If suspected, administer **Sodium Bicarbonate** 1mEq/Kg. If renal failure is suspected, also administer **Calcium Chloride** 1g IVP.
 - If rhythm is persistent shockable V-fib or Pulseless V-Tach, consider the possible use of **Magnesium Sulfate** 2g IVP.

Cont. next page

Cardio Cerebral Resuscitation Cont.

- **Additional Treatments to consider (continued):**

- If the patient is successfully converted from V-Fib/Pulseless V-tach to a perfusing sustainable rhythm, consider post resuscitation Amiodarone boluses.
 - **Amiodarone bolus: 150mg**
- If rhythm is a non-shockable Asystole or PEA, seek out and treat any possible contributing factors.
- Also consider external pacing: for PEA. Apply the pads in (or move them to) the anterior/posterior position, attach the 4-Lead cable, and set the pacer at the maximum milliamps at a rate of 80/min. Do **NOT** interrupt compressions while attempting pacing.

When to stop CCC:

- If the patient shows signs of cerebral activity and the rhythm is non-shockable.
- Use end-tidal CO₂ as a marker for possible ROSC. Look for a dramatic increase.
- Pulse checks are **ONLY** performed during brief rhythm analysis with location of carotid pulse ascertained during chest compressions.
 - This may be modified by the Code Commander if cerebral function signs of life appear
 - The Code Commander is the only individual who can order a pulse check other than that done during rhythm analysis.
 - The Code Commander must ensure the pulse checker is clear if a shock is indicated.

When to move the patient:

- Remember that moving the patient inevitably results in compromised quality of compressions. If crew safety is compromised or inadequate resuscitation space is available, patient should be quickly moved to a safe or larger area. This should be done initially and not after resuscitation efforts have begun.
- Initially shockable patients will live or die in the field!
 - Move is allowed after 3 cycles are completed and a non-shockable rhythm is identified at the 3rd analysis
 - If 3rd analysis is still shockable, continue resuscitation at the scene until a non-shockable rhythm is encountered.
- Initially non-shockable rhythms
 - Medical Control must make this determination, but these patients may deserve at least 3 cycles of treatment with optimal quality compressions.

Avoid Excessive Pauses:

- Rhythm analysis – **ONLY** the Code Commander pays attention to the rhythm (not everyone)
- Resume CCC immediately after analysis + shock. The Code Commander must assure this happens
- Charging – perform during last 10 seconds of 200 chest compressions
- During Intubation – It is responsibility of both the Code Commander and the second airway person to avoid pauses in CCC. This **MUST** be able to be performed without any interruption of compressions! Consider using the LTA if unable to intubate effectively.
- Pulse Checks – only performed during the rhythm analysis pause; must be correlated with rhythm

Chest Decompression

P PARAMEDIC P

Clinical Indications:

Tension pneumothorax should be suspected in patients who exhibit:

- Severe respiratory distress with hypoxia
- Unilateral decreased or absent lung sounds
- Evidence of hemodynamic compromise (Shock, Hypotension, Tachycardia, Altered Mental Status)
- Tracheal deviation away from the collapsed lung field (less reliable than the above)

Pleural decompression for tension pneumothorax should only be performed when at least 3 of the above criteria are present.

Equipment:

- 14 gauge 2 inch – 2.5 inch over the needle catheter
- Tape
- Sterile gauze pads
- Antiseptic swabs
- Occlusive dressing

Procedure:

- Locate decompression site
 - Identify the 2nd intercostal space in the mid-clavicular line on the same side as the pneumothorax
- Prepare the site with an antiseptic swab:
 - Firmly introduce catheter immediately above distal rib of selected site.
- Insert the catheter into the thorax until air exits
- Advance catheter and remove needle.
- Secure the catheter taking care not to allow it to kink
- Reassess lung sounds and patient condition
- Dress area with occlusive dressing then cover with sterile gauze pad
- Assess breath sounds and respiratory status.



Childbirth

B	EMT	B
P	PARAMEDIC	P

Clinical Indications:

Active labor with perineal crowning

- Apply personal protective equipment and prepare for childbirth
- Allow head to deliver passively and control delivery by placing palm of hand over occiput.
- Protect perineum with pressure from other hand
- If amniotic sac is still intact, gently pinch and twist to manually rupture.
- Note presence or absence of meconium.
- If meconium is present, see Complication of Childbirth
- Once the head is delivered and passively turns to one side, suction mouth and nose
- If nuchal cord present, gently lift cord from around infant's neck
- Gently apply downward pressure to infant to facilitate delivery of upper shoulder
- Once upper shoulder has delivered, apply gentle upward pressure to deliver lower shoulder
- Grasp the infant as it emerges from birth canal
- Keep infant at level of perineum until cord stops pulsating and cord is clamped.

Care of the Newborn:

- Double clamp cord 10-12 inches from abdomen, once it stops pulsating cut cord.
- Suction mouth and nose
- Dry and warm the neonate. Wrap in blankets
- Stimulate infant by rubbing back or soles of feet
- Refer to Neonatal Resuscitation Protocol if infant is hypoxic, not breathing properly or heart rate <100.

Obtain APGAR Score:

Sign	0	1	2
Appearance	Blue, Pale	Extremities Blue	Pink Throughout
Pulse	0	<100/ minute	>100/ minute
Grimace	None	Movement	Cry
Activity	Limp	Some Flexion	Active Flexion
Respirations	0	Weak Cry	Strong Cry

Post-Partum Care:

- Allow placenta to deliver spontaneously while transporting patient to hospital. Do not pull on cord.
- Apply direct pressure to any actively bleeding areas on the perineum
- If blood loss significant or vaginal bleeding continues
 - Fluid bolus as needed
 - Massage top of uterus
 - Allow newborn to nurse / breast feed if stable

Childbirth Complications

Shoulder Dystocia:

- Place mother in knee-chest position and reattempt delivery
- If delivery fails, support child's airway, provide supplemental oxygen.

B	EMT	B
P	PARAMEDIC	P

Breech Birth:

- Do not attempt to pull infant by trunk or legs.
- Place mother in knee-chest position
- If head does not deliver, push baby's mouth and nose away from vaginal wall with two gloved fingers.
- Provide supplemental oxygen to infant.

Prolapsed Cord:

- Place mother in knee-chest position
- Do not push cord back into birth canal
- Insert gloved fingers into birth canal and keep pressure off prolapsed cord
- Cover exposed cord with warm moist dressing

Meconium-Stained Amniotic Fluid:

- Suction mouth and nose after delivery
- If baby is vigorous (normal respiratory effort, muscle tone, and heart rate >100), provide supportive care

P	PARAMEDIC	P
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Meconium-Stained Amniotic Fluid:

- *Suction mouth and nose after delivery*
- *If baby is vigorous (normal respiratory effort, muscle tone, and heart rate >100), provide supportive care*
- *If baby is not vigorous (depressed respirations, poor muscle tone, or heart rate <100), perform endotracheal intubation and suction trachea while removing ET tube with meconium aspirator attachment, may repeat one additional time.*
- *Support ventilation and re-intubate with a clean tube*

CPR-Cardiopulmonary Resuscitation

B	EMT	B
P	PARAMEDIC	P

Clinical Indications:

- Pediatric Arrest
- Suspected non-cardiac arrest/respiratory arrest in adult patients (i.e. overdose, drowning)

Procedure:

- 1) Assess the patient's level of responsiveness (signs of life)
- 2) If no response, open the patient's airway with the head-tilt, chin-lift. Look, listen and feel for respiratory effort. If the patient may have sustained c-spine trauma, use the modified jaw thrust while maintaining immobilization of the c-spine. For infants, positioning the head in the sniffing position is the most effective method for opening the airway.
- 3) If patient is an adult, go to step 4. If no respiratory effort in the pediatric patient, give two ventilations. If air moves successfully, go to step 4. If air movement fails, proceed per AHA obstructed airway guidelines.
- 4) Check for pulse (carotid for adults and older children, brachial or femoral for infants) for at least 10 seconds. If no pulse, begin chest compressions as directed below.

Age	Location	Depth	Rate
Infant	Over sternum, (between inter-mammary line), 2-3 fingers	1.5 inches (1/3 the anterior-posterior chest dimension)	100-120/ minute
Child	Over sternum, between nipples, heel of one (1) hand	2 inches (1/3 the anterior-posterior chest dimension)	At least 100/minute
Adult	Over sternum, just above the xyphoid process, hands with interlocked fingers	At least 2 inches (1/3 the anterior-posterior chest dimension)	At least 100/minute

- 5) Go to Cardiac Arrest protocol
- 6) Chest compressions should be provided in an uninterrupted manner. Only brief interruptions are allowed for rhythm analysis and defibrillation
- 7) Document the time and procedure in the PCR.

CPR-Mechanical Device LUCAS

B	EMT	B
P	PARAMEDIC	P

Clinical Indications:

This procedure describes the appropriate methods to apply, operate, and discontinue the LUCAS device in patients > 12 years of age requiring mechanical chest compression related to cardiac arrest. The Lucas may be used in adult patients where manual compressions would otherwise be used.

Contraindications

1. Pediatrics
2. Patients who do not fit within the device.
 - a. Patients who are too large and LUCAS device alarms
 - b. Patients who are too small and with whom you cannot pull the pressure pad down to touch the sternum and LUCAS device alarms

Procedure:

1. All therapies related to the management of cardiopulmonary arrest should be continued as currently defined
2. Initiate resuscitative measures following guidelines
 - a. Early defibrillation should be considered and provided as indicated based on clinical presentation.
 - b. Manual chest compressions should be initiated immediately while the LUCAS device is being placed on the patient.
 - c. Limit interruptions in chest compressions.
 - d. Do not delay manual CPR for the LUCAS. Continue manual CPR until the device can be placed.
1. While resuscitative measures are initiated, the LUCAS device should be removed from its carrying device and placed on the patient in the following manner. The backplate should be centered on the nipple line and the top of the backplate should be located just below the patient's armpits



In cases for which the patient is already on the stretcher, place the backplate underneath the thorax. This can be accomplished by log-rolling the patient or raising the torso (Placement should occur during a scheduled discontinuation of compressions).

Defibrillation-Automated

B	EMT	B
P	PARAMEDIC	P

Clinical Indications:

- Patients in cardiac arrest (pulseless, non-breathing)
- Age <8 years, use pediatric pads if available

Contraindications:

Pediatric patients whose body size is such that the pads cannot be placed without touching one another.

Procedure:

- 1) If multiple rescuers available, one rescuer should provide uninterrupted chest compression while the AED is being prepared for use.
- 2) Apply defibrillator pads per manufacturer recommendations. Use alternate placement when implanted devices (pacemakers, AICD's) occupy preferred pad positions.
- 3) Remove any medication patches on the chest and wipe off any residue
- 4) If necessary, connect defibrillator leads: per manufacturer recommendations.
- 5) Activate AED for analysis of rhythm
- 6) Stop chest compressions and clear the patient for rhythm analysis. Keep interruption in chest compressions as brief as possible
- 7) Defibrillate if appropriate by depressing the "shock" button. Assertively state "CLEAR" and visualize that no one, including yourself, is in contact with the patient prior to defibrillation. The sequence of defibrillation charges is preprogrammed for monophasic defibrillators. Biphasic defibrillators will determine the correct joules accordingly.
- 8) Begin CPR/CCR immediately after the delivery of the shock beginning with chest compressions.
- 9) After 2 minutes of CPR/CCR, analyze rhythm and defibrillate if indicated. Repeat this step every 2 minutes.
- 10) If "no shock advised" appears, perform CPR/CCR for two minutes and then reanalyze.
- 11) Transport and continue treatment as indicated.
- 12) Keep interruption of compressions as brief as possible. Adequate CPR/CCR is a key to successful resuscitation.

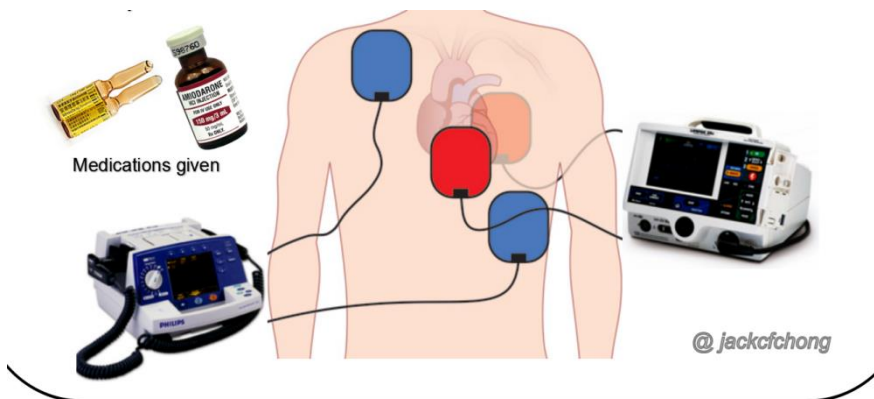
If pulse returns: See Post-Resuscitation Protocol

Defibrillation- Double Sequential

P PARAMEDIC P

Clinical Indications:

Any patient who has persisted in ventricular fibrillation/tachycardia, without even transient interruption of fibrillation, as per the persistent VF/VT protocol. Refractory ventricular fibrillation or pulseless ventricular tachycardia where ≥ 3 shocks delivered. At least one shock was delivered using different pads applied so as to produce a different current vector than the first set.



Procedure:

2. Ensure ongoing high quality CPR that is interrupted only when absolutely necessary.
 - Consider alternate pad placement prior to Dual or Double Defibrillation
 - Maximize pressure on pads with hands when defibrillating.
3. Prepare sites for second pad set attachment and apply defibrillation pads.
 - Pads: First defibrillator pads preferred in AP position, with anterior pad just to patient's left of sternum (red pads in diagram)
 - Pads: Second defibrillator pads in AL position, with anterior pad to patient's right of sternum and lateral pad at the patients left anterior axillary line (blue pads in diagram)
 - Ensure pads are not in contact with one another. For patients with implanted pacers/defibrillators: Avoid placing paddles or pads directly above device.
3. Set the appropriate energy level and assure controls for both defibrillator / monitors are accessible to provider performing defibrillation.
4. Follow procedure outlined in the VF/VT protocol. If refractory or persistent VF/VT continues: *Charge the defibrillators to the selected energy level; Continue chest compressions while the defibrillator is charging.
5. When both monitor / defibrillators have reached selected energy setting: * Hold Compressions, assertively state, "CLEAR" and visualize that no one, including yourself, is in contact with the patient. Push both defibrillator shock buttons sequentially.
*****ONE PERSON SHOULD BE PUSHING BOTH SHOCK BUTTONS SEQUENTIALLY*****
6. Immediately resume chest compressions and ventilations for 2 minutes. After 2 minutes of CPR, analyze rhythm and check for pulse only if appropriate for rhythm.
7. Repeat the procedure every two minutes as indicated by patient response and ECG rhythm, as per VF/VT protocol.
8. Keep interruption of CPR compressions as brief as possible. Adequate CPR is a key to successful resuscitation.

Defibrillation-Manual

P PARAMEDIC P

Clinical Indications:

Cardiac arrest with ventricular fibrillation or pulseless ventricular tachycardia

Procedure:

- 1) Ensure chest compressions are adequate and interrupted only when necessary
- 2) Clinically confirm the diagnosis of cardiac arrest and identify the need for defibrillation
- 3) Apply hands-free pads to the patient's chest in the proper position
- 4) Charge the defibrillator to the maximum energy level. Continue chest compressions while the defibrillator is charging.
- 5) Pause compressions, assertively state, "CLEAR" and visualize that no one, including yourself, is in contact with the patient.
- 6) Deliver the shock by depressing the shock button for hands-free operation.
- 7) Immediately resume chest compressions and ventilations for 2 minutes. After 2 minutes of CPR/CCR, analyze rhythm and check for pulse only if organized rhythm.
- 8) Repeat the procedure every two minutes as indicated by patient response and EKG rhythm.
- 9) Keep interruption of compressions as brief as possible. Adequate compressions are the key to successful resuscitation.

If pulse returns: See Post-Resuscitation Protocol

External Cardiac Pacing

P PARAMEDIC P

Clinical Indications:

- Monitored heart rate less than 60 per minute with signs and symptoms of inadequate cerebral or cardiac perfusion such as:
 - Severe chest pain
 - Hypotension
 - Pulmonary edema
 - ALOC, disorientation, confusion, etc.
- PEA, where the underlying rhythm is bradycardic and reversible causes have been treated

Procedure:

- 1) Attach standard four-lead monitor
- 2) Apply defibrillation/pacing pads to chest and back:
 - One pad to left mid chest next to sternum, one pad to left mid posterior back next to spine
- 3) Set pacing option to 50 mA
- 4) Adjust heart rate to 100 BPM for an adult, 100 BPM for pediatric patients
- 5) Note pacer spikes on EKG screen
- 6) Slowly increase output of 10 mA until capture of electrical rhythm on the monitor
- 7) If unable to capture while at maximum current output, stop pacing immediately
- 8) If capture observed on monitor, check for corresponding pulse and assess vital signs
- 9) Mechanical capture occurs when paced electrical spikes on the monitor correspond with palpable pulse
- 10) Consider the use of sedation and analgesia if patient is uncomfortable, per protocol
- 11) Document the dysrhythmia and the response to external pacing with EKG strips in the PCR.

Injections-Subcutaneous and Intramuscular

B	EMT	B
P	PARAMEDIC	P

Clinical Indications:

When medication administration is necessary and the medication must be given via the SQ (not auto-injector) or IM route or as an alternative route in selected medications.

Procedure:

1. Receive and confirm medication order or perform according to standing orders.
2. Prepare equipment and medication expelling air from the syringe.
3. Explain the procedure to the patient and reconfirm patient allergies.
4. The most common site for subcutaneous injection is the arm.
 - Injection volume should not exceed 1 cc.
5. The possible injection sites for intramuscular injections include the arm, buttock and thigh.
 - Injection volume should not exceed 1 cc for the arm
 - Injection volume should not exceed 2 cc in the thigh or buttock.
6. The thigh should be used for injections in pediatric patients and injection volume should not exceed 1 cc.
7. Expose the selected area and cleanse the injection site with alcohol.
8. Insert the needle into the skin with a smooth, steady motion

SQ: 45-degree angle

Skin Pinched

IM: 90-degree angle

Skin flattened

9. Aspirate for blood
10. Inject the medication.
11. Withdraw the needle quickly and dispose of properly without recapping.
12. Apply pressure to the site.
13. Monitor the patient for the desired therapeutic effects as well as any possible side effects.
14. Document the medication, dose, route, and time on/with the patient care report (PCR).

MAD-Mucosal Atomizer Device

P PARAMEDIC P

Purpose:

Administration of medication via a non-invasive route

Clinical Indications:

- Altered mental status, presumed or possible opiate overdose
- Seizures
- Pain management

Contraindications:

DO NOT USE on patient if:

- Severe nasal/facial trauma
- Active nasal bleeding or discharge

Procedure for medication administration via the MAD®:

- 1) Determine appropriate dose of medication per protocol
- 2) Draw medication into syringe and dispose of the sharps (add an additional 0.1 ml of medication due to dead space), do not administer more than 1 ml per nostril.
- 3) Attach Mucosal Atomizer Device (MAD) to syringe
- 4) With one hand, control the patient's head
- 5) Gently introduce MAD into nare, stop when resistance is met.
- 6) Aim slightly upwards and toward the ear on the same side.
- 7) Briskly compress the syringe to administer one-half of the medication, repeat the procedure with the remaining medication on the other nare.
- 8) Document the results in the PCR.

Pulse Oximetry

B	EMT	B
P	PARAMEDIC	P

Clinical Indications:

Patients with suspected hypoxemia, altered level of consciousness respiratory issues, or as specified in protocol.

Procedure:

- 1) Apply probe to patient's finger, toe or ear or 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 PCR
- 4) Verify pulse rate on machine or with actual manual pulse check 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 93% 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.
- 10) Factors which may reduce the reliability of the pulse oximetry reading include:
 - Poor peripheral circulation (blood volume, hypotension, hypothermia)
 - Excessive pulse oximeter sensor motion
 - Fingernail polish (may be removed with acetone pad)
 - Carbon monoxide bound to hemoglobin
 - Irregular heart rhythms (atrial fibrillation, SVT, etc.)
 - Jaundice
 - Placement of BP cuff on same extremity as pulse ox probe

Spinal Protection (Backboard Reduction)

B	EMT	B
P	PARAMEDIC	P

Indications:

Long spine boards (LSB) have both risks and benefits for patients and have not been shown to improve outcomes. The best use of the LSB may be for extricating the unconscious patient, or providing a firm surface for compressions. However, several devices may be appropriate for patient extrication and movement, including the scoop stretcher and soft body splints. Utilization of the LSB should occur in consideration of the individual patient's benefit vs. risk.

Whether or not a LSB is utilized, spinal precautions are **STILL VERY IMPORTANT** in patients at risk for spinal injury. Adequate spinal precautions may be achieved by placement of a hard cervical collar and ensuring that the patient is secured tightly to the stretcher, ensuring minimal movement and patient transfers, and manual in-line stabilization during any transfers.

Procedure:

- In a patient with a potential spinal injury, if the following elements can be confirmed, cervical spinal immobilization is **NOT** indicated.
 - The patient is > 5 and < 65 years old.
 - The patient is conscious, alert, and able to fully cooperate with examination.
 - The patient is not intoxicated. (No alcohol, drugs, etc.)
 - The patient does not have a distracting injury².
 - The patient has no neurologic deficits. (Transient or sustained.)
 - The patient has no midline spinal tenderness, deformity, or pain with ranging.
 - There is no other reason to suspect a cervical spinal injury.
- Mechanisms suggestive of a potential spinal injury include, but are not limited to:
 - Fall from any height with evidence of striking head.
 - Fall from a height > 2X patient's height.
 - Blunt trauma.
 - MVC with > 30mph velocity differential.
 - Any trauma where patient was thrown (Auto vs. pedestrian, explosion, etc.)
 - Lightning or high voltage electrical injury.
 - Axial loading injury (Swimming, diving, etc.)
- Distracting injury:
 - Any pain sufficient to interfere with the patient's ability to cooperate with assessment, including both medical and traumatic etiologies.

WHEN IN DOUBT ALWAYS IMMOBILIZE!!

Spinal Immobilization-Football Players

B	EMT	B
P	PARAMEDIC	P

EMS providers must use extreme caution when evaluating and treating an injured football player, especially when the extent of the injury remains unknown. Suspect any unconscious football player to have an accompanying spinal injury until proven otherwise. If the football player isn't breathing or the possibility of respiratory arrest exists, it's essential that certified athletic trainers and EMS providers work quickly and effectively to remove the face mask and administer care. In most situations, the helmet **should not** be removed in the field. Proper management of head and neck injuries includes leaving the helmet and shoulder pads in place whenever possible, removing only the face mask from the helmet and developing a plan to manage head-and-neck injured football players using well-trained sports medicine and EMS providers.

Guidelines and Recommendations:

The following guidelines and recommendations were developed by the Inter-Association Task Force for the Appropriate Care of the Spine-Injured Athlete:

- General Guidelines for Care Prior to Arrival of EMS
 - The Emergency Medical Services system should be activated.
 - Any athlete suspected of having a spinal injury should not be moved and should be managed as though a spinal injury exists.
 - The athlete's airway, breathing and circulation, neurological status and level of consciousness should be assessed.
 - The athlete should NOT be moved unless absolutely essential to maintain airway, breathing and circulation
 - If the athlete must be moved to maintain airway, breathing and circulation, the athlete should be placed in a supine position while maintaining spinal immobilization
 - When moving a suspected spine injured athlete, the head and trunk should be moved as a unit. One accepted technique is to manually splint the head to the trunk.
- Face Mask Removal
 - The face mask should be removed prior to transportation, regardless of current respiratory status (see figure 1)



- Those involved in the pre-hospital care of injured football players must have the tools for face mask removal readily available.

Spinal Immobilization-Football Players Cont.

Indications for Football Helmet Removal:

- The athletic helmet and chin straps should only be removed if:
 - The helmet and chin strap do not hold the head securely, such that immobilization of the helmet does not also immobilize the head
 - The design of the helmet and chin strap is such that even after removal of the face mask the airway cannot be controlled, or ventilation be provided.
 - The face mask cannot be removed after a reasonable period of time
 - The helmet prevents immobilization for transportation in an appropriate position.

Helmet Removal:

- If it becomes absolutely necessary, spinal immobilization must be maintained while removing the helmet.
 - Helmet removal should be frequently practiced under proper supervision by an EMS supervisor or Training Division.
 - Due to the varying types of helmets encountered, the helmet should be removed with close oversight by the team athletic trainers and/or sports medicine staff
 - In most circumstances, it may be helpful to remove cheek padding and/or deflate air padding prior to helmet removal.

Spinal Alignment:

- Appropriate spinal alignment must be maintained during care and transport using backboard, straps, tape, head blocks or other necessary equipment.
 - Be aware that the helmet and shoulder pads elevate an athlete's trunk when in the supine position
 - Should either be removed, or if only one is present, appropriate spinal alignment must be maintained.
 - The front of the shoulder pads can be opened to allow access for CPR and defibrillation.

Splinting

B	EMT	B
P	PARAMEDIC	P

Clinical Indications:

Immobilization of an extremity for transport, either due to suspected fracture, sprain or injury.

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 from the extremity
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 (i.e. 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, reposition the splint and reassess. If no improvement, remove splint.
7. If a femur fracture is suspected and there is no evidence of pelvic fracture or instability, place a traction splint
8. Consider pain management per protocol
9. Document the time, type of splint, and the pre and post assessment of pulse, sensation and motor function in the PCR.

Stroke Screen

B	EMT	B
P	PARAMEDIC	P

Clinical Indications:

Suspected stroke patient.

Procedure:

- 1) Assess and treat suspected stroke patients as per protocol
- 2) The Cincinnati Stroke Screen should be completed for all suspected stroke patients
- 3) Establish the “time last normal” for the patient. This will be the presumed time of onset.
- 4) Perform the screen through physical exam:
 - Look for facial droop by asking the patient to smile
 - Have patient, while sitting upright or standing, extend both arms parallel to floor, close eyes, and turn their palms upward. Assess for unilateral drift of an arm.
 - Have the person say, “You can’t teach an old dog new tricks,” or some other simple, familiar saying. Assess for the person to slur the words, get some words wrong, or inability to speak.
- 5) One of these exam components must be positive to answer “yes”
- 6) Evaluate Blood Glucose level results
- 7) If the “time last normal” is less than 24 hours, blood glucose is between 60 and 400, and at least one of the physical exam elements is positive, follow the Suspected Stroke Protocol, alerting the receiving hospital of a possible stroke patient as early as possible and to initiate CODE STROKE.
- 8) All sections of the Cincinnati screen must be completed.
- 9) The complete screening should be documented in the PCR.

Temperature Measurement

B	EMT	B
P	PARAMEDIC	P

Clinical Indications:

Monitoring body temperature in a patient with suspected infection, hypothermia, hyperthermia, or to assist in evaluating resuscitation.

Procedure:

- 1) If clinically appropriate, allow the patient to reach equilibrium with the surrounding environment.
- 2) Leave the device in place until there is indication of an accurate temperature acquisition (per the “beep” or other indicator specific to the device)
- 3) Record time, temperature, method (tympanic, rectal or oral), and scale (C° or F°) in PCR

Tourniquet

Clinical Indications:

- Life threatening extremity hemorrhage that cannot be controlled by other means.
- Serious or life threatening extremity hemorrhage and tactical considerations prevent the use of standard hemorrhage control techniques.

Contraindications:

- Non-extremity hemorrhage
- Proximal extremity location where tourniquet application is not practical

Procedure:

1. Place tourniquet proximal to wound
2. Tighten per manufacturer instructions until hemorrhage stops and/or distal pulses in affected extremity disappear.
3. Secure tourniquet per manufacturer instructions
4. Note time of tourniquet application and communicate this to receiving care providers
5. Dress wounds per standard wound care protocol
6. If delayed or prolonged transport and tourniquet application time > 45 minutes: consider reattempting standard hemorrhage control techniques and removing tourniquet
7. If one tourniquet is not sufficient or not functional to control hemorrhage, consider the application of a second tourniquet more proximal to the first.

Venous Access-External Jugular

P PARAMEDIC P

Clinical Indications:

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. Consider IO access in addition to or instead of an EJ attempt.

External jugular cannulation may be attempted initially in life threatening events where no obvious peripheral site is noted.

Procedure:

1. Place the patient in a supine head down position. This helps distend the vein and prevents air embolism.
2. Turn the patient's head toward the opposite side if no risk of cervical injury exists.
3. Prep the site as per peripheral IV site.
4. Align the catheter with the vein and aim toward the same side shoulder.
5. Compressing the vein lightly with one finger above the clavicle, puncture the vein midway between the angle of the jaw and the clavicle and cannulate the vein in the usual method.
6. Attach the IV and secure the catheter avoiding circumferential dressing or taping.
7. Document the procedure, time, and result (success) on/with the patient care report (PCR).



Venous Access-Extremity

P PARAMEDIC P

Clinical Indications:

- Patients requiring IV medications or fluids
- Patients with any potential for deterioration (i.e. seizures, altered mentation, trauma, chest pain, difficulty)

Contraindications:

Child with partial airway obstruction (i.e. Suspected epiglottitis) – when agitation from performing procedure may worsen respiratory difficulty.

Equipment:

- Appropriate tubing or IV lock
- #16-#24 catheter over the needle, or butterfly needle
- Venous tourniquet
- Antiseptic swab
- Gauze pad or adhesive bandage
- Tape or other securing device

Procedure:

- 1) Saline locks may be used as an alternative to IV tubing and fluid at the discretion of the paramedic
- 2) Paramedics can use intraosseous access where threat to life exists as provided for in the Venous Access – Intraosseous procedure.
- 3) Use the largest catheter bore necessary based upon the patient's condition and size of veins
- 4) Fluid and setup choice is preferably:
 - Normal Saline with a macro drip (10-gtt/cc) for medical/trauma conditions.
 - Normal Saline with a micro drip (60gtt/cc) for medication infusions or for patients where fluid overload is of concern.
- 5) Assemble IV solution and tubing:
 - Open IV bag and check for clarity, expiration date, etc.
 - Verify correct solution
 - Open IV tubing
 - Assemble IV tubing according to manufacturer's guidelines

Venous Access-Extremity Cont.

6) Insertion

- Explain to the patient that an IV is going to be started.
- Place the tourniquet around the patient's arm proximal to the IV site, if appropriate
- Palpate veins for resilience
- Clean the skin with the antiseptic swab in an increasing sized concentric circle and follow it with an alcohol swab
- Stabilize the vein distally with the thumb/fingers
- Enter the skin with the bevel of the needle facing upward
- Enter the vein, obtain a flash, and advance the catheter into the vein while stabilizing the needle.
- Remove the needle while compressing the proximal tip of the catheter to minimize blood loss
- Remove the tourniquet
- Connect IV tubing to the catheter, or secure the IV lock to the catheter and flush with appropriate solution (normal saline)
- Open the IV clamp to assure free flow
- Set IV infusion rate.

7) Secure the IV:

- Secure the IV catheter and tubing
- Recheck IV drip rate to make sure it is flowing at appropriate rate.
- Troubleshooting the IV, (if the IV is not working well):
 - Make sure the tourniquet is off
 - Check the IV insertion site for swelling
 - Check the IV tubing clamp to make sure it is open
 - Check the drip chamber to make sure it is half full
 - Lower the IV bag below IV site and watch for blood to return into the tubing

Venous Access-Intraosseous Proximal Humerus

Clinical Indications:

Patients where rapid, regular IV access is unavailable with any of the following:

- Cardiac Arrest
- CCR – IO is preferable
- Multisystem trauma with severe hypovolemia
- Severe dehydration with vascular collapse and/or loss of consciousness
- Respiratory failure/respiratory arrest
- Inability to establish peripheral venous access in a timely manner

P PARAMEDIC P

Contraindications:

- History of Osteogenesis Imperfecta
- Current or prior infection at proposed intraosseous site
- Previous intraosseous insertion or joint replacement at the selected site.

Landmark Instructions:

- Place the patient's hand over the abdomen (elbow adducted and humerus internally rotated)



- Place your palm on the patient's shoulder anteriorly
 - The area that feels like a "ball" under your palm is the general target area
 - You should be able to feel this ball, even on obese patients, by pushing deeply
- Place the ulnar aspect of your hand vertically over the axilla
- Place the ulnar aspect of your other hand along the midline of the upper arm laterally

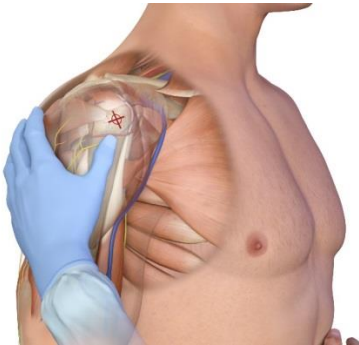


- Place your thumbs together over the arm
 - This identifies the vertical line of insertion on the proximal humerus



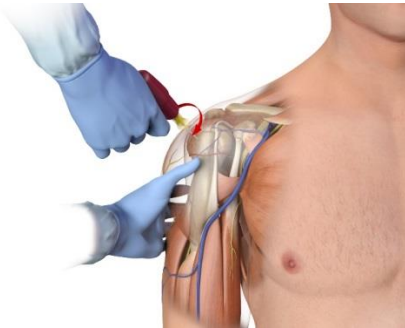
Venous Access-Intraosseous Proximal Humerus Cont.

- Palpate deeply up the humerus to the surgical neck
 - This may feel like a golf ball on a tee – the spot where the “ball” meets the “tee” is the surgical neck
 - The insertion site is 1 to 2cm above the surgical neck, on the most prominent aspect of the greater tubercle



Insertion Technique:

- Prepare the site by using antiseptic of your choice
- Use a clean, “no touch” technique
- Remove the needle set cap
- Point the needle set tip at a 45-degree angle to the anterior plane and posteromedial



- Push the needle set tip through the skin until the tip rests against the bone
- The 5mm mark must be visible above the skin for confirmation of adequate needle set length
- Gently drill into the humerus 2cm or until the hub is close to the skin
 - The hub of the needle set should be perpendicular to the skin
- Hold the hub in place and pull the driver straight off
- Continue to hold the hub while twisting the stylet off the hub with counter clockwise rotations
 - The catheter should feel firmly seated in the bone (1st confirmation of placement)
- Place the stylet in a sharps container
- Place the EZ-Stabilizer™ dressing over the hub
- Attach a primed extension set to the hub, firmly secure by twisting clockwise
- Pull the tabs off the EZ-Stabilizer dressing to expose the adhesive, apply to the skin
- Aspirate for blood/bone marrow (2nd confirmation of placement)
- Secure the arm in place across the abdomen

Pain Management:

- Prime extension set with lidocaine
- *Note that the priming volume of the extension set is approximately 1.0mL*
- Slowly infuse lidocaine 40mg IO over 120 seconds. Allow lidocaine to dwell in IO space 60 seconds
- Flush with 5 to 10mL of normal saline
- Slowly administer an additional 20mg of lidocaine IO over 60 seconds. Repeat PRN
- Consider Comfort Management Protocol for patients not responding to IO lidocaine

Venous Access-Intraosseous Distal Tibia

P PARAMEDIC P

Clinical Indications:

Patients where rapid, regular IV access is unavailable with any of the following:

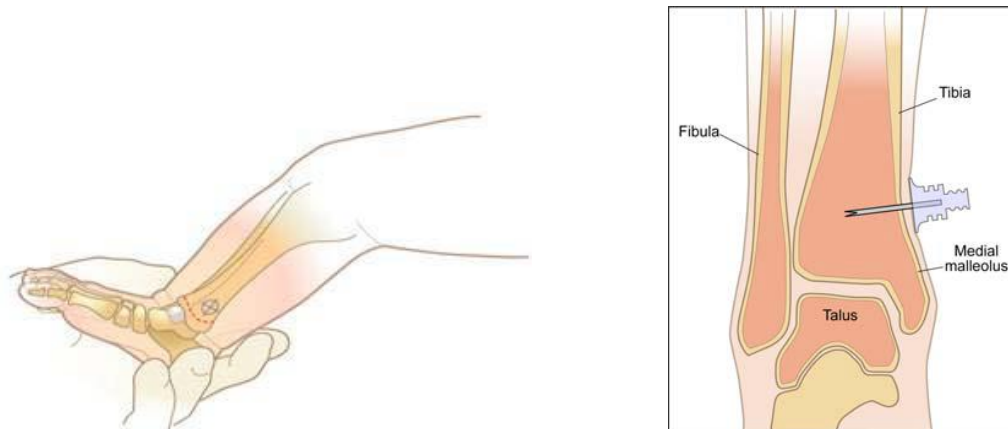
- Cardiac Arrest
- CCR – IO is preferable
- Multisystem trauma with severe hypovolemia
- Severe dehydration with vascular collapse and/or loss of consciousness
- Respiratory failure/respiratory arrest
- Inability to establish peripheral venous access in a timely manner

Contraindications:

- Fracture proximal to proposed intraosseous site.
- History of Osteogenesis Imperfecta
- Current or prior infection at proposed intraosseous site
- Previous intraosseous insertion or joint replacement at the selected site.

Procedure:

1. Insertion site is located approximately 3cm (2 finger widths) proximal to the most prominent aspect of the medial malleolus. Palpate the anterior and posterior borders of the tibia to assure that your insertion site is on the flat center aspect of the bone.
2. Cleanse the site
3. For the EZ-IO intraosseous device, hold the intraosseous needle at a 60-90° angle, aimed away from the nearby joint and epiphyseal plate, power the driver until a “pop” or “give” is felt indicating loss of resistance. Do not advance the needle any further.



5. Remove the stylette and place in an approved sharps container
5. Attach a 12cc syringe filled with 5cc NS; aspirate bone marrow to verify correct placement, then inject 5cc of NS to clear the lumen of the needle.
6. Attach the IV line. Use a pressure bag
7. Stabilize and secure the needle with dressings and tape
8. Paramedics may administer 20-40 mg (1-2cc) of 2% Lidocaine in adult patients who experience infusion related pain. May repeat 20 mg of Lidocaine. Refer to Comfort Control Protocol if indicated.
9. Following the administration of IO medications, flush the IO line with 10cc of IV fluid to expedite medication absorption.
10. Document the procedure, time, and result (success) on/with the PCR

Venous Access-Intraosseous Proximal Tibia

P PARAMEDIC P

Clinical Indications:

Patients where rapid, regular IV access is unavailable with any of the following:

- Cardiac Arrest
- CCR – IO is preferable
- Multisystem trauma with severe hypovolemia
- Severe dehydration with vascular collapse and/or loss of consciousness
- Respiratory failure/respiratory arrest
- Inability to establish peripheral venous access in a timely manner

Contraindications:

- Fracture proximal to proposed intraosseous site.
- History of Osteogenesis Imperfecta
- Current or prior infection at proposed intraosseous site
- Previous intraosseous insertion or joint replacement at the selected site.

Procedure:

1. Identify anteromedial aspect of the proximal tibia (bony prominence below the knee cap). The insertion location will be 1-2 cm (2 finger widths) below this.
2. Cleanse the site
3. For the EZ-IO intraosseous device, hold the intraosseous needle at a 60-90° angle, aimed away from the nearby joint and epiphyseal plate, power the driver until a “pop” or “give” is felt indicating loss of resistance. Do not advance the needle any further.
4. Remove the stylette and place in an approved sharps container
5. Attach a 12cc syringe filled with 5cc NS; aspirate bone marrow to verify correct placement, then inject 5cc of NS to clear the lumen of the needle.
6. Attach the IV line. Use a pressure bag
7. Stabilize and secure the needle with dressings and tape
8. Paramedics may administer 10-20mg (1-2cc) of 2% Lidocaine in adult patients who experience infusion related pain.
9. Following the administration of IO medications, flush the IO line with 10cc of IV fluid to expedite medication absorption.
10. Document the procedure, time, and result (success) on/with the PCR.

Wound Care

B	EMT	B
P	PARAMEDIC	P

Clinical Indications:

Protection of open wounds prior to and during transport

Procedure:

6. 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.
- 2) Once bleeding is controlled, irrigate contaminated wounds with saline as appropriate (this may have to be avoided if bleeding was difficult to control).
- 3) Cover wounds with sterile gauze/dressings. Check distal pulses, sensation, and motor function to ensure the bandage is not too tight.
- 4) Monitor wounds and/or dressing throughout transport for bleeding
- 5) Consider tourniquet use as indicated in protocol/procedure
- 6) Document the wound assessment and care in the PCR

ACETAMINOPHEN (TYLENOL)

Class

- A. Antipyretic, analgesic

Pharmacology and Actions

- A. Acetaminophen acts as an analgesic/antipyretic with little effect on platelet function.
Indications: For mild to moderate pain and fever when aspirin is otherwise not tolerated.
Contraindications: Hypersensitivity, children under 3 years. Precautions: Patients with hepatic disease; children under 12 years with arthritic conditions; alcoholism; malnutrition; and thrombocytopenia. Dosage/Route: 325 to 650 mg. PO/4 to 6 hours. 650 mg PR/4 to 6 hours.
- B. Acetaminophen undergoes metabolism in the liver.

Indications

- A. The treatment of mild to moderate pain.
- B. Significant fever in the context of, or for the prevention of a febrile illness or seizure.

Contraindications

- A. Known hypersensitivity to the drug.

Precautions

- A. Patients with known hepatic disease, alcoholism, malnutrition, or thrombocytopenia.

Dosage

- A. Suppository form:
- B. The pediatric dose (age <12) is 15mg/kg orally or rectally

Side Effects and Notes

- A. Nausea, rash, or headache

ADENOSINE (ADENOCARD)

Class

Antiarrhythmic

Pharmacology and Actions

- C. Adenosine is an endogenous nucleoside with antiarrhythmic activity.
- D. Because of its short plasma half-life (less than 10 seconds with IV doses), the clinical effects of adenosine occur rapidly and are very brief.
- E. Produces a transient slowing of the sinus rate
- F. Has a depressant effect on the AV node.

Indications

- C. For termination of episodes of acute supraventricular tachycardia involving the AV-node.

Contraindications

- B. Second or third-degree heart block
- C. Sick sinus syndrome
- D. Known hypersensitivity to drug

Precautions

- B. Adverse effects include hypotension, flushing, dyspnea, chest pain, anxiety, and occasionally, hemodynamic disturbances – all of which are of short duration.
- C. Transient arrhythmias including asystole and blocks are common at the time of chemical cardioversion.

Administration

- C. Direct rapid intravenous bolus over 1-2 seconds of 6mg initially, followed immediately by 20mL saline flush. A second dose of 12 mg may be given after an interval of 1-2 minutes if the tachycardia persists.
- D. Pediatric dose: rapid IV 0.1 mg/kg initial dose followed immediately with a saline flush (greater than 5mL). Second dose 0.2 mg/kg rapid IV if SVT persists. Maximum first dose is 6 mg. Maximum second dose is 12mg.

Side Effects and Notes

- B. Whenever possible, establish the IV at the antecubital
- C. Adenosine is safe in patients with Wolff Parkinson-White Syndrome.
- D. Concomitant use of dipyridamole (Persantine) enhances the effects of adenosine. Smaller doses may be required.
- E. Caffeine and theophylline antagonize adenosine's effects. Larger doses may be required.
- F. Warn patients to expect a brief sensation of chest discomfort.
- G. If patient becomes hemodynamically unstable, see appropriate tachycardia algorithm.
- H. Stable, asymptomatic patients, without a history of PSVT, may not need to be treated.
- I. Any patient receiving adenosine must be on a monitor and a 12-lead EKG should be performed and documented, if available.

ALBUTEROL (PROVENTIL, VENTOLIN)

Class

Sympathomimetic (B₂Selective)

Pharmacology and Actions

- A. Has selective beta-adrenergic stimulating properties resulting in potent bronchodilation.
- B. Rapid onset of action (under 5 minutes), and duration of action between 2 – 6 hours.

Indications

- A. For relief of bronchospasm in patients with obstructive airway disease (asthma, emphysema, COPD) or allergic reactions.

Contraindications

- A. Symptomatic tachycardia
- B. Known hypersensitivity to drug

Precautions

- A. Albuterol sulfate has sympathomimetic effects. Use with caution in patients with known coronary disease. Monitor pulse, blood pressure, and cardiac monitor, in CAD patients.
- B. When inhaled, albuterol sulfate can result in paradoxical bronchospasm, which can be life threatening. If this occurs, the preparation should be discontinued immediately.

Administration

- A. For nebulizer use only
 - 1. For adults and children: place 2.5 mg/3mL albuterol into an oxygen-powered nebulizer and run at 6-8 LPM. Deliver as much of the mist as possible by nebulizer over 5-15 minutes.
 - 2. Endotracheally intubated patients may be given albuterol sulfate by attaching the nebulizer in-line.
 - 3. Patients placed on CPAP may be given albuterol sulfate by attaching the nebulizer in-line.

Side Effects and Special Notes

- A. Monitor blood pressure and heart rate closely and contact medical control if any concerns arise.
- B. Medications such as MAO inhibitors and tricyclics may potentiate tachycardia and hypertension.

AMIODARONE (CORDARONE)

Class

Antiarrhythmic agent

Pharmacology and Actions

- A. Suppresses ventricular ectopy and increases ventricular fibrillation threshold.
- B. Noncompetitive blocker of alpha and beta adrenergic receptors which can cause:
 - 1. Negative chronotropic effects
 - 2. Negative inotropic effects (the effect on cardiac output by the negative inotropic effect is balanced by a decrease in afterload and increase in coronary blood flow, which in turn improves cardiac performance [especially for patients with left ventricular failure]).
 - 3. Peripheral vasodilation (reduces afterload).
 - 4. Coronary vessel dilation
- C. Prolongs duration of cardiac potential and prolongs effective refractory period

Indications

- A. Shock resistant ventricular fibrillation or pulseless ventricular tachycardia
- B. Unstable ventricular tachycardia
- C. May be used for rate control in treatment of symptomatic atrial fibrillation or flutter when other therapies are ineffective.

Contraindications

- A. None in cardiac arrest with ventricular fibrillation or pulseless ventricular tachycardia
- B. 2nd or 3rd degree heart block in the absence of functioning pacemaker
- C. Marked bradycardia
- D. Cardiogenic shock
- E. Known hypersensitivity

Precautions

- A. Increased hypotension and bradycardia can occur when given with other beta-blockers or calcium channel blockers.
- B. May prolong QT interval. Do not administer with other medications that prolong QT interval (e.g., procainamide).
- C. Use with caution if renal failure is present, terminal elimination of amiodarone is extremely long (half-life can last up to 40 days).

Administration

- A. Pulseless VT / VF: 300 mg IV push. Consider repeating 150 mg IV/IO push in 3-5 minutes (Maximum cumulative dose is 2.2 grams IV over 24 hours).
- B. Unstable VT: 150 mg IV diluted in NS over 10 minutes. Consider repeating at same dose.

Side Effects and Special Notes

- A. Medication must be carefully and slowly drawn from vial to avoid excess air bubbles.
- B. The most commonly reported side effects include hypotension, bradycardia, AV block, PEA, and hepatotoxicity.

ASPIRIN (ASA)

Class

Platelet inhibitor/Anti-inflammatory

Pharmacology and Actions

- A. ASA inhibits blood clotting. It inhibits the formation of thromboxane A₂, a platelet aggregating, vasoconstricting prostaglandin. ASA in low doses, however, inhibits the production of thromboxane A₂ in the platelet more than it does the production of prostacyclin in the endothelial cells.
- B. Platelet aggregation has been implicated in the pathogenesis of atherosclerosis contributing to the acute episodes of TIA's, unstable angina, and acute myocardial infarction.
- C. Unstable angina is precipitated by a sudden fall in coronary blood flow. One possible mechanism is platelet aggregation.
- D. ASA has been shown to be beneficial in decreasing sudden cardiac death and myocardial infarction in patients with unstable angina.
- E. ASA has been shown to be of added benefit in maintaining vessel patency after thrombolytic therapy.

Indications

- A. Patients with chest pain or other symptoms, which may be of cardiac origin.
- B. ASA is not to be used for analgesia (i.e. headache).

Contraindications

- A. Children under 12 years of age
- B. Known hypersensitivity to drug, especially allergy induced asthma
- C. Current ulcer or GI bleed

Administration

- A. Chew four 81 mg ASA chewable tablets (324 milligrams total) if the patient is able to swallow voluntarily.

Side Effects and Special Notes

- A. ASA is one of the few interventions that has been shown to improve mortality and therefore should be considered early in the care of the patient.
- B. Patients taking Coumadin may receive aspirin.

ATROPINE

Class

Parasympatholytic (anticholinergic)

Pharmacology and Actions

- A. Increases heart rate (by blocking vagal influences).
- B. Increases conduction through AV node.
- C. Reduces motility and tone of GI tract.
- D. Reduces action and tone of urinary bladder (may cause urinary retention).
- E. Dilates pupils

Note: This drug blocks cholinergic (vagal) influences already present. If there is little cholinergic stimulation present, effects will be minimal.

Indications

- A. To counteract excessive vagal influences responsible for some bradyarrhythmias.
- B. To increase heart rate in hemodynamically significant bradycardia.
- C. To improve conduction in AV heart block at the nodal level. Will not be effective when intranodal (Mobitz type II) block is suspected.
- D. As an antidote for some insecticide exposures (organophosphate poisoning) and nerve gases with symptoms of excess cholinergic stimulation: salivation, constricted pupils, bradycardia, tearing, diaphoresis, vomiting, and diarrhea.

Precautions

- A. Bradycardias in the setting of an acute MI are common and may be beneficial. Do not treat them unless there are signs of poor perfusion (low B/P, mental confusion). If in doubt, consult with the base physician.
- B. People do well with chronic 2^d and 3^d degree block. Symptoms occur mainly with acute change. Treat the patient, not the arrhythmia.
- C. Pediatric bradycardias are most commonly secondary to hypoxia. Correct the ventilation first, and only treat the rate directly if that fails. Epinephrine is almost always the first-line medication for bradycardia in pediatric patients.

Administration

- A. Hemodynamically unstable bradycardia:
 - 1. Adult: 0.5 mg IV/IO, repeated if needed at 3-5 minute intervals to a dose of 3mg. (Stop at ventricular rate which provides adequate medication and B/P).
 - 2. Pediatric: 0.02 mg/kg IV, minimum 0.1 mg.
- B. May be given through the ET tube at 2 times the IV dose. Maximum ET dose is 6 mg.
- C. For symptomatic insecticide/organophosphate poisoning exposures: Usually begin with 2 mg IV/IO and titrate (2 mg q 5 min) until secretions are dried. Total required dose may be massive.

Side Effects and Special Notes

Remember in cardiac arrest situations that atropine dilates the pupils

ATROVENT (IPATROPIUM)

Class

Anticholinergic

Pharmacology and Actions

- A. Bronchodilation
- B. Dries respiratory tract secretions

Indications

- A. Bronchospasm related to asthma, chronic bronchitis, or emphysema

Contraindications

- A. Hypersensitivity to this drug, atropine, soy, or peanuts.

Precautions

- A. Should not be used as the primary agent for treatment of bronchospasm
- B. Use with caution in patients with coronary artery disease
- C. Pulse, blood pressure, and EKG must be monitored.

Administration

- A. Adult and Pediatrics (>2 years) dosage: place 500 mcg into an oxygen-powered nebulizer and run at 6-8 LPM. Deliver as much of the mist as possible by nebulizer over 5-15 minutes.

Side Effects and Special Notes

- A. Palpitations, dizziness, anxiety, tremors, headache, nervousness, and dry mouth
- B. Can cause paradoxical bronchospasm, if this occurs discontinue treatment.

CYANOKIT

Class

Toxicology

Pharmacology and Actions:

CYANOKIT is a cyanide antidote that contains hydroxocobalamin, a form of vitamin B12. Hydroxocobalamin binds to the cyanide, creating nontoxic cyanocobalamin, allowing the body to use oxygen again.

Indications

Symptoms: headache, confusion, dyspnea, chest tightness and nausea

Signs: altered mental status, seizure or coma, mydriasis, tachypnea, bradypnea, hypertension (early), hypotension (late), cardiovascular collapse, vomiting

Easily recognizable signs of cyanide poisoning in smoke inhalation victims:

- Exposure to fire or smoke in an enclosed area
- Soot around the mouth, nose or back of mouth
- Altered mental status (eg, confusion, disorientation)

Contraindications

None

Precautions

- No adequate well-controlled studies in pregnant women. CYANOKIT should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.
- Safety and effectiveness has not been established in Pediatrics

Administration

1. **Reconstitute:** Place the vial in an upright position. Add **200 mL** of 0.9% Sodium Chloride injection* to the vial using the transfer spike. **Fill to the line.** *0.9% Sodium Chloride injection is the recommended diluent (diluent not included in the kit). Lactated Ringer's injection and 5% Dextrose injection have also been found to be compatible with hydroxocobalamin and may be used if 0.9% Sodium Chloride is not readily available.

2. **Mix:** The vial should be repeatedly inverted or rocked, not shaken, for at least **60 seconds** prior to infusion.

- CYANOKIT solutions should be visually inspected for particulate matter and color prior to administration
 - — Discard solution if particulate matter is present or solution is not dark red

3. **Infuse Vial:** Use vented intravenous tubing, hang and infuse over **15 minutes**.

Side Effects and Special Notes

Hypertension may occur in some patients (>180 mmHg SBP or >110 mmHg DBP).

DEXTROSE 10%

Class

Carbohydrate

Pharmacology and Actions

- A. Glucose is the body's basic fuel and is required for cellular metabolism. A sudden drop in blood sugar levels will result in disturbances of normal metabolism, manifested clinically as a decrease in mental status, sweating, and tachycardia. Further decreases in blood sugar may result in coma, seizures, and cardiac arrhythmias. Serum glucose is regulated by insulin, which stimulates storage of excess glucose from the blood stream, and glucagon, which mobilizes stored glucose into the bloodstream.

Indications

- A. Hypoglycemic states (i.e., insulin shock in the diabetic).
- B. The unconscious patient with an unknown history. Any patient with focal or partial neurologic deficit or altered state of consciousness, which may be due to hypoglycemia.
- C. Blood glucose test < 60 mg/dL if clinically indicated.
- D. In children with alcohol exposure, suspected sepsis, hypoperfusion or altered mental status.

Precautions

- A. In patients with clinical findings suggestive of a CVA, caution should be used when considering dextrose unless the patient has a measurable hypoglycemia.
- B. Draw appropriate blood tubes for blood sugar determination prior to administering dextrose.
- C. Extravasation of glucose can cause tissue necrosis. Ensure IV patency before and during dextrose infusion.

Administration

- A. Adult dose: 1 (one) 250 mL bag of D10 solution, IV into a secure vein (D₁₀ is 25 grams of dextrose in 250 mL).
- B. Pediatric dose: 5 mL/kg of D10 up to 125 mL. If blood glucose is below 60 mg/dL a repeat dose may be administered.
- C. May give oral glucose preparations if the patient is awake and able to swallow effectively.

Side Effects and Special Notes

- A. One bolus should raise the blood sugar 50-100 mg/dL and, therefore, will be adequate for most patients.
- B. Effect may be delayed in elderly patients with poor circulation.
- C. Dextrose should be diluted 1:1 with normal saline (to create D₂₅W) for patients 2 years and younger.
- D. Do not withhold dextrose in a patient suspected of being hypoglycemic.

DEXTROSE 50%

Class

Carbohydrate

Pharmacology and Actions

B. Glucose is the body's basic fuel and is required for cellular metabolism. A sudden drop in blood sugar levels will result in disturbances of normal metabolism, manifested clinically as a decrease in mental status, sweating, and tachycardia. Further decreases in blood sugar may result in coma, seizures, and cardiac arrhythmias. Serum glucose is regulated by insulin, which stimulates storage of excess glucose from the blood stream, and glucagon, which mobilizes stored glucose into the bloodstream.

Indications

- E. Hypoglycemic states (i.e., insulin shock in the diabetic).
- F. The unconscious patient with an unknown history. Any patient with focal or partial neurologic deficit or altered state of consciousness, which may be due to hypoglycemia.
- G. Blood glucose test < 60 mg/dL if clinically indicated.
- H. In children with alcohol exposure, suspected sepsis, hypoperfusion or altered mental status.

Precautions

- D. In patients with clinical findings suggestive of a CVA, caution should be used when considering dextrose unless the patient has a measurable hypoglycemia.
- E. Draw appropriate blood tubes for blood sugar determination prior to administering dextrose.
- F. Extravasation of glucose can cause tissue necrosis. Ensure IV patency before and during dextrose infusion.

Administration

- D. In patients older than 2 years: 1 mL/kg of D₅₀
- E. In patients 3 months to 2 years: 1mL/kg of D₂₅
- F. In patients less than 3 months: 1 mL/kg of D_{12.5}
- G. May give oral glucose preparations if the patient is awake and able to swallow effectively.

Side Effects and Special Notes

- E. One bolus should raise the blood sugar 50-100 mg/dL and, therefore, will be adequate for most patients.
- F. Effect may be delayed in elderly patients with poor circulation.
- G. Dextrose should be diluted 1:1 with normal saline (to create D₂₅W) for patients 2 years and younger.
- H. Do not withhold dextrose in a patient suspected of being hypoglycemic.

DIPHENHYDRAMINE (BENADRYL)

Class

Antihistamine

Pharmacology and Actions

- A. An antihistamine that blocks action of histamine released from the cells during an allergic reaction.
- B. Direct CNS effects, which may be a stimulant or, more commonly, a depressant, depending on individual variation.
- C. Anticholinergic, antiparkinsonian effect, which is used to treat acute dystonic reactions to antipsychotic drugs (Haldol, Thorazine, Compazine, etc.). These reactions include oculogyric crisis, acute torticollis, and facial grimacing.

Indications

- A. Moderate allergic reaction.
- B. The second-line drug in anaphylaxis and severe allergic reactions (after epinephrine).
- C. To prevent or counteract extrapyramidal reactions from antipsychotic medications.
- D. For use in intractable vomiting.

Contraindications

- A. Asthma (relative)
- B. Nursing mothers

Precautions

May have additive effect with alcohol or depressants.

Administration

- A. Adult: 25 mg slow IV push or 50 mg IM
- B. Children 8 years and younger: 1 mg/kg slow IV (not to exceed 25 mg total).

Side Effects and Special Notes

- A. May cause CNS stimulation in children.
- B. Side effects include dry mouth, dilated pupils, flushing, and drowsiness.
- C. Diphenhydramine should be used with caution in patients with asthma/COPD, glaucoma, and bladder obstruction, as all of these conditions can be exacerbated by its administration.
- D. If an IV has been or will be established for other reasons, the IV route is preferred over the IM route.

EPINEPHRINE

Class

Sympathomimetic

Pharmacology and Actions

- A. Catecholamine with alpha and beta effects
- B. Cardiovascular: Increased heart rate, increased blood pressure, arterial vasoconstriction, increased myocardial contractile force, increased myocardial oxygen consumption, and increased myocardial automaticity and irritability
- C. Pulmonary: Potent bronchodilator

Indications

- A. Medical cardiac arrest, including:
 - 1. Ventricular fibrillation and pulseless ventricular tachycardia, asystole, and PEA
- B. Bradycardia:
 - 1. Pediatric patients with signs of poor perfusion.
- C. Asthma
- D. Mild to moderate allergic reactions, anaphylaxis or severe angioedema
- E. Life-threatening airway obstruction suspected secondary to croup or epiglottitis.
- F. Shock:
 - 1. First line pressor for non traumatic shock (hypotension, sepsis, cardeogenic, etc) due to its vasopressor and vasoconstrictor effects.

Contraindications

- A. Epinephrine 1:1000:
 - 1. Hypertension
 - 2. Pregnancy
 - 3. Patients with tachyarrhythmias
- B. Epinephrine 1:10,000 is for intravenous or endotracheal use; it should not be used in patients who do not require extensive resuscitative efforts.

Precautions

- A. Do not add to solutions containing bicarbonate.
- B. Increase in myocardial oxygen consumption can precipitate angina or MI in patients with coronary artery disease.
- C. Use with caution in patients with hypertension, hyperthyroidism, peripheral vascular disease, or cerebrovascular disease or any patient over the age of 50.
- D. Asthma is not the only cause of wheezing. Epinephrine is contraindicated in pulmonary edema.
- E. Anaphylaxis is a systemic allergic reaction with cardiovascular collapse. Angioedema involves swelling of mucous membranes; potential exists for airway compromise. Mild or moderate allergic reactions with urticaria or wheezing may progress to anaphylaxis or severe angioedema. Monitor patient carefully and treat according to patient status.
- F. Epinephrine comes in two strengths. Use of the wrong formulation will result in a ten-fold difference in dosage. Be sure to use the right one.

EPINEPHRINE CONTINUED

Administration

A. Adult

1. Cardiac arrest
 - a. 1.0 mg (10 mL of 1:10,000 solution) IV every 3-5 minutes
2. Moderate or severe allergic reactions
 - a. 0.3 (0.3 mL of 1:1000 solution) SQ/IM
3. Anaphylaxis
 - a. Consider administration of Epinephrine 0.1 mL of 1:1,000 solution or 1 mL of 1:10,000 solution IV for refractory anaphylactic shock. Dilute with 9-10 mL NS or administer with IV running wide open
4. Shock
 - i. See Medication Drip Charts on page 305 for correct dosage and mixing for infusions or push dose pressor
5. Asthma
 - a. 0.3 (0.3 mL of 1:1000 solution) SQ/IM

B. Pediatric

1. Cardiac arrest
 - a. IV/IO dose: 0.01 mg/kg (0.1 mg/kg of 1:10,000 concentration). Administer every 3 to 5 minutes during arrest.
 - b. All tracheal doses: 0.1 mg/kg (0.1 mL/kg of 1:1000 concentration). Note: Administer every 3-5 minutes of arrest until IV/IO access achieved; then begin with first IV dose.
2. Symptomatic Bradycardia
 - a. All IV/IO doses: 0.01 mg/kg (0.1 mL/kg of 1:10,000 concentration).
 - b. All tracheal doses: 0.1 mg/kg (0.1 mL/kg of 1:1000 concentration).
3. Mild or Moderate allergic reactions
 - a. 0.01 mg/kg (0.01 mL/kg of 1:1000 solution) SQ/IM
4. Anaphylaxis (**Contact medical control**)
 - a. 0.01 mg/kg (0.1 mL/kg of 1:10,000 solution) IV.
5. Asthma
 - a. 0.01 mg/kg (0.1 mL/kg of 1:1000 solution) SQ/IM

C. IV doses may be given through ET at 10 times the IV dose.

Side Effects and Special Notes

- A. Anxiety, tremor, palpitations, vomiting, and headache are common.

FENTANYL (SUBLIMAZE)

Class

Narcotic analgesic

Pharmacology and Actions

- A. Potent synthetic narcotic analgesic with actions similar to those of morphine, but action is more prompt and less prolonged
- B. The emetic effect is less than morphine.

Indications

- A. Adult and pediatric pain management
- B. Chest pain
- C. STEMI
- D. RSI (Rapid Sequence Intubation) Post placement pain management

Precautions

- A. Contraindicated in patients taking MOA inhibitors
- B. Myasthenia gravis
- C. Use with caution with head injuries, ICP, elderly, COPD, liver and kidney dysfunction, and bradydysrhythmias.

Administration

- A. Adult Pain Management
 - 1. 100 mcg slow IV/IO/IN over 2 – 3 minutes; additional dose of 50 mcg may be administered IV provided systolic BP remains above 100 mm Hg for a total max dose of 150 mcg
- B. Pediatric Pain Management
 - 1. 1 mcg/kg mixed in 5 mL normal saline and given IV push over 2-4 minutes to a maximum single dose of 100 mcg IV. Reassess patient vital signs and pain scale after 5 minutes.
- C. Chest Pain/STEMI
 - 1. 50 mcg slow IV/IO over 2 – 3 minutes; may be repeated to a total dose of 150 mcg.
- D. RSI/ Post placement pain management
 - 1. 50 mcg IV/IO up to 150 mcg total and SBP>100 mmHg

Side Effects and Special Notes

- A. Sedation, euphoria, dizziness, and diaphoresis.
- B. Seizures with high doses.
- C. Nausea and vomiting.
- D. Bronchoconstriction, respiratory depression or arrest if given as a rapid IV infusion.
- E. Can be reversed with Narcan.

GLUCAGON

Class

Hormone (antihypoglycemic agent)

Pharmacology and Actions

- A. Increases blood sugar concentration by converting liver glycogen to glucose.
- B. Relaxes smooth muscle of the GI tract.
- C. Increases heart rate and cardiac contractility.

Indications

- A. Symptomatic hypoglycemia when IV access is unsuccessful.
- B. Hypotension from beta-blocker or calcium channel blocker overdose unresponsive to normal saline bolus.
- C. Suspected symptomatic esophageal foreign body.

Contraindications

- A. Hypersensitivity to the drug

Precautions

- A. Use with caution in patients with a history of cardiovascular disease, renal disease, pheochromocytoma or insulinoma.

Administration

- A. Hypoglycemia: Adult dose; 1 mg IM
- B. Beta blocker / Ca ++ Channel Blocker OD - Contact medical control
 - 1. Adult Dose: 2mg IV
 - 2. Pediatric Dose: 0.1 mg/kg IV (max dose is 1 mg).

Side Effects and Special Notes

- A. Nausea, vomiting, and headache.
- B. When glucagon is given for hypoglycemia the patient should receive glucose as soon as possible after the administration of glucagon.

KETAMINE (KETALAR)

Class

Dissociative Anesthetic, NMDA receptor antagonist
Schedule III controlled substance

Pharmacology and Actions

- A. Dissociates
- B. Analgesia with minimal respiratory depression
- C. Sedation
- D. Adrenergic support, including bronchodilation
- E. Patient appears awake, but amnestic and unresponsive
- F. Excellent Safety Profile

Indications

- A. Analgesia, sedation, and dissociation for management of pain or behavior
- B. Precursor to painful procedure or airway support in bronchospasm
- C. Sedative and analgesic for Rapid Sequence Intubation (RSI)

Contraindications

- A. Pregnancy
- B. Known hypersensitivity to drug
- C. Age < 3 months

Precautions

- A. Coronary Artery Disease
- B. Uncontrolled Hypertension or Stroke
- C. Glaucoma or acute globe injury (conditions of IOP)

Administration

- A. Adult/Peds: 1 mg/kg IV/ IO or 4 mg/kg IM

Side Effects and Notes

- A. Hypertension
- B. Tachycardia
- C. Laryngospasm
- D. Vomiting
- E. Excessive salivation
- F. Tremors
- G. Diplopia
- H. Emergence delirium in 12% (treat with benzodiazepine)

LIDOCAINE (XYLOCAINE)

Class

Antiarrhythmic

Pharmacology and Actions

- A. Cardiovascular
 - 1. Increased ventricular fibrillation threshold
 - 2. Decreased conduction rate and myocontractility (at toxic levels)
- B. CNS
 - 1. Stimulation
 - 2. Decreased cough reflex

Indications

- A. Pediatric cardiac arrest from VT/VF
- B. Sustained VT with a pulse
- C. Prior to intubation in head trauma (suspected increased intracranial pressure)

Contraindications

- A. Known hypersensitivity to lidocaine

Precautions

- A. High grade AV block is a relative contraindication. Do not treat ventricular escape beats or accelerated idioventricular rhythm with lidocaine.
- B. Lidocaine is metabolized in the liver, elderly patients and those with liver disease or poor liver perfusion secondary to shock or CHF are more likely to experience side effects.
- C. Side effects include drowsiness, confusion, convulsion, hypotension, bradycardia, and tachycardia.
- D. Head trauma requires careful airway management. If endotracheal intubation is appropriate, pretreatment with lidocaine may help avoid further ICP.

Administration

- A. Pediatric cardiac Arrest from VF/VT
 - 1. Initial dose of 1.0 mg/kg IV/IO
- B. Adults: Sustained ventricular tachycardia with a pulse
 - 1. 0.5 mg/kg IV/IO over 2 minutes and may be repeated in 5 – 10 minutes
- C. Pediatrics: Sustained ventricular tachycardia with a pulse
 - 1. 1 mg/kg IV/IO over 2 minutes
- D. Head Trauma
 - 1. 1.0 mg/kg IV/IO bolus: no additional bolus is required

Side Effects and Special Notes

- A. PVCs **should not** be treated with lidocaine. Hypoxia can generate PVCs and lidocaine will not help; treat the cause. Patients with PVCs and active chest pain should have their pain treated aggressively with oxygen, aspirin, and pain medications.
- B. Best available evidence currently indicates that prophylactic lidocaine (in the setting of MI without PVCs) may actually increase mortality.

MAGNESIUM SULFATE

Class

Anticonvulsant / Antiarrhythmic

Pharmacology and Actions

- A. Cardiac: stabilizes potassium pump, correcting repolarization. Shortens the QT interval in the presence of ventricular arrhythmias due to drug toxicity or electrolyte imbalance.
- B. Obstetrics: controls seizures by blocking neuromuscular transmission. Also lowers blood pressure and decreases cerebral vasospasm.

Indications

- A. Cardiac:
 - 1. Recommended for use in cardiac arrest only if torsades de pointes or suspected hypomagnesemia is present.
 - 2. Refractory VF (after lidocaine).
 - 3. Torsades de pointes with a pulse
- B. Obstetrics: Pregnancy >20 weeks with signs and symptoms of pre-eclampsia, defined as:
 - 1. Blood pressure > 180 mm systolic or > 120 mm diastolic with altered mental status, or,
 - 2. Seizures

Precautions

- A. AV block
- B. Decrease in respiratory or cardiac function
- C. Use with caution in patients taking digitalis

Administration

- A. Torsades de pointes (not in cardiac arrest): Loading dose of 1 gram infused slowly over 60 minutes.
- B. In pre-eclampsia/eclampsia patients, 2 grams diluted in 100 mL of normal saline over 5-20 minutes. May repeat to a total dose of 6 grams.

Side Effects and Special Notes

- A. Principle side effect is respiratory depression. Ventilatory assistance may be needed.
- B. Not for pediatric use.
- C. Magnesium sulfate is very irritating when administered IV, thus dilution is always recommended.

VERSED (MIDAZOLAM)

Class

Benzodiazepine, Sedative and Hypnotic

Pharmacology and Actions

- A. CNS depressant leading to sedation and amnesia
- B. Versed is 3 to 4 times more potent than Diazepam
- C. Like other benzodiazepines, it has no effect on pain

Indications

- A. Sedation for cardioversion or transcutaneous pacing (TCP)
- B. Used with succinylcholine for rapid sequence intubation (RSI)
- C. Continued sedation of the intubated patient

Contraindications

- A. Patients with a history of hypersensitivity to benzodiazepines
- B. Narrow angle glaucoma

Precautions

- A. Can cause significant respiratory depression, apnea, and hypotension. Especially when used in combination with other sedatives such as alcohol or narcotics. Continuous pulse oximetry and cardiac monitoring are mandatory. Resuscitative equipment must be immediately available.
- B. Consider lower doses for elderly patients; significant respiratory depression, apnea, and hypotension are more frequently encountered.

Administration

- A. RSI: 2 mg IV/IO, may repeat one time if inadequate sedation obtained.
- B. Cardioversion: 2 mg slowly IV/IO if indicated; May repeat to max dose of 4 mg
- C. Pediatric maximum dosage is 10 mg.
- D. Behavioral Emergencies: 2 mg slowly IV/IO/IN if indicated; May repeat to max dose of 4 mg

Side Effects and Special Notes

- A. Hypotension
- B. Respiratory depression
- C. Amnesia

NARCAN (NALOXONE)

Class

Narcotic antagonist

Pharmacology and Actions

A. Narcan is a narcotic antagonist which completely binds to narcotic receptor sites, but which exhibits almost no pharmacological activity of its own. Duration of action: 1-4 hours.

Indications

- A. Reversal of narcotic effects, particularly respiratory depression, due to narcotic drugs ingested, injected, or administered in the course of treatment. Narcotic drugs include morphine, fentanyl, meperidine (Demerol), heroin, hydromorphone (Dilaudid), oxycodone (Percodan, Percocet), codeine, propoxyphene (Darvon), pentazocine (Talwin).
- B. Diagnostically in coma or altered mental status of unknown etiology, to rule out (or reverse) narcotic respiratory depression.
- C. Seizures of unknown etiology, to rule out narcotic overdose (particularly propoxyphene).

Precautions

- A. In patients physically dependant on narcotics, frank and occasionally violent withdrawal symptoms may be precipitated. Be prepared to restrain the patient. Titrate the dose slowly to reverse cardiac and respiratory depression, but to keep the patient groggy.
- B. May need large doses to reverse propoxyphene (darvon) overdose.

Administration

- A. Adult: 0.4mg IV/IO/IN for narcotic overdose case; May repeat up to max dose of 2 mg
- B. If no response is observed, this dose may be repeated after 5 minutes, if narcotic overdose is strongly suspected.
- C. May be given through ET tube at 2 times the IV dose.

Side Effects and Special Notes

- A. This drug is remarkably safe and free from side effects. Do not hesitate to use if indicated.
- B. The duration of some narcotics is longer than narcan and the patient must be monitored closely. Repeated doses of narcan may be required. Patients who have received this drug must be transported to the hospital because coma may reoccur when the narcan wears off.
- C. With an endotracheal tube in place and assisted ventilation, narcotic overdose patients may be safely managed without narcan. Think twice before totally reversing coma; airway may be lost, or (worse) the patient may become violent and may refuse transport.

NITROGLYCERIN

Class

Vasodilator

Pharmacology and Actions

- A. Cardiovascular effects include:
 - 1. Reduced venous tone, causes blood pooling in peripheral veins, decreasing venous return to the heart.
 - 2. Decreased peripheral resistance
 - 3. Dilatation of coronary arteries (if not already at maximum) and relief of coronary artery spasm.
- B. Generalized smooth muscle relaxation

Indications

- A. Angina
- B. Chest, arm, or neck pain caused by coronary ischemia
- C. Patients with 12-lead evidence of acute MI, with / without chest pain
- D. Cardiogenic pulmonary edema: to increase venous pooling, lowering cardiac preload and afterload.

Contraindications

- A. Children younger than 12 years of age.
- B. Patients currently using Viagra or similar drugs (male or female).

Precautions

- A. Generalized vasodilation may cause profound hypotension and reflex tachycardia.
- B. Use with extreme caution in hypotensive patients.
- C. Use with caution in patients with EKG evidence of a right ventricular infarct.

Administration

- A. Oral: 0.4 mg tablet / spray sublingually, may repeat every 3-5 minutes as needed for effect.

Side Effects and Special Notes

- A. Common side effects include throbbing headache, flushing, dizziness, and burning under the tongue (if given orally), these side effects may be used to check potency.
- B. Less common: orthostatic hypotension, sometimes marked.
- C. NOTE: Therapeutic effect is enhanced, but adverse effects are increased when patient is upright.
- D. Because nitroglycerin causes generalized smooth muscle relaxation, it may be effective in relieving chest pain caused by esophageal spasm.
- E. May be effective even in patients using paste, discs, or oral long-acting nitrate preparation.
- F. Patients taking Viagra or similar drugs should not be given nitroglycerin.

ONDANSETRON (ZOFRAN)

Class

Antiemetic

Selective antagonist of the serotonin receptor subtype

Pharmacology and Actions

- A. Very effective antiemetic
- B. Action is not known, probably due to the selective antagonist receptors on neurons located in either the peripheral or central nervous systems or both

Indications

- A. Nausea and vomiting

Contraindications

- A. Known sensitivity to the drug.

Precautions

- A. Not effective in preventing motion-induced nausea and vomiting

Administration

- A. 4 mg IV

Side Effects and Special Notes

- A. Headache
- B. Constipation
- C. Dizziness
- D. Musculoskeletal pain
- E. Drowsiness
- F. Fatigue
- G. Urinary retention
- H. Chest pain (rarely)

ROCURONIUM (ZEMURON)

Class

Skeletal muscle relaxant, neuromuscular blocking agent

Pharmacology and Actions

- A. Non-depolarizing neuromuscular blocking agent with intermediate to rapid onset
- B. Acts by competitive inhibition of cholinergic receptors at the motor end-plate
- C. Higher doses produce a longer duration of action

Indications for Use:

- A. Facilitate endotracheal intubation. Should be the second choice paralytic in RSI (Rapid Sequence Intubation)
- B. Provide skeletal muscle relaxation for mechanical ventilation

Contraindications

- A. Known hypersensitivity to Rocuronium
- B. Myasthenia gravis

Precautions

- A. Severe liver disease.
- B. Vancomycin and tetracycline antibiotics prolong the effects.
- C. Tegretol and Dilantin decrease the effects and duration.

Side Effects:

- A. Cardiovascular: arrhythmias, tachycardia
- B. Respiratory: bronchospasm, hiccups
- C. Dermatologic: rash, itching, injection site edema
- D. Gastrointestinal: nausea, vomiting

Administration:

- A. Rapid Sequence Intubation Dose: 1 mg/kg IVP, may repeat one time after 2 minutes if inadequate response is obtained.

Side Effects and Special Notes:

- A. Duration of effect is slightly increased in patients > 65 year
- B. Compatible with all IV solutions

SODIUM BICARBONATE

Class

Alkalinizing agent

Pharmacology and Actions

Sodium bicarbonate is an alkalotic solution, which neutralizes acids found in the body. Acids are increased when body tissues become hypoxic due to cardiac or respiratory arrest.

Indications

- A. Tricyclic overdose with arrhythmias, widened QRS complex, hypotension, and seizures.
- B. Consider in patients with prolonged cardiac arrest.
- C. Consider in dialysis patients with cardiac arrest (presumed secondary to hyperkalemia).

Contraindications

- A. Alkalotic states

Precautions

- A. Addition of too much sodium bicarbonate may result in alkalosis. Alkalosis is very difficult to reverse and can cause as many problems in resuscitation as acidosis.
- B. Not to be given with catecholamines or calcium
- C. May increase cerebral acidosis

Administration

- A. Contact medical control with any questions or concerns.
- B. For cardiac arrest / tricyclic overdose:
 - 1. Adult: 1 mEq/kg IV.
 - 2. Pediatric: 1 mEq/kg
 - 3. Neonatal: 1 mEq/kg

Side Effects and Special Notes

- A. Sodium bicarbonate administration increases CO₂ which rapidly enters cells, causing a paradoxical intracellular acidosis.
- B. Hyperosmolality of the blood can occur, resulting in cerebral impairment.
- C. Sodium bicarbonate's lack of proven efficacy and its numerous adverse effects have led to the reconsideration of its role in cardiac resuscitation. Effective ventilation and circulation of blood during CPR are the most effective treatments for acidemia associated with cardiac arrest.
- D. Administration of sodium bicarbonate has not been proven to facilitate ventricular defibrillation or to increase survival in cardiac arrest. Metabolic acidosis lowers the threshold for the induction of ventricular fibrillation, but has no effect on defibrillation threshold.
- E. The inhibition effect of metabolic acidosis on the actions of catecholamines has not been demonstrated at the pH levels encountered during cardiac arrest.
- F. Metabolic acidosis from medical causes (e.g. diabetes) develops slowly, and field treatment is rarely indicated.
- G. Sodium bicarbonate may be considered for the dialysis patient in cardiac arrest due to suspected hyperkalemia.

SUCCINYLCHOLINE (ANECTINE)

Class

Short duration, depolarizing neuromuscular blocker

Pharmacology and Actions

- A. Succinylcholine is a short-acting, depolarizing skeletal muscle relaxant.
 - 1. Like acetylcholine, it combines with cholinergic receptors in the motor nerves to cause depolarization.
 - 2. Neuromuscular transmission is thus inhibited, which renders the muscles unable to be stimulated by acetylcholine.
- B. Following IV injection, complete paralysis is obtained within 60-90 seconds and persists for approximately 4 to 5 minutes.
 - 1. Effects then start to fade, and a return to normal is usually seen within 6 minutes.
 - 2. Muscle relaxation begins in the eyelids and jaw.
 - 3. It then progresses to the limbs, the abdomen, and finally the diaphragm and intercostals.
- C. It has no effect on consciousness.

Indications

- A. Succinylcholine is indicated in RSI (Rapid Sequence Intubation) to achieve temporary paralysis when endotracheal intubation is indicated and muscle tone or seizure activity prevents it.

Contraindications

- A. Penetrating eye injury
- B. Patients at risk for hyperkalemia (e.g., patients with crush or burn injuries greater than 24 hours old, severe renal failure)
- C. Known hypersensitivity to the drug.

Precautions

- A. Succinylcholine should not be administered unless personnel skilled in endotracheal intubation are present and ready to perform the procedure.
- B. Cardiac arrest and ventricular arrhythmias can occur when Succinylcholine is administered to patients with severe burns and severe crush injuries.

Administration

- A. Adult: 200 mg IV push

Side Effects and Special Notes

- A. Oxygen therapies and suction should be readily available, as should all emergency resuscitative drugs and equipment.
- B. This agent has no effect on consciousness, cerebration or pain threshold. Thus, it is crucial that an analgesic or sedative is administered prior to Succinylcholine.
- C. When the airway is secured after Succinylcholine administration and intubation, and further need for neuromuscular blockade is indicated, consider the administration of rocuronium (Zemeron).
- D. This agent may increase intragastric pressure, which could result in vomiting and possible aspiration of stomach contents.
- E. Lidocaine administration, prior to paralytic administration, reduces the rise in ICP associated with paralytic endotracheal intubation. This is especially important if there is already the possibility of ICP secondary to a head injury.

Medication Drip Charts

Epi Infusion:

Mix 2mg of Epi 1:1,000 in 250 mL of NS. Using 60 drop micro set. Concentration is 8 mcg/mL.

Dosage is 5-20 mcg/min per protocol

Dose in mcg/min									
Micrograms per minute	2	3	4	5	6	7	8	9	10
Drops of 60 gtt tubing per minute	15	22	30	37	44	52	60	67	75

Push Dose Epi:

Items needed:

- – Epi 1:10,000 prefilled syringe (cardiac dose)
- 1 – Normal Saline Flush
- 1 – Needle to draw medication

Mixing Instructions:

1. Take a 10 mL NS flush and waste 1 mL of saline so you are left with 9 mL
2. With this syringe of 9 mL of NS, draw up 1 mL of Epi 1:10,000 from the prefilled syringe

Now you will have 10 mL of Epi with a concentration of 10 mcg/mL

Onset: 1 minute

Duration: 5-10 minutes

Dosing/ administration:

0.5 to 2 mL every 2-5 minutes (2-10 mcg)

Approved Medical Abbreviations

The following is a list of approved medical abbreviations. In general, the use of abbreviations should be limited to this list.

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
BG	- blood glucose
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-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)

Approved Medical Abbreviations

D5W	- 5% dextrose in water
DBP	- diastolic blood pressure
DKA	- diabetic ketoacidosis
DNR	- do not resuscitate
DOA	- dead on arrival
DT	- delirium tremens
Dx	- diagnosis
ECG	- electrocardiogram
EEG	- electroencephelogram
ET	- endotracheal
ETOH	- ethanol (alcohol)
ETT	- endotracheal tube
EXT	- external (extension)
FB	- foreign body
FLEX	- flexion
Fx	- fracture
g	- gram(s)
GI	- gastrointestinal
GSW	- gunshot wound
gtts	- drops
GU	- gastrourinary
GYN	- gynecology (gynecological)
H/A	- headache
HEENT	- head, eyes, ears, nose, throat
HR	- heart rate (hour)
HTN	- hypertension
Hx	- history
ICP	- intracranial pressure
ICU	- intensive care unit
IM	- intramuscular
IV	- intravenous
JVD	- jugular vein distension
kg	- kilogram
KVO	- keep vein open
L-SPINE	- lumbar spine
L/S-SPINE	- lumbar-sacral spine
L&D	- labor and delivery
LAT	- lateral
lb	- pound
LLQ	- left lower quadrant
LMP	- last menstrual period
LOC	- level of consciousness (loss of consciousness)
LR	- lactated ringers

Approved Medical Abbreviations

LUQ	- left upper quadrant
MAST	- military anti-shock trousers
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/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
OB/GYN	- obstetrics/gynecology
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
RLQ	- right lower quadrant
RUQ	- right upper quadrant
Rx	- medicine
RXN	- reaction
SBP	- systolic blood pressure
S/P	- status post
SOB	- shortness of breath
SQ	- subcutaneous
ST	- sinus tachycardia
SVT	- supraventricular tachycardia
Sx	- symptom
SZ	- seizure

Approved Medical Abbreviations

T-SPINE	- thoracic spine
T	- temperature
TIA	- transient ischemic attack
TKO	- to keep open (□□□□□□□□□□□□□□□□- same as KVO)
Tx	- treatment
UOA	- upon our arrival
URI	- upper respiratory infection
UTI	- urinary tract infection
VF	- ventricular fibrillation
VS	- vital signs
VT	- ventricular tachycardia
WAP	- wandering atrial pacemaker
WNL	- within normal limits
YO (YOA)	- years old (years of age)
+	- positive
-	- negative
?	- questionable
~	- approximately
>	- greater than
<	- less than
=	- equal
A	- before
p	- after
c	- with
s	- without
L	- left
R	- right
1°	- primary
2°	- secondary