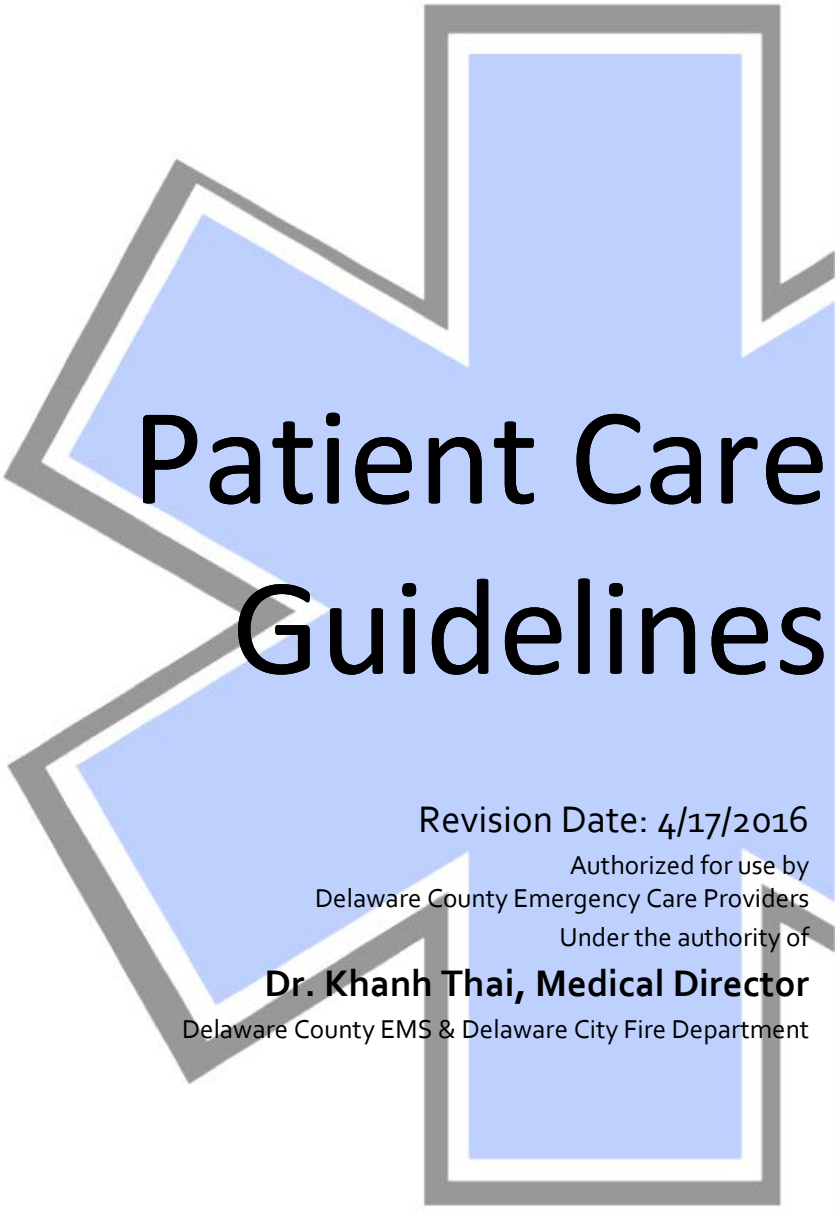
DELAWARE COUNTY, OHIO

Delaware County Emergency Medical Services



Patient Care Guidelines

Revision Date: 4/17/2016

Authorized for use by
Delaware County Emergency Care Providers
Under the authority of

Dr. Khanh Thai, Medical Director

Delaware County EMS & Delaware City Fire Department

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DELAWARE COUNTY EMERGENCY MEDICAL SERVICES | CITY OF DELAWARE FIRE DEPARTMENT
BERLIN TOWNSHIP FIRE DEPARTMENT | BST&G FIRE DISTRICT | ELM VALLEY JOINT FIRE DISTRICT
PORTER / KINGSTON FIRE DISTRICT | RADNOR TOWNSHIP FIRE DEPARTMENT
SCIOTO TOWNSHIP FIRE DEPARTMENT | TRI-TOWNSHIP FIRE DEPARTMENT

Patient Care Guidelines

The document is administratively maintained by:
Delaware County Emergency Medical Services | 10 Court St., Delaware, Ohio 43068
740-833-2190 | 740-833-2189 fax

Effective Date – 01/15/2011

This document supersedes all previous versions of the Patient Care Guidelines and Medical Protocols held by Delaware County Emergency Medical Services and all other participating agencies

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Medical Director Statement

The following document presents the protocols for the provision of out of hospital care by all levels of emergency medical care providers operating in Delaware County, Ohio. This protocol is to guide providers in assessing and treating the patients that they will be called on to care for. These have been written with the knowledge that every situation is different; but that certain basic guidelines must be adhered to in order to best standardize the care of our patients. Pre-hospital emergency medicine is an art and not an exact science; hopefully this protocol will allow pre-hospital providers and members of the emergency department to work together for the benefit of our patients.

The attached protocols shall be the guidelines for the medical treatment provided by the Emergency Medical Providers in Delaware County. The medical director has reviewed and approved these protocols for use.

Signature on file

_____

Khanh Thai, MD, Medical Director
Delaware County Emergency Medical Services
Delaware County, Ohio

STATE OF OHIO

COUNTY OF DELAWARE SS:

The undersigned hereby affirms that the statements made in the foregoing affidavit are true, under penalty of perjury.

Subscribed and affirmed to before me this 13th day of January, 2011,

By Brenda Hopkins

Signature on file

_____
Notary Public

My commission expires on _____

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Preamble

Summary:

These Patient Care Guidelines (PCGs) explain the policies, procedures and standing medical orders prescribed for Delaware County emergency medical personnel for treating the ill and injured in the out-of-hospital setting in Delaware County and mutual aid communities.

Authority:

The Delaware County Board of Commissioners has delegated to the Medical Director of DCEMS the authority to ensure that the medical objectives and mission of all Delaware County emergency medical personnel are achieved. Individual patient care protocols, procedures and standing orders have been reviewed, approved and authorized for immediate implication by the Medical Director of DCEMS.

Applicability:

These PCGs apply specifically to personnel operating under the Medical Director of DCEMS. The participating agencies include: Delaware County EMS, Delaware City Fire, Berlin Township Fire, BST&G Fire, Elm Valley Fire, Porter-Kingston Fire, Radnor Township Fire, Scioto Township Fire, and Tri-Township Fire.

Interim Changes:

Interim changes to these plans are not official unless they are authenticated by the Medical Director of DCEMS. Users will destroy interim changes on their expiration (or revision) date unless sooner superseded or rescinded. These PCGs shall remain effective until changed by the appropriate Medical Authority

Intent:

It is the intent of these PCGs to give all Delaware County emergency medical personnel written guidelines to manage a wide variety of common medical, trauma and psychiatric emergencies. Personnel must always make thorough situational and patient assessments and specific treatment plans based on those case-by-case findings.

Patient Definition:

"Patient: an individual requesting or potentially needing medical evaluation or treatment."

The relationship between provider and patient is established either by telephone, radio, or personal contact. This definition reflects more of an ethical principle than anything else. In the case of a mass casualty incident, everyone involved is a potential patient until proven otherwise. This principle holds true for every incident, regardless of size or magnitude. It is every provider's responsibility to make certain that all effected individuals are offered the opportunity for evaluation, treatment, and/or transport.

Transfer of Care Responsibility & Delegation:

Commented [E1]: Added language for CAAS compliance 6-12-15

When receiving a patient from another health care provider, Delaware County emergency medical personnel accepting the patient should obtain complete patient information to include:

- Incident Location & Location Type
- Patient Name, Gender, & DOB
- Agency/Facility & Referring Staff Identification
- Past Medical History including available Current Medications
- History of Present Illness or Episode
- Overview of Patient Assessment
- Treatment Rendered Prior to Arrival
- Any Other Pertinent Information

When transferring a patient to another health care provider, whether in the pre-hospital environment to another crew or agency, or to a receiving emergency department, Delaware County emergency medical personnel releasing the patient shall provide the receiving health care provider with complete patient information to include:

- Incident Location & Location Type
- Patient Name, Gender, & DOB
- Agency, Vehicle, & Crew Identification
- Past Medical History including available Current Medications
- History of Present Illness or Episode
- Overview of Patient Assessment
- Treatment Rendered by Personnel
- Any Other Pertinent Information

Transfer of care should only be made to a healthcare provider, or a healthcare team, whose level of training is equivalent to or greater than that of the personnel transferring the care, i.e. Paramedic, Nurse or Physician.

NOTE: When, at the discretion of the officer/acting officer, the EMS unit must depart the receiving facility prior to the written patient care report being completed, the patient information outlined above **shall** be provided verbally to the receiving facility **prior** to departure of said facility. Subsequently, the written patient care report shall be completed and electronically submitted to the receiving facility prior to the end of the current shift.

Commented [E2]: Added language for CAAS compliance 6-12-15

Preamble (cont.)

Emergency Operations Declaration:

During the course of a major medical incident, including that of a national health crisis, Delaware County emergency medical personnel may be asked to administer medications that are not listed on their drug license, and/or addressed in these PCGs. These medications may also be requested to be administered at locations which are not an incident location listed on the agency's drug license; however, during the course of an emergency, this shall be authorized. These medications will be administered only after an "Emergency" has been declared by the Health Commissioner or Emergency Management Agency having jurisdiction and, these providers will be working under the direction of that agency until they deem the "Emergency" to be over. Prior to administration, the EMS providers will be given guidance with information related to the medication, such as indications, dosage and side effects. This operation will only take place upon declaration of an "Emergency"; otherwise these PCGs will be followed.

Ohio Administrative Code: 4765-6-03 "Additional services in a declared emergency"

In the event of an emergency declared by the governor that affects the public's health, an EMS provider, certified in accordance with section 4765.30 of the Revised Code and Chapter 4765-8 of the Administrative Code, may perform immunizations and administer drugs or dangerous drugs, in relation to the emergency, provided the EMS provider is under physician medical direction and has received appropriate training regarding the administration of such immunizations and/or drugs.

Effective: 02/06/2012

Patient Advocacy:

Patient care and safety shall be the primary focus of all emergency health care providers in Delaware County. Any request for urgent or emergency medical care shall be honored as long as the request is legal and ethical. Patients deserve to be informed, when possible, of all decisions affecting their care and transport. Competent adults have the legal right to accept or refuse treatment and/or transport recommendations. Immediate family members should be considered an extension of the patient in notification and scene management. Family members should be treated with dignity and respect, and should be equally supported in their role as the patient's advocate.

Patient Confidentiality:

All information obtained during the course of treating and transporting a patient is confidential.

Providers have an ethical responsibility to handle all information and documentation regarding a patient with a high degree of confidentiality. Patient information is only to be shared with those individuals who are part of the continuity of patient care. Patient records should not be provided to law enforcement agencies or other non-medical public safety entities that are not part of the patient care continuum.

Once a patient record has been completed, it is considered a medical record and, therefore, is confidential. Every effort should be made to ensure that the patient record will not be left unattended, open for public view, or stored haphazardly in a way which will compromise the confidentiality of the patient and the record's contents. Similarly, it is our responsibility to not discuss patient care issues with anyone other than those medical professionals involved in that patient's care.

Nondiscrimination Statement:

Delaware County emergency medical personnel shall serve as the patient's advocate, and will provide prompt urgent or emergency response, treatment and transport upon request, and shall have no regard to race, color, religion, gender, national origin, age, disability, disease, marital status, sexual orientation or any other factor.

Documentation:

All patient contacts shall be appropriately documented using authorized Delaware County patient report forms. All patient care documentation shall be done using the C.H.A.R.T. format. Each patient contact shall also be given an individual "Incident Number," as assigned by the Delaware County 9-1-1 Center, which shall be documented on all EMS patient care report forms

Professionalism

The following paragraphs were taken from Bledsoe's "Paramedic Emergency Care Second Edition," and establish the foundation that all providers (volunteer or career) should strive for and maintain.

> *"Professionalism describes the conduct or qualities that characterize a practitioner in a particular field or occupation. Health care professionals promote quality patient care and take pride in their profession. They earn the respect and confidence of team members by performing their duties to the best of their abilities and by exhibiting a high level of respect for their profession. Attaining professionalism is not easy. It requires an understanding of what distinguishes the professional from the non-professional. To develop this skill, keep the following points in mind. Professionals place the patient first; non-professionals place their egos first. Professionals practice their skills to the point of mastery, and then keep practicing them to improve and remain sharp. Non-professionals do not believe their skills will fade and see no reason to constantly strive for improvement. Professionals understand the importance of response times; non-professionals get to an accident when it's convenient. Professionals take refresher courses seriously, because they know they have forgotten a lot and because they are eager for new information. Non-professionals believe they don't need training sessions and dislike being required to attend them. Professionals critically review their performance, always seeking a way to improve. Non-professionals look to protect themselves, to hide inadequacies, and to place blame on others. Professionals check out their equipment prior to the emergency response. Non-professionals hope that everything will work, supplies will be in place, batteries will be charged, and oxygen levels will be adequate. Maintaining professionalism requires effort. But, the result of that effort - the admiration and respect of one's peers - is the highest compliment a person can receive."*

Being a professional has nothing to do with pay or rank or the level of certification that you hold. It is the goal that every member of our Practice, from basic provider to the Medical Director, constantly strives for to remain a comprehensive, clinically sophisticated, and compassionate EMS System.

The Five Deadly Sins

It is important for the individuals and agencies that are part of any EMS system to always focus on providing clinical care that is appropriate for the patients we serve. We will always be accountable for our actions and the Delaware County system will focus on a non-disciplinary approach to support and re-educate members of the system. On occasion, however, circumstances arise that may lead to a change in credential status, such as suspension or revocation of the provider's ability to practice. It is to be understood that these actions shall be carried out as directed by the Medical Director of DCEMS.

As in any practice of medicine, there are certain actions that are deemed unacceptable for any Emergency Provider involved in the medical care of patients. In the Delaware County system, these actions are known as the "Five Deadly Sins." If substantiated through a process of appropriate investigation by the providing Department's Chain of Command, the Medical Director of DCEMS, and if appropriate, by the standards agreed to between the Department's Leadership and its Labor Union, any Provider found to be involved in any of these actions may be "Decredentialed" in the System. These actions are:

1. Falsification of a patient care document
2. Intentionally withholding care from a patient
3. Intentionally harming a patient
4. Providing care while impaired by alcohol or drugs
5. Failure to remediate and/or participate in required education and/or review

Additionally, there may be circumstances that result in suspension or revocation of a Provider's credentials. These may include, but are not limited to, the following:

- Lapse, Loss, or Suspension of State of Ohio EMT Certification
- Lapse or Loss of Required National Standards Certification(s), (i.e. BLS, ACLS etc.), as specified per credentialing level.
- Activity that may pose a threat to public health
- Any action taken by the Ohio Department of Public Safety – Division of Emergency Medical Services.

Ultimately, credential status of Delaware County emergency medical providers is solely at the discretion of the Medical Director of DCEMS.

In all events concerning these issues, the Chief Officer of the Provider's Department will be advised. If deemed appropriate, the leadership of other organizations within the Delaware County System and/or ODPS – Division of EMS may be notified.

Foundations of Patient Care

1. These Patient Care Guidelines (PCGs) are the result of the combination of nationally recognized guidelines, local medical practice, and input from the Medical Director of DCEMS and participants from the Delaware County protocol development team. Nationally recognized resources include, but are not limited to:

    - Basic Life Support (HCP-CPR), Advanced Cardiac Life Support (ACLS/ACLS-EP) & associated courses.
    - Pediatric Advanced Life Support (PALS) & Pediatric Education for Pre-hospital Providers (PEPP).
    - Neonatal Resuscitation Program (NRP) & Neonatal Advanced Life Support (NALS).
    - Advanced Medical Life Support (AMLS).
    - Basic Trauma Life Support (BTLS), Pre-Hospital Trauma Life Support (PHTLS) & associated courses.
    - Advanced Burn Life Support (ABLS)

    Delaware County emergency medical personnel are encouraged to use the guidance and algorithms of these resources to supplement the PCGs in their daily practice. If contradiction occurs, however, these PCGs will supersede any other algorithm. Alternative courses of action may be utilized when appropriate, following standard medical control, deviation, and documentation guidelines.
2. While this document cannot cover every possible variation of disease or injury encountered in the field, it should provide a foundation for the acute care of the majority of patients seen.
3. The Delaware Tactical Unit (DTU) shall operate under the patient care guideline set forth in this protocol. In addition, a supplemental training manual will be provided to the clinicians assigned to the DTU which may extend patient care beyond these guidelines. Only individual clinicians authorized by the Medical Director may operate under these extended guidelines.
4. Each and every protocol should be considered to have, as its first directive, a mandate to maintain universal blood and body fluid precautions and scene safety to the emergency care providers of the department.
5. Newer defibrillators using biphasic technology require lower energy doses and self-regulate the appropriate electrical energy delivered. When not specified, or when a different device (other than those normally used by Delaware County emergency medical personnel), or if device deployment changes after publication of the PCGs, all protocols assume energy levels as set by the manufacturer recommendations for the device.
6. Basic Life Support (BLS) measures are considered as standing orders for Advanced Life Support (ALS) providers unless otherwise specifically mentioned.
7. General treatment: All patients shall receive the following general supportive care as appropriate (within the scope of practice and sound clinical judgment of the provider):

    Airway Control:

    - Positioning/suctioning
    - Oropharyngeal or nasopharyngeal airways
    - Esophageal-Tracheal CombiTube or other adopted advanced airway device
    - Endotracheal intubation (oral, nasal, digital)
    - Use of pharmacological agents to facilitate airway control (RSII)
    - Use of difficult airway devices, such as the Endotracheal Tube Introducer, to facilitate airway control
    - Cricothyrotomy (needle, surgical)

    Ventilatory Support:

    - Supplemental oxygen by appropriate means
    - Bag/valve/mask - bag/valve/ET
    - Demand valve (Elder valve)
    - Monitoring of pulse oximetry and end tidal CO_2
    - CPAP devices when available
    - Deep tracheal suctioning

Foundations of Patient Care (cont.)

Circulatory Support:

- CPR and components of CPR
- Basic bleeding control, up to and including use of tourniquets

Spinal Immobilization:

- Selective immobilization using cervical collars, KED's (or similar devices), spine boards (or similar devices), and improvised devices. This includes screening for appropriate immobilization.

Splinting:

- Using pillows, cardboard splints, vacuum splints, traction devices, PASG, and other improvised devices as appropriate and available.

Vascular Access:

- Single or multiple lumens
- Peripheral, Central or Intraosseous access, including the access of pre-established lines, when appropriate.
- Normal saline and saline lock as appropriate
- Use and maintenance of other crystalloid solutions and pre-established vascular access, including PICC lines, Hickman catheters, hemodialysis lines, and other routes of vascular access (as training and clinician comfort level allows)

ECG/Electrical Therapy:

- Defibrillation/cardioversion/pacing, including AEDs and manual devices
- ECG and 12 lead monitoring
- Patients requiring continuous ECG monitoring shall be attended to by a paramedic at all times

Universal Precautions

Providers SHALL use Universal Precautions as outlined:

Adherence to infection control principles is the responsibility of each Provider. All EMS Providers must be aware of well-known infectious agents (Hepatitis B, influenza, etc.), as well as emerging new pathogens (Avian Flu, SARS, etc.) that present challenges to medicine and risks to Providers. A personal commitment to employing basic infection control measures on every single incident will provide the simplest and best protection against infectious diseases. *Make it a habit!*

Basic Protection Guidelines and Immunizations

The infection "triad" requires a portal of entry, an adequate amount of the infectious agent, and a susceptible host (the Provider) in order for a person to actually become infected. Through the engineering of safer equipment and the use of Personal Protective Equipment (PPE), we can prevent portals of entry and reduce the amount of materials to which you may be exposed.

Although it sounds simplistic and obvious, individuals that are well nourished, rested, and physically fit have immune systems that are more responsive and better prepared to mount an effective fight against invading pathogens. Taking care of ourselves decreases our long-term morbidity and allows us to recover more quickly should we become infected.

In any health care environment, Providers can expect to be routinely exposed to infectious agents. Immunizations are an extremely important weapon against infection from many of the more common agents. Keeping current on appropriate immunizations protects you, protects patients from becoming infected by you, and decreases overall disease transmission (a concept in public health known as herd immunity). As always, you should consult with your regular physician regarding your health care and immunization status. For healthcare workers, the currently available recommended immunizations (or documented immunity) include:

- Hepatitis B, Measles, Mumps, Rubella, Varicella, Tetanus, Diphtheria, or Pertussis
- Influenza (seasonal)
- Hepatitis A (particularly for Providers routinely involved in water rescue operations)

Attention to ongoing hand washing, especially during the cold and flu season, is very important. Contact with contaminated surfaces provides a ready way for you to become infected and for you to infect others. Hands should be washed after each patient contact, gloves should be changed and all equipment cleaned. In addition, gloves should be changed between patient contacts while on multiple patient scenes. Waterless, alcohol-based hand cleaners are an acceptable alternative to soap and water provided there is no gross organic material present. To be effective, hand washing with soap and water needs to be performed for a minimum of twenty (20) seconds, using a vigorous rubbing together of all surfaces of lathered hands followed by thorough rinsing under a stream of water. As soap and water are not typically available at the scene, a waterless hand wash/wipe should be used before boarding the vehicle. Upon return to the station, all Providers should wash their hands with soap and water.

Additionally, it is important to conduct a self-check of your skin (particularly hands and exposed surfaces) prior to any potential patient contact. Identify scrapes, wounds, or other non-intact surfaces and cover all open and scabbed wounds with bandages. The integrity of any bandages should be monitored during your shift to ensure the continuation of their protection.

Personal Protective Equipment (PPE)

PPE is designed to stop the transmission chain of an infectious agent by preventing potentially infectious microorganisms from contaminating a Provider's skin, mucous membrane, or clothing, and subsequently being transmitted to others. While PPE reduces the risk, it does not completely eliminate the possibility of infection, and is only effective if chosen and used correctly.

Remember, PPE should always be readily available, not just carried in the vehicle for those "surprise" circumstances where the possibility of exposure exists. In addition, wishing you had your PPE available AFTER an exposure is a terrible place to put yourself.

There are instances that the selection of appropriate PPE should be obvious and regarded by all Providers as standard practice. These include:

- Anytime patient contact is made, gloves are to be worn. The EMS System has adopted the use of latex free materials whenever possible and certainly in all cases where a patient or Provider suffers from latex sensitivity.
- During any type of airway management procedure, or other situation that fluid splash contact with the Provider's face is a possibility, the protection of mucous membrane is crucial. Effective mucous membrane protection may be afforded by use of the combination eye shield and mask apparatus, or N95 mask in conjunction with approved eyewear (goggles or safety glasses with side shields).
- Whenever the possibility exists that a patient's bodily fluids could be splashed onto a Provider, gowns should be utilized.

Universal Precautions (cont.)

There are times when the selection of proper PPE, especially respiratory protection, is not so obvious and must be made based on how a disease is spread. In these situations, the difficulty in determining the appropriate level of protection is that a truly informed decision usually can't be made until a patient assessment is completed and/or a history is obtained. By then, it's too late! For that reason, a patient exhibiting any of the following signs or symptoms should be a signal to Providers, that in addition to gloves and possibly a gown; some level of respiratory protection is required:

- Productive cough (with or without blood)
- Fever and chills with coughing
- Night sweats
- Dramatic (> 10%) unexplained weight loss
- Fatigue (in the presence of other symptoms)
- Hemoptysis (coughing up blood)
- Nuchal rigidity (stiff neck)
- Chest and upper torso rash
- A recent history of travel out of the continental United States
- Patients with high risk for a positive history of TB exposure (i.e. nursing home patients).

In determining the type of respiratory protection needed, remember that only the N95 mask will afford protection against diseases spread via airborne particles (i.e., tuberculosis), while the combination eye shield and mask apparatus is appropriate protection against disease spread through larger droplets (i.e., meningitis). In either case, protection is only afforded if the mask is worn, and worn properly.

- For a patient exhibiting signs and/or symptoms of a disease spread via airborne particles, the N95 mask should be donned prior to entering an enclosed area that the patient may have contaminated
- When caring for a patient with signs and symptoms of a disease spread through larger droplets, the N95 mask or combination eye shield and mask should be donned as soon as possible, and worn anytime the Provider is within five (5) feet of the patient.
- When airborne or droplet precautions are appropriate, the additional step of placing a non-rebreather mask with supplemental oxygen on the patient should be employed. This will limit the amount of aerosolized agent emitted. You may also consider placing a disposable surgical mask to all persons suspected of having a respiratory infection. In N95 mask should never be used on a patient as it could inhibit his or her respiratory function.
- If the patient needs to expectorate, every attempt to should be made to capture the sputum in a tissue or gauze, and dispose of properly.
- When in doubt, maximal rather than minimal PPE should be selected.

Sharps Hazards

- The greatest risk for an occupational exposure to blood occurs with the use of needles and other sharp utensils. The most common occupational blood exposure occurs when needles are recapped. Needles that have contact with human tissue SHALL not be recapped, re-sheathed, bent, broken, or separated from disposable syringes.
- Used needles and other sharps shall be disposed of in approved sharps containers.
- Providers should ensure that no sharp is used in a manner inconsistent with its intended purpose or attempt to circumvent the safety features of the device.

Cleaning and Disinfection of Equipment and Work Areas

Remember how important it is to keep all medical equipment clean and free from infectious agents. The essential part of cleaning and disinfecting equipment is ensuring the removal of all accumulated organic material, otherwise known as "chunks." Failure to remove organic material provides a continuing breeding ground for organisms. After the removal of the organic material, disinfection can take place.

Be thorough with your cleaning and consider using your PPE eyewear if you need to do heavy cleaning that may result in splashing. Remember to clean any surface that your gloved hand may have contacted. After applying your disinfectant, permit the equipment to air dry. Wiping dry the wet disinfected surface will negate the effects of the agent and render it useless. Upon completion of the cleaning, make sure you wash your hands.

Universal Precautions (cont.)

Exposure Follow-up

The purpose of PPE, and always using sound infection control practices, is to reduce or eliminate the potential for infection. On occasion, a Provider is exposed to blood, bodily fluids, or airborne particles, and appropriate action must be taken. Many of these actions are time-dependent so it's important to initiate the reporting and follow up process as soon as possible. Besides adherence to sound infection control practices, the most important thing you can do to ensure your health and well-being is to educate yourself. Become knowledgeable about infectious diseases and the exposure reporting and follow-up process for your Department. Knowledge of the process specific to your Department ensures the right people are notified in a timely manner should post exposure testing, follow-up, and documentation is required. Following are general guidelines to be followed should you experience, or suspect that you have experienced, an exposure to blood or other infectious material:

- Withdraw from patient care as soon as it is appropriate. This is usually at the completion of care but may need to occur sooner in some cases.
- Take self-care steps and cleanse the wound (or irrigate the membranes) with the appropriate solution immediately after any exposure to a patient's bodily fluids. Don't attempt to "milk" any needle stick injuries. This is not useful in removing source patient material.

Exposures require immediate intervention. Report any suspected exposure to communicable diseases to the appropriate designated individual in your Department as quickly as possible. Questions and consultation regarding post exposure actions should be immediately directed to the Provider's Infection Control Officer. Consultation may reveal that medical evaluation of the exposure, testing, follow-up, and/or additional documentation is necessary. In the case of a blood exposure due to needle stick (or other sharps), spray to mucous membrane, or patient blood contacting non-intact skin, the Provider should immediately travel, or be transported to, the closest appropriate facility for evaluation, preferably where the patient was transported.

Guidelines Pertaining To All Patients

1. **All Persons operating under this protocol shall not exceed their scope of practice or level of certification, unless specifically directed otherwise by online Medical Control.**
2. Consider appropriate level of universal precautions. Assess the scene for dangers to the rescuers.
3. Consider the number of patients, and mechanism of injury / nature of the illness. Request additional help if necessary.
4. Begin an ABCDE approach to each patient to form a general impression, and establish the presence of a life threatening injury or illness.
   - Assess the airway and adequacy of breathing. Treat accordingly.
   - Assess the circulation/perfusion.
   - Quickly assess level of consciousness using the AVPU Method.

     A - Alert - Eyes Open / **V** - Verbal - Responds to vocal stimuli

     P - Pain - Responds only to painful stimuli / **U** - Unresponsive - No response to verbal or painful stimuli
   - Provide care for any compromise in airway, breathing, circulation, neurological status per protocol and perform basic life support according to the current guidelines.
   - Baseline vital signs should be obtained and recorded as soon as practical. Standard vital signs include: heart rate, respiratory rate, blood pressure, and pulse oximetry / etco2 reading when available. Repeat and re-record abnormal vital signs and after interventions.
   - Identify priority patients and make a transport decision.
5. Gather the patient's history of present illness

   O - Onset of the problem / **P** – Provocation / **Q** - Quality – "Crushing", Pressure, Ache, Stabbing /

   R – Radiating / **S** - Severity - "1-10" scale and duration / **T** - Time since the onset of this episode
6. Assess for signs / symptoms of injury

   D – Deformity / **C** – Contusion / **A** – Abrasions / **P** – Penetrations / **B** – Burns / **T** – Tenderness /

   L – Lacerations / **S** - Swelling
7. Past Medical History
   - Known medical problems
   - Recent surgeries, hospitalizations
   - Current medications & allergies
   - Private MD or HMO
8. Talk with patient's relatives and/or bystanders and gather additional pertinent information
9. Place the patient in their position of comfort unless contraindicated by patient condition
10. All protocol drug doses specified in **RED** are for an ADULT patient. Specific pediatric guidelines are provided where necessary and/or appropriate and are printed in **BLUE**.
11. **When a drug dose is calculated as dose/kg, doses are pre-calculated for 50 kg, 75 kg, and 100 kg patients. These doses appear in parentheses after the standard dose and are printed in GREEN.**
12. For purposes of medication doses and other protocol specifics, pediatric patients are defined as patients < 16 years old and adults are patients ≥ 16 years old.
13. For all critically ill or injured patients, notify the anticipated receiving hospital as soon as possible after completing the initial assessment of the patient.

Commented [SK3]: Change age to 16 y/o

Rapid Assessment - Priority Patients

Rapid Assessment should be performed on all priority patients after the initial "triage" level assessment. Patients with a mechanism of injury or nature of illness consistent with the possibility of spinal trauma should first have manual C-Spine controlled, and after the rapid assessment be fully C-Spine immobilized.

Rapidly assess the patient "head to toe" (roughly 1 to 1½ minutes total)

1. Reconsider Mechanism of Injury
2. Head, Ears, Eyes, Nose, Throat:
   - Head: for signs of trauma
   - Ears: look for blood, CSF or foreign bodies
   - Pupils: symmetric & responsive to light
   - Nose: injury, blood or CSF
   - Throat: bleeding or obstruction
   - Neck: pain, stiffness or injury. No JVD, obvious injury, employs cervical spine precautions
   - DCAP-BTLS: Assess for any signs of Deformity, Contusions, Abrasions, Penetrations, Burns, Tenderness, Lacerations, Swelling
3. Chest and Abdomen:
   - Chest: signs of blunt or penetrating trauma, bleeding, visible injury
   - Breath Sounds: movement symmetry and effort should be noted, palpate for pain
   - DCAP-BTLS: assess for any signs of Deformity, Contusions, Abrasions, Penetrations, Burns, Tenderness, Lacerations, Swelling
   - Abdomen: blunt or penetrating injury, pain, tenderness, rigidity, and guarding
   - Bowel sounds: auscultation for bowel movement
   - Pelvis: stability, history of trauma
   - DCAP-BTLS: assess for any signs of Deformity, Contusions, Abrasions, Penetrations, Burns, Tenderness, Lacerations, and Swelling
4. Extremities and Back:
   - Extremities: lower and upper extremities,
   - PMS: Assess for presence of pulse, sensation, and motor function, edema, signs of poor perfusion.
   - DCAP-BTLS: assess for any signs of Deformity, Contusions, Abrasions, Penetrations, Burns, Tenderness, Lacerations, and Swelling.
   - Back: visible signs of injury or pain. Patients with possible spinal injury, assess during log roll
5. Neurological Survey:
   - Pupils: equality & reactive to light
   - LOC:

     A - Alert / **V** - Verbal / **P** - Pain / **U** - Unresponsive.
6. Past Medical History:
   - SAMPLE:

     S - Signs/Symptoms / **A** – Allergies or adverse reaction / **M** – Medications / **P** - Past Illnesses / **L** - Last Meal / **E** - Events of the injury/illness
7. Exposure: Expose the patient, keeping modesty in mind. Keep patient warm.
8. Obtain Baseline Vital Signs

General Transport Guidelines

1. Establish and maintain a patent airway and use supplemental oxygen via nasal cannula, mask, adjunctive device or advanced airway as required.
2. Perform a primary and secondary assessment including a past medical history of every patient transported.
3. Obtain and gather all pertinent information including X-rays, electrocardiograms, laboratory values, emergency department and/or inpatient records, and medications if available**. When possible, bring the patient's medications to the hospital with the patient.** Include all over-the-counter and non-prescription medications, including supplements and herbal remedies.
4. Transport the patient in a position as comfortable as possible. Use *and document* appropriate measures to prevent hypothermia. Utilize appropriate positioning, splinting, diversion from pain, and administer pain control medication as indicated.
5. Prevention and control of nausea and vomiting, motion sickness, and medical emergencies (kidney stones, migraine, severe abdominal pain, gastroenteritis.)
6. Apply a cardiac monitor. Obtain and record vital signs, including a baseline temperature when appropriate. Monitor and document O_2 saturation as well as end tidal CO_2 levels where appropriate. Vital signs should be documented at least every 5 to 15 minutes as the patient's clinical condition indicates during transport.
7. Establish and maintain intravenous access using NS as indicated by the patient's condition and/or protocol.
8. Advise receiving hospital as soon as possible of patient status and all changes in condition via radio and/or telephone. Information to include:
   A. Age
   B. Sex
   C. Chief Complaint
   D. Sings / Symptoms
   E. Vitals
   F. Treatments with patients response
   G. Transmit **all** 12 lead EKG

General Principles for Emergency Transport

1. All patients with abnormal vital signs or with potential deterioration in vital signs should be transported to an appropriate medical facility. In most cases, this will imply transport of the patient to the closest medical facility with an emergency department. When indicated by this protocol or standard operational guidelines, transport to specialized centers may be indicated. (Trauma, pediatric, OB/GYN, cardiac, stroke, microvascular surgery, burns, etc.)
2. Patients with vital signs within normal limits and patients that are not in imminent danger that require transport may be taken to the patient's facility of choice provided that it is within a reasonable transport time and will not result in undue stress to the EMS system. Generally, the crew should honor the patient's wishes when it is acceptable under the conditions of this protocol
3. Transportation should be offered to any patient that, in the opinion of the Company Officer or on-duty EMS Captain, may require treatment at a medical facility for their complaint.
4. Transportation shall be offered to all patients that are complaining of, or exhibiting signs of, but not limited to:
    - Abnormal vital signs
    - A sudden or new onset of severe headache
    - Complaint of high temperature in children
    - Renal dialysis patients
    - History of diabetes with a medical complaint
    - Severe abdominal pain
    - A mechanism of injury which has or may cause head or cervical spine injury.
    - Neck pain
    - Intoxication
    - Children < 6 y/o
    - Adults > 65 y/o
    - Distracting (severe) injuries
5. Transportation shall be provided by an ALS unit for:
    - Recent complaint of chest discomfort/pain
    - Abnormal difficulty in breathing
    - Any need for cardiac monitoring
6. Transportation must be provided and patient cannot refuse with (see Refusal of Treatment Guidelines):
    - An altered level of consciousness
    - Any penetrating trunk or head trauma
    - Any severe extremity trauma
    - Any patient who has required an airway intervention

Any minor (< 18 y/o), unless they are married or active duty military

Air-Medical Transport Guidelines

The decision to access an air medical response will generally be made by the first arriving EMS vehicle. The EMS unit should advise Incident Command for the need of the medical helicopter. In general air medical services should be restricted for only special situations:

- When the speed of transport will make a significant difference in patient outcome
- Acute Stroke patient i9n 4 hr window without contraindications (recent surgery, blood thinners, severely elevated BP, trauma, major hemorrhage)
- When the scene is not accessible by ground vehicle
- When there will be a decrease in the transport time of 15 minutes or greater by using a helicopter
- Significantly injured multisystem trauma patients
- Hypothermic patients in cardiopulmonary arrest
- Carbon monoxide exposures with cardiac dysrhythmias, chest pain or cardiopulmonary arrest with return of spontaneous circulation may be transferred to a specific facility for hyperbaric oxygen therapy
- Chest pain with ST segment elevation with ground transport that exceeds 20-30 min.
- Significant burns over 20% total body surface area or significant airway compromise
- **Pediatric multiple trauma with extended transport times**

Load and Go Guidelines

1. Airway obstruction uncorrectable in the field.
2. Traumatic cardiopulmonary arrest.
3. Uncontrolled arterial bleeding.
4. Severe signs of shock.
5. Major chest injury (i.e., tension pneumothorax, pericardial tamponade, massive hemothorax, sucking chest wound, penetrating wounds with shock, flail chest).
6. Bilateral femur fractures and/or unstable pelvis.
7. Head injury with decreasing level of consciousness and/or unilateral dilated pupil.
8. Symptomatic pregnancy.
9. The only field treatments to be instituted prior to transport are as follows:
   - Airway management with C-Spine control, 100% O_2. Maintain $ETCO_2$ at 25 to 40 mmHg for intubated patients.
   - Chest wound management (i.e., tension pneumothorax, sucking chest wound, flail chest stabilization)
   - Basic CPR in cases of trauma arrest
   - IV's (if placed during extrication or during transport), C-Collar and backboard (when appropriate), and cardiac monitor.
   - Consider **Epinephrine – 1 mg IV, IO** and only one attempt at defibrillation (see traumatic arrest protocol).

SECTION II - TRAUMA / MULTISYSTEM INJURIES

Multiple Trauma - Transport Guidelines

Patients with a significant traumatic mechanism of injury (major trauma) with any of the following associated findings should be transported to the nearest designated trauma center. If the patient's injuries are SO severe that the transport to the trauma facility would be too lengthy for patient survival (i.e.: traumatic arrest, airway obstruction, uncontrollable bleeding), the Company Officer or Incident Commander may elect to transport to the closest Emergency Department for primary stabilization.

Physiologic Trauma Criteria are:

- GCS of 13 or less, unless baseline mentation documented to be at some level ie; dementia
- Loss of consciousness greater than four minutes
- Deterioration in LOC with evidence of head injury at the time of exam or thereafter, or cognitive inability to localize pain with significant injury
- Systolic BP < 90 mmHg
- Respiratory rate < 10 or > 30, or anyone requiring ventilatory support.
- **Respiratory rate less than 20 in infants less than 1 year old**
- Penetrating injuries to head, neck, torso, or extremities proximal to the elbow or knee
- Flail chest
- Open skull fracture
- Trauma with significant burns
- Two or more proximal long bone fractures (humerus, femur)
- Unstable pelvic fractures
- New onset paralysis
- Amputation injuries proximal to the wrist or ankle
- Ejection from an automobile during a motor vehicle crash
- Death of another patient in the same auto during a motor vehicle crash
- Extrication time > 20 minutes
- Falls > 20 feet
- Victim of rollover crash
- Victim of a high speed auto crash (impact speed > 40 mph, major auto deformity, intrusion of auto damage into the passenger compartment)
- Vehicle telemetry data consistent with high risk of injury
- Auto-pedestrian or auto-bicycle injury with significant impact
- Pedestrian thrown or run over
- Motorcycle crash > 20 mph, or separation of rider from bike
- Patient with major trauma and age < 5 or > 55 years old
- Patient with major trauma who has cardiac or respiratory disease
- Pregnant patient with major trauma or unstable vital signs
- Major trauma patient with immune system problems
- Major trauma patient with bleeding disorder, or an anticoagulant medication; Comadin, Plavix, ASA, Aggrenox, Lovenox

Commented [SK4]: Changed from "intubation" 2-3-15

Commented [SK5]: Added 2-3-15

Commented [SK6]: Added 2-3-15

Commented [SK7]: Added 2-3-15

Multiple Trauma - Transport Guidelines (cont.)

Ohio Administrative Code 4765-14-05 - Exceptions to mandatory transport.

(A) Emergency medical service personnel shall transport a trauma victim, as defined in section 4765.01 of the Revised Code and this chapter, directly to an adult or pediatric trauma center that is qualified to provide appropriate adult or pediatric care, unless one or more of the following exceptions apply:

(1) It is medically necessary to transport the victim to another hospital for initial assessment and stabilization before transfer to an adult or pediatric trauma center;

(2) It is unsafe or medically inappropriate to transport the victim directly to an adult or pediatric trauma center due to adverse weather or ground conditions or excessive transport time;

(3) Transporting the victim to an adult or pediatric trauma center would cause a shortage of local emergency medical service resources;

(4) No appropriate adult or pediatric trauma center is able to receive and provide adult or pediatric trauma care to the trauma victim without undue delay;

(5) Before transport of a patient begins, the patient requests to be taken to a particular hospital that is not a trauma center or, if the patient is less than eighteen years of age or is not able to communicate, such a request is made by an adult member of the patient's family or a legal representative of the patient.

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Multiple Trauma-General Guidelines

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Assess airway and maintain c-spine.
2. Use airway and ventilation general guidelines.
3. Place c-collar. Use full c-spine precautions if mechanism of injury and cervical spine involvement is unknown. If patient is pregnant, (second or third trimester) tilt board on left side.
4. Assess breathing; determine rate, effort, and effectiveness of breathing.
5. Check for asymmetrical breathing/breath sounds.
6. Ventilate as needed using a BVM and mask with effective seal.
7. Paradoxical chest movement may indicate a flail chest. Splint as needed.
8. Assess circulation.
9. Control major external hemorrhage
10. Measure and record pulses and capillary refill
11. Assess palpable pulses indicating approximate systolic blood pressure.
    - Carotid=Systolic BP of 60
    - Femoral= Systolic BP of 70
    - Radial= Systolic BP of 80
12. Disability-Assess mental status using Glasgow Coma Scale
13. Expose patient and immobilize any major fractures PRN without delay of transport
14. Remove as much clothing as possible-particularly cold and wet clothing.
15. Note and record injuries to back BEFORE rolling onto backboard.
16. Re-cover patient with warm, dry blankets.
17. Call for ALS intercept
18. Arrange for transport to an appropriate facility (see below)

Advanced EMT

Treatment continuation from above

19. Warmed IV NS with large IV catheter $\geq$ 16 gauge without delay in transport
20. Administer **500ml boluses** then infuse at a rate to maintain a systolic BP $\geq$ 90 mmHg, intact mental status, or to maintain adequate perfusion i. e. Cap refill, mentation

(continued on next page)

Multiple Trauma-General Guidelines (cont.)

Paramedic

Treatment continuation from above

21. If unable to maintain perfusion after 1000ml NS bolus, consider administration of **Transexamic Acid (TXA)** in accordance with TXA medication protocol.
22. Consider intubation
23. Consider cricothyroidotomy if all other attempts to secure the airway fail
24. Consider the following for pain control if appropriate and systolic BP ≥ 90 mmHg
    A. Administer **Fentanyl (*Sublimaze*) - 50 to 100 mcg IV, IO, IM may repeat to max of 200 mcg (75 mcg IN may repeat x1)**
    - OR –
    B. Administer **Dilaudid (Hydromorphone) – 0.5 to 1mg IVP (slow), IO, IM, IN. May repeat to max total dose of 2 mg**
    - OR -
    C. Administer **Morphine Sulfate - 2 to 5 mg slow IV, IO, IM, SQ to a max of 10 mg IV**
    (In abdominal pain, 25 mcg Fentanyl IV, IO, IM, IN or 2mg MS IV, IO, IM, SQ may be used to control severe pain may consider repeat x1) And must notify receiving hospital of medications given for abdominal pain.
    D. Consider **Ondansetron (*Zofran*) - 4 mg undiluted, IM or slow IV, IO** for nausea. May repeat once to max of 8 mg.
    E. Administer pain medication ONLY if:
    - Respiratory status adequate-monitor this carefully!
    - Normal LOC and systolic BP ≥ 90 mmHg
25. Transport patient to an appropriate receiving facility. Use air-medical transport as needed. Central Ohio Trauma Centers include: Grant Medical Center, Ohio State University Main, Riverside Methodist, and Nationwide Children's Hospital.
26. Notify receiving hospital with patient information as soon as possible.

Commented [SK8]: Added TXA 2-9-15

Commented [SK9]: Changed to reflect increased approved dose.

Commented [SK10]: Added Dilaudid 2-9-15

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Spinal Immobilization - Appropriate Omission

Patients with traumatic mechanism of injuries may have spinal immobilization omitted if ALL of the following conditions apply. If at any time the paramedic feels the patient needs spinal immobilization despite these guidelines, immobilization is always warranted:

Note: Spinal immobilization does not require the use of a backboard. Adequate immobilization can be achieved by applying a c-collar and securing pt to cot in position of comfort.

Commented [SK11]: Added language clarifying adequate immobilization 1-28-15

1. They are conscious, cooperative are able to communicate and can cooperate with the physical exam
2. There is no mechanism for severe injury, for example:
   A. ejection from vehicle
   B. high speed impact
   C. death of another occupant
   D. fall greater than 5 feet
3. Have no history of new or temporary neurological deficit
   A. numbness or weakness in any extremity
4. Have no evidence of intoxication or other altering substance
5. Have no evidence of a concentration-distracting injury:
   A. long bone fractures
   B. burns
6. Have no midline or paraspinal back or neck pain, or tenderness upon palpation to the cervical spine
7. Have no language barrier or difficulty communicating with the paramedic conducting the physical examination
8. All elderly/advanced age patients with falls from standing position complaining of neck or back pain or unable to communicate need immobilized.

The above findings must be clearly documented on the run record

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Traumatic Arrest

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Loss of airway and hypovolemic shock is by the far the most common causes of causes of traumatic arrest
2. Call for ALS intervention
3. Start CPR and continue with minimal interruptions throughout the arrest, each interruption lasting no more than 10 seconds-verify compressions with pulse checks
4. Place advanced airway immediately (maintaining cervical spine precautions) while simultaneously doing the following:
   A. Assess the assisted breathing and success of advanced airway

Advanced EMT

Treatment continuation from above

5. Initiate two large bore IV's and give wide open, warmed .9NS via trauma tubing, or IO whichever is most expeditious

Paramedic

Treatment continuation from above

6. See separate protocols for procedure details
7. Assess for mechanism of injury to determine additional rapid interventions needed, (i.e. with thoracic mechanism-consider tension pneumothorax, cardiac tamponade, treat PRN)
8. Follow appropriate dysrhythmias protocols en route to hospital
9. Contact designated hospital ASAP and initiate transport without delay unless resuscitation is deemed futile or is discontinued

If decision to transport is made, choose closest Emergency Department regardless of trauma status, and inform the ER of patient's condition as early as possible.

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Major Burns

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. The following "Major Burn" patients should be transported to the Ohio State University Trauma Center or Nationwide Children's Hospital Trauma Center:
   A. Burns associated with other significant traumatic injuries or significant co-morbidities.
   B. Burns involving complex body areas (hands, feet, face, genitalia)
   C. Second and third degree burns involving greater than 15% BSA
   D. All significant chemical or electrical burns
   E. All significant pediatric burns
2. Assess ABCDE's and intervene as needed. Stop the burning process
3. Refer to General Trauma and Specific Trauma Protocols when applicable
4. All burn patients should receive high flow oxygen
5. Apply appropriate Water-Jel dressing in accordance with size of burn
6. If Water-Jel dressings are not available, cool acute burns (including chemical burns) using profuse irrigation (sterile water is best-or sterile saline). Once cooled, cover the burns with sterile, dry dressings, and keep injured extremity elevated whenever possible
7. Prevent hypothermia-keep patient treatment area warm, use warm blankets

Commented [GU12]: Added Water-Jel -SK

Advanced EMT

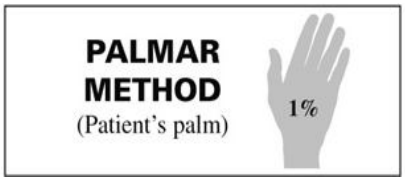
Treatment continuation from above

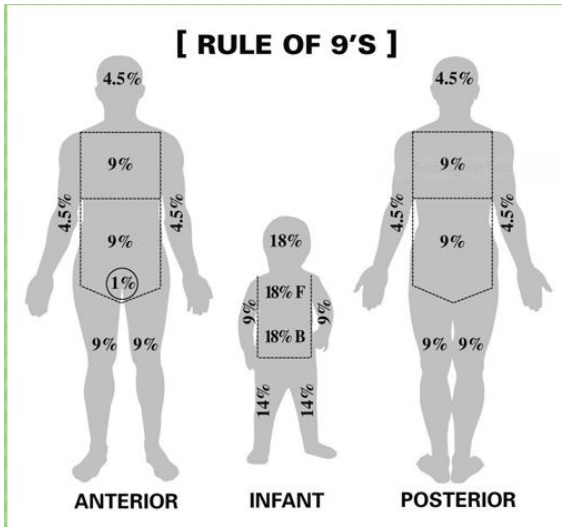
8. Place IV's and administer IV fluids according to Parkland Formula
9. Use cardiac monitoring

Parkland Formula:

TBSA burned (%) x Wt (kg) x 4mL

See charts





Major Burns (cont.)

Paramedic

Treatment continuation from above

10. Even if the patient appears to be breathing well, consider advanced airway if patient has any burn injury to the mouth/nose or potential for airway edema from inhalation injury (carbonaceous sputum, hoarse voice, stridor, etc.)-see RSII Protocol
11. If patient is exhibiting any signs of wheezing or inhalation injury, administer **Albuterol (*Proventil*)-2.5 mg AND Ipratropium (Atrovent)-0.5 mg nebulized**
12. If a closed space fire victim, consider cyanide toxicity in anyone who has a decreased level of consciousness and is not responding to O2, consider:
    - Administer **Hydroxocobalamin (*Cyanokit*) 5 grams slow IV, IO** . **May not be given with another drug in that IV, IO**. If signs and symptoms persist **consult medical control for second dose**.
13. Consider the following for pain control if appropriate and systolic BP ≥ 90 mmHg
    A. Administer **Fentanyl (*Sublimaze*) - 50 to 100 mcg IV, IO, IM may repeat to max of 200 mcg (75 mcg IN may repeat x1)**
    - OR -
    B. Administer **Dilaudid (Hydromorphone) – 0.5 to 1mg IVP (slow), IO, IM, IN. May repeat to max total dose of 2 mg**
    - OR -
    C. Administer **Morphine Sulfate - 2 to 5 mg slow IV, IO, IM, SQ to a max of 10 mg IV**
    D. Consider **Ondansetron (*Zofran*) - 4 mg undiluted, IM or slow IV, IO** for nausea. May repeat once to max of 8 mg.
    E. Administer pain medication ONLY if:
    - Respiratory status adequate-monitor this carefully!
    - Normal mentation and systolic BP ≥ 90 mmHg

Commented [SK13]: Added Dilaudid 2-9-15

Cautions for Water-Jel use:

1. Chemical burns should be thoroughly flushed with the appropriate antidote and/or water before applying Water-Jel.

2. DO NOT apply Water-Jel to a water reactive chemical.

3. Do not apply to a patient in contact with energized electrical equipment.

4. If foil pouch has been opened or damaged, do not use.

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Thoracic Trauma

Continually reassess ABCDE's and keep reassessing and intervening as needed

Basic

1. Initiate high flow oxygen, pulse oximetry
2. Control external bleeding
3. Do not remove any impaled objects. Stabilize them and transport
4. Open (Sucking) Chest Wound:
   - Cover wound with "Ascherman Chest Seal" or equivalent. Reassess adequacy of ventilation. Monitor closely for development of Tension Pnuemothorax.
5. Flail Chest
   - Apply hands to temporarily stabilize the flail segment. Apply a bulky dressing and tape it to the chest to brace the chest wall if possible. Reassess adequacy of ventilation.
6. Abdominal Trauma:
   - If evisceration is present, cover viscera with sterile saline dressing. Do not replace exposed viscera.

Advanced EMT

Treatment continuation from above

7. Initiate IV NS, monitor

Paramedic

Treatment continuation from above

8. **Tension Pneumothorax**:
   - Expose chest and quickly clean with alcohol or Betadine. Using a 14g or larger angiocath, insert needle on the affected side in the second intercostal space at the mid-clavicular line. **Be sure to travel along the top of the 3rd rib to avoid the vasculature along the bottom of the 2nd rib.** Insert the angiocath in until the hub meets the skin of the chest wall. If the air is under tension, it will exit under pressure, giving the tell-tale "rush of air". Leave the catheter in place if successful. If no air is obtained, remove it, and inform the receiving facility of the attempt.
9. **Suspected Pericardial Tamponade or Myocardial Contusion**:
   - Anticipate hypotension and dysrhythmias. Treat accordingly. Do not delay transport!
10. Consider the following for pain control if appropriate and systolic BP ≥ 90 mmHg
    A. Administer **Fentanyl (*Sublimaze*) - 50 to 100 mcg IV, IO, IM, IN may repeat to max of 200 mcg (75 mcg IN may repeat x1)**
    - OR -
    B. Administer **Dilaudid (Hydromorphone) – 0.5 to 1mg IVP (slow), IO, IM, IN. May repeat to max total dose of 2 mg**
    - OR –
    C. Administer **Morphine Sulfate - 2 to 5 mg slow IV, IO, IM, SQ to a max of 10 mg IV**
    D. Consider **Ondansetron (*Zofran*) - 4 mg undiluted, IM or slow IV, IO** for nausea. May repeat once to max of 8 mg.
    E. Administer pain medication **ONLY** if:
       - Respiratory status is adequate! Be certain and monitor this closely and carefully!
       - Normal mentation and a systolic BP ≥ 90 mmHg

Commented [SK14]: Added Dilaudid 2-9-15

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Musculoskeletal/Extremity Trauma

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Assess the ABC's – support airway and ventilation PRN
2. Control external bleeding
3. Head and Spinal Fractures:
   - Maintain manual c-spine immobilization, apply cervical collar
4. Extremity Fractures:
   A. Manually immobilize fracture above and below fracture site
   B. Assess PMS (pulse, motor, sensation). Compare to uninjured limb
   C. If PMS impaired, reposition. Apply gentle distal aligning traction. If you feel resistance or increase patient discomfort, stop! Only attempt alignment one time.
   D. Reassess PMS every 5 to 10 minutes and **document the findings** (including pertinent negatives).

Advanced EMT

Treatment continuation from above

5. Initiate IV

Paramedic

Treatment continuation from above

6. If GCS < 8, patient's respirations < 8, or patient is endangering the C-Spine integrity by being combative, consider intubation following the RSII guidelines.
7. Consider the following for pain control if appropriate and systolic BP ≥ 90 mmHg
   A. Administer **Fentanyl (*Sublimaze*) - 50 to 100 mcg IV, IO, IM, IN may repeat to max of 200 mcg. (75 mcg IN may repeat x1)**
   - OR -
   B. Administer **Dilaudid (Hydromorphone) – 0.5 to 1mg IVP (slow), IO, IM, IN. May repeat to max total dose of 2 mg**
   - OR -
   C. Administer **Morphine Sulfate - 2 to 5 mg slow IV, IO, IM, SQ to a max of 10 mg IV**
   D. Consider **Ondansetron (*Zofran*) - 4 mg undiluted, IM or slow IV, IO** for nausea. May repeat once to max of 8 mg.
   E. Administer pain medication ONLY if:
      - Respiratory status is adequate! Be certain and monitor this closely and carefully!
      - Normal mentation and systolic BP ≥ 90 mmHg
8. Transport to appropriate hospital. Consider air-medical transport when necessary.

Commented [SK15]: Added Dilaudid 2-9-15

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Avulsion & Amputation

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Initiate oxygen and pulse oximetry
2. Control bleeding and splint; Tourniquet for bleeding not controlled with direct pressure.
3. Amputated Body Parts and/or Tissue
   A. All retrievable tissue should be transported (do not delay transport for tissue retrieval)
   B. Rinse part(s) with NS
   C. Wrap tissue in sterile gauze moistened with NS
   D. Place tissue into plastic bag or container.
   E. Place bag / container into separate container filled with ice
   F. Do not allow tissue to come into direct contact with ice
   G. Administer **Aspirin - 324 mg chewed PO**
4. Tooth Avulsion:
   A. Handle tooth by chewing surface only. Avoid touching the root.
   B. Rinse with water. Do not scrub, dry, or wrap tooth in tissue or cloth.
   C. Place tooth in container of (in order of preference)
      1. Patient's Saliva
      2. Milk
      3. Normal Saline
      4. Water
5. If incomplete avulsion, do not remove. Attempt to clean with gross irrigation and sterile dressing.
6. Transport to appropriate facility.

Advanced EMT

Treatment continuation from above

7. Initiate IV and monitor

Paramedic

Treatment continuation from above

8. Consider the following for pain control if appropriate and systolic BP ≥ 90 mmHg
   A. Administer **Fentanyl (*Sublimaze*) - 50 to 100 mcg IV, IO, IM, IN may repeat to max of 200 mcg. (75 mcg IN may repeat x1)**
   - OR -
   B. Administer **Dilaudid (Hydromorphone) – 0.5 to 1mg IVP (slow), IO, IM, IN. May repeat to max total dose of 2 mg**
   - OR -
   C. Administer **Morphine Sulfate - 2 to 5 mg slow IV, IO, IM, SQ to a max of 10 mg IV**
   D. Consider **Ondansetron (Zofran) - 4 mg undiluted, IM or slow IV, IO** for nausea. May repeat once to max of 8 mg.
   E. Administer pain medication ONLY if:
      - Respiratory status is adequate! Be certain and monitor this closely and carefully!
      - Normal mentation and systolic BP ≥ 90 mmHg

Commented [SK16]: Added Dilaudid 2-9-15

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Ocular Trauma

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Initiate oxygen and pulse oximetry.
2. Chemical Injury / Exposure:
   - Immediately flush with at least 1000 cc of saline. Continue irrigation during transport. Cover both eyes to prevent ocular movement.
3. Penetrating Injuries:
   - Stabilize impaled objects, apply metal eye shield if possible. Cover both eyes
4. Open Eye Injuries or Torn Eyelid:
   - Apply sterile dressing soaked in normal saline. Cover both eyes
5. Transport patient supine if possible to appropriate facility.

Advanced EMT

Treatment continuation from above

6. Initiate IV NS and monitor

Paramedic

Treatment continuation from above

7. Consider the following for pain control if appropriate and systolic BP ≥ 90 mmHg
   F. Administer **Fentanyl (*Sublimaze*) - 50 to 100 mcg IV, IO, IM, IN may repeat to max of 200 mcg. (75 mcg IN may repeat x1)**
   - OR -
   G. Administer **Dilaudid (Hydromorphone) – 0.5 to 1mg IVP (slow), IO, IM, IN. May repeat to max total dose of 2 mg**
   - OR -
   H. Administer **Morphine Sulfate - 2 to 5 mg slow IV, IO, IM, SQ to a max of 10 mg IV**
   I. Consider **Ondansetron (Zofran) - 4 mg undiluted, IM or slow IV, IO** for nausea. May repeat once to max of 8 mg.
   J. Administer pain medication ONLY if:
      - Respiratory status is adequate! Be certain and monitor this closely and carefully!
      - Normal mentation and systolic BP ≥ 90 mmHg

Commented [SK17]: Added Dilaudid 2-9-15

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Crushing Injury & Crushing Syndrome

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT-Basic

PRIOR TO EXTRICATION:

1. If patient has been trapped/pinned for longer than 20 to 30 minutes, and exhibits signs/symptoms of relevant mechanism of injury to suspect crushing injury:
2. Call for ALS unit
3. Continually reassess ABCDE's and keep reassessing and intervening as needed
4. Refer to General Trauma and Specific Trauma Protocols if applicable.
5. Coordinate time of release with rescue personnel.
6. Initiate high flow oxygen, pulse oximetry, and monitor
7. Anticipate crush syndrome and cardiac arrest at time of, or immediately after, extrication
8. Contact receiving hospital of patient's injuries early
9. PASG are contraindicated in crushing injury patients

Advanced EMT

Treatment continuation from above

10. Initiate at least one large bore IV NS

AFTER EXTRICATION:

11. Continue aggressive fluid resuscitation with NS. **TRANSPORT IMMEDIATELY!**
12. Watch the patient and monitor closely for:
    A. Widened QRS complexes – 0.12 seconds or greater
    B. Presence of PVCs
    C. Ventricular Tachycardia/V-Fib/Idioventricular rhythms
    D. Cardiovascular compromise and/or cardiac arrest

Paramedic

Treatment continuation from above

13. In 1000 cc bag of NS mix **Sodium Bicarbonate – 1 amp per liter of NS solution IV, IO and infuse wide open up to 1 liter**. (monitor for fluid overload closely if noted KVO line) OR administer **499.9 ml/hr of mixture IV, IO**
14. Consider the following for pain control if appropriate and systolic BP ≥ 90 mmHg
    K. Administer **Fentanyl (*Sublimaze*) - 50 to 100 mcg IV, IO, IM, IN may repeat to max of 200 mcg. (75 mcg IN may repeat x1)**
    - OR -
    L. Administer **Dilaudid (Hydromorphone) – 0.5 to 1mg IVP (slow), IO, IM, IN. May repeat to max total dose of 2 mg**
    - OR -
    M. Administer **Morphine Sulfate - 2 to 5 mg slow IV, IO, IM, SQ to a max of 10 mg IV**
    N. Consider **Ondansetron (Zofran) - 4 mg undiluted, IM or slow IV, IO** for nausea. May repeat once to max of 8 mg.
    O. Administer pain medication ONLY if:
    - Respiratory status is adequate! Be certain and monitor this closely and carefully!
    - Normal mentation and systolic BP ≥ 90 mmHg

Commented [SK18]: Added Dilaudid 2-9-15

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Heat Related Illness / Hyperthermia / Temperature Instability

Continually reassess ABCDE's and keep reassessing and intervening as needed.

EMT

1. Assess ABCDE's. If possible, measure body core temperature.
2. Remove from heated environment. Begin to cool with ice packs or water if available.
3. Transport without delay.

Advanced EMT

Treatment continuation from above

4. Initiate IV NS, oxygen, pulse oximetry, and monitor.

Paramedic

Treatment continuation from above

5. Use appropriate dysrhythmias protocol if necessary.

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Hypothermia

Continually reassess ABCDE's and keep reassessing and intervening as needed.

EMT

1. Assess ABCDE's – note that pulses and respirations may be slow and much harder than normal to assess. Feel for pulse for at least one minute (carotid) before assuming there is no pulse. Listen carefully for the presence of an apical pulse and/or respirations.
2. All patients with perfusing rhythm
   A. If possible, measure body core temperature.
   B. Gentle handling
   C. Prevent further heat loss with warm blankets
   D. Turn heat up in ambulance as warm as possible
   E. Apply warm packs to neck, axillae and groin

Advanced EMT

Treatment continuation from above

3. Initiate IV NS, high flow oxygen, monitor – use warmed IV fluids – follow General Trauma Guidelines if the hypothermia is a consequence of trauma.

Paramedic

Treatment continuation from above

4. Follow appropriate medical protocols for dysrhythmias, altered LOC, etc. if the hypothermia is non-traumatic with the following exceptions:
5. If PNB and body core temperature ≥ 90° F follow usual PNB / Arrhythmia / Trauma Protocols as indicated by the circumstances.
6. Prolong the interval between consecutive drugs by 5 minutes
7. If continued shocks are indicated, they should not be performed more frequently than every 10 minutes
8. If patient is PNB and body core temperature is < 90° F be very gentle and **DO NOT** attempt defibrillation or advanced airways. Withhold resuscitative IV medications. CPR, IV fluids (warmed) and other trauma resuscitative measures are indicated according to the usual guidelines.
9. Remember the general rule that "*a patient isn't dead, until they are WARM and dead…"*

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SECTION III - MEDICAL EMERGENCIES

Pulseless Non-Breather (PNB)

Continually reassess ABCDE's and keep reassessing and intervening as needed

If PNB due to Traumatic Mechanism of Injury - see Traumatic Arrest Protocol

EMT

1. Start CPR and continue with MINIMAL interruptions throughout the arrest, each interruption lasting no longer than 10 seconds – verify compressions with pulse checks. If cardiac arrest is WITNESSED by EMS crew, defibrillate once immediately (AED), and then begin CPR. If cardiac arrest is UNWITNESSED by EMS crew, and is assumed to be cardiac in origin, begin CCR protocol (p.83).
2. While performing CPR, give continuous chest compressions at a rate of at least 100 per minute in a 30:2 ratio until an advanced airway is placed. Rescuers should change as the compressor every 2 to 3 minutes to prevent compressor fatigue and deterioration in quality and rate of chest compressions. Rescuers should attempt to accomplish any change in compressor role in less than 5 seconds.
3. Call for additional help and equipment if needed.
4. Ventilate with 100% oxygen – see Airway and Ventilation Protocol
5. Check heart monitor(AED) and proceed with defibrillation as indicated

Commented [SK19]: Added CCR to PNB protocol 2-26-16

Advanced EMT

Treatment continuation from above

6. Initiate .9NS IV, IO and limb lead EKG

Paramedic

Treatment continuation from above

7. Secure airway with airway device if appropriate – support airway and ventilation PRN

Proceed with appropriate ACLS algorithms

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Ventricular Fibrillation / Pulseless Ventricular Tachycardia

Continually reassess ABCDE's and keep reassessing and intervening as needed

1. Consult pulseless non-breather (PNB) protocol – Start CPR and continue with MINIMAL interruptions throughout the arrest, each interruption lasting no longer than 10 seconds – Perform 1 ½ to 3 minutes of CPR prior to defibrillating.
2. Defibrillate at 360 J.
3. Establish airway with a secondary airway device and ventilate with 100% oxygen, check breath sounds. *See Airway and Ventilation Protocol*
4. Initiate at least one IV, IO NS. Run wide open
5. For persistent or recurring ventricular fibrillation counter shock at 360 J after each medication bolus, or every 2 minutes, whichever comes first.
6. Pressor options:
   A. Administer **Epinephrine - 1 mg IV, IO or (2 mg ET followed by 5 cc NS)**, repeat every 2 to 3 minutes, no max dose
7. Anti-arrhythmic options:
   A. Administer **Lidocaine (*Xylocaine*) - 1.5 mg/kg IV, IO**. May repeat at 0.75 mg/kg x 2, to a max dose of 3 mg/kg. If converted to a perfusing rhythm greater than 60 bpm, hang a Lidocaine (Xylocaine) drip: Infuse at 2 to 4 mg/min (30 to 60 gtts/min)
8. Consider **Magnesium Sulfate - 2 g slow IV, IO** if patient rhythm is questionably pulseless
9. If chronic dialysis patient and suspected hyperkalemia, consider:
   A. **Calcium Chloride - 8 mg/kg slow IV, IO** - AND -
   B. **Sodium Bicarbonate ($NaHCO_3$) - 1 mEq/kg IV, IO**
10. If patient is taking a calcium channel blocking medication (see appendix):

Calcium Chloride - 8 mg/kg slow IV, IO

Commented [SK20]: Removed Vasopressin 4-28-15

Commented [SK21]: Removed Amiodarone 4-28-15

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Torsades de Pointes

Continually reassess ABCDE's and keep reassessing and intervening as needed

1. Consult pulseless non-breather (PNB) protocol – Start CPR and continue with MINIMAL interruptions throughout the arrest, each interruption lasting no longer than 10 seconds – Perform 1 ½ to 3 minutes of CPR prior to defibrillating.
2. Defibrillate at 360 J.
3. Establish airway with a secondary airway device PRN and ventilate with 100% oxygen, check breath sounds. See Airway and Ventilation Protocol
4. Initiate IV, IO NS
5. Administer **Magnesium Sulfate - 2 g slow IV, IO over 2-5 minutes.**
6. Counter shock at 360 J after each drug bolus
7. Medications other than Magnesium are unlikely to be helpful in true Torsades de Pointes
8. Pressor options – if systolic BP < 90 mmHg AND patient has altered mental status despite above interventions:
   A. Administer **Epinephrine - 1 mg IV, IO or (2 mg ET followed by 5 cc NS)**, repeat every 2 to 3 minutes
9. Anti-arrhythmic options:
   A. Administer **Lidocaine (*Xylocaine*) - 1.5 mg/kg IV**. May repeat up to a total dose of 3 mg/kg. If converted to a perfusing supraventricular rhythm greater than 60 bpm and total dose of Lidocaine (*Xylocaine*) given so far is less than 3 mg/kg, give a 0.75 mg/kg bolus **(37 mg, 67 mg, 75 mg)**. Then hang a Lidocaine (*Xylocaine*) drip: Infuse at 2 to 4 mg/min (30 to 60 gtts/min)

Commented [SK22]: Removed Vasopressin 4-28-15

Commented [SK23]: Removed Amiodarone 4-28-15

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Pulseless Electrical Activity (PEA)

Continually reassess ABCDE's and keep reassessing and intervening as needed

1. Consult pulseless non-breather (PNB) protocol – Start CPR and continue with MINIMAL interruptions throughout the arrest, each interruption lasting no longer than 10 seconds – Perform 1 ½ to 3 minutes of CPR prior to defibrillating.
2. Place airway with a secondary airway device, ventilate with 100% oxygen, ECG monitor, initiate IV, IO fluid resuscitation with warmed NS bolus unless audible pulmonary edema is present
3. Consider appropriate focused treatment of common etiologies of PEA including: hypovolemia, hypothermia, hypoxia, hypoglycemia, acidosis, hypo-/hyperkalemia, cardiac tamponade, tension pneumothorax, massive pulmonary embolus, acute myocardial infarction, drug overdose (eg, tricyclic antidepressants, Digoxin, calcium channel blockers, beta blockers). Treat each potential cause with the appropriate intervention (rapid fluid bolus, rewarming, check ET tube for proper placement, check effectiveness of ventilation and oxygenation, pericardiocentesis, needle decompression, etc.)
4. Pressor options:
   A. Administer **Epinephrine - 1 mg IV, IO or (2 mg ET followed by 5 cc NS),** repeat every 2 to 3 minutes
5. If patient is bradycardic:
   A. Consider transcutaneous pacing (TCP) and
6. In patients with history of diabetes consider:
   A. **Dextrose 10% (D10) – 25 grams/250 cc IV, IO**
   -OR-
   B. **Dextrose 50% (D50) - 25 grams IV, IO**
7. Consider **Sodium Bicarbonate ($NaHCO_3$) - 1 mEq/kg IV, IO** in patients with severe systemic acidosis from prolonged arrest, hyperkalemia, or with suspected tricyclic antidepressant overdose.

Determine if patient is appropriate for termination of resuscitative efforts.

Commented [SK24]: Removed Vasopressin 4-28-15

Commented [AM25]: D10 added

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Asystole

Continually reassess ABCDE's and keep reassessing and intervening as needed

1. Consult pulseless non-breather (PNB) protocol - Start CPR and continue with MINIMAL interruptions throughout the arrest, each interruption lasting no longer than 10 seconds – Perform 1 ½ to 3 minutes of CPR prior to defibrillating.
2. Place airway with a secondary airway device, ventilate with 100% oxygen, monitor, initiate IV, IO fluid resuscitation with warmed NS bolus unless audible pulmonary edema is present
3. Consider appropriate focused treatment of common etiologies of PEA including: hypovolemia, hypothermia, hypoxia, hypoglycemia, acidosis, hypo/hyperkalemia, cardiac tamponade, tension pneumothorax, massive pulmonary embolus, acute myocardial infarction, drug overdose (eg, tricyclic antidepressants, Digoxin, calcium channel blockers, beta blockers). Treat each potential cause with the appropriate intervention (rapid fluid bolus, rewarming, check ET tube for proper placement, check effectiveness of ventilation and oxygenation, needle decompression, etc.)
4. Check monitor in multiple leads
5. If appropriate, make early determination of whether or not resuscitation should continue. Refer to Guidelines for "Terminating or Withholding Resuscitative Efforts."
6. Pressor options:
   A. Administer **Epinephrine - 1 mg IV, IO or (2 mg ET followed by 5 cc NS)**, repeat every 2 to 3 minutes
7. Consider **Sodium Bicarbonate ($NaHCO_3$) - 1 mEq/kg IV, IO** in patients with severe systemic acidosis from prolonged "down time", hyperkalemia, or with suspected tricyclic antidepressant overdose.

Commented [SK26]: Removed Vasopressin 4-28-15

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Ventricular Tachycardia with Pulse

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Assess the ABC's – support airway and ventilation PRN
2. Initiate high flow O2 and apply pulse oximeter
3. Obtain and record vital signs – repeat frequently and record all findings

Advanced EMT

Treatment continuation from above

4. Initiate .9NS IV and limb lead EKG

Paramedic

Treatment continuation from above

5. Consider advanced airway. Obtain 12-lead ECG.
6. If patient is asymptomatic and/or stable, consider ONE of the following anti-arrhythmic options:
   A. If MONNOMORPHIC administer **Adenosine (*Adenocard*) - 6 mg rapid IV, IO** followed by 20 cc NS bolus
   B. If initial dose ineffective, administer **Adenosine (Adenocard) - 12 mg rapid IV, IO** followed by 20 cc NS bolus. Repeat x 1
7. If dysrhythmia is not resolved, yet patient remains asymptomatic and/or stable, consider:
   A. Administer **Lidocaine (*Xylocaine*) - 1 mg/kg IV, IO bolus**. Then hang a Lidocaine (Xylocaine) drip: Infuse at 2 to 4 mg/min (30 - 60 gtts/min). May repeat Lidocaine (Xylocaine) bolus at 0.5 mg/kg (25 mg, 37 mg, 50 mg), up to maximum total bolus dose of 3 mg/kg - OR –
   B. **May consider in prolonged transport over 10 minutes;** Administer **Amiodarone (*Cordarone*) - 150 mg IV** (diluted in 100 cc NS IV and infused over 10 minutes).
8. If the dysrhythmia is successfully converted, observe closely and transport ASAP.
9. If systolic BP < 90 mmHg and patient is unstable / difficulty breathing and/or altered LOC, prepare for synchronized cardioversion:
   A. For sedation, **Midazolam (*Versed*) - 2 to 5 mg IV, IO, IM, IN**
   B. Synchronized cardioversion at 100 J. Repeat if necessary at 200 J, 300 J, and 360 J
      * Make sure you press the sync button after each cardioversion *
   C. After successful conversion, administer **Amiodarone (*Cordarone*) - 150mg IV, IO** (diluted in 100 cc NS IV and infused over 10 minutes)
   D. For pain control, if systolic BP > 90 mmHg, consider:
      I. Administer **Fentanyl (*Sublimaze*) - 50 to 100 mcg IV, IO, IM, IN may repeat to max of 200 mcg. (75 mcg IN may repeat x1)** - OR -
      II. Administer **Morphine Sulfate - 2 to 5 mg slow IV, IO, IM, SQ to a max of 10 mg IV**
      III. Consider **Ondansetron (*Zofran*) - 4 mg undiluted, IM or slow IV, IO** for nausea. May repeat once to max of 8 mg.
10. If at any point the patient becomes pulseless, go to PNB guideline.

Commented [GU27]: Change 2nd & 3rd dose to 12mg.Change flush to 20cc

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Symptomatic PVCs

1. Asymptomatic PVC's do not require specific intervention(s).
2. If PVC's are CLEARLY symptomatic (i.e. altered mental status, syncope, systolic BP <90 mmHg, signs of acute MI, etc.) OR are occurring in sustained runs of ventricular tachycardia, are multiform, or occur with R on T phenomena, then refer to the Ventricular Tachycardia with Pulses Guideline above.

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Supraventricular Tachycardia

Continually reassess ABCDE's and keep reassessing and intervening as needed

1. Assess the ABCs – support airway and ventilation PRN
2. Initiate IV NS, high flow oxygen, pulse oximetry, and monitor. Obtain a 12-lead ECG
3. If patient is asymptomatic or symptomatic/stable
   A. Attempt vagal maneuvers
   B. Administer **Adenosine (*Adenocard*) - 6 mg rapid IV, IO** followed by 20 cc NS bolus
   C. Administer **Adenosine (*Adenocard*) - 12 mg rapid IV, IO** followed by 20 cc NS bolus. Repeat x 1
   D. Administer **Diltiazem (*Cardizem*) – 0.25 mg/kg IV, IO (12.5 mg, 18 mg, 25 mg)** over two minutes
   E. If no effect after 15 minutes, **Diltiazem (*Cardizem*) – 0.35 mg/kg IV, IO (18 mg, 25 mg, 35 mg)** over two minutes
4. If systolic BP < 90 mmHg and patient becoming unstable / difficulty breathing and/or altered LOC, prepare for synchronized cardioversion:
   A. For sedation, **Midazolam (*Versed*) - 2 to 5 mg IV** **Anticipate possible use of advanced airway.**
   B. Synchronized cardioversion at 100 J
   C. Repeat if necessary at 200 J, 300 J and 360 J
      * Make sure you press the sync button after each cardioversion *
   D. After successful conversion, administer **Amiodarone (*Cordarone*) – 150 mg IV** (diluted in 100 cc NS IV and infused over 10 minutes).
   E. For pain control, if systolic BP > 90 mmHg, consider:
      I. Administer **Fentanyl (*Sublimaze*) - 50 to 100 mcg IV, IO, IM, IN may repeat to max of 200 mcg. (75 mcg IN may repeat x1)** - OR -
      II. Administer **Morphine Sulfate - 2 to 5 mg slow IV, IO, IM, SQ to a max of 10 mg IV**
      III. Consider **Ondansetron (*Zofran*) - 4 mg undiluted, IM or slow IV, IO** for nausea. May repeat once to max of 8 mg.

If wide QRS complexes develop, go to Ventricular Tachycardia with Pulses protocol

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Symptomatic Bradycardia

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Assess the ABC's – support airway and ventilation PRN
2. Initiate high flow O2 and apply pulse oximeter
3. Obtain and record vital signs – repeat frequently and record all findings

Advanced EMT

Treatment continuation from above

4. Initiate .9NS IV and limb lead EKG

Paramedic

Treatment continuation from above

5. Consider advanced airway. Obtain 12-lead ECG.
6. If patient has a systolic BP > 90 mmHg:
   A. See chest pain protocol if chest pain present
   B. Attempt a fluid challenge of **300 to 500 cc NS** (this should not delay or hamper other protocol interventions from occurring simultaneously)
   C. If 2° AV block - type I, 2° AV block - type II, or 3º AV block, prepare for transcutaneous pacing (TCP)
   D. If at any time patient condition deteriorates, go to section 7 b.
7. If pulse present and systolic BP < 90 mmHg:
   A. Administer **Atropine - 0.5 to 1 mg IV, IO** (except in pt w/ hx of heart transplant), may repeat to max dose of 0.04 mg/kg (2mg, 3mg, 4mg). Note: Atropine is unlikely to be helpful in 2° and 3° heart block – and may be harmful if the etiology of the block is MI – i.e. it can induce Ventricular Fibrillation. The treatment of choice in these patients is pacing.
   B. TCP at a set heart rate of 70 bpm, titrate amplitude to mechanical capture. If time permits:
      i) Sedate with **Midazolam (*Versed*) - 2 to 5 mg IV, IO**
      ii) If systolic BP > 90 mmHg, consider pain control:
         1. Administer **Fentanyl (*Sublimaze*) - 50 to 100 mcg IV, IO, IM, IN may repeat to max of 200 mcg. (75 mcg IN may repeat x1)** - OR -
         2. Administer **Morphine Sulfate - 2 to 5 mg slow IV, IO, IM, SQ to a max of 10 mg IV**
         3. Consider **Ondansetron (*Zofran*) - 4 mg undiluted, IM or slow IV, IO** for nausea. May repeat once to max of 8 mg.
8. Monitor airway closely and support PRN
9. If the above fail to produce desired response (HR remains < 60 bpm and/or systolic BP remains < 90 mmHg):
   A. Start a **Dopamine (*Intropin*) infusion**:
      1. **Start infusion at 10 mcg/kg/min**
      2. Titrate to maintain HR > 60 bpm and/or systolic BP > 90 mmHg with good patient mentation.
10. If inadequate response and HR remains < 60 bpm and/or systolic BP remains < 90 mmHg with altered LOC:
    A. Start an **Epinephrine infusion**:
       1. Mix **1mg epinephrine** (1:1000 or 1:10,000) into **1000ml Normal Saline**
       2. Piggyback epinephrine infusion into a fast flowing, primary IV running **Wide Open**.
       3. Utilizing either a Dial-a-flow device or an IV pump, start infusion at **2mcg/min (2ml/min or 120ml/hour)**
       4. Titrate to maintain a HR >60bpm and / or SBP > 90 to a max dose of **5mcg/min (5ml/min or 400ml/hour)**

Commented [SK28]: Updated to new epi infusion formula 10-23-14

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Uncontrolled Atrial Fibrillation & Atrial Flutter

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Assess ABC's - Support airway as needed
2. Initiate oxygen and pulse oximetry
3. Complete and record all vital signs - repeat frequently and record new readings
4. If patient condition permits, obtain a severity of chest pain value (1 to 10 scale)
5. Medication:
   A. Administer **Aspirin - 324 mg (4 tablets baby asa) PO**, if the patient is awake and at a controlled ventricular rate. Give even if they "took their own."

Advanced EMT

Treatment continuation from above

1. Initiate .9NS IV and limb lead EKG

Paramedic

Treatment continuation from above

2. Consider advanced airway. Obtain 12-lead ECG.
3. If patient is unstable / difficulty breathing, syncope, altered LOC, or the ventricular rate is uncontrolled – (i.e. ventricular rate is > 150, systolic BP < 90 mmHg and/or the rapid rhythm is believed to be the cause of the patient's clinical deterioration):
4. Prepare for synchronized cardioversion:
   A. For sedation, **Midazolam (*Versed*) - 2 to 5 mg IV**
   B. Start synchronized cardioversion for A-Fib at 100 J and for A-Flutter at 50 J
   C. Repeat if necessary at 100 J, 200 J, 300 J and 360 J
      * Make sure you press the sync button after each cardioversion *
   D. For pain control, if systolic BP > 90 mmHg, consider:
      I. Administer **Fentanyl (*Sublimaze*) - 50 to 100 mcg IV, IO, IM, IN may repeat to max of 200 mcg. (75 mcg IN may repeat x1)** - OR -
      II. Administer **Morphine Sulfate - 2 to 5 mg slow IV, IO, IM, SQ to a max of 10 mg IV**
      III. Consider **Ondansetron (*Zofran*) - 4 mg undiluted, IM or slow IV, IO** for nausea. May repeat once to max of 8 mg.
5. If patient is unstable as outlined in #3 above, but systolic BP > 90 mmHg (except in known WPW) – and the tachycardia is narrow complex type, consider:
   A. Administer **Diltiazem (*Cardizem*) - 0.25 mg/kg IV** over two minutes
   B. If no effect after 15 minutes, **Diltiazem (*Cardizem*) - 0.35 mg/kg IV** over two minutes.

Do not use Diltiazem (Cardizem) in wide complex tachyarrhythmias.

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Known WPW & Wide Complex Atrial Fibrillation

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Assess ABC's - Support airway as needed
2. Initiate oxygen and pulse oximetry
3. Complete and record all vital signs - repeat frequently and record new readings
4. If patient condition permits, obtain a severity of chest pain value (1 to 10 scale)
5. Medication:
   A. Administer **Aspirin - 324 mg (4 tablets baby asa) PO**, if the patient is awake and at a controlled ventricular rate. Give even if they "took their own."

Advanced EMT

Treatment continuation from above

6. Initiate .9NS IV and limb lead EKG

Paramedic

Treatment continuation from above

7. Consider advanced airway. Obtain 12-lead ECG.
8. If systolic BP > 90 mmHg:
   A. Administer **Amiodarone (*Cordarone*) - 150 mg IV** (diluted in 100 cc NS infused over 10 minutes).
9. If patient is unstable / difficulty breathing, syncope or altered LOC, or the ventricular rate is uncontrolled – (i.e. ventricular rate is > 150, systolic BP < 90 mmHg and/or the rapid rhythm is believed to be the cause of the patient's clinical deterioration):
10. Prepare for synchronized cardioversion:
    A. For sedation, **Midazolam (*Versed*) - 2 to 5 mg IV**
    B. Start synchronized cardioversion at 50 J
    C. Repeat if necessary at 100 J, 200 J, 300 J and 360 J
       * Make sure you press the sync button after each cardioversion *
    D. For pain control, if systolic BP > 90 mmHg, consider:
       1. Administer **Fentanyl (*Sublimaze*) - 50 to 100 mcg IV, IO, IM, IN may repeat to max of 200 mcg. (75 mcg IN may repeat x1)** - OR -
       2. Administer **Morphine Sulfate - 2 to 5 mg slow IV, IO, IM, SQ to a max of 10 mg IV**
       3. Consider **Ondansetron (Zofran) - 4 mg undiluted, IM or slow IV, IO**, for nausea. May repeat once to max of 8 mg.

       Anticipate possible use of advanced airway.

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Inappropriately Firing Internal Cardiac Defibrillator (ICD)

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Assess ABC's - Support airway as needed
2. Initiate oxygen and pulse oximetry
3. Complete and record all vital signs - repeat frequently and record new readings
4. If patient condition permits, obtain a severity of chest pain value (1 to 10 scale)
5. Medication:
   A. Administer **Aspirin - 324 mg (4 tablets baby asa) PO** if the patient is awake and at a controlled ventricular rate. This is to be administered even if they "*took their own*."

Advanced EMT

Treatment continuation from above

6. Initiate .9NS IV and limb lead EKG

Paramedic

Treatment continuation from above

7. Consider advanced airway. Obtain 12-lead ECG.
8. If patient is asymptomatic - place multi-function pads on patient and observe closely
9. Confirm that the ICD is inappropriately firing
10. Place magnet over device and secure in place with tape.
11. Follow appropriate dysrhythmias protocol

NOTE: If patient presents with a shockable rhythm, and after 3 subsequent shocks the patient remains in that shockable rhythm, change the position of the defib pads and continue.

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Pacemaker Induced Tachycardia

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Assess ABC's - Support airway as needed
2. Initiate oxygen and pulse oximetry
3. Complete and record all vital signs - repeat frequently and record new readings
4. If patient condition permits, obtain a severity of chest pain value (1 to 10 scale)
5. Medication:
   A. Administer **Aspirin - 324 mg (4 tablets baby asa) PO** if the patient is awake and at a controlled ventricular rate. This is to be administered even if they "*took their own*."

Advanced EMT

Treatment continuation from above

6. Initiate .9NS IV and limb lead EKG

EMT-Paramedic

Treatment continuation from above

7. Consider advanced airway. Obtain 12-lead ECG.
8. If patient is asymptomatic and systolic BP > 90 mmHg - place multi-function pads on patient and observe closely
9. If systolic BP < 90 mmHg and/or patient is deteriorating with shortness of breath or altered mental status – confirm rapid pulse / runaway pacer
10. Confirm proper placement of transcutaneous pacer pads on patient prior to deactivating runaway pacer
11. Place magnet over pacemaker, and secure in place with tape.

Follow appropriate dysrhythmias protocol

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Chest Pain

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Assess ABC's - Support airway as needed
2. Initiate oxygen and pulse oximetry
3. Complete and record all vital signs - repeat frequently and record new readings
4. If patient condition permits, obtain a severity of chest pain value (1 to 10 scale)
5. Elderly patients, diabetics and women are more likely to experience symptoms, especially their chest pain, in an atypical fashion, presenting as vague weakness, SOB, arm, back or jaw discomfort, etc.
6. Medication
   A. Administer **Aspirin - 324 mg (4 tablets baby asa) PO**. This is to be administered even if they "took their own."
   B. Assist the patient with administration of their prescribed Nitroglycerine **ONLY** if systolic BP > 90 mmHg. Administer **Nitroglycerine (*Nitrostat*) - 0.4 mg tablet SL**, may repeat in 3-5 minutes for a total of 3 tablets. Verify that patient has not taken any PDE_5 inhibitors within the past 24 hours (such as *Viagra, Levitra,* or *Cialis*) which are known to potentiate the hypertensive effects of nitrates.

Advanced EMT

Treatment continuation from above

7. Non-prescribed Nitroglycerine may be given as above, not exceeding an accumulation dose of 3 tablets.
8. Initiate monitor limb leads only, IV NS
9. If patient's systolic BP drops < 90 mmHg after administration of Nitroglycerine, AND lungs are clear, administer **250-500 ml IV, IO fluid challenge of NS**. May repeat as needed PRN.

Paramedic

Treatment continuation from above

-

10. Obtain and interpret a 12-Lead ECG for all chest pain patients. Refer to STEMI protocol if ECG is positive, and assess TPA eligibility (see Checklist)
11. If chest pain persists, or reoccurs, after three Nitro and Morphine, with systolic BP ≥ 90 mmHg, initiate **Nitropaste (*Nitro-Bid*) 1-2 inches topical L upper chest**.
12. Consider **Ondansetron (*Zofran*) - 4 mg undiluted, IM or slow IV, IO** for nausea, or in cases with positive indication of STEMI, as a precaution. It is prudent to administer Zofran in cases of inferior wall, posterior wall, and right sided MIs to prevent vagal stimulation and the resultant bradycardia associated with these MI patterns.
13. In cases of RIGHT SIDED MI (confirmed in lead V4R on 12-Lead ECG), consider:

Commented [SK29]: Removed Morphine from Chest Pain protocol 4-17-15

Chest Pain (cont.)

A. Withhold nitrates and administer **300 cc NS fluid bolus IV, IO**. Repeat every 5 to 8 minutes PRN to maintain systolic BP > 90 mmHg, assuring absence of rales in breath sounds.

B. Use caution with low doses of Morphine Sulfate, and watch closely for cardiovascular compromise associated with right sided MI.

14. If NS bolus fails to improve patient's BP and/or patient's mental status is waning, with a systolic BP ≤90 consider starting a **Dopamine (*Intropin*) infusion**.
    1. Mix 400 mg Dopamine (Intropin) in 250 cc NS
    2. **Start infusion at 5 mcg/kg/min (10 gtts/min, 15 gtts/min, 20 gtts/min)**
    3. Titrate to maintain systolic BP of 90 mmHg with good patient mental status
15. Treat dysrhythmias as appropriate – see separate protocols
16. Review transport guidelines below.

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Chest Pain with STEMI / Transport Guidelines

Has patient experienced chest pain for greater than 15 minutes and less than 12 hours?

1. If yes, does ECG show STEMI or new or presumably new LBBB?
2. If yes, are there contraindications to fibrinolytics? If any of the following are checked YES, fibrinolytics MAY be contraindicated:

Criteria	Yes	No
Systolic BP > 180 mmHg?	☐	☐
Diastolic BP > 110 mmHg?	☐	☐
Right arm v. Left arm systolic BP difference greater than 15 mmHg?	☐	☐
History of structural center nervous system disease?	☐	☐
Significant closed head / facial trauma in the past 3 months?	☐	☐
Recent (within 6 weeks) major trauma, surgery, GI/GU bleed?	☐	☐
Bleeding or clotting problem, or on blood thinners?	☐	☐
CPR greater than 10 minutes?	☐	☐
Pregnant female?	☐	☐
Serious systemic disease (i.e. advanced/terminal cancer, liver disease)	☐	☐

3. Is the patient at high risk? If any of the following is checked YES, consider immediate transport to a PCI capable facility:

Criteria	Yes	No
Heart rate > or = 100 bpm and systolic BP < 100 mmHg	☐	☐
Pulmonary Edema (rales) or new S3	☐	☐
Signs of shock (cool, clammy)	☐	☐
Contraindications to fibrinolytic therapy	☐	☐

- If patient has NO CONTRAINDICATIONS to fibrinolytics, and patient has been experiencing their chest pain for less than 3 hours or greater than 12 hours, transport patient to either the closest facility, or the facility of their choice.
- Notify receiving hospital of a **STEMI or CARDIAC ALERT.**
- If patient has relative or absolute contraindications to fibrinolytics, or criteria above indicate necessity, **transport patient to a designated Central Ohio Heart Hospital**. Central Ohio Heart Hospitals include, in no particular order: Riverside Methodist Hospital, Ohio State University - Main, Grant Medical Center, Mount Carmel East Hospital, Mount Carmel St. Ann's, Mount Carmel West Hospital, Marion General Hospital, and Knox Community Hospital.
- Assess Time - Contact-To-Balloon GOAL is ≤ 90 minutes. Consider air-medical transport if the collective time is ≥ 90 min. from initial patient contact to predicted cath lab time. Maximum ground transport time of approximately 45 minutes or less.

In cases of "Imminent death:" If your patient will possibly deteriorate during your transport time, go to closest emergency department for stabilization.

Commented [SK30]: Removed "transport to closest hospital if <10 min away" 4-23-15

Commented [SK31]: Added Marion & Knox 10-23-14

Commented [SK32]: Increase to 45 min from 30 min 10-23-14

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CHF/Pulmonary Edema

Continually reassess ABCDE's and keep reassessing and intervening as needed.

EMT

1. Assess the ABC's – support airway and ventilation PRN. Place patient in sitting position or reverse Trendelenburg if possible.
2. Initiate high flow O2 with NRB and pulse oximetry.
1. Complete and record all vital signs – repeat frequently and record new findings.
2. Obtain a dyspnea index (See Appendix) and a pulse oximetry reading.
3. Consider CPAP (see CPAP guidelines) if the patient has 2 or more of the following:
   A. Retraction of intercostals &/or accessory muscles, bronchospasm, rales, resp. rate >30, sPO_2 < 92% on high flow oxygen
4. Medications
   A. Administer **Aspirin 324 mg** (4 baby ASA) PO.
   A. Assist the patient with administration of their prescribed Nitroglycerine **ONLY** if systolic BP > 90 mmHg. Administer **Nitroglycerine (*Nitrostat*) - 0.4 mg tablet SL**, may repeat in 3-5 minutes for a total of 3 tablets. Verify that patient has not taken any PDE5 inhibitors within the past 48 hours (such as *Viagra*, *Levitra*, or *Cialis*) which are known to potentiate the hypotensive effects of nitrates.

Advanced EMT

Treatment continuation from above

5. Non-prescribed Nitroglycerine may be given as above, not exceeding an accumulation dose of 3 tablet.
6. Initiate monitor limb leads only, IV NS

Paramedic

Treatment continuation from above

7. Obtain 12 lead EKG - see chest pain protocol
8. Consider **Furosemide (*Lasix*) – 20 - 40 mg IV, IO, IM**. May repeat to a max of 80 mg.
9. If systolic BP >90mmHg: consider **Morphine Sulfate – 2mg slow IV, IO, IM, SQ**, may repeat q 3-5 minutes to max of 10mg.
10. If systolic BP >90mmHg: consider **Nitropaste (*Nitro-Bid*) 1-2 inches.**
11. If systolic BP ≤90mmHg: Start **Dopamine infusion**
    A. Use premix 400mg in 250cc NS
    B. **Start infusion at 5mcg/kg/min** see dopamine chart for weight
    C. Titrate to achieve systolic BP of 90mmHg with good patient mentation
12. If Dopamine (Intropin) reaches 20mcg/kg/min **(40gtts/min, 60gtts/min, 80gtts/min)** and systolic BP is still ≤90mmHg, keep Dopamine (Intropin) running and begin **Epinephrine infusion:**
    A. Mix **1mg epinephrine** (1:1000 or 1:10,000) into **1000ml Normal Saline**
    B. Utilizing either a Dial-a-flow device or an IV pump, start infusion at **2mcg/min (2ml/min or 120ml/hour)**
    C. Titrate to maintain a SBP > 90 to a max dose of **5mcg/min (5ml/min or 400ml/hour)**

Reassess ABC's and if patient still deteriorating consider endotracheal intubation / RSI.

Commented [SK33]: Update to new epi infusion formula 10-23-14

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Asthma

Continually reassess ABCDE's and keep reassessing and intervening as needed.

EMT

1. Assess the ABC's – support airway and ventilation PRN. Consider CPAP - see CPAP guidelines
2. Initiate high flow O2 with NRB and pulse oximetry
3. Obtain and record all vital signs – repeat frequently and record new readings
4. Obtain a dyspnea index (See Appendix) and a pulse oximeter reading
5. Assist patient with administering their prescribed metered dose inhaler **ONLY. Not to exceed two puffs**

Advanced EMT

Treatment continuation from above

6. Initiate .9NS IV and limb lead EKG
7. If no relief or improvement from metered dose inhaler, administer a mix of **Albuterol (*Proventil*) 2.5mg AND Ipratropium (*Atrovent*) 0.5mg by nebulizer**. Set Oxygen flow at 6-8 LPM. Repeat **Albuterol 2.5mg** AND **Ipratropium 0.5mg** one time. May give **Albuterol 2.5mg** continuously if necessary
8. If patient remains in extremis, administer **Epinephrine 0.3mg SQ (0.3ml of 1:1,000)**

Paramedic

Treatment continuation from above

9. Administer **Methylprednisone (*Solu-Medrol*) 125mg slow IV, IO, IM** , with or without the above mentioned **Epinephrine 0.3mg SQ (0.3ml of 1:1,000)**
10. If patient remains in extremis, give **Magnesium Sulfate – 4 grams IV, IO over 10-15 minutes** (mixed and infused in 100cc NS)
11. Reassess ABC's and if patient is still deteriorating consider endotracheal intubation / RSII
12. If patient is intubated and becomes difficult to ventilate, consider periods of passive apnea, assuring complete exhalation before next ventilation (optional). Consider Albuterol treatment via BVM/ETT
13. Consider non transport of a patient who after ONLY **one** nebulizer treatment, meets **ALL** of the following criteria:
    A. Has returned to normal with a documented decrease in dyspnea rating by the patient, RR ≤20 per minute, pulse oximetry (on room air) ≥98%
    B. Is not alone and can be in the company of a responsible adult for at least the next 24 hours
    C. Agrees to contact her/his respective health care provider within 24 hours
    D. Appears to have normal adult judgment with no impediments to this judgment (i.e. evidence of intoxication, drugs, alcohol, trauma, and other factors)
    E. Is able and willing to sign a medical release form

Document all of this carefully!

Commented [GU34]: Able to give Solu-Medrol without epi. SK

Commented [SK35]: Change dose to 4 g in 100 ml from 2 g in 250 ml 10-23-14

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COPD

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Assess the ABCs – support airway and ventilation PRN. Consider CPAP – see CPAP guidelines
2. Obtain a dyspnea index (see appendix) and pulse oximeter reading
3. Administer oxygen at a flow rate sufficient to maintain oxygen saturation at 91% or greater. **NEVER withhold oxygen from a patient who needs it!**
1. Complete and record all vital signs – repeat frequently and record new findings.

Advanced EMT

Treatment continuation from above

2. Initiate .9NS IV and limb lead EKG
3. Administer **Albuterol (*Proventil*) - 2.5 mg AND Ipratropium (*Atrovent*) - 0.5 mg by nebulizer** (oxygen flow at 6 - 8 lpm). May repeat **Albuterol (*Proventil*) - 2.5mg AND Ipratropium (*Atrovent*) - 0.5 mg** one time, May give **Albuterol (*Proventil*) - 2.5 mg** continuously if necessary.

Paramedic

Treatment continuation from above

4. Obtain 12-Lead ECG – see chest pain guidelines
5. If patient is in severe distress, administer **Methylprednisolone (*Solu-Medrol*) - 125 mg slow IV, IO, IM.**
6. Reassess ABCs and if patient is still deteriorating, cyanotic, using accessory muscles and/or RR ≤ 8 or ≥ 22 per minute after REPEATED use of nebulized medications.

Consider CPAP if no improvement with above treatment, and/or advanced airway RSII.

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Spontaneous Pneumothorax

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Assess the ABCs – support airway and ventilation PRN.
2. Administer high flow oxygen.
1. Complete and record all vital signs – repeat frequently and record new findings.

Advanced EMT

Treatment continuation from above

2. Initiate .9NS IV and limb lead EKG
3. The patient's status can quickly change into Tension Pneumothorax. Monitor carefully, and if necessary, refer to "Tension Pneumothorax" protocol

Paramedic

Treatment continuation from above

Obtain 12-Lead ECG – see chest pain guidelines

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Pulmonary Embolism

Continually reassess ABCDE's and keep reassessing and intervening as needed

Consider High Index of Probability if any HX of:

- Recent surgery or long bone fractures
- Hx of DVT
- Prior Pulmonary Embolism
- Pregnancy up to 6 wks. post partum
- Long periods of sitting/traveling or flying
- Use of birth control medication
- Current smoker

EMT

1. Assess the ABCs – support airway and ventilation PRN.
2. Assess rate & quality of breathing; obtain a dyspnea index (see Appendix) and pulse oximeter reading
3. Administer high flow oxygen.
4. Complete and record all vital signs – repeat frequently and record new findings.

Advanced EMT

Treatment continuation from above

5. Initiate .9NS IV and limb lead EKG

Paramedic

Treatment continuation from above

6. Obtain 12-Lead ECG – see chest pain guidelines
7. Consider the following for pain control:
   A. Administer **Fentanyl (*Sublimaze*) - 50 to 100 mcg IV, IO, IM, IN may repeat to max of 200 mcg. (75 mcg IN may repeat x1)**
   - OR -
   B. Administer **Dilaudid (Hydromorphone) – 0.5 to 1mg IVP (slow), IO, IM, IN. May repeat to max total dose of 2 mg**
   - OR -
   C. Administer **Morphine Sulfate - 2 to 5 mg slow IV, IO, IM, SQ to a max of 10 mg IV**
   D. Consider **Ondansetron (*Zofran*) - 4 mg undiluted, IM or slow IV, IO** for nausea. May repeat once to max of 8 mg.

Commented [SK36]: Added Dilaudid 2-9-15

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Carbon Monoxide Poisoning

Continually reassess ABCDE's and keep reassessing and intervening as needed

Always ensure the safety of you and your crew. If you suspect CO poisoning, remove yourself, your crew, and the patient immediately. Call for Fire Department Response for ventilation. Do not attempt to enter a home if this is suspected prior to your arrival. Wait for FD ventilation or have patients come out to you.

EMT

1. Assess the ABCs - support airway and ventilation PRN.
2. Apply RAD-57. See Masimo EMS Reference Card. (see appendix)
3. Administer high flow oxygen with NRB Mask. REMEMBER THAT PULSE OXIMETRY IS UNRELIABLE IN CARBON MONOXIDE POISONING!
4. Assess rate & quality of breathing; obtain a dyspnea index (see Appendix)
5. Assess patient carefully for other injuries associated with carbon monoxide poisoning (burns, trauma, and overdose) and follow appropriate protocols.

Advanced EMT

Treatment continuation from above

6. Initiate .9NS IV and limb lead EKG

Paramedic

Treatment continuation from above

7. Consider advanced airway/RSII if indicated
8. Consider transportation specifically to Ohio State University Main, Grant, or Nationwide Childrens – if ANY of the following:
   A. Carboxyhemoglobin (COHb) 20 or higher
   B. CO reading in patient's prolonged environment was $\geq$ 180 ppm
   C. Pt. unresponsive or history of syncope
   D. Cardiac dysrhythmias

Chest pain, known CAD, or risk factors for CAD i.e. coronary disease

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Cyanide Poisoning

Continually reassess ABCDE's and keep reassessing and intervening as needed

Consider if pt. of enclosed space fire victim, consider Cyanide toxicity in anyone who has decreased level of consciousness and is not responding to Oxygen. Coexistence of carbon monoxide poisoning may occur.

Serious signs and symptoms {altered mental status, confusion/disorientation, mydriasis(excessive pupil dilation), seizures, coma and cardiovascular collapse.

EMT

1. Assess the ABCs - support airway and ventilation PRN.
2. Administer high flow oxygen with NRB Mask. REMEMBER THAT PULSE OXIMETRY IS UNRELIABLE IN CYANIDE POISONING!

Advanced EMT

Treatment continuation from above

3. Initiate .9NS IV and limb lead EKG

Paramedic

Treatment continuation from above

4. Administer **Hydroxocobalamin (*Cyanokit*) 5g IV, IO infused over 15 minutes**. If signs and symptoms persist may repeat once. (Do Not give any other med. in the same IV)

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Stroke/CVA

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Assess the ABC's- support airway and ventilation PRN.
2. Administer high-flow O2 and apply pulse oximeter.
3. Complete and record all vital signs-repeat frequently and record new findings.
4. Check capillary blood glucose. If ≤70mg/dl or ≥400mg/dl, see Hypo-/Hyperglycemia guideline

Advanced EMT

Treatment continuation from above

5. Apply limb lead EKG
6. Initiate .9NS IV, titrate to maintain systolic BP>90mmHg

Paramedic

Treatment continuation from above

7. Consider advanced airway/RSII as indicated
8. Obtain 12-lead EKG + document any use of anticoagulants i.e. ASA, *Aggrenox*, *Plavix*, *Coumadin*
9. If suspected stroke is associated with hypertension, do NOT treat hypertension, even if severe, unless chest pain is also present. In that circumstance only treat according to hypertension guideline.
10. Perform and record the Cincinnati Pre-Hospital Stroke Scale:
11. Facial Droop/Arm Drift/Abnormal Speech -> 1of 3 is indicative = 72% probability of CVA.
12. Perform and record the Los Angeles Pre-Hospital Stroke Scale- refer to appendix
13. Perform thrombolytic pre-screening- refer to appendix
14. Call receiving hospital with notification of a **STROKE ALERT**.
15. Attempt to pinpoint the specific time at which the patient's symptoms began, and DOCUMENT IT! If the patient can be to the ER before the symptoms are less than 4.5 hours old, the patient should be transported to the closest Stroke Network Hospital / Stroke Center. If necessary, consider use of air-medical transport. Central Ohio Stroke Centers include Ohio State University-Main, Mount Carmel East/West, Riverside Methodist Hospital, Grant or affiliated stroke network hospitals. Patients <18 y/o consider transport to Nationwide Children's Hospital.

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Stroke/CVA Charts

IV THROMBOLYTIC INCLUSION CRITERIA:
☐ Age ≥ 18 years of age ☐ Clinical stroke diagnosis with measurable deficit ☐ Symptom onset < 3 hours prior to treatment
IV THROMBOLYTIC EXCLUSION CRITERIA*:
☐ Pre-treatment CT shows intracranial hemorrhage ☐ Subarachnoid hemorrhage clinical presentation ☐ Active internal bleeding ☐ Platelet count < 100,000 ☐ Heparin w/in past 48 hours & elevated PTT ☐ INR ≥ 1.7 ☐ Intracranial surgery, serious head trauma or stroke within past 3 months ☐ History of intracranial hemorrhage, AV-malformation or aneurysm ☐ SBP > 185 or DBP > 110 by repeated measure at time of treatment ☐ Glucose < 50 or > 400 mg/dL ☐ Allergy to thrombolytic ☐ Minor symptoms or rapid improvements ☐ Major surgery or trauma w/in 14 days ☐ GI or GU hemorrhage w/in 21 days ☐ Arterial puncture at non-compressible site or lumbar puncture with w/in past 7 days ☐ Acute MI w/in past 3 months ☐ Seizure at onset of stroke symptoms ☐ Pregnancy

*NOTE: tPA eligibility for some criteria is determined on a case-by-case basis

Hypoglycemia / Hyperglycemia

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Assess the ABC's – support airway and ventilation PRN.
2. Initiate O2 and apply pulse oximeter.
3. Complete and record all vital signs-repeat frequently and record new findings.
4. Check blood glucose level. If initial blood glucose is ≤70mg/dl:
   A. Hypoglycemic patient with altered mentation - with insulin pump in place
      i) Care is directed at treating hypoglycemia first, then stopping administration of insulin!
      ii) Turn off insulin pump if able.
      iii) If no one familiar with the device is available to assist, disconnect pump from patient by:
         (1) Using quick-release where tubing enters dressing on patient's skin, -OR-
         (2) Completely removing the dressing, thereby removing the subcutaneous needle and catheter from under patient's skin.
   B. If patient is able to swallow and easily protect their own airway, give **Glucose (Glutose) - 15 grams PO**.

Advanced EMT

Treatment continuation from above

5. Initiate .9NS IV and administer:
   - **Dextrose 10% (D10) – 25 grams/250 cc IV, IO**

     -OR-
   - **Dextrose 50% (D50) - 25 grams IV, IO**
6. Recheck blood glucose in 5 minutes. May repeat Dextrose administration x 1 if necessary.
7. If unable to start an IV – administer **Glucagon – 1mg deep IM -OR- 2 mg IN.**
8. Consider "treat and refuse" of diabetic patients with a well documented medical history who have received the treatment outlined above and meet ALL of the following criteria:
   A. Blood glucose is now ≥70mg/dl
   B. Patient agrees to eat a meal, and is able to do so.
   C. Patient will be in the company of a responsible adult(s) who will stay with him/her for at least 12 hours or can ensure that somebody else does.
   D. Patient agrees to contact their primary health care provider within 24 hours.
   E. Patient has the capability of measuring their own blood sugar and adjusting their medications (i.e. insulin) accordingly.
   F. There are no other acute medical issues involved (i.e. suspected stroke, MI, trauma, drugs, alcohol, serious infection, etc.)
   G. A signed "non-transport" refusal form MUST still be obtained.
   H. Thoroughly document all of the above criteria on your patient care report.

If hyperglycemic – i.e. blood sugar is ≥400mg/dl – administer **500cc bolus of IV, IO .9NS** – except with cardiac patients. "treat-and-refuse" is NOT an option.

Commented [AM37]: D10 added

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Decreased / Altered Level of Consciousness

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Assess the ABC's – support airway and ventilation PRN.
2. Initiate O2 and apply pulse oximeter.
3. Complete and record all vital signs-repeat frequently and record new findings.
4. Consider differential diagnosis - hypoglycemia, stroke, traumatic head injury, MI, respiratory arrest, drugs – follow appropriate protocols based on suspected etiology of the decreased LOC. Always C-spine immobilize unconscious patients with an unknown mechanism of injury
5. Check capillary blood glucose. If ≤ 70 mg/dl or ≥ 400 mg/dl, see Hypo-/Hyperglycemia Protocol
6. If suspected narcotic overdose, administer **Naloxone (Narcan) 1-2 mg IN**. May repeat to max of 4 mg

Advanced EMT

Treatment continuation from above

7. Initiate .9NS IV and limb lead EKG
8. If glucose level is ≥ 60 and the patient has a high suspicion of narcotic overdose **administer Naloxone (*Narcan*) 0.4 to 2 mg IV, SQ, IN, or Neb.** May repeat every 2 to 3 minutes to a max dose of 10 mg.
    a. For patients with respiratory arrest, severe depression or circulatory collapse due to opioid overdose, administer **Naloxone *(Narcan)* 0.4 to 2.0 mg IV, IN**. May repeat every 2 to 3 minutes to a **max dose of 4 mg**.
    b. For patients where opioid overdose is suspected and patient is not in the above situation, but may still have a reduction in LOC due to opioid overdose, administer **Naloxone *(Narcan)* 2 mg / 2 ml nebulized.**

Commented [SK38]: Add nebulized narcan

Commented [SK39]: Added specific dose for neb 2-9-15

Paramedic

Treatment continuation from above

9. Consider advanced airway/RSII as indicated

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Symptomatic Hypotension & Non-Traumatic Hypovolemia

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Assess the ABC's – support airway and ventilation PRN.
2. Initiate O2 and apply pulse oximeter.
3. Complete and record all vital signs-repeat frequently and record new findings.

Advanced EMT

Treatment continuation from above

4. Initiate .9NS IV and limb lead EKG
5. Consider starting a 2nd IV line.
6. If systolic BP ≤ 90 mmHg AND if breath sounds are clear, **infuse 500 cc of warm NS** to maintain systolic BP ≥ 90 mmHg; may repeat PRN to maintain adequate perfusion.

Paramedic

Treatment continuation from above

7. If due to a dysrhythmias, go to appropriate protocol.
8. If systolic BP remains ≤ 90 mmHg, start a **Dopamine (*Intropin*) infusion**:
   A. Use premix 400 mg Dopamine (Intropin) in 250 cc NS
   B. **Start infusion at 5 mcg/kg/min** See chart.
   C. Titrate to maintain systolic BP of 90 mmHg with good patient mentation.
9. If Dopamine (Intropin) reaches 20mcg/kg/min **(40gtts/min, 60gtts/min, 80gtts/min)** and systolic BP is still <90mmHg, keep Dopamine (Intropin) running and begin **Epinephrine infusion**:
   A. Mix **1mg epinephrine** (1:1000 or 1:10,000) into **1000ml Normal Saline**
   B. Piggyback epinephrine infusion into a fast flowing, primary IV running **Wide Open**.
   C. Utilizing either a Dial-a-flow device or an IV pump, start infusion at **2mcg/min (2ml/min or 120ml/hour)**
   D. Titrate to maintain a SBP > 90 to a max dose of **5mcg/min (5ml/min or 400ml/hour)**

Commented [SK40]: Added epi infusion 10-23-14

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Seizures

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Assess the ABCs - support airway and ventilation PRN. Do not attempt to place an oral airway or orally suction during an active seizure.
2. Initiate O2 and apply pulse oximeter.
3. Complete and record all vital signs-repeat frequently and record new findings.
4. Check capillary blood glucose. If ≤ 70 mg/dl or ≥ 400 mg/dl, see Hypo-/Hyperglycemia Protocol

Advanced EMT

Treatment continuation from above

5. Initiate .9NS IV and limb lead EKG

Paramedic

Treatment continuation from above

6. If seizures are recurrent:
   A. Administer **Lorazepam (*Ativan*) 1-2 mg slow IV, IO, IM**. May repeat x 2 to max dose of 6 mg
7. If unable to start an IV or access IM:
   A. Consider **Midazolam (*Versed*) - 2 mg atomized IN**

If patient is pregnant and may have eclampsia, administer **Magnesium Sulfate - 2 to 4 grams IV, IO over 10 to 15 minutes** (mix in 250 cc NS)

Commented [GU41]: Remove 5 minute seizures 5/15/15. SK

Commented [SK42]: Added IM Ativan to initial treatment 10-23-15

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Hypertensive Emergencies

If you suspect that the patient is having a stroke (symptoms such as one sided facial drooping, one sided extremity weakness/paralysis, or a positive Cincinnati Stroke Scale are present), lowering systolic blood pressure may be harmful.

Symptoms of hypertensive emergencies may include a systolic BP ≥220mmHg or diastolic BP ≥ 130 mmHg, a change in mental status, visual changes, and headache.

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Assess the ABC's – support airway and ventilation PRN.
2. Initiate O2 and apply pulse oximeter.
3. Complete and record all vital signs-repeat frequently and record new findings.
4. If appropriate, attempt to contact or arrange to see patient's physician.

Advanced EMT

Treatment continuation from above

5. Initiate .9NS IV and limb lead EKG
6. Administer **Nitroglycerine (*Nitrostat*) - 0.4 mg SL** (if not pregnant). May repeat q 3 - 5 minutes x 3 **for chest pain/pulmonary edema.**
7. If pregnant, and patient is greater than 20 weeks gestation, place on left side, and transport to her obstetrical facility of choice. Be cautious of seizure or abruption. Transport with head slightly elevated.

In most cases, hypertension is a symptom rather than the primary disease (i.e. *Hypertension due to a seizure rather than a seizure due to hypertension*). Always consider other causes of symptoms, especially in cases of altered levels of consciousness, but do not delay transport. Rapidly lowering diastolic BP may cause brain injury. Confirm hypotension with repeat blood pressures every 5 minutes.

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Pain Management / Abdominal Pain

Consider use of this protocol only for patients with sickle cell crisis, flank pain consistent with renal colic, back pain from strains, Abdominal injuries with severe pain and those patients with isolated extremity injuries that are not due to multi-system trauma or falls from substantial heights.

Do not use this protocol in patients with pain due to cardiac or stroke episodes or those with other significant issues or complicating factors (i.e. multisystem illness, drug or alcohol intoxication, etc.), significant head trauma.

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Assess the ABC's – support airway and ventilation PRN.
2. Initiate O2 and apply pulse oximeter.
3. Complete and record all vital signs-repeat frequently and record new findings.
4. For extremity injuries, splint and control bleeding as needed.

Advanced EMT

Treatment continuation from above

5. Initiate .9NS IV and limb lead EKG
6. Administer **Morphine Sulfate - 2 to 5 mg IV**, repeat PRN up to 10 mg IV maximum.
7. If hypotension occurs after administration of pain medication, give a **500 ml fluid bolus of NS.**
8. If respiratory depression occurs following administration of the above pain medications, administer **Naloxone (*Narcan*) – 0.4 to 2.0 mg IV, IO, IM, SQ, (ET followed by 5 cc of NS).** Be alert to the need for advanced airway management if necessary

- **OR -**

Paramedic

Treatment continuation from above

9. Administer **Fentanyl (*Sublimaze*) - 50 to 100 mcg IV, IO, IN** **(preferred)**. Administer in 50 mcg increments when using IV, up to maximum dose of 200 mcg IV. If no IV may give 100 mcg IM single dose
10. Consider **Ondansetron (*Zofran*) - 4 mg undiluted, IM or slow IV** for nausea. May repeat once to max of 8 mg.
11. If hypotension occurs after administration of pain medication, give a **500 ml fluid bolus of NS**.
12. If respiratory depression occurs following administration of the above pain medications, administer **Naloxone (*Narcan*) – 0.4 to 2.0 mg IV, IO, IM, SQ, (ET followed by 5 cc of NS)**. Be alert to the need for advanced airway management if necessary
13. **Abdominal pain** patients may receive **Morphine - 2 mg IV, IO** **OR** **Fentanyl – 50-100 mcg IV, IO**. May repeat to max of 4 mg of morphine or 50 mcg of Fentanyl.

Commented [SK43]: Changed Fentanyl in Ab pain to 50-100mcg for consistency across protocol 10-23-15

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Exposure To Nerve Agents / Organophosphates

For CLINICIANS Only

1. If the potential exists for exposure to chemical agents that affect the nervous system:
   A. Protect SELF AND CREW above all else, with personal protective equipment
   B. Protect victim from further exposure
      1. Remove from source and identify agent if possible
      2. Weaponized Nerve Agents included *Sarin* (GB), *Soman* (GD), *Tabun* (GA), and VX.
      3. Remove only outer clothing if exposed to vapors
      4. Remove all clothing and decontaminate if liquid exposure
      5. Follow decontamination procedure per hazmat protocol
2. Identify signs & symptoms that raise your index of suspicion indicating possible exposure to nerve agents or organophosphates (**SLUDGEM**):
   A. **S** – Salivation / **L** – Lacrimation / **U** – Urination / **D** – Defecation / **G** – Gastrointestinal Upset / **E** – Emesis / **M** – Muscle Twitching & Miosis (pinpoint pupils)
3. Nerve Agent or Organophosphate exposure
   A. If patient has a mild to moderate exposure, with symptoms to include: SLUDGEM, agitation and respiratory depression, administer **one (1) DuoDote Kit - IM Autoinjector**
   B. A DuoDote Kit Autoinjector consists of:
      I. Atropine (*AtroPen*) – 1.0 mg in 20 ml
      II. Pralidoxime Chloride (*Protopam Chloride, 2PAM*) – 1 gram in 20 ml
   C. If severe symptoms continue in 5 to 8 minutes, administer up to **three (3) additional DuoDote Kit - IM Autoinjector in rapid succession.**
   D. If patient exhibits SLUDGEM, but no central nervous system (CNS) findings i.e. A+O*3 administer ***2 atropine auto injectors and 1 2-PAM CL auto injector.*** Additional doses of **Atropine 1-2 mg IV, IO** until **SLUDGEM** signs and symptoms are diminished.
   E. In addition, administer ***Versed/Ativan* 1-2mg IV/IN/IV**, repeated once PRN.
4. All levels of providers that have been trained to do so are permitted to administer nerve agent antidotes:

   Ohio Administrative Code: 4765-6-03 "Additional services in a declared emergency"

   (B) A first responder, EMT-basic, EMT-intermediate, or EMT-paramedic, certified in accordance with section 4765.30 of the Revised Code and Chapter 4765-8 of the Administrative Code, may administer drugs or dangerous drugs contained within a nerve agent antidote auto-injector kit, including a MARK-1 kit, in response to suspected or known exposure to a nerve or organophosphate agent provided the first responder or EMT is under physician medical direction and has received appropriate training regarding the administration of such drugs within the nerve agent antidote auto-injector kit.

Transport patients as quickly as possible, notifying receiving hospitals as early as possible so they may prepare for decontamination procedures.

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Animal / Reptile Bites & Insect Stings

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Assess the ABC's – support airway and ventilation PRN
2. Initiate high flow O2 and apply pulse oximeter
3. Consider BVM with high flow O2 if respiratory difficulty and /or symptoms of airway edema is present
4. Obtain and record vital signs – repeat frequently and record all findings
5. Minimize patient exertion, if appropriate, immobilize affected patient limb
6. Obtain identifying information of the animal, insect or reptile, including size, color, markings, shape of the head, location of the event, how it happened, and if the predator was captured. Notify animal control and law enforcement if appropriate
7. Mark margins of wounds, swelling, and /or redness with pen. If stinger is present, attempt to remove.
8. If appropriate, watch for signs & symptoms of anaphylaxis, and treat according to anaphylaxis guidelines.
   A. May assist patient with their **prescribed** auto-injector **Epinephrine 1:1,000 pen** **ONLY**

Advanced EMT

Treatment continuation from above

9. Initiate .9NS IV and limb lead EKG
10. If reaction is localized, systolic BP is ≥90mmHg, no respiratory difficulty and no symptoms of airway edema:
    A. Administer **Diphenhydramine (*Bendryl*) – 25 to 50mg IV, IM.** May repeat x 1 to a **max dose of 50mg.**
11. If reaction is systemic, respiratory difficulty and /or symptoms of airway edema, and BP ≥90mmHg:
    A. Administer **Epinephrine – 0.3mg SQ (0.3ml of 1:1,000)**
    B. Administer **Diphenhydramine (*Benadryl*) – 25-50mg IV, IM.** May repeat x 1 to a **max dose of 50mg.**
    C. Consider **Albuterol** for wheezing and / or shortness of breath
    D. If systolic BP remains ≥90mmHg and no improvement after 5 minutes – repeat **Epinephrine 0.3mg SQ (0.3ml of 1:1,000)** using a different injection site.
12. If systolic BP ≤ 90 mmHg AND if breath sounds are clear, **infuse 500 cc of warm NS** to maintain systolic BP > 90 mmHg; may repeat PRN to maintain adequate perfusion.

Commented [SK44]: Clarified dosage, max dose. 8-18-14

Animal / Reptile Bites & Insect Stings (cont.)

Paramedic

Treatment continuation from above

13. Secure advanced airway if appropriate – support airway and ventilation PRN

14. If pt shows signs of severe anaphylactic shock, hypoperfusion, BP remains < 90 mmHg and/or altered LOC, Continue IV/IO bolus to total 2 liters of Normal Saline and **start an Epinephrine infusion:**,
    A. Mix **1mg epinephrine** (1:1000 or 1:10,000) into **1000ml Normal Saline**
    B. Piggyback epinephrine infusion into a fast flowing, primary IV running **Wide Open**.
    C. Utilizing either a Dial-a-flow device or an IV pump, start infusion at **1mcg/min (1ml/min or 60ml/hour)**
    D. If signs and symptoms do not improve within one (1) minute titrate epinephrine to **2mcg/min (2ml/min or 120ml/hour)**
    E. If signs and symptoms do not improve within one (1) minute after initial increase, increase drip again to 4mcg/min **(4ml/min or 240ml/hour)**
    F. Titrate to maintain a SBP > 90 to a max dose of **5mcg/min (5ml/min or 400ml/hour)**

15. If unable to start IV
    A. Administer **Epinephrine – 0.2 mg via SL injection (0.2 cc of 1:1,000) –OR-**
    B. Administer **Epinephrine – 2 mg via ET tube (2 cc of 1:1,000)** if ET tube is in place repeat if no response after 5 minutes

16. If signs of major systemic reaction and/or patient severely anxious or in pain:
    A. Administer **Fentanyl (*Sublimaze*) - 50 to 100 mcg IV, IO, IM may repeat to max of 200 mcg. (75 mcg IN may repeat x1)**
    - OR -
    B. Administer **Morphine Sulfate - 2 to 5 mg slow IV, IO, IM, SQ to a max of 10 mg IV**
    C. Consider **Ondansetron (*Zofran*) - 4 mg undiluted, IM or slow IV, IO** for nausea. May repeat once to max of 8 mg.
    A. Consider **Midazolam (*Versed*) – 2 to 5mg IV** for anxiety, or **0.1mg/kg IV**

17. If systolic BP is ≤90mmHg, start a **Dopamine (*Intropin*) infusion**:
    A. Use premix 400mg in 250cc NS
    B. Start infusion at **5mcg/kg/min** see dopamine chart for weight
    C. Titrate to achieve systolic BP of 90mmHg with good patient mentation

Commented [SK45]: Updated to new epi infusion formula 10-23-14

Commented [GU46]: Replaced epi 1:10 with epi 1:1 - SK

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Medication Overdose, Ingestions and Toxic Exposure

Continually reassess ABCDE's and keep reassessing and intervening as needed.

- In an event where there is a possible toxic exposure / hazmat, report to incident command and stage until patients are decontaminated. **NEVER enter the "Warm" or "Hot" zone under any circumstance**!
- MEDICATIONS: Gather type, dose, time and route of exposure, how consumed, and take bottles with you.
- Contact Poison Control via 800-MHz radio on Zone-11- Position-12 Poison
- TOXIC EXPOSURE: When possible determine type of chemical involved first. Obtain the name and if possible the material safety data sheet (MSDS) or ask that the name of the MSDS be brought to the hospital as soon as possible.
- SKIN EXPOSURE: Remove clothing, brush dry chemicals, and flood skin with copious amounts of water.
- FIRE VICTIMS: Evaluate for airway obstructions secondary to thermal injury!

EMT

1. Assess the ABC's – support airway and ventilation PRN
2. Initiate high flow O2 and apply pulse oximeter
3. Complete and record all vital signs-repeat frequently and record new findings.
4. If indicated assume spinal injury and treat accordingly.
5. Check capillary blood glucose. If ≤ 70 mg/dl or ≥ 400 mg/dl, see Hypo-/Hyperglycemia Protocol

Advanced EMT

Treatment continuation from above

6. Initiate .9NS IV and limb lead EKG
7. If systolic BP ≤ 90 mmHg AND if breath sounds are clear, **infuse 500 cc of warm NS** to maintain systolic BP ≥ 90 mmHg; may repeat PRN to maintain adequate perfusion.
8. If glucose level is ≥ 60 and the patient has a high suspicion of narcotic overdose **administer Naloxone (*Narcan*) 0.4 to 2 mg IV, SQ, IN, or Neb.** May repeat every 2 to 3 minutes to a max dose of 10 mg.
    c. For patients with respiratory arrest, severe depression or circulatory collapse due to opioid overdose, administer **Naloxone *(Narcan)* 0.4 to 2.0 mg IV, IN**. May repeat every 2 to 3 minutes to a **max dose of 4 mg**.
    d. For patients where opioid overdose is suspected and patient is not in the above situation, but may still have a reduction in LOC due to opioid overdose, administer **Naloxone *(Narcan)* 2 mg / 2 ml nebulized.**

Commented [SK47]: Add nebulized narcan

Commented [SK48]: Added specific dose for neb 2-9-15

Medication Overdose, Ingestions and Toxic Exposure (cont.)

Paramedic

Treatment continuation from above

9. If tricyclic antidepressant overdose suspected (see list in appendix) and QRS begins to widen ≥ 0.12 seconds, or HR ≥ 120 bpm develops:
   A. Administer **Sodium Bicarbonate ($NaHCO_3$) - 1 amp 50 meq IV, IO over 1-2 minutes.**
   B. Infuse **500ml warm IV, IO NS** (with 1 amp sodium bicarbonate in 1 liter of NS) may repeat x1
10. If coma, seizures, wide QRS, or dysrhythmias develop, give **Sodium Bicarbonate (NaHCO3) - 1 amp 50 meq IV, IO over 1-2 minutes.** Repeat every 3 to 5 minutes PRN.
11. If systolic BP ≤ 90 mmHg and patient's mental status is diminished, start a **Dopamine (*Intropin*) infusion:**
    A. Use premix 400mg in 250cc NS
    B. Start infusion at **5mcg/kg/min** see dopamine chart for weight
    C. Titrate to achieve systolic BP of 90mmHg with good patient mentation
12. If inadequate response to Dopamine (*Intropin*) and BP remains ≤ 90 mmHg with altered LOC, start an **Epinephrine infusion:**
    A. Mix **1mg epinephrine** (1:1000 or 1:10,000) into **1000ml Normal Saline**
    B. Piggyback epinephrine infusion into a fast flowing, primary IV running **Wide Open**.
    C. Utilizing either a Dial-a-flow device or an IV pump, start infusion at **2mcg/min (2ml/min or 120ml/hour)**
    D. Titrate to maintain a SBP > 90 to a max dose of **5mcg/min (5ml/min or 400ml/hour)**
13. If organophosphate exposure is suspected:
    A. Administer **Atropine - 2 mg IV, IO.** Repeat every 5 minutes until signs & symptoms diminish, no max dose.

Commented [SK49]: Updated epi infusion formula 10-23-14

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Allergic Reaction, Anaphylaxis, Dystonic Reaction

Continually reassess ABCDE's and keep reassessing and intervening as needed.

EMT

1. Assess the ABC's – support airway and ventilation PRN
2. Initiate high flow O2 and apply pulse oximeter
3. Complete and record all vital signs-repeat frequently and record new findings.
4. If indicated assume spinal injury and treat accordingly.
5. If severe allergic reaction, assist patient in administering their own prescribed Epi-Pen if available.
6. Keep the patient calm and minimize patient exertion

Advanced EMT

Treatment continuation from above

7. Initiate .9NS IV and limb lead EKG
8. If the patient is exhibiting signs of Bronchospasm administer **Albuterol (*Proventil*) 2.5 mg** (diluted in 3 ml NS) nebulized. May be combined with **0.5 mg or Ipratropium (*Atrovent*)**
   A. You may only give **Albuterol** in continuous administration
9. If reaction is localized, systolic BP is ≥ 90 mmHg, no respiratory difficulty and no symptoms of airway edema: Administer **Diphenhydramine (*Benadryl*) - 25 to 50 mg IV, IO, IM**
10. If reaction is systemic, respiratory difficulty and/or symptoms of airway edema, and BP ≥ 90 mmHg:
    1. Administer **Epinephrine - 0.3 mg SQ, IM** (0.3 cc of 1:1,000)
    2. Administer **Diphenhydramine (*Benadryl*) - 25 to 50 mg IV, IO, IM**
    3. Consider **Albuterol** for Wheezing or SOB
11. If systolic BP remains ≥ 90 mmHg and no improvement after 5 minutes - repeat **Epinephrine 0.3 mg SQ, IM** (1:1,000) using a different injection site.
12. If systolic BP ≤ 90 mmHg AND if breath sounds are clear, **infuse 500 cc of warm NS** to maintain systolic BP ≥ 90 mmHg; may repeat PRN to maintain adequate perfusion.

Paramedic

Treatment continuation from above

13. If inadequate response to all above interventions and BP remains ≤ 90 mmHg with altered LOC, start an **Epinephrine infusion:**
    1. Mix 1 mg in 250 cc NS
    2. **Start infusion at 2 mcg/min** (30 gtts/min)
    3. Titrate to maintain systolic BP ≥ 90 mmHg
14. If unable to start an IV
    1. Administer **Epinephrine - 0.2 mg via SL injection** (0.2 cc of 1:1,000) - OR -
    2. Administer **Epinephrine - 1 mg via ET tube** (1 cc of 1:1,000) if ET in place followed by 5 cc NS.
    3. Repeat if no response after 5 minutes

Commented [GU50]: Replaced 1:10 epi with 1:1 -SK

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Behavioral Emergency and Patient Restraint

- Definition of a "Behavioral Emergency:" When the patient acts abnormally in a way that is unacceptable or intolerable to the patient, family, or community. Behavioral changes may be due to psychological, emotional, physical, or medical conditions.
- Psychological causes include depression, mania, paranoia, suicidal, and environmental changes.
- Physical causes may include excessive heat or cold, lack of oxygen, lack of blood flow to the brain, head injuries, stroke, alcohol or drug abuse, high or low blood sugar, metabolic disorders, and neurologic disease.
- **Chemical restraint is preferred to physical restraint (at the Paramedic level). When the Reeves Sleeve is used for physical restraint, chemical restraint should be strongly considered.**

Commented [SK51]: Changed priorities, chemical vs physical 2-9-15

Continually reassess ABCDEs and intervene as needed.

EMT / Advanced EMT

1. Make the scene safe. Law enforcement should be used, as needed, to determine scene safety.
2. Never turn your back on the patient. Never leave the patient alone.
3. Encourage the patient to talk. Listen carefully.
4. Be confident. Be respectful. Be calm. Be honest.
5. Explain all movements and procedures.
6. Provide interventions for possible medical causes.
7. Transport to an appropriate facility

USE OF RESTRAINT: PATIENT RESTRAINT MAY BE USED UNDER THE FOLLOWING CONDITIONS:

A. It is understood that the use of restraint is a "last resort" measure to ensure safe transport. All efforts should be made to avoid this AND must be **PROPERLY DOCUMENTED**.
B. Consult with law enforcement. Law enforcement should perform physical restraint if possible.
C. After patient is physically restrained, use wide leather or cloth restraints to immobilize
D. THE REASONING FOR RESTRAINT, EITHER PHYSICAL OR CHEMICAL, MUST BE SUFFICIENTLY DOCUMENTED ON THE PATIENT CARE REPORT
E. Patients may ONLY be restrained face up on the cot.
F. The patient MUST be fully conscious and protecting his/her own airway with stable vital signs prior to physical restraint.

Physical restraints MAY NOT BE USED:

A. In situations where the combative behavior of the patient is due to severe trauma, burns, pain, or any life threatening medical condition (i.e. asthma, COPD, anaphylaxis, hypoglycemia, etc.)
B. In such cases the underlying condition resulting in the patient's behavior must be addressed.
C. If interventions to address the underlying condition cannot ensure safe transport, ONLY THEN may soft physical restraints may be applied. This must be painstakingly documented.

Paramedic

8. Chemical restraint may be used if necessary, especially in the case of drug/illegal substance overdoses.
9. When chemical restraint is necessary or to decrease severe anxiety, agitation, or combativeness:
   A. Administer **Lorazepam (*Ativan*) – 1-2 mg slow IV, IO, IM** or **Midazolam (*Versed*) 2-5 mg IV, IO, IM, IN** for patients with presumed substance abuse. May repeat x 1 in 15-20 minutes.
   B. Administer **Haloperidol (*Haldol*) 2-5 mg IM.** After administration place the pt on cardiac monitor.
   C. Treat Dystonic reaction with **Diphenhydramine (*Benadryl*) 25-50 mg IV, IO, IM.**
10. Carefully and continually monitor the patient's ABCDE's and vitals, most importantly airway adequacy and pulse oximetry

Commented [SK52]: Removed "as last resort" 4-23-15

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SECTION IV - OBSTETRICAL EMERGENCIES

Obstetrical Emergencies - During Pregnancy

Continually reassess ABCDE's and keep reassessing and intervening as needed

VAGINAL BLEEDING DURING PREGNANCY, PREGNANCY ≥ 20 WEEKS PLACENTAL ABRUPTION OR PLACENTA PREVIA

A. Apply external vaginal pads

GESTATIONAL HYPERTENSION, PRE-ECLAMPSIA

A. Signs & Symptoms: Edema, Excessive Weight Gain, Headaches, Right Upper Epigastric Pain, Visual Disturbances, Apprehension, Systolic BP ≥ 140 mmHg, Pale, Diastolic ≥ 110 mmHg
   - Be prepared for seizures

EMT

1. Assess the ABC's – support airway and ventilation PRN
2. Initiate high flow O2 and apply pulse oximeter
3. Complete and record all vital signs-repeat frequently and record new findings.
4. Transport immediately to appropriate facility with patient rolled on left side
5. Bring any fetal tissues to hospital

Advanced EMT

Treatment continuation from above

6. Initiate .9NS IV and limb lead EKG
7. If systolic BP ≤ 90 mmHg AND if breath sounds are clear, **infuse 500 cc of warm NS** to maintain systolic BP > 90 mmHg; may repeat PRN to maintain adequate perfusion.

Paramedic

Treatment continuation from above

VAGINAL BLEEDING DURING PREGNANCY < 20 WEEKS

1. Apply external vaginal pads, bring any fetal tissues to hospital
2. Establish baseline vital signs. If hypotension administer **fluid boluses of IV, IO NS** to keep BP ≥ 90 mmHg, Consider 2nd line
3. Transport to appropriate facility.

VAGINAL BLEEDING, PREGNANCY ≥ 20 WEEKS, ABRUPTION OR PLACENTA PREVIA

1. Apply external vaginal pads, bring any fetal tissues to hospital
2. Establish baseline vital signs. If hypotension administer **fluid boluses of IV, IO NS** to keep BP ≥ 90 mmHg, Consider 2nd line
3. Transport on left side, **assess fetal heart tones every 5 minutes**
4. Transport to appropriate facility

Obstetrical Emergencies - During Pregnancy (cont.)

GESTATIONAL HYPERTENSION, PRE-ECLAMPSIA

A. Signs & Symptoms: Edema, Excessive Weight Gain, Headaches, Right Upper Epigastric Pain, Visual Disturbances, Apprehension, Systolic BP > 140 mmHg, Pale, Diastolic > 110 mmHg
   - Administer **Magnesium Sulfate - 4 grams (diluted in 100 ml NS) over 20 minutes**
   - Transport immediately to appropriate facility with patient rolled on left side

Commented [SK53]: Changed to 4g in 100 ml from 2g in 250 ml 10-23-14

ECLAMPSIA, SEIZURE DURING PREGNANCY

A. Maintain airway, prepare to suction. Consider advanced airway.
B. Administer **Magnesium Sulfate - 4 grams (diluted in 100 cc NS) over 5 minutes**
C. Administer **Lorazepam (*Ativan*) 1-2 mg IV, IO, IM over 2-3 minutes**. May repeat every 5 min to max of 6 mg.
D. Be prepared to support pt with an advanced airway.

Commented [SK54]: Changed to 4g in 100ml from 2g in 50ml 10-23-14

Transport to appropriate facility

Obstetrical Emergencies - Delivery

Continually reassess ABCDE's and keep reassessing and intervening as needed

- Attempt to attain sanitary environment
- Focused history and physical exam, however, do not perform pelvic exam
- Develop and implement treatment plan based on assessment findings, resources, and training

NORMAL DELIVERY PROCEDURES:

Advanced EMT, Paramedic

1. Initiate IV NS, oxygen, pulse oximetry and monitor.
2. Attempt to prevent explosive delivery
3. As delivery occurs, suction mouth, then nose
4. If membrane is still intact as head delivers
   A. Instruct the mother to stop pushing
   B. Gently tear open membrane and immediately suction mouth, then nose
5. Keep newborn warm and dry
6. Keep newborn at level of vagina until cord is cut
7. Once cord pulsations cease, place one clamp six (6) inches away from baby, place second clamp nine (9) inches away from baby, cut cord between the clamps
8. Allow infant to nurse
   A. In multiple births, do not allow babies to nurse until all have been delivered

Obstetrical Emergencies – Delivery (cont.)

9. **APGAR** score at **1** minute and again at **5** minutes

	Signs	- 0 -	- 1 -	- 2 -
A	Appearance	Blue, Pale	Body Pink, Extremities Blue	Completely Pink
P	Pulse	Absent	Slow Or < 100	> 100
G	Grimace(Reflex Irritability)	No Response	Grimace	Cough Or Sneeze
A	Activity(Muscle Tone)	Limp	Some Flexion Of Extremities	Active Motion
R	Respiration(Effort)	Absent	Slow, Irregular	Good, Crying

Special situations

- High-risk preterm labor when delivery is imminent
  A. Rapidly infuse **1000 ml of NS via IV, IO**.
- Significant hemorrhage following delivery or delayed placenta delivery
  A. Unless multiple births are anticipated, begin fundal massage
  B. Refer to Resuscitation and Perfusion Core Principle
- Nuchal cord
  A. Attempt to slip cord over the head
  B. If cord is too tight to remove, immediately clamp in two places and cut between clamps
- Prolapsed cord or limb presentation
  A. With maintaining a pulsatile cord as the objective, two fingers of gloved hand into vagina to raise presenting portion of newborn off the cord.
  B. If possible, place mother in Trendelenburg position. Otherwise, knee-chest.
  C. Keep cord moistened with sterile saline.
  D. Continue to keep pressure off cord throughout transport
- Meconium delivery
  A. Deliver infant per "normal delivery" protocol
  B. If meconium is noted, suction mouth, nose, & posterior pharynx with bulb syringe AFTER delivery of the head but BEFORE deliver of the shoulders
  C. If the Infant is VIGOROUS (Strong Respiratory Effort, Good Muscle Tone, Heart Rate $\geq$ 100 bpm) - Continue with APGAR & stimulation.
  D. **EMT-Paramedic** If the Infant is DEPRESSED (Poor Respiratory Effort, Decreased Muscle Tone, Heart Rate $\leq$ 100bpm) - Delay drying & stimulation, suction trachea before taking other resuscitative steps, examine with laryngoscope and suction x 3, intubate trachea on 3rd tracheal suction. Aggressively resuscitate the infant to the extent necessary
- Breech presentation
  A. Position mother with her buttocks at edge of bed, legs flexed
  B. Support body as it delivers
  C. As the head passes the pubis, apply gentle upward pressure until the mouth appears over the perineum. Immediately suction mouth, then nose.
  D. If head does not deliver, but newborn is attempting to breath, place gloved hand into the vagina, palm toward newborn's face, forming a "V" with the index and middle finger on either side of the nose. Push the vaginal wall from the face. Maintain position throughout transport.

Obstetrical Emergencies – Delivery (cont.)

- Shoulder dystocia
  A. Position mother with buttocks off the edge of the bed and thighs flexed upward as much as possible.
  B. Apply firm, open hand pressure above the symphysis pubis
  C. If delivery does not occur, maintain airway patency as best as possible, immediately transport
- Stillborn/abortion
  A. All products of conception should be carefully collected and transported with the mother to the hospital.
  B. Anything other than transport should be coordinated with on-line medical consultation and/or law enforcement.

- Uterine inversion
  A. Make one attempt to put the uterus back into the vaginal vault. Using the palm of the hand, push the fundus of the inverted uterus toward the vagina. If unsuccessful, cover uterus with moistened sterile gauze.
  B. If mother is in active seizures secondary to presumed eclampsia, consider:
     1. **EMT-Paramedic** Administer **Magnesium Sulfate - 4 grams in 100 ml of NS** over 5 min.
  C. If mother is in active seizures not-responsive to magnesium sulfate, or for patients with seizure history not related to pregnancy, and BP ≥ 100 mmHg, consider:
     1. **EMT-Paramedic** Administer **Lorazepam (Ativan) 1-2 mg IV, IO, IM** may be repeated every 5 minutes to max of 6 mg.
  D. Be prepared to support pt with an advanced airway.

Commented [SK55]: Fixed typo 1-28-15

Commented [SK56]: Change to 100 ml from 250 ml 10-23-14

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Sexual Assault

The terms sexual assault and sexual abuse refer to any act of sexual contact or conduct performed upon one person by another, and without mutual consent, or with an inability of the victim to give consent due to age, mental or physical incapacity. This protocol should also be used for other forms of sexual assault (sex crimes perpetrated against adults), and sexual abuse (sex crimes perpetrated against children and adolescents).

Patient confidentiality is a priority. Providing care to sexual assault patients requires special sensitivity. Social, cultural, and religious practices may cause patients additional stress if they are concerned about discriminatory treatment as they are seeking support.

Continually reassess ABCDEs and keep reassessing and intervening as needed.

EMT, Advanced EMT, Paramedic

1. Obtain explicit permission to treat before you begin! Prefer same sex clinician perform all patient contact when possible, and always have more than one clinician present..
2. Call Law Enforcement
3. Protect crime scene. Remove only clothing necessary to assess and treat injuries; then give to law enforcement
4. Examine genitalia ONLY if bleeding profusely
5. Discourage patient from bathing, douching, changing clothes, voiding, combing hair or cleaning nails. Clean only wounds that are necessary.
6. Transport to hospital designated as a Rape Crisis Center, which include all Columbus Hospitals, Grady, Marion, Morrow, Union

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SECTION V - PROCEDURES

Cardiocerebral Resuscitation (CCR)

Commented [SK57]: Added CCR protocol 10-14-14

Continually reassess ABCDE's and keep reassessing and intervening as needed.

SUMMARY

CCR is to be used for cases in which an unwitnessed arrest (unwitnessed by EMS) is presumed to be cardiac in origin— i.e., individuals with sudden, unexpected collapses with absent or abnormal breathing. In all other situations, AHA guidelines for ACLS should still be used. EMS should give 200 uninterrupted chest compressions (100 per minute) before each rhythm analysis and single shock, if indicated. Patients are not moved from the scene until four cycles of 200 compressions/rhythm analysis have been completed. In most cases they are not transported until they are resuscitated or pronounced dead. Insertion of an advanced airway and assisted ventilation are not performed until either return of spontaneous circulation or after four cycles of chest compressions.

INDICATIONS

- Unresponsive adult patients with no palpable pulse.

CONTRAINDICATIONS

- Patients less than 8 years of age
- Drowning patients
- Drug overdose patients
- Trauma patients
- Respiratory arrest patients with palpable pulse

PROCEDURE

1. When faced with an unwitnessed cardiac arrest, the first rescuer should **immediately begin continuous chest compressions at rate of 100/min** and a depth of at least 2" allowing for full chest recoil.
2. Second and third rescuers should place an oropharyngeal or nasopharyngeal airway, apply NRB mask connected to 15 LPM O2 to patient's face, apply combo-pads to patient, and establish IV or IO access while first rescuer performs chest compressions. If time permits, administer 1 mg Epinephrine 1:10,000 IV/IO during chest compressions.
3. After 2 minutes (200 uninterrupted compressions), analyze cardiac rhythm. Administer a single shock at 360 joules if monitor reveals pulseless V-tach or V-fib.
4. Switch out rescuer who is providing chest compressions.
5. **Give second round of 200 compressions.**
6. During compressions, administer 1 mg Epinephrine 1:10,000 IV/IO.
7. Upon completion of 200 compressions, analyze rhythm & deliver single shock if indicated.
8. Switch out rescuer who is providing chest compressions.
9. **Give third round of 200 compressions.**
10. During compressions, administer 1 mg Epinephrine 1:10,000 IV/IO.
11. Upon completion of 200 compressions, analyze rhythm & deliver single shock if indicated.
12. Switch out rescuer who is providing chest compressions.
13. **Give Fourth round of 200 compressions.**
14. During compressions, administer 1 mg Epinephrine 1:10,000 IV/IO.
15. Upon completion of 200 compressions, analyze rhythm & deliver single shock if indicated.
16. After eight minutes (4 cycles of 200 compressions), if ROSC has not been achieved, consider terminating resuscitative efforts.
17. If resuscitative efforts are deemed worthy, resume standard ACLS algorithms. Consider placement of advanced airway if doing so will not interrupt chest compressions or if ROSC has been achieved. Return to PNB protocol
18. Consider transporting patient to nearest appropriate facility.

Oxygen, Airway & Ventilation Guidelines

Oxygen Administration Guidelines - Stable, spontaneously breathing patients

1. All ALS patients protecting their own airway should be given oxygen unless they have only isolated extremity injury and no other co-morbidities.
2. Nasal cannula at 4 to 6 lpm - OR - Reservoir mask at 10 to 15 lpm (flow sufficient to keep the bag from collapsing during inhalation)
3. Monitor patient's respiratory effort carefully
4. Use pulse oximeter to measure oxygen saturation - record readings

Ventilation and Intubation Guidelines - Unstable or deteriorating patients

1. When breathing is inadequate but an advanced airway is not needed the paramedic should assist the patient's ventilation via:
    1. Pocket mask with supplemental oxygen at 10 to 15 lpm - OR -
    2. Bag-valve mask with 100% oxygen
3. Use of simple airway adjuncts (i.e. oral or nasal airways)
    1. Never use an oral airway in a patient with an intact gag reflex
4. If a pulse is present: ventilate once every 6-8 seconds
5. **For children ventilate at least once every 3 seconds**
6. If pulseless and not intubated: ventilate twice after every 30th compression
7. Place an advanced airway if patient does not improve rapidly or deteriorates despite these efforts
8. If pulmonary edema/congestion or worsening cyanosis with ET tube in place, add 5 to 15 cm PEEP to bag-valve-mask.

When breathing is inadequate and an advanced airway is indicated - (i.e. a deteriorating patient in severe respiratory distress, a patient in shock or impending shock state with loss of ability to breathe and/or protect their airway, a patient with severely altered mental status and absent gag reflex, a patient not breathing for any reason, and/or paramedic judgment that endotracheal intubation is indicated)

- If provision of an advanced airway is necessary in the paramedic's judgment - doing so supersedes all other considerations in these guidelines.
- See RSII guideline and utilize if indicated and appropriate criteria are met. In order to utilize this guideline the paramedic must be up-to-date on all certifications to use RSII, AND the situation must in his/her judgment be "life threatening" mandating immediate placement of an advanced airway, AND the likelihood of successful placement of an advanced airway without RSII must be considered "low".
- Insert an ET tube as the advanced airway of choice
- If endotracheal intubation is unsuccessful after **three attempts at visualization total, not per provider**, insert an I-Gel airway or other blind insertion device. For the purposes of these guidelines, a visualization is defined as any advanced airway device, either a laryngoscope or an endotracheal tube, entering the patient's mouth in an attempt to secure the airway
- **If the patient is a pediatric patient and attempts at endotracheal intubation are unsuccessful, and then first strive to support the airway via two person bag-valve-mask and 100% oxygen. If necessary, consider needle cricothyroidotomy (see cricothyroidotomy guidelines)**
- Never remove an airway adjunct in the field if it is providing an adequate airway
- If patient is pulseless and intubated: ventilate patient 10 to 12 times per minute. Use Capnography or if unavailable, an end tidal CO_2 detector or other secondary confirmation device to assure proper placement of the ET tube on ALL intubated patients.

Commented [GU58]: Replaced Combitube with I-Gel. - SK

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Dyspnea Index

NO Distress - The patient can speak in complete sentences without difficulty

Slight Distress - The patient is able to speak several words at a time but with some difficulty Moderate **Distress** - The patient can only speak 2 to 3 words at a time

Severe Distress - The patient must struggle to speak 1 word at a time

Extremely Severe Distress - The patient cannot speak at all or is able to speak only a rare word due to respiratory distress

Airway Adjuncts

The tongue is the most common cause of airway obstruction in an unconscious person. Keeping the tongue from blocking the air passage is a high priority. Oropharyngeal (oral) airways (OPAs) and nasopharyngeal (nasal) airways (NPAs) can help you accomplish this task.

Oropharyngeal Airway (OPA)

Continually reassess ABCDE's and keep reassessing and intervening as needed

INDICATIONS

- Unresponsive patient unable to protect their own airway
- No gag reflex present

CONTRAINDICATIONS

- Oral trauma, broken teeth, etc.
- Recent oral surgery

EQUIPMENT NEEDED

- Oropharyngeal airways (OPA), multiple sizes
- Bag Valve Mask resuscitator (BVM)

PROCEDURE

- Select proper size OPA by measuring OPA from the patient's earlobe to the corner of their mouth.
- Use cross-finger technique to open the patient's mouth.
- Insert the OPA with the end toward the roof of the patient's mouth.
- As the tip approaches the back of the mouth, rotate it one-half turn (180 degrees).
- Slide the OPA into the back of the patient's throat.
- The flange of a properly sized OPA should rest on the patient's lips.

Pediatric patients:

- Use a tongue blade or a tongue depressor and insert OPA with the tip of the device pointing toward the back of the tongue and throat in the position it will rest in after insertion.

  -OR-
- Insert the OPA sideways and then rotate it 90 degrees into position.

Note: If the victim vomits, remove and suction the airway, ensuring all debris is removed from the airway. Thoroughly clean the device and reinsert the OPA only if the victim is still unconscious and does not have a gag reflex.

Nasopharyngeal Airway (NPA)

Continually reassess ABCDE's and keep reassessing and intervening as needed

INDICATIONS

- Patient unable to protect their own airway
- May be used on responsive and unresponsive patients
- May be used when gag reflex is present

CONTRAINDICATIONS

- Suspected head trauma, skull fracture, etc.
- Recent nasal surgery

EQUIPMENT NEEDED

- Nasopharyngeal airways (NPA), multiple sizes
- Bag Valve Mask resuscitator (BVM)

PROCEDURE

- Select proper size NPA by measuring the NPA from the victim's earlobe to the tip of the nostril.
- Ensure that the diameter of the NPA is not larger than the nostril.
- Lubricate NPA with water-soluble lubricant.
- Insert NPA with the bevel toward the septum. Advance the NPA gently, straight in, following the floor of the nose.
- If resistance is felt, do not force.
- If you are experiencing problems, try the other nostril.
- The flange of a properly sized NPA should rest at the patient's nostril.

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Apneic Oxygenation

Commented [SK59]: Added to protocol 2-3-15

Continually reassess ABCDE's and keep reassessing and intervening as needed

Actions

- Diffusion of oxygen to alveoli in absence of ventilation.

INDICATIONS

- To prevent desaturation during RSI

CONTRAINDICATIONS

- No absolute contraindications
- **Caution:** Capnography reading may be falsely low during high flow nasal oxygen

PROCEDURE

1. Apply pulse oximeter
2. Position the head up or in reverse Trendelenburg at a 20-30 Degree angle. Ideally the auditory meatus should be aligned with the sternal notch.
3. Consider use of NPA
4. During the pre-oxygenation stage apply a nasal cannula at 5-15 LPM (as tolerated by patient, 15 LPM ideal) in addition to NRB mask or BVM ventilation. Two oxygen regulators are needed.
5. Allow 3 minutes of pre-oxygenation or eight vital capacity breaths.
6. Discontinue nasal cannula once airway is established and ventilations with oxygen are resumed.

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Endotracheal Intubation

Orotracheal intubations should be attempted on any patient who has no spontaneous respiratory effort (except cardiac arrest), or has significant airway compromise. Nasotracheal and/or endotracheal intubation may be attempted on patients who are breathing but are unable to protect their own airway. Patients who are in extreme respiratory distress and are decompensating may be electively intubated.

1. All patients should be pre-oxygenated with 100% oxygen prior to any intubation attempt.
2. The intubation attempt should be no longer than 30 seconds. If so, the attempt should be stopped and the patient should be re-oxygenated with 100% oxygen
3. After the trachea is intubated, proper tube placement must be assured by:
   a. Observing rise and fall of the chest wall.
   b. Confirming the presence of bilateral breath sounds by direct auscultation with a stethoscope.
   c. Confirmation via End tidal CO_2 detector or other secondary confirmation device.
4. Secure ET Tube to patient. When appropriate, use C-Collar to help assure tube security.
5. If there is any doubt as to proper tube placement, resume ventilation with the bag-valve-mask using 100% oxygen before re-attempting.
6. Orotracheal intubation should be approached with caution in patients with suspected cervical spine injury. A two rescuer oral intubation maneuver using cervical spine motion limitations should be utilized.
7. In patients with suspected head injury and who need to be electively intubated, consider:
   a. Administer **Lidocaine (Xylocaine) - 1.0 to 1.5 mg/kg IV, IO**
8. In patients who need sedation, or who will be electively intubated, refer to RSII guidelines.
9. When attempting oral or nasal endotracheal intubation**, Lidocaine Jelly 2% (Xylocaine)** may be used as an anesthetic as needed.

In cases of nasal endotracheal intubation, administration of **Oxymetazoline HCl (*Afrin*) – 2 to 3 sprays per nostril** may be used to facilitate intubation and lessen the risk of epistaxis

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Nasal Intubation

Continually reassess ABCDE's and keep reassessing and intervening as needed

INDICATIONS

- Breathing patient unable to protect their own airway
- Cervical spine injury suspected without the ability to intubate orally with c-spine protection
- Anticipated difficult orotracheal intubation
- Oropharyngeal injuries
- Significant angioedema

CONTRAINDICATIONS

- Apnea
- Suspected facial fracture above the mandible.
- Coagulopathies (relative contraindication)

EQUIPMENT NEEDED

- Nasal trumpet (if time allows)
- Endotrol ET tube, several sizes
- BAAM
- 10 ml syringe
- Afrin nasal spray
- Lidocaine jelly

PROCEDURE

1. Pre-oxygenate with 100% O2.
2. Limit nasal intubation attempts to less than 10 seconds.
3. Give Afrin 2 - 3 sprays in each nostril 1 - 2 minutes prior to intubation.
4. Apply Lidocaine Jelly liberally to appropriately sized nasal trumpet and insert into selected nostril, leave in place for 1 minute (if time allows).
5. Apply Lidocaine Jelly liberally to appropriately sized Endotrol.
6. Apply BAAM to end of Endotrol.
7. If nasal trumpet has been placed, remove trumpet and pass Endotrol into same nostril. Insert with bevel toward the septum then rotate into position if necessary.
8. Direct Endotrol straight back into nostril (passing in a upward manner can cause damage).
9. If resistance is met, use a slight twisting motion. If resistance persists, remove tube and attempt in other nostril repeating previous procedures.
10. Once the tip of the Endotrol is in the oropharynx, pull the ring on the Edotrol to direct the tip of the tube anteriorly.
11. When the BAAM begins to emit a whistling sound on patient inspiration, pass tube into trachea.
12. Inflate cuff with 10 ml syringe.
13. Confirm tube placement using approved methods (bilateral lung sounds, chest rise & fall, absent abdominal sounds, ETCO2, capnography).
14. If there is any doubt as to proper tube placement, remove tube and resume ventilations with 100%O2 before subsequent attempts.
15. If successful, secure tube to patient. Consider using C-collar to help ensure that tube stays secure.

(continued on next page)

Nasal Intubation (continued)

Notes:

- The BAAM greatly facilitates intubation and magnifies airway-airflow sounds by creating a whistle sound. The BAAM connects to the standard 15mm endotracheal tube connector and as the patient breathes in and out a whistling sound is made. This helps the intubator to hear when the tube is approaching the glottic opening. If the tube is inadvertently inserted into the esophagus the whistle sound is lost.

- Do not use extreme force when passing the tube. You might perforate the pyriform sinus, lacerate the epiglottis, shear off the vocal cords, enter the mediastinum or puncture major blood vessels.

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RSII - Rapid Sequence Induction & Intubation

Assess indications and contraindications for RSII. Assess patient for Difficult Airway Exclusions.

1. Assure patient is in a controlled environment (e.g. preferably, inside the truck. However, adequate airway maintenance should not be delayed in an effort to get to the truck).
2. Pre-oxygenate
   a. Assist ventilations with bag-valve-mask with reservoir and 100% oxygen
   b. Do not aggressively ventilate the spontaneously breathing patient
   c. Apply pulse oximeter and heart monitor
   d. **Initiate Apneic Oxygenation Procedure**
      - Position the head up or in reverse Trendelenburg at a 20-30 Degree angle. Ideally the auditory meatus should be aligned with the sternal notch.
      - Consider use of NPA
      - During the pre-oxygenation stage apply a nasal cannula at 5-15 LPM (as tolerated by patient, 15 LPM ideal) in addition to NRB mask or BVM ventilation. Two oxygen regulators are needed.
      - Allow 3 minutes of pre-oxygenation or eight vital capacity breaths.
      - Discontinue nasal cannula once airway is established and ventilations with oxygen are resumed.
3. Initiate at least one large bore IV NS
4. Prepare additional endotracheal intubation equipment & difficult/rescue airway devices
   a. Endotracheal Tube Introducer, alternative airway device, Suction & Cricothyroidotomy equipment
   b. 10 cc syringe, stylet, extra ET tubes (one size up/down from anticipated size needed)
5. Pre-medicate patient PRN:
   a. Administer **Atropine - 1 mg IV, IO** if bradycardic.
   b. Administer **Lidocaine (Xylocaine) - 1.5 mg/kg IV (75 mg, 100 mg, 150 mg)** in head injured patients.
6. Sedate with **Midazolam (*Versed*) - 5 mg IV - or- Etomidate (*Amidate*)** if hypotensive patient, SBP <90 mmHg.
7. If adequate sedation has not yet occurred, administer **Etomidate (*Amidate*) - 0.3 mg/kg IV (15 mg, 22 mg, 30 mg)**
8. Wait 1 to 2 minutes for sedation to begin to take effect
9. If adequate sedation has not yet occurred, administer **Succinylcholine (Anectine) – 1 - 1.5 mg/kg IV OR Rocuronium (*Zemuron*) 1mg/kg IV** if Succinylcholine contra-indicated **see below. ***AFTER*** *completion of advanced airway training and clearance by the Medical Director, a paramedic may use these additional pharmacologic agents for airway support.*
10. Apply Sellick's maneuver until endotracheal intubation is completed. Once patient has been paralyzed, do not BVM patient unless SpO_2 drops below 95%. Do not hyperventilate.
11. Intubate orally once adequate sedation / paralysis has taken affect.
12. Confirm proper tube placement using physical assessment and secondary confirmation devices. **DOCUMENT, DOCUMENT, DOCUMENT!**
13. Consider additional sedation + analgesic with **Midazolam (*Versed*) - 2-5 mg slow IV, IO + Fentanyl 50-100 mcg IV, IO** if patient becomes anxious, combative, drugs wear off etc.
14. May repeat **Succinylcholine (*Anectine*) - 1.5 mg/kg IV, IO** as necessary if patient begins to resist the endotracheal tube or airway becomes difficult to manage

Commented [SK60]: Removed need to start EMS Captain for paralytics. 4-22-15

Commented [SK61]: Added apneic oxygenation 1-28-15

Commented [SK62]: Change from 1.5 to range of 1-1.5

Commented [GU63]: Removed Succs only carried by Captains -SK

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RSII (cont.)

15. IF AIRWAY MANAGEMENT BY ENDOTRACHEAL INTUBATION IS UNSUCCESSFUL:
    a. If unable to intubate in 30 seconds, and pulse ox drops below 92%, gently ventilate with BVM and Sellick's maneuver. Reattempt.
    b. If unable to intubate after THREE attempts at passing the tube across the teeth, place an alternative airway device, or if contraindicated or unable after two attempts with an alternative airway device, consider agent reversal or surgical airway.

Commented [GU64]: Changed from "3 attempts" to "3… passing tube across the teeth" -SK

A RSII Q.A. form MUST be completed on ALL managed airways, regardless of device, and regardless of success.

Contraindications to Succinylcholine:

Commented [SK65]: Clarified contraindications for consistency throughout protocol 2-9-15

- Hypersensitivity
- Hyperkalemia
- Renal failure
- Neuromuscular disease
- Massive burns greater than 24 hours old still currently being treated by a medical provider. i.e. Rehab, burn unit
- Head injuries greater than 24 hours old currently being treating by a medical provider. i.e. Rehab, ICU
- Penetrating eye injuries
- Crush injuries
- History of malignant hyperthermia
- Known anatomical airway anomalies

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Laryngeal Mask Airway (I-Gel)

Commented [GU66]: Replaced CombiTube with I-Gel - SK

The I-Gel is an airway designed for emergency airway management or difficult intubations.

INDICATIONS:

- Patients in respiratory arrest
- Patients in cardiac arrest
- Airway adjunct when endotracheal intubation has failed
- Temporary rescue airway in failed DAI

CONTRAINDICATIONS:

- Gag reflex present
- Tracheostomy or laryngectomy
- Foreign body airway obstruction

EQUIPMENT NEEDED

- LMA (I-Gel)
- Water soluble lubricant
- ETCO2 detection
- NG Tube

PROCEDURE:

1. Confirm the patient is being properly ventilated with high flow oxygen
2. Select appropriate LMA (I-Gel). Check the device and place the NG tube through the gastric tube port until even with the tip of the LMA.
3. Lubricate the posterior portion of the device and NOT the mask itself.
4. Pre-oxygenate the patient.
5. Remove nasal or oral airway if necessary.
6. Place head in neutral position or slightly extended (sniffing position).
7. Insert device downward along hard palate. Stop when it is felt to “pop” into place or when resistance is felt.
8. Control ventilation via BVM.
9. Assess for air leakage. If leakage occurs, reposition or remove the LMA if necessary.
10. Confirm placement with chest rise and fall, lung sounds, lack of gastric sounds, and ETCO2 detection.
11. Secure tube with tape or other appropriate material/device.

The Esophageal-Tracheal CombiTube is NOT to be used as a route for drug administration in the absence of an endotracheal tube

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Cricothyroidotomy Guidelines

When all other airway management measures have failed, and the patient needs an airway immediately - consider surgical cricothyrotomy for adults.

INDICATIONS

1. Inability to control the airway by other methods, particularly when time is a critical factor in securing the airway in a critically ill or injured patient.
2. Impacted foreign bodies
3. Severe facial trauma or oropharyngeal hemorrhage
4. Severe laryngeal trauma
5. Laryngeal spasm
6. Obstructing tumors
7. Burns of the face and/or upper airway precluding intubation
8. Pharyngeal hematoma usually secondary to cervical fractures

TO PERFORM A SURGICAL CRICOTHYROTOMY (ADULTS)

1. Locate the cricoid membrane between the thyroid cartilage and the cricoid cartilage.
2. Quickly prep the site with Betadine
3. Using a sterile scalpel, make a 3 to 4 cm vertical incision through the skin over the cricoid membrane
4. Visualize the cricoid membrane and use the scalpel to cut a 1 cm puncture through the membrane
5. Enlarge the puncture with an inducer and place a size #5 or #6 ET tube caudally thru the incision.
6. Verify placement by auscultation of breath sounds bilaterally and checking for the absence of ventilation in the abdomen. Next, check with end-tidal CO_2 detector (patient with pulses) or alternate secondary tube confirmation device.

Secure the tube

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King LT(S)-D™ Airway

The King device is intended for an alternative airway management tool to the standard endotracheal intubation. This device should only be used by properly trained personnel.

INSERTION:

1. Using the chart on the next page, select the proper size of device.
2. Test cuff inflation system by injecting the maximum recommended volume of air into the cuffs (refer to chart). Remove all air from cuffs prior to insertion.
3. Apply a water-based lubricant to the beveled distal tip and posterior aspect of the tube.
4. Have an alternate airway adjunct available for use.
5. Pre-oxygenate.
6. Position the head to a "sniffing" position.
7. Hold the device at the connector with the dominant hand. Hold mouth open and apply chin lift unless contraindicated (c-spine).
8. Rotate the device laterally approximately 45-90° such that the blue orientation line is touching the corner of the mouth, introduce tip into mouth and advance behind base of tongue. Do not force tube into position.
9. As tube passes under tongue, rotate tube back to midline (blue orientation line faces chin).
10. Without exerting excessive force, advance the device until base connector aligns with teeth or gums.
11. Inflate cuffs with the minimum amount of volume to achieve seal. (refer to chart)
12. Attach the device to the BVM.
13. While gently bagging the patient to assess ventilation, simultaneously withdraw the airway until ventilation is easy and free flowing (large tidal volume with minimal airway pressure.
14. Confirm proper position by auscultation, chest movement, and end-tidal CO2 readings.
15. Readjust cuff inflation if necessary.
16. Secure the device using tape or other accepted means.

REMOVAL:

1. Removal should always be carried out in an area where suction and the ability to intubate or otherwise maintain the airway is readily available.
2. Deflate both cuffs.
3. Remove device.

CONTRAINDICATIONS:

1. Responsive patients with an intact gag reflex.
2. Patients with known esophageal disease.
3. Patients who have ingested caustic substances

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King LT(S)-D™ Airway (cont.)

KLTSD Kit	n/a	n/a	KLTSD413	KLTSD414	KLTSD415

KLT(S)D kit is non-sterile and contains a KING LT(S)-D, syringe for cuff inflation, lubricant, and abbreviated instructions for use.

3	KLTD	4-5 ft (122-155 cm)	Yellow	45-60 ml
	KLTSD			40-55 ml
4	KLTD	5-6 ft (155-180 cm)	Red	60-80 ml
	KLTSD			50-70 ml
5	KLTD	greater than 6 ft (>180 cm)	Purple	70-90 ml
	KLTSD			60-80 ml

KING LTS-D: For size 3, 4, and 5 the OD is 18 mm and the ID of the Ventilation Lumen is equivalent to 10 mm. Gastric Tube Size ≤18 Fr

Pulse Oximetry

Pulse oximetry is used in conjunction with other assessment processes to determine the actual available oxygen in the blood for use by body tissue. Pulse oximetry measures the oxygen saturation of the red blood cells, (SpO_2%).

- 96% - 100% - Maintain Airway & O_2 Support
- 90% - 95% - Increase Airway & O_2 Support
- 85% - 89% - Assist Ventilation & Increase O_2
- Below 85% - Ventilate, Consider Intubation, Increase O_2

PROCEDURE

1. Select sensor and apply: Try to obtain oxygen saturation on room air prior to applying supplemental oxygen.
2. Finger Clip Sensors - These are designed for older pediatric and adult patients and/or continuous monitoring less than 30 minutes where patient movement is not expected. Insert finger (preferably the patient's index finger) completely into sensor, keeping fingernail side facing the sensor top. The thumb should not be used in the finger clip. When possible, remove any fingernail polish.
3. Flex Sensor - This sensor is designed for monitoring pediatric and adult patients in which moderate patient movement is expected. Place the sensor on the top and bottom of the end of the finger or toe. Place the light emitter portion on the finger/toe-nail side and the detector of the side opposite of the nail, making sure to align the emitter and detector through the tissue.

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Continuous Positive Airway Pressure (CPAP)

Consider CPAP in any patient with Congestive Heart Failure (CHF), Pulmonary Edema, Chronic Obstructive Pulmonary Disease (COPD) or Asthma, and is experiencing respiratory distress as evidenced below:

INDICATIONS:

1. Any adult patient (age ≥ 12) who is complaining of shortness of breath and:
   A. Is awake and oriented
   B. Has the ability to maintain an open airway (GCS ≥ 10)
   C. Has a systolic BP ≥ 90 mmHg
   D. Has signs and symptoms of CHF, pulmonary edema or asthma with one or more of the following:
      i. On medications such as Digoxin or Lasix
      ii. Pedal edema
      iii. Severe and/or sudden onset of shortness of breath
      iv. Orthopnea (Difficulty breathing except in upright position)
      v. Rales, or coarse wheezing
      vi. Hypertension
      vii. Verbal impairment (inability to speak in complete sentences)
   E. Any two or more of the following:
      viii. Retractions or accessory muscle use
      ix. Respiratory rate ≥ 30 per minute
      x. Pulse oximetry ≤ 92% on high flow oxygen

CONTRAINDICATIONS:

Bag valve mask ventilation or endotracheal intubation, rather than CPAP, should be considered for any patient who exhibits one or more of the following contraindications:

1. Absolute contraindications:
   A. Respiratory or cardiac arrest
   B. Agonal respirations
   C. Severely depressed level of consciousness
   D. Suspicion or indication of pneumothorax
   E. Inability to maintain patent airway
   F. Major trauma, especially head trauma with increased intracranial pressure
   G. Facial trauma
   H. Patient has a tracheostomy
2. Relative contraindications:
   A. History of pulmonary fibrosis
   B. Decreased level of consciousness, or inability to follow simple commands.
   C. Claustrophobia

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Continuous Positive Airway Pressure (CPAP) (cont.)

PROCEDURE:

1. Ensure indication for use and rule out contraindications
2. Explain the procedure to the patient (it will take reassurance for the patient to tolerate procedure), and place them in an upright or sitting position.
3. Ensure adequate oxygen supply to CPAP ventilation device
4. Place patient on continuous pulse oximetry
5. Place the delivery device over the mouth and nose
6. Start procedure at indicated pressure per CPAP Pressure Chart (below)
7. Monitor vitals every 5 minutes and document response to treatment
8. Titrate CPAP pressure to effect and never increase above 12 cmH_20
9. Continue to coach patient to keep mask in place
10. If respiratory status deteriorates, remove device and consider BVM ventilations or placement of an advanced airway.
11. If patient is exhibiting increased anxiety, and sedation is needed during procedure, consider
    A. Administer **Midazolam (*Versed*) - 2 to 5 mg slow IV**
    B. Closely monitor level of consciousness and airway patency when administering anti-anxiety meds, as decreased LOC alone will contraindicate, and discontinue CPAP.
12. Depending on patients underlying problem (CHF, Pulmonary edema, COPD, Asthma), follow appropriate protocol with medication interventions as well.

SPECIAL NOTES:

- Contact receiving emergency department as early as possible so that they can be prepared for the patient
- Due to changes in preload and afterload of the cardiovascular system during CPAP therapy, a complete set of vital signs needs to be obtained every 5 minutes. If patient deteriorates, either with respiratory worsening, or with circulatory collapse, discontinue CPAP and manage the patient according to the appropriate guidelines.

- **Pts. With Asthma/COPD NOT to exceed 15 Lpm/5.0 cmH_20**

Commented [SK67]: Removed boussignac flow conversion chart 2-3-15

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Colorimetric End Tidal CO_2 Monitoring

In order to assure placement of the endotracheal tube into the trachea after intubation; end tidal CO_2 monitoring will be done. This procedure will be achieved by using the "Easy Cap" device on adults and the "Pedi-Cap" devices on children under 30 lbs. Use an end tidal CO_2 detector after each intubation attempt.

1. Remove the detector from package (Do not remove the caps until ready to attach device).
2. Remove the caps immediately before use and shake device to introduce room air.
3. Match initial color of the indicator to the purple color labeled "CHECK" on the product dome. If the purple indicator color is not the same or darker, do not use.
4. Insert endotracheal tube (Inflate cuff if tube is equipped with one).
5. Firmly attach the detector between the endotracheal tube and the bag-valve-mask.
6. Ventilate patient with six breaths of moderate tidal volume (may be done quickly). Interpreting result with less than six breaths can yield false results.
7. Compare color of indicator on full end-expiration to color chart on product dome.
8. If initial intubation attempts fail, the detector can be used for re-intubation on the same patient provided the indicator color still matches the "CHECK" color stand on product dome

The detector may only be left in place during ventilation to assist in monitoring tube placement for approximately 15 minutes.

Needle Decompression

Needle decompression is indicated when you have signs/symptoms of a tension pneumothorax.

PROCEDURE

1. Expose entire chest and clean site vigorously with Betadine. Prepare large bore needle catheter, 14 gauge or larger (16 to 18 gauge for children) with 30cc to 50cc syringe attached.
2. Insert catheter in mid-clavicular line, on affected side into second or third intercostal space. Enter at the rib and slide OVER it. The needle should be "walked" upward on the rib until it slides off the upper edge and penetrates into the pleural space.
3. If air is under tension, it will exit under pressure. Leave needle in place.
4. If no air is obtained, remove needle and catheter, cover site with dressing, and inform receiving facility of attempt.
5. Continuously reassess adequacy of ventilation

IV Protocol

1. An IV of 0.9% Normal Saline (NS) Solution should be started if there are any signs or symptoms which indicate the possibility or potential for a life-threatening cardiac, respiratory or neurological or traumatic condition or if there is an anticipated use for IV medications
2. A saline well is acceptable in stable patients when the need for a drug route is anticipated, but the need for fluid replacement is not expected. After drugs have been administered flush saline well with 5 to 10 ml of normal saline.
3. An IV of NS using trauma (blood) tubing should be started if there are any factors which indicate the potential for hypovolemic shock. Use a large bore IV catheter (16 gauge or larger) if possible
4. Use a pressure infuser bag for fluid resuscitation in the adult hypovolemic patient.
5. All IV infusions are to be run at TKO unless specified by the appropriate guideline.
6. Start a second IV line when appropriate.

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Intraosseous Access - Adult "EZ-IO Driver"

All medications indicated in the PCGs to be administered via IV may also be administered via Intraosseous (IO).

INDICATIONS

- Adult patients ≥ 12 y/o or ≥ 40 kg
- IV fluids or medications are needed and a peripheral IV cannot be established in 2 attempts or 90 seconds AND exhibit 1 or more of the following:
  - A. Altered mental status
  - B. Respiratory compromise (SpO_2 ≤ 80% after supplemental O_2 has been applied, Respiratory rate ≤ 10 or ≥ 40/min)
  - C. Hemodynamic instability (systolic BP ≤ 90 mmHg)
- May be considered PRIOR to IV attempts in the following situations
  - A. Cardiac arrest (medical or traumatic)
  - B. Profound hypovolemia with altered mental status
  - C. Urgent need for IV but veins are not readily accessible

CONTRAINDICATIONS

- Fracture of the tibia or femur (consider alternate tibia)
- Previous orthopedic procedure (knee replacement)
- IO within past 24 hrs.
- Pre-existing medical condition (tumor near site, peripheral vascular disease, cellulitis at the site)
- Inability to locate landmarks (significant edema or excessive tissue at insertion site).

PROCEDURE

1. Locate appropriate **FDA approved insertion site**
2. Cleanse insertion site using aseptic technique
3. Prepare the EZ - IO driver and needle set according to the manufacturer's recommendations.
4. Stabilize site and insert the IO needle set
5. Remove driver from needle set while stabilizing catheter hub
6. Remove stylet from needle set, place stylet in sharps container
7. Confirm placement and connect primed EZ - Connect extension set
8. In conscious patients, administer **Lidocaine (*Xylocaine*) - 20 to 50 mg IO**
9. Flush or rapidly bolus the IO catheter with 10 cc of NS using a 10 cc syringe
10. Place a pressure bag on solution being infused where applicable, begin infusion.

Dress site, secure tubing, monitor IO catheter site and patient condition

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Central Venous Line Access

Some patients have a Central Venous Line established from an extended illness. Lines can have anywhere from 1 to 3 ports attached (Single, Double, or Triple Lumen). The ports are color coded along with the location marked (proximal, medial, and distal). The "distal" is the preferred port to use,. Lines can be located at one of three sites, (Subclavian, Internal Jugular, or Femoral). All locations are appropriate for our use. All ports can be accessed with different meds at the same time.

Note: Central line colors do not indicate Artery or Venous access; All Central lines are venous and are usable.

PROCEDURE:

1. Prepare the site, clean each port with an alcohol prep
2. Aspirate 10 cc of blood from the desired port.
3. If unable to aspirate blood, attempt to gently flush with saline. If no resistance is met with flush, attempt to aspirate blood again.
   A. If still unsuccessful, do NOT use that port.
4. After successfully aspirating blood, flush port with 10 cc Normal Saline
5. Connect IV fluids to port or push IV medication

If treatment is discontinued in any of the ports, flush with 10 cc NS

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Implanted Subcutaneous Venous Port Access

The implanted infusion device consists of a port and a catheter. The port is surgically implanted into a vein and tunneled under the skin. Once in place, the port provides access to the vascular system via a self-sealing septum. The port may be used for obtained blood samples and for administering intravenous fluids and medications.

INDICATIONS

- For cardiac arrest, obtaining blood samples, administering intravenous fluids and medications in the patient with difficult venous access. When accessing an implanted port, a non-coring needle must be used to maintain integrity of the system.
- Once an implanted subcutaneous venous port is accessed, the patient MUST be transported.

PROCEDURE

1. Assemble equipment, explain procedure to patient and observe body substance precaution.
2. Position patient to assure access to port.
3. Inspect port for proper location, inflammation or abnormalities
4. Using iodine swap sticks, clean port site beginning at the center and working outward using a circular motion.
5. Use alcohol pad to clean iodine away, beginning at the center and working outward using a circular motion.
6. Connect non-coring needle with extension tubing to 10 ml syringe containing NS and flush system to remove air. Clamp extension tubing. ALWAYS protect system from air entering the needle.
7. Palpate port to identify the center of the septum.
8. Using aseptic technique, insert the needle perpendicular to the septum. Firm pressure is required to push needle into the port septum
9. Keep aspirate to confirm placement by obtaining a back flow of blood, then flush with normal saline in the system. Clamp tubing, turn needle so that the tubing points up towards the shoulder.
10. Apply iodine ointment to the needle site. Then place 2 x 2 gauze under the needle to stabilize. Cover with a large transparent dressing.
11. Proceed with IV or medication administration.
12. Transport patient.

BLOOD SAMPLING

1. Follow port access procedure using a 20-gauge or larger non-coring needle.
2. Open clamp and withdraw at least 5 ml of blood into a 10 ml syringe. Clamp tubing and safely discard syringe.
3. Attach empty syringe, open clamp and withdraw amount of blood sample needed for testing. Close clamp.
4. Connect syringe with 10 ml of normal saline. Open clamp and flush
5. Proceed with IV or medication administration

Transport patient.

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Intranasal (IN) Atomizer

In the absence of an established IV, intranasal is the next quickest route offering the highest level of bio-availability of drug being administered.

INDICATIONS:

- **Midazolam (*Versed*)** - Seizures, cardioversion, to aid with intubation
- **Naloxone (*Narcan*)** - Overdoses or decreased LOC

CAUTIONS:

- Do not exceed 1cc per nostril. When dose is greater than volume of 1 ml, administer ½ of the dose in each nostril.

PROCEDURE:

1. Using a 1 or 3 ml syringe, draw up the required amount of desired medication
2. Expel all air from syringe
3. Affix the Mucosal Atomization Device (MAD) to the syringe
4. Visually inspect nares, choosing the largest, or the nares with least obstruction
5. Insert the MAD 1½ cm into the chosen nares
6. Timing the respirations, depress plunger rapidly upon patient fully exhaling and before inhalation.
7. Observe for anticipated response, further doses may be necessary.
8. MAD is reusable on the same patient, dispose after each patient.
9. For Midazolam (Versed), refer to appropriate dosing chart below. When age and weight do not match below, use weight as dosing factor.
10. For Naloxone (Narcan), refer to the appropriate PCG for dosing.

Patient age (yr)	Approximate Weight (kg)	IN Midazolam (*Versed*) volume in ml when using 5mg/ml concentration	
		Midazolam (*Versed*) volume	Dose (in mg)
Neonate	3	0.3 ml	0.6 mg
<1	6	0.4 ml	1.2 mg
1	10	0.5 ml	2.0 mg
2	14	0..7 ml	2.8 mg
3	16	0.8 ml	3.2 mg
4	18	0.9 ml	3.6 mg
5	20	1.0 ml	4.0 mg
6	22	1.0 ml	4.4 mg
7	24	1.1 ml	4.8 mg
8	26	1.2 ml	5.2 mg
9	28	1.3 ml	5.6 mg
10	30	1.4 ml	6.0 mg
11	32	1.4 ml	6.4 mg
12	34	1.5 ml	6.8 mg
Smaller teenager	40	1.8 ml	8.0 mg
Adult or full grown Teenager	50 or more	2.0 ml	10.0 mg

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Nasogastric Tube (NG) Insertion

Nasogastric tube insertion should only be performed on patients able to protect their own airway (alert with cough and gag reflex) or who are intubated via endotracheal tube.

INDICATIONS

- Cardiopulmonary arrest with gastric distention
- Trauma patients with suspected C-Spine injury that are vomiting or nauseated while immobilized
- Drug overdose with decreased LOC after airway is controlled

CONTRAINDICATIONS

- Suspected basilar skill fracture (battle's sign, raccoon eyes, bleeding from nose).
- Significant facial fractures
- Ingestion of corrosive, acidic or other tissue destructive substance

PROCEDURE

1. If conscious, explain procedure to patient.
2. If possible, have patient sitting upright.
3. Measure the tube from tip of nose to earlobe, then earlobe to bottom of xiphoid for approximate length, then mark with adhesive tape.
4. Lubricate first 6 to 8 inches with *KY Jelly* (Surgi-Lube) or *Xylocaine* (Lidocaine) jelly.
5. Look at the nose for deformity or obstruction and determine the best side, usually the right.
6. Pass the tube gently along the floor of the nose at a 90º angle (perpendicular) to the face.
7. Have the conscious patient swallow as the tube is passed into the stomach and stop at the predetermined mark. Do not force the tube if increasing resistance is encountered.
8. Confirm placement by observing rapid return of gastric contents when tube is aspirated with a syringe and/or auscultate over the epigastrium for bubbling sounds as 20 to 60 cc or air is injected into the tube

Secure tube to nose and face and connect to LOW suction as needed.

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Post Arrest Induced Hypothermia

INDICATIONS:

- Post cardiac arrest, with spontaneous return of circulation/pulse

CRITERIA:

- Age ≥ 16
- No obvious signs or knowledge of pregnancy
- Initial temp. ≥30 °C / 86 °F
- Advanced airway placed with EtCO2 ≥ 10 mmHg if monitoring is available
- GCS of 3
- Transport to a hospital with hypothermia protocol
- **DO NOT HYPERVENTILATE**

PROCEDURE:

- Document Neuro exam to evaluate brainstem activity to include:
  a. Pupillary response, gag reflex, corneal reflex i.e. gently touch eye lid / eye lash for any noted movement
- Expose patient and apply cold packs to axilla and groin
- Cold saline bolus 30mL/kg IV/IO 2L maximum
- Consider 2nd IV/IO (if/when time permits)
- For Shivering:
  a. **Fentanyl (*Sublimaze*) 50-100mcg IV/IO**
- To maintain sedation:
  a. **Etomidate (*Amidate*) 20mg IV/IO** and if necessary
  b. **Succinylcholine (*Anectine*) 1.5 mg/kg IV/IO**
- SBP ≤ 90 maintaining SBP of 90 start a **Dopamine (Intropin) infusion:**
  a. Use premix 400mg in 250cc NS
  b. Start infusion at **5mcg/kg/min** see dopamine chart for weight
  c. Titrate to achieve systolic BP of 90mmHg
- Target EtCO2 of 40 mmHg if monitoring is available

CONTRAINDICATIONS:

- Age ≤16 years of age
- Known pregnancy
- Trauma induced arrest
- Coma secondary to non-cardiac factors (ie, drug overdose, status epilepticus)
- SBP <90 despite maximal vasopressor support
- DNRCC

CAUTIONS:

- Intracranial hemorrhage
- Any major surgery within the past 14 days
- Systemic infection / sepsis

Known bleeding disorder diathesis/hemophilia or active ongoing bleeding

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Taser Probe Removal

INDICATIONS:

- Scene Safety is the most important indication. Medics must be requested by Law Enforcement into the scene. Upon entering the scene request a quick debriefing from Law Enforcement or the Tactical Medic with the patient. Consider questions regarding the patient's mental status, psychiatric problems or possible drug/alcohol ingestion. Confirm that the Taser has been shut off and the empty cartridge has been removed from the Taser.

CONTRAINDICATIONS:

- Patient refuses to allow the paramedics to remove the probe(s).
- One or more of the probes has created a puncture wound in any of the following areas: Eye, Ear, Nose, Mouth, Neck, Breast, Groin, Spinal Column, or Bone.
- In these cases, the police are to be advised that EMS will be transporting the patient to the nearest hospital ER for removal of the probes. Cutting Taser wire near probes is acceptable for transport.

REMOVAL: <u>Remove and treat one probe at a time!</u>

1. Retrieve the spent cartridge from the officer for placement of the removed probes (evidence).
2. Cut away clothing if possible or necessary
3. Grasp the probe with dominant hand to steady
4. Stretch the surrounding skin with the non-dominant hand using the thumb and index finger in a V-shape.
5. With a quick straight movement in a vertical direction pull the probe out
6. Inspect the probe carefully to ensure it is completely intact
7. Place the probe tip down into the empty cartridge (Do not hold the cartridge in your hands while placing the used probes into the cartridge).
8. Cleanse the wound with a alcohol or iodine swab
9. Apply bandage

POST-PROBE REMOVAL:

1. Assume all subjects are in need of medical attention until assessment proves otherwise
2. Assess subject for a minimum of 10 minutes after the removal of the last probe
3. Assess all vital signs (minimum of 2 sets).
4. Apply cardiac monitor and collect the primary strip. Collect a second 6 second strip just before disconnecting the monitor from the subject. Record both strips to the report.
5. Consider detailed trauma assessment (i.e., injuries from the fall after being tased).
6. If information wasn't gathered prior to probe removal interview the officers about the patient.
7. Document usual documentation requirements. Include probe(s) location, removal, wound, wound cleaning, first-aid rendered and instructions provided to subject and police. Document officers name or badge number that you passed information regarding subject.
8. Transport:
   A. Unstable Vital Signs
   B. GCS $\leq$ 15
   C. If the patient is pregnant
   D. Any condition that warrants further treatment

One or more of the probes has created a puncture wound in any of the following areas: Eye, Ear, Nose, Mouth, Neck, Breast, Groin, Spinal Column, or Bone.

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Helmet Removal Procedures

Helmets in general are designed to protect the wearer from acute head injury. If used correctly, the wearer will have a greater chance of withstanding a traumatic head injury. The helmet removal procedure is a guideline designed in two parts. Part 1 is for those patients wearing a motorcycle, bicycle, or other non-football type head protective device. Part 2 is designed for those patients wearing a football helmet.

Part 1 – Motorcycle, Bicycle or other non-football type head protective device.

1. Perform a primary survey if possible. Also, if the situation permits, ascertain if the victim has the ability to move their extremities. If unable to perform a primary survey, go to step 2.
2. The in-charge rescuer should designate a trained rescuer (Rescuer II) to manually control the cervical spine. The in-charge rescuer should kneel beside the patient and remove the chin strap device. A third rescuer should prepare padding for use to keep the spine in a neutral position.
3. The in-charge rescuer should then take control of the cervical spine from a side position to the patent. Rescuer II should then relinquish control of the cervical spine to the in-charge rescuer. Rescuer II should remove the helmet by spreading the sides of the helmet and removing the helmet using caution not to manipulate the cervical spine. (Use caution not to pinch the nose when removing) The in-charge rescuer should be prepared to hold the head as when the helmet is removed, there will be an increase in weight. The pad should be inserted under the patient's head and cervical spine control should then be maintained by Rescuer II. The in-charge rescuer should then resume the primary survey, further assessment and interventions.

Part 2 - Football Helmets

1. The goal of evaluation of football player injuries is to do no further harm. The following procedure should be used to facilitate proper management of the injured player. Keep the cervical spine in the neutral position as much as possible.
2. Perform a Primary Survey. Also, if the situation permits, ascertain if the victim has the ability to move extremities. If the football helmet fits and the airway is maintainable with the helmet in place, do not remove the helmet. Immobilize manually and complete the primary survey. If transportation is necessary, the cervical spine should be immobilized with the helmet and shoulder pads in place. A CID, towels, or blanket rolls may be used to immobilize the head on a back board. The face mask may be removed. If the football helmet does not fit correctly or the airway is not maintainable with the helmet in place, go to step 3.
3. The in-charge rescuer should designate a trained rescuer (Rescuer II) to manually control the cervical spine. The in-charge rescuer should kneel beside the patient and remove the chin strap, ear pads, and remove the face mask retainers if not already done. A third rescuer should prepare padding for use to keep the spine in a neutral position.
4. The in-charge rescuer should then take control of the cervical spine from a side position to the patient. Rescuer II should then relinquish control of the cervical spine to the in-charge rescuer.
5. Rescuer II should remove the helmet by spreading the sides of the helmet and removing the helmet no to manipulate the cervical spine. The in-charge rescuer should be prepared to hold the head as when the helmet is removed, there will be an increase in weight. The pad should be inserted under the patient's head and cervical spine control should then be maintained by Rescuer II.
6. If shoulder pads need to be removed, the helmet should be removed prior to the shoulder pads. When removing should pads, remove the straps and lift on side of the pads prior to log-rolling. Then after rolling the patient on their side, finish removing the shoulder pads. A CID pad or a 1" pad may be sufficient to maintain neutral alignment of the cervical spine.

Immobilize on a long back board using a cervical collar, straps, and a cervical immobilization device. Continue the assessment

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Hazardous Materials Guidelines

- Do not accept responsibility for a patient's care until the contaminated patient has completed the on-scene decontamination process, as determined by the appropriate officers (Decon, EMS or Safety_. Patients should be decontaminated to the point where only "Universal Precautions" will need to be worn by the EMS personnel.
- All patients received from Decon should already be packaged as follows:
  A. Ambulatory: In hooded, booted *Tyvek* suit.
  B. Non-Ambulatory: in a disposable body-bag with head exposed and a shower cap on the patient's head.
- Notify receiving hospital(s) of patient or possible patients as soon as possible into an incident.
- Initial patient care should take place in the treatment area to limit possible vehicle contamination.
- During transport, ventilation system be turned on and the driver's compartment should be separated from the patient compartment as best can be achieved.

TREATMENT:

1. Evaluate the patient to determine if injuries and/or complaints are chemical or health related. Treat in accordance with the appropriate patient care guideline.
2. Continually reassess ABCDE's and keep reassessing and intervening as needed. Initiate IV NS, oxygen, pulse oximetry and monitor

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Pulmodyne™ O2-RESQ™ System

This system delivers continuous positive airway pressure (CPAP) throughout the breathing cycle. It provides CPAP at pre-set levels throughout inspiration and exhalation, independent of the patient's flow rate. This is a single patient use only system to be used with spontaneously breathing patients. This device is only to be used by properly trained personnel.

INDICATIONS-

To provide CPAP to a spontaneously breathing adult (≥30kg) patients in the hospital and pre-hospital (EMS) environment.

CONTRAINDICATIONS-

1. Facial lacerations
2. Laryngeal trauma
3. Recent tracheal or esophageal anastomosis
4. Gastrointestinal bleeding or ileus
5. Recent gastric surgery
6. Basilar skull fracture
7. Patients at high risk of vomiting
8. When an area of the lung may be brittle and presents a risk of bursting
9. Hypovolemia

OPERATING THE SYSTEM-

1. Connect directly to a regulator capable of delivering a minimum of 15 lpm. For maximum flow open the regulator completely.
2. Listen for leaks.
3. Prior to use, check the device for obstructions and verify valve function.
4. Select proper O2-CPAP valve.
5. Place mask over patient's face.
6. Utilize the head strap to secure the mask firmly in place.
7. Monitor with a manometer with a range of 0-30cm H2O. If the pressure drops too low increase the flow rate if possible.

CAUTIONS-

1. Watch the preset O2-CPAP valve to ensure that it remains open during inspiration.
2. Do not use if valve becomes occluded.
3. When there is no O2 source, the mask should not be worn.

MONITORING THE PATIENT-

1. Ensure there are no leaks at the patient connection.
2. Ensure that there is flow from the preset O2-CPAP valve during inspiration (which means the O2 source is supplying adequate flow to meet patient demand).
3. Monitor the manometer during inspiration. If the pressure drops then the flow is inadequate.
4. Monitor the patient for signs of dehydration and discomfort.

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ResQPOD® Impedance Threshold Device

The ResQPOD is a device used to AID resuscitation efforts in conjunction with American Heart Association (AHA) guidelines for CPR. It shall only be used by personnel properly trained in its use.

ACTIONS

The ResQPOD® prevents unnecessary air from entering the chest during CPR. As the chest wall recoils, the negative pressure in the thorax is greater. The enhanced vacuum pulls more blood back to the heart, doubling blood flow during CPR. Studies have shown that this mechanism increases cardiac output, blood pressure and survival rates. Patient ventilation and exhalation are not restricted in any way.

INDICATIONS

All adult patients in cardiac arrest. Considered a class IIa CPR device according to the most recent American Heart Association guidelines.

Using the ResQPOD® on a facemask:

1. Connect the device to the mask.
2. Open the airway. Establish and maintain a tight face seal with the mask throughout chest compressions; a head strap or 2 handed technique is recommended.
3. Connect the ventilation source to the ResQPOD®, or mouthpiece if performing mouth to mask ventilation.
4. Provide chest compressions according to current AHA guidelines.

Using the ResQPOD® on an ET tube:

1. Confirm ET placement and secure it with a tube restraint.
2. Connect the ResQPOD® to the ET tube.
3. Connect the ventilation source to the ResQPOD®.
4. Perform continuous chest compressions according to current AHA guidelines.
5. Remove the clear tab and turn on the timing assist device lights. Ventilate **asynchronously** at the timing light flash rate of 10/min.
6. Administer ET meds directly into the ET tube.
7. Place ETCO2 detector between the ResQPOD® and the ventilation source.

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Tourniquet Application

Commented [GU68]: Added Tourniquet Protocol

Continually reassess ABCDE's and keep reassessing and intervening as needed

The application of a tourniquet should be applied to bleeding that cannot be controlled by direct pressure or pressure bandages. Tourniquets should be thought of very early in the treatment of hemorrhage instead of the last resort. Tourniquets used early in the treatment of hemorrhage can prevent hypoperfusion and hypovolemic shock. Applying a tourniquet early allows for personnel to gather equipment, apply direct pressure, apply a compression bandage, and complete multiple procedures by freeing up hands and package for transport. The effectiveness of the tourniquet can be evaluated and down graded if it is no longer needed. A tourniquet can cause tissue or nerve damage whether applied correctly or not. Tourniquets do not have any contraindications, if direct pressure or compression bandage does not work a tourniquet must be used or bleeding will continue. Preservation of life supersedes preservation of limbs (life or limb). Injury due to tourniquet application is unlikely if the tourniquet can be removed within less than 2 hours. Microvascular injuries will begin after 2 hours. Most irreversible ischemic damage occurs after tourniquet placement of greater than 6 hours. **Rapid transport to a trauma facility is imperative for possible surgical intervention and blood transfusion**.

EMT

1. Take Body Substance Isolation.
2. Control severe bleeding with direct pressure first. Depending on size of wound chose a 5x9 or trauma dressing, firmly press and hold in place.
3. If the dressing becomes completely soaked with blood remove it and apply a new one. A completely soaked dressing offers no formation of clotting factors.
4. Depending on the saturation of the dressing (uncontrolled bleeding) determine if the patient is a candidate for a tourniquet or compression bandage.
5. Use commercial-grade compression bandage for adequate results and follow the manufacturer's application procedures. If one is not available, elastic wrap can be used to secure the bandage over the wound. Wrap bandage tightly.
6. If bleeding remains uncontrolled despite direct pressure and compression bandage, apply a tourniquet.
7. Apply the tourniquet 2-3 inches proximal to the bleeding would. If this cannot be achieved, place the tourniquet more proximally over a thicker part of the extremity.
8. Purpose of the tourniquet is to eliminate arterial flow to the injury site. Tighten tourniquet until bleeding has stopped and a distal pulse can no longer be felt.
9. Evaluate the need for further bandages or compression bandages at this time.
10. If bleeding continues after tourniquet application, apply a second tourniquet proximal to the first (as close as possible to the first, between it and the torso.
11. Never cover a tourniquet or obscure its visibility. Cut away clothing to reduce this possible complication.
12. Record the time the tourniquet was applied.

Advanced EMT

Treatment continuation from above

13. IV NS with large-bore IV catheter without delaying transport.
14. Administer 250-500 ml NS boluses, then infuse at a rate to maintain adequate mental status along with radial pulse (in unaffected arm).
15. After administration of IV fluids, assess injury site for any observable bleeding. The tourniquet may need to be tightened if one is in place or a second one added as perfusion increases.

Paramedic

Treatment continuation from above

16. With the proper application of a tourniquet the patient may experience significant pain. Pain control will need to be addressed.
17. Consider the following for pain control if appropriate. **Be cautious of hypoperfusion** with the administration of pain medications.
    A. Administer **Fentanyl (*Sublimaze*) – 50 to 100 mcg IV, IO, IM, IN**. May repeat to max dose of 200 mcg. (75 mcg IN may repeat x 1)
    - OR -
    B. Administer **Dilaudid (Hydromorphone) – 0.5 to 1mg IVP (slow), IO, IM, IN. May repeat to max total dose of 2 mg**
    - OR –
    C. Administer **Morphine Sulfate – 2 to 5 mg slow IV, IO, IM, SQ**. May repeat to max dose of 10 mg IV.
    D. Consider **Ondansetron (*Zofran*) – 4 mg undiluted, IM or slow IV, IO** for nausea. May repeat once to max dose of 8 mg.
    E. Consider sedation with **Midazolam (*Versed*) – 2 to 5 mg IV, IO, IM, IN**.

18. Downgrading the tourniquet is the definitive treatment for pain control, reduction of neurological deficit, and reducing ischemic damage.
    A. If transport time is less than 30 minutes, leave tourniquet in place unless you have time to downgrade the tourniquet.
    B. If transport time is greater than 30 minutes and you have time to closely assess the injury site for bleeding, slowly release the windlass device by one turn and evaluate the injury site for signs of active bleeding. As long as bleeding does not occur, continue this process turn-by-turn. DO NOT REMOVE THE TOURNIQUET!
    C. If bleeding resumes during the downgrading process, retighten the tourniquet until bleeding stops and the distal pulse is no longer palpable.
    D. Reassess and consider pain control management.

19. Crush injury/crush syndrome; if the patient has been trapped/pinned for longer than 20-30 minutes and exhibits signs/symptoms of relevant mechanism of injury to suspect crush injury.
    A. Apply a tourniquet high on the affected limb. Application of a tourniquet will reduce the effects of widespread acidosis caused by the crush syndrome.
    B. Follow the **crush injury/crush syndrome protocol** to combat any widespread systemic rhabdomyolysis that the tourniquet cannot prevent or slow down.

Commented [SK69]: Added Dilaudid 2-9-15

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SECTION VI - APPENDIX

Adult vs. Pediatric Glasgow Coma Scoring

	Adult	Infant	
Eye Opening	Spontaneous	Spontaneous	4
	To Voice	To Voice	3
	To Pain	To Pain	2
	None	None	1
Verbal Response	Oriented	Coos, babbles	5
	Confused	Irritable cry, Inconsolable	4
	Inappropriate	Cries to Pain	3
	Garbled Speech	Moans to Pain	2
	None	None	1
Motor Response	Obeys Commands	Normal Movements	6
	Localizes Pain	Withdraws to touch	5
	Withdraws to Pain	Withdraws to pain	4
	Flexion	Flexion	3
	Extension	Extension	2
	Flaccid	Flaccid	1

Los Angeles Prehospital Stroke Screen (LAPSS)

For evaluation of acute, non-comatose, non-traumatic neurological complaint. If items one through six are all checked "Yes" (or "Unknown"), provide pre-arrival notification to hospital of potential stroke patient. If any item is checked "No," return to appropriate treatment protocol. Interpretation: 93% of patients with a stroke will have a positive LAPSS score (sensitivity = 93%), and 97% of those with a positive LAPSS score will have a stroke (SPECIFICITY = 97%). Note that the patient may still be experiencing a stroke if LAPSS criteria are not met.

Criteria	**Yes**	**Unknown**	**No**
Age ≥ 45 years	☐	☐	☐
History of seizures or epilepsy ABSENT	☐	☐	☐
Symptom duration ≤ 24 hours	☐	☐	☐
At baseline, patient is NOT wheelchair or bedridden	☐	☐	☐
Blood glucose between 60 and 400	☐	☐	☐

Obvious asymmetry (right v. left) in **any** of the following three exam categories:

Criteria		**Right**	**Left**
Facial smile / grimace:	☐-Equal	☐-Weak	☐-Weak
Grip:	☐-Equal	☐-Weak	☐-Weak
		☐-None	☐-None
Arm Strength:		☐-Drifts Down	☐-Drifts Down
		☐-Falls Quick	☐-Falls Quick

Thrombolytic Therapy Checklist:

You and the patient MUST answer YES:

- ☐ Clinical signs and symptoms?
- ☐ Lasting ≥ 30 min & ≤ 6 hrs
- ☐ Pain unresolved with nitro & oxygen
- ☐ Is patient ≤ 76 years old?

The patient MUST answer NO:

- ☐ Any bleeding problems?
- ☐ Any clotting problems?
- ☐ GI bleeding history?
- ☐ Urinary tract bleeding history?
- ☐ Esophageal varices?
- ☐ Inflammatory bowel disease (IBS)?
- ☐ Diverticulitis?
- ☐ Eye problems? (Other than vision)
- ☐ Liver or Kidney disease?
- ☐ Any form of cancer?
- ☐ Chronic headaches?
- ☐ Chronic hypertension?
- ☐ CVA/TIA ever?
- ☐ Recent surgery? (Within 6 months)
- ☐ Recent trauma? (Within 6 months)
- ☐ Recent CPR? (Within 6 months)
- ☐ Aneurysm?

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Benzodiazepines

Generic and brand name listings include, but are not limited to: Alprazolam, Xanax, Bromazepam, Lexotan, Chlordiazepoxide, Librium, Clonazepam, Klonopin, Clorazepate, Tranxene, Diazepam, Valium, Flunitrazepam, Rohypnol, Estazolam, ProSom, Flurazepam, Dalmane, Halazepam, Paxipam, Loprazolam, Dormonoct, Lorazepam, Ativan, Midazolam, Versed, Hypnovel, Dormicum, Nitrazepam, Mogadon, Oxazepam, Serax, Quazepam, Doral, Temazepam, Restoril, Triazolam, Halcion

Benzodiazepine overdoses may result in apnea and death, especially when taken along with alcohol or other sedative - hypnotics.

1. Moderate poisoning produces a state of intoxication remarkably similar to alcohol overdose.
2. Signs and symptoms of a moderate overdose include:
   - Dizziness, Confusion, Drowsiness, Blurred vision, Slurred speech, Loss of motor coordination, Diaphoresis, Impaired judgment
3. Signs and symptoms of a severe overdose include:
   - Hypotension, Loss of consciousness, Weak, rapid pulse, Respiratory depression or arrest
4. If the patient is unconscious and you suspect benzodiazepine overdose:
   c. Support ventilations (consider advanced airway)
   d. Refer to Toxic Exposure / Overdose guideline

Tricyclic and Tetracyclic Antidepressants

Generic and brand name listings include, but are not limited to: Doxepin, Adapin, Sinequan, Clomipramine, Anafranil, Amoxipine, Asendin, Nortiptyline, Aventyl, Pamelor, Amitriptyline, Elavil, Endep, Limbitrol, Triavil, Perphenazine, Etrafon, Imipramine, Janamine, Tofranil, Maprotiline, Ludiomil, Desipramine, Norpramin, Pertofrane, Trimipramine, Surmontil, Protriptyline, Vivactil

Overdoses may result in catastrophic deterioration

1. Symptoms often present very suddenly
2. Early warning symptoms include:
   A. Tachycardia – if greater than 120 bpm
   B. Widening QRS complex.
3. Complications may include
   A. Hypotension
   B. Loss of consciousness
   C. Dysrhythmias – especially V-Tach
   D. Respiratory arrest
   E. Seizures
   F. Acidosis
4. If overdose is suspected:
   A. Support ventilations (consider advanced airway)
   B. Administer **Sodium Bicarbonate ($NaHCO_3$) - 1 amp 50 meq IV, IO over 1-2 minutes.**
   C. Infuse **500ml warm IV, IO NS** (with 1 amp sodium bicarbonate in 1 liter of NS) may repeat x1
5. If coma, seizures, wide QRS, or dysrhythmias develop, give **Sodium Bicarbonate (NaHCO3) - 1 amp 50 meq IV, IO over 1-2 minutes.** Repeat every 3 to 5 minutes PRN.

Non-Cyclic Antidepressants

Generic and brand name listings include, but are not limited to: Trazodone, Desyrel, Paroxetine, Paxil, Fluoxetine, Prozac, Sertraline, Zoloft

Non-cyclic antidepressants do not cause the same side effects as tricyclic antidepressants

Common side effects include dizziness, drowsiness, nausea, headache and tremors.

Calcium Channel Blocking Agents

Generic and brand name listings include, but are not limited to: Adalat, Nifedipine, Procardia, Cardene SR, Nicardipine, Cardene, Cardizem, Diltiazem, Dilacor XR, Tiazac, Dynacirc, Isradipine, Plendil XR, Felodipine, Nitrendipine, Bepridil, Vascor, Nisoldipine, Sular, Nimotop, Nimodipine, Amlodipin, Norvasc, Verapamil, Verelan, Isoptin, Calan, Covera

1. Patients take these medications to treat:
   - Hypertension
   - Chronic angina
   - Supraventricular dysrhythmias
   - Post non-Q wave MI's
   - Cardiomyopathy
   - Cerebral vasospasm
   - Migraine headaches
2. Calcium channel blockers slow the heart rate and decrease the force of contraction of the heart.
3. Complications of use may include:
   - Hypotension
   - Asystole
   - Bradycardias
   - Calcium may be indicated during resuscitations of life-threatened patients if the patient:
     A. Is taking Ca^{+} blocking agents
     B. Is on chronic dialysis

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Special Transport Situations

NON-EMERGENT TRANSPORTS:

- If the patient does not require transport by an ALS or BLS emergency unit, the patient should be asked if they request transport. If the patient requests transport but does not require transport by an emergency unit, offer help in calling an alternative mode of transport. If the patient does not require ALS or BLS emergency transport and demands transport by an emergency unit, call the on-duty DCEMS Captain or notify your departmental chain of command. They should consult with the receiving hospital Emergency Department attending physician or primary care physician for assistance.

EMERGENCY CARE OF MINOR PATIENTS:

- When minors are injured and require treatment, the parents should be contacted from the scene if possible. If the situation requires immediate transport, transport to the most appropriate medical facility. Parental consent will be obtained by the hospital.
- INJURED minors cannot refuse treatment or transport, telephone contact with a parent or guardian is only necessary for a refusal, NOT FOR TREATMENT
- If a parent or guardian consents to refusal via telephone, exact instructions must be given to the minor, the mental status of the patient must not be impaired, and all instructions must be clearly understood. This must be painstakingly documented on the patient care report. Only minors between the ages of 16 to 18 y/o can be released to his/her own care. All others must be released to another adult of the parent's approval.
- The only minors who are capable of refusing for them are those who are married (evidenced ONLY by a valid marriage certificate in hand) or who are in ACTIVE military Status (evidenced by a valid military ID in hand). In all cases, documentation must be produced ON SCENE for them to be excluded.

RAPE CRISIS CENTER:

- Rape Crisis centers are the first choice for the transport of sexual assault victims. It is also helpful, but not necessary, to transport the patient to a hospital within the County in which the assault occurred (for law enforcement follow-up purposes).

DANGEROUS PERSONS:

- When faced with a patient that poses potential violence to the EMS crew, the first duty of the crew is to protect themselves and bystanders. The crew has the right to refuse placing themselves in jeopardy of physical harm from violent patients.
- At no time will any EMS system member place themselves in a situation that they cannot control without the presence of law enforcement.
- The Company Officer shall ascertain from law enforcement officials whether the patient is under arrest and a ward of the State
- If the patient is under arrest at time of transport, the law enforcement agency will be asked to escort the patient aboard the ambulance
- If law enforcement personnel do not escort the patient, EMS personnel are under no obligation to maintain custody outside medical guidelines (i.e., if the patient is coherent, he or she has the right to refuse treatment and leave).
- If physical restrain of the patient is warranted for safety of the EMS crew, law enforcement personnel should be asked to assist in restraining the patient before departure.
- EMS personnel have the right to restrain a patient for the safety of the EMS crew when violent personalities are suspected. Such suspicion can be warranted for reasons including, but not limited to:
  A. Currently under arrest for a violent crime
  B. Past history of violence
  C. Displayed behavior symptomatic of intoxication
  D. Displayed behavior symptomatic of drug abuse

Special Transport Situations (cont.)

- Transportation and/or treatment can be denied by EMS for any violent or suspected violent patient for the following reasons:
  A. The patient is mentally alert, capable of making decisions about his/her care, and refuses restraint.
  B. The patient cannot be adequately restrained by the EMS crew
  C. The patient is deemed unsafe to transport while restrained without law enforcement presence, and law enforcement declines to escort aboard vehicle.
  D. The patient has not been properly searched for weapons
- If acceptable to the Company Officer, law enforcement escort by following in a separate vehicle may be allowed for maintaining custody. Such decision should be based on the perceived threat of violence to the EMS crew.
- The patient shall be transported to the most appropriate medical facility according to normal transportation guidelines.
- EMS crews shall transport prisoners for medical reasons ONLY.

ETHICAL/MEDICAL LEGAL

- HIPAA / Release of Patient Information: ALL of your EMS report is confidential. This includes the patient's name, condition, hospital of transport, or any medical information. Refer anyone with questions (i.e., OSP, DCSO, media, etc…) to the on-duty DCEMS Captain or your chain of command.

ELDERLY ABUSE/NEGLECT:

- In cases of suspected abuse/neglect of an adult:
  A. Document all physically and emotionally abusive signs and symptoms.
  B. Make every attempt to transport the patient
  C. Contact Adult Protective Services, this may be done after care of the patient is handed off to another provider.
  D. Document the time and who contacted on the patient care report
  E. Never assume that when you pass information to the hospital that they will report it, you need to report this information yourself.
  F. If there is suspected abuse/neglect and you believe that the patient's safety is in imminent danger, and the patient or their care provider refuses transportation, request law enforcement and do not leave the scene until they arrive. Be tactful.
- Abuse - Any injury inflicted upon an adult by other than accidental means which was inflicted by a spouse, child or other person responsible for that adult's care.
- Neglect - Any person that is abandoned by their custodian or whose custodian refuses to provide that person with proper necessary subsistence, education, medical, surgical or other necessary care for his/her health, moral or well being.

INTERVENING PHYSICIAN – ON EMERGENCY SCENE

- An intervening Good Samaritan physician is a physician on the scene who has no previous connection with the patient. For the Good Samaritan physician to assume control of the care of the patient he/she must fulfill the terms below. If the Physician is unwilling to comply with these requirements, then his assistance should be respectfully declined.
  A. Submit proof of licensure in Ohio. All Ohio physicians are given a wallet card to carry.
  B. Be willing to assume responsibility for the patient at the scene AND ACCOMPANYING THE PATIENT, IN THE BACK OF THE TRUCK, TO THE HOSPITAL (except in multi-casualty situations).
  C. He/She must perform procedures outside the scope of EMS protocol him/herself.

Special Transport Situations (cont.)

PHYSICIAN – IN THEIR OFFICE:

- EMS shall perform its duties according to these PCGs
- The physician may elect to supervise care provided by EMS
- If the physician directs the EMS providers to perform a procedure or administer a medication which is not covered by these PCGs, the crew should advise him/her of such, and will NOT perform the procedure. However, the EMS provider may assist the physician in performing the procedure. If the physician initiates a medication which is to be continued during patient transportation which is not covered by this protocol, the physician MUST accompany the patient to the hospital.

CONSENT FOR TREATMENT:

- Patients should be advised by the Company Officer of his/her diagnostic impression and the course of treatment prescribed by this protocol. This should be explained in terminology understood by the patient.
- All patients who are unconscious or mentally impaired shall be transported per protocol.
- Minors, patient's who are developmentally disabled, and persons deemed incompetent by the Company Officer (head injury, intoxication, CVA, hypotension, etc.) shall be treated after consultation with the patient's guardian, parent, spouse or other responsible care giver. If that person is not immediately available, the patient should be treated per protocol and transported.

REFUSAL OF TREATMENT

- If a patient refuses care or withdraws consent for treatment, EMS personnel shall consider their wishes. Prior to discontinuing or withdrawing treatment, the Company Officer shall determine if the patient is competent to withdraw consent. You MUST document the following:
  A. Document all care provided
  B. Document the patient's competency to refuse consent, and that you performed counseling of the patient regarding the consequences of not receiving care. Document any other family members that may have been present for this counseling.
  C. The PATIENT must sign the refusal statement. If the patient refuses to sign, this should be witnesses by at least two people, preferably at least one being a non crew member.
  D. Any minor, developmentally disabled person or persons deemed incompetent by the Company Officer (head injury, intoxication, CVA, hypotension, etc.) shall be treated after consultation with the patient's guardian, parent, spouse or other responsible care giver. If that person is not immediately available, the patient should be treated per protocol and transported

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Terminating or Withholding Resuscitation Efforts

> *"Resuscitation may be discontinued in the pre-hospital setting when the patient is non-resuscitable after an adequate trial of ACLS."*

In accordance with the Journal of the American Medical Association's guidelines for cardiopulmonary resuscitation and emergency cardiac care, the above statement encourages pre-hospital systems to develop guidelines for the ability to terminate resuscitation efforts when the patient's survivability is unlikely.

A trial of ACLS, according to the guidelines, occurs when:

1. Adequate BLS has been provided for a reasonable length of time;
2. Endotracheal intubation or a "secure airway" has been successfully accomplished;
3. Intravenous (or Intraosseous) access has been achieved and rhythm-appropriate medications and counter shocks for ventricular fibrillation have been administered, and;
4. Persistent asystole or agonal electrocardiographic patterns are present and no reversible causes are identified.

WITH THAT UNDERSTANDING, there are times when terminating or withholding resuscitation is deemed appropriate. Documentation in all cases is ABSOLUTELY ESSENTIAL.

Patients exhibiting the following signs and symptoms will be deemed "inappropriate for resuscitative efforts." Resuscitation will not be initiated if any of the following are present:

- Dependent lividity (pooling of blood in lower parts of body).
- Rigidity (rigor mortis).
- Patient's condition incompatible with life (e.g., decapitation, decomposition, burned beyond recognition).
- History of apnea for > 15 minutes, pupils are fixed and dilated, or corneal reflexes are absent.
- Patient is in asystole in two or more leads upon arrival, and there is no sign of life.

If the above does not apply, resuscitative measures should be initiated. If resuscitative efforts are later ceased, all IV lines, endotracheal tubes and other interventions must be left in place.

If a physician is present and has pronounced the patient dead, the physicians name and time of death should be documented on the EMS report. Documentation of identification for the physician is recommended by the crew.

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Do Not Resuscitate (DNR) Situations

Delaware County emergency medical personnel should never make DNR decisions for the patient. That is a private decision made between a patient and their personal physician. A family member cannot decide whether or not to resuscitate if a DNR exists. If there is a question or disagreement among family members, resuscitation efforts should be initiated. Doing more than necessary is legally safe versus the potentially unsafe legal consequences of doing nothing. Immediately contact a DCEMS on-duty Captain for problems or issues that may arise on scene involving a specific case. If indicated, provide immediate and appropriate ALS care if there are no documented (written) orders.

In the State of Ohio, a DNR Comfort Care patient's status is confirmed when the patient has one of the following: A DNR comfort Care card or form completed for the patient, or a DNR Comfort Care necklace or bracelet bearing the DNR Comfort Care official logo. Copies of these items are sufficient for EMS workers. EMS is not required to search a person to see if they have a DNR order. If EMS discovers one of these items in the possession of a patient, the EMT must make a reasonable effort to identify the DNR patient in appropriate circumstances. (i.e., the patient or family member, caregiver or friend gives the patient's name, driver's license) If you cannot ID the patient, you should still follow the DNR protocol. Verification is not required for patients or residents of extended care facilities when a DNR order is present on the person's chart.

ACTIVATION:

- DNRCC is activated when the DNR order is signed.
- DNRCC-Arrest is activated when the patient experiences cardiac arrest or respiratory arrest. Cardiac Arrest means absence of a palpable pulse. Respiratory arrest means absence of spontaneous respirations or presence of agonal breathing.

INTERACTION WITH PATIENT, FAMILY OR BYSTANDERS:

- THE PATIENT MAY ALWAYS REQUEST RESUSCITATION even if he or she is a DNR Comfort Care patient and this protocol has been activated. The request for resuscitation amounts to a revocation of DNR Comfort Care status.
- IF FAMILY OR BYSTANDERS REQUEST OR DEMAND RESUSCITATION for a person for whom the DNR Protocol has been activated, DO NOT PROCEED WITH RESUSCITATION. Provide comfort measure as outlines in this guideline (below) and try to help the family understand the dying process and the patient's choice not to be resuscitated. In the State of Ohio, Power-of-Attorney does NOT supersede a valid DNR unless the Durable Power of Attorney signed DNR form.

DOCUMENTATION:

EMS or other health care personnel who implement the DNR Protocol for a DNR Comfort Care patient should document in their records:

- The item that identified the person as DNR Comfort Care
- The method of verifying the person's ID, if any.
- Whether the person was a DNRCC or DNRCC-Arrest patient
- The actions taken to implement the DNR Protocol

ACTIONS:

EMS Will:

- Place patient in position of comfort, provide emotional support, administer O2, suction the airway, splint or immobilize, provide pain medication, control bleeding, and contact appropriate health providers, such as hospice, Physician/CNP/CNS.

EMS Will NOT:

- Provide respiratory assistance, insert artificial airways, administer chest compressions, initiate resuscitative IVs, administer resuscitative drugs, apply cardiac monitor, or defibrillate / cardiovert.

If you have initiated any of the "will not" actions prior to confirming the patient's status, the DNR Protocol must be activated. Discontinue the "will not" actions when you activate the protocol. You may only continue respiratory assistance, IV medications, etc., that have been part of the patient's ongoing course of treatment for any other underlying disease process.

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Sepsis Alert Pre-Hospital Protocol

Commented [SK70]: Added Sepsis Protocol

Patients: Age >16 who are not pregnant

Continually reassess ABCDE's and keep reassessing and intervening as needed

Consider sepsis if any of the following are present:

- Pneumonia
- Urinary Tract Infection
- Abdominal pain or distension
- Meningitis
- Indwelling medical device of Intravenous line
- Cellulitis, septic arthritis, infected wound
- Hospitalized in the last month
- Recent chemotherapy
- Organ transplant (kidney, heart, lung, etc.)
- Age ≥ 65 years

High suspicion of sepsis (sepsis alert) for patients who also display two or more of the following criteria:

- Temperature > 100.4 F (38 C) or < 96.8 F (36 C)
- Heart Rate > 90 bpm
- Respiratory rate > 20
- Systolic Blood Pressure < 90 mmHg
- New confusion/level of consciousness

EMT-Basic

1. Perform the initial assessment as per protocol
2. Give Oxygen by non-rebreather mask at 15LPM
3. Modified Trendelenburg position (feet up), if tolerated
4. Advise receiving emergency department of patient's potential for sepsis. Call a Sepsis Alert.

EMT-Advanced

Treatment continuation from above

5. Establish IV if not present
6. In not in **Acute Pulmonary Edema/CHF** give 1 L NS rapid IV bolus
7. Advise receiving emergency department of patient's potential for sepsis. Call a Sepsis Alert.

Suspicion of sepsis and systolic blood pressure < 90 mmHg

8. Establish 2 IV's if not present
9. Give 1 Liter Normal Saline rapid IV bolus
10. If SBP remains <90 mmHg, infuse a second liter of Normal Saline rapidly
11. Auscultate lungs frequently for rales. If rales appear or dyspnea increases at any time, terminate the bolus.
12. Advise receiving emergency department of patient's potential for sepsis. Call a Sepsis Alert

Paramedic

Treatment continuation from above

13. If the SBP remains < 90 mmHg after 2 liters of Normal Saline, begin an infusion of Dopamine at 5-10 mcg/kg/min and titrate to a systolic blood pressure of >90 mmHg (max 20 mcg/kg/min).
14. Test blood serum lactate using the LactatePro© monitor. A serum lactate reading of ≥ 2.0 indicates a high likelihood of sepsis
15. Advise receiving emergency department of patient's potential for sepsis. Call a Sepsis Alert.

Commented [SK71]: Fix typo, change from 50 to 20. 8-18-14

Commented [SK72]: Added LactatePro

Dopamine Infusion Chart

Reference Charts			Dopamine 400 mg Infusion									
Dopamine 400mg in 250ml												
Body Weight			Drip Rate per Minute to Achieve Desired Dose in mcg/kg/min									
kgs	lbs	1 mcg	3mcg	5mcg	6mcg	8 mcg	10mcg	12 mcg	14 mcg	16 mcg	18 mcg	20 mcg
40	88	1.5	5	8	9	12	15	18	21	24	27	30
45	99	1.5	5	8	10	14	17	20	24	27	30	34
50	110	2	6	9	11	15	19	23	27	30	34	38
55	121	2	6	10	12	17	21	25	29	33	37	41
60	132	2	7	11	14	18	22	27	32	35	40	45
65	143	2.5	7	12	15	20	25	30	35	40	45	49
70	154	2.5	8	13	16	21	26	32	37	42	47	53
75	165	3	8	14	17	23	28	35	40	45	50	55
80	176	3	9	15	18	24	30	35	42	48	55	60
85	187	3	10	16	19	26	32	38	45	50	57	63
90	198	3.5	10	17	20	27	34	40	47	55	60	68
95	209	3.5	11	18	21	29	35	43	50	57	65	70
100	220	3.5	11	19	23	30	38	45	53	60	68	75
105	231	4	12	20	24	32	40	47	55	63	70	80
110	242	4	12	21	25	33	41	50	58	66	74	83
115	253	4.5	13	22	26	34	43	52	60	69	77	86
120	264	4.5	14	23	27	36	45	54	63	72	81	90
125	275	4.5	14	23	28	38	47	56	66	75	84	94
130	286	5	15	25	29	39	49	59	69	78	88	98
135	297	5	15	26	31	41	51	61	71	82	92	102
140	308	5	16	26	32	42	53	63	74	84	95	105

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SECTION VII - INCIDENT REHABILITATION

Emergency Incident Rehabilitation

SCOPE

This guideline shall apply to all operations where strenuous physical or mental activity, or exposure to extreme heat or cold, exists:

PURPOSE

The Rehab Sector will be utilized to evaluate and assist personnel who may be suffering from the effects of sustained physical or mental exertion during emergency or training operations. The Rehab Sector will provide a specific area where personnel will assemble to receive:

1. A primary / secondary physical assessment and treatment of injuries
2. Revitalization (rest, hydration and refreshments)
3. Continual monitoring of physical condition
4. Transportation for those requiring treatment at a medical facility

RESPONSIBILITIES

The Incident Commander (IC) shall be responsible for evaluating the conditions of an incident and determining the need to establish a Rehab Sector. If the IC feels the conditions will in any way inhibit the safe and efficient performance of the incident personnel, a Rehab Sector shall be established. In addition, upon designating any incident a "working incident," a Rehab Sector SHALL be established.

STAFFING

The Rehab Sector will consist of the following Rehab Team:

1. The Advance Life Support (ALS) Medic Unit dispatched in the initial fire assignment.
2. Upon establishing the need for a Rehab Sector or designating an incident a "working incident," a second ALS Medic Unit and DCEMS Captain shall be dispatched. Unless actively committed to providing emergency patient care, the initial Medic crew's Company Officer shall be designated the Rehab Officer, and the crew will establish the Rehab Sector at the direction of Incident Command. The second arriving Medic unit will be designated as the primary EMS / Transport vehicle for the fire ground.
3. Upon his/her arrival, the DCEMS Captain shall typically be designated EMS Command, at the discretion of Incident Command.
4. If and when the EMS/transport medic is committed, another Medic crew shall be requested by Incident Command to replace it.

In order to maintain the appropriate span of control during major or complex operations, additional Paramedics and Advance Life Support (ALS) equipment may be required to adequately staff the Rehab Sector, or create additional Rehab Sectors, due to incident size or geographic barriers.

SITE LOCATION

If not already established by Incident Command, the Rehab Officer shall be responsible for establishing a Rehab Area, and communicating that location to Incident Command.

Emergency Incident Rehabilitation (cont.)

REHAB SITE CHARACTERISTICS

The Location should be:

- Easily identifiable to all personnel and stationed in an environmentally protected area, up wind, away from adverse weather conditions and free from apparatus exhaust emissions, however, out of the direct line of site of the incident to prevent responders from "migrating" back into the work zone prematurely.

- Located safely away from the incident where crews can remove their protective clothing and have their vital signs monitored while receiving fluids and rest. The interior of an ambulance or similar vehicle may be used for this purpose.
- Large enough to accommodate the needs of the incident.
  - A. Easily accessible by ingress and egress for transportation and re-supply.
  - B. In an area to allow for prompt re-entry to the emergency operations without possible interference of operations.

PHASES OF REHAB

TRIAGE: Entry to rehab area. This is where personnel remove all protective clothing (turnout gear) and begin to rehydrate while a primary assessment with vital signs and temperature are taken. If VS are within normal limits (per vital sign guideline) personnel will move to **REHAB**. If Rehab Sector staff determines that VS are NOT within normal limits, a chief complaint is reported, and those personnel SHALL report to **MEDICAL REHAB.** If at any point those personnel refuse further assessment or rehab, the Rehab Officer will notify Incident Command.

REHAB: Rest, rehydrate, and rehab. External cooling will begin along with rest and rehydration. Secondary assessment along with VS and temperature SHALL be completed BEFORE any personnel will be allowed to re-enter the fire ground for reassignment.

MEDICAL REHAB: If any personnel present with signs or symptoms (per the VS guideline), report an injury, or a chief complaint, they become a PATIENT, and SHALL be treated as such. Here the patient SHALL be reassessed and treated for their injury and/or chief complaint, and transported to the nearest appropriate Emergency Department if necessary. The Rehab Officer will notify Incident Command of the patient's status, and whether they will be transported for further care. If at any point those personnel refuse further assessment or rehab, an appropriate Refusal of Treatment form must be obtained (according to the Refusal of Treatment Patient Care Guideline), and the Rehab Officer will notify Incident Command.

REHAB OPERATIONS

The Rehab Officer shall have the responsibility of securing all necessary resources required to adequately staff and supply the Rehab Sector. A list of supplies should include:

1. Fluids: Water, activity beverage, oral electrolyte solutions, and ice (avoid fluids high in salts and sugars).
2. Food: Soup, broth, stew, fruit (avoid salty or fatty foods)
3. Medical: BP cuffs, stethoscopes, oxygen administration devices, cardiac monitors, IV solutions and thermometers.
4. Minor cooling equipment: Towels, blankets, tubs for arm submersion (Good for personnel that are on the borderline of needing evasive cooling).
5. Items needed for large scale incident: Awnings, fans, tarps or salvage covers, smoke ejectors, dry clothing, extra equipment, portable lighting, traffic cones and fire-line tape (to identify the entrance and exit of Rehab).

All emergency personnel involved in operations should be routinely evaluated at Rehab (including all sector and command officers). Company Officers, Sector Officers, Safety Officers, and the Incident Command shall determine when crews are to be rotated through the Rehab Sector. In most cases this shall occur at thirty to forty-five minute intervals. During extreme weather or strenuous working conditions, this shall occur at twenty to thirty-minute intervals, or more often if deemed necessary. Crews shall report to Rehab Sector utilizing the Passport system.

Once in Rehab, crews shall immediately begin to hydrate. (Hydration shall consist of water or a 50/50 water/Gatorade-type mix). Crews reporting to rehab will remove their SCBA, helmet/hood, face piece, gloves, and jacket and open their bunker pants. The Rehab Sector crew will immediately take vital signs and temperature of each member entering the Rehab Area.

Emergency Incident Rehabilitation (cont.)

Vital signs will be checked and recorded. At least two sets of vital signs shall be taken on all personnel. The paramedics assigned to the Rehab Sector shall initially elicit complaints, observe skin conditions, evaluate respirations, blood pressure, and pulse rate. Heart rate and temperature should be monitored as soon as possible. After a 15 to 20 minute rest and a satisfactory evaluation, the crews shall be released by the Rehab Officer to return to the personnel staging area unless immediately needed for firefighting duties. Individual companies and crews are responsible for letting Incident Command know when they are available for reassignment.

Any person complaining of chest pain or shortness of breath, or found to have abnormal vital signs (see Vital Sign Guidelines) or any other emergent condition shall be removed from active duty for further evaluation. In these cases, treatment shall be initiated and EMS guidelines shall be followed. Incident Command and Safety Officer shall be immediately notified.

The Rehab Officer shall ensure that at least one ALS medic unit is always dedicated to the Rehab Sector for transport of firefighting personnel. Additionally, the Rehab Officer shall contact Central Dispatch for current weather conditions when necessary. Updates should be obtained every four (4) hours, or as needed.

DOCUMENTATION

The names of all personnel passing through the Rehab Sector, as well as all pertinent data, shall be recorded on the Rehab Sector Check Sheet. This document shall become part of the permanent record of the incident.

For all situations where medical treatment beyond normal Rehab was initiated, the appropriate EMS report(s) shall be utilized following EMS Guidelines.

For those situations when a responder or officer fails to meet the criteria for being released from Rehab, yet returns to duty on the incident scene, notification shall be made to his/her immediate supervisor and Incident Command. Notification shall also be made in follow up after closure of the incident to the Medical Director of DCEMS.

Should anyone involved in the incident refuse Rehab and/or treatment, that person's immediate supervisor and Incident Command shall immediately be notified for disposition. Anyone refusing Rehab and/or treatment shall not be permitted to continue working at the incident. Incident Command shall document this situation and provide formal notification to that person's Chief after the Incident.

POINTS TO REMEMBER

1. Firefighting crews shall be cycled through Rehab on a regular basis.
2. Assigned companies shall stay together.
3. Crews at Rehab shall receive fluids, medical evaluation, and rest.
4. Use of ANY tobacco products in Rehab shall be STRICTLY PROHIBITED. This includes use by the Rehab Sector crews.
5. All officers/sectors shall maintain an ongoing awareness of the condition of their personnel and use Rehab to combat excessive fatigue and exhaustion.
6. Rehab Sector crews must never forget to rehab themselves.
7. Personnel not involved in actual firefighting still need to be evaluated on a regular basis as deemed necessary by Incident Command or the Safety Officer.
8. Individuals are to drink 8 ounces of fluids for every 20 to 30 minute period of heavy or moderate work. Fluid should be water or a water/Gatorade mix. Fluids with sugar and/or salt tablets are not to be used.
9. The Rehab Officer will update command throughout the operation as to the identity of companies in Rehab. Companies reporting to Rehab shall first report to the Rehab Officer and present their passports.

Emergency Incident Rehabilitation (cont.)

VITAL SIGN GUIDELINES

A complete set of vital signs and temperature shall be taken on personnel going through Rehab. The following criteria shall serve as a guideline for transporting personnel involved in emergency operations to the hospital for further evaluation. In these cases, treatment should be initiated according to the Delaware County PCGs.

After a minimum of ten minutes of rest and fluids:

1. Hypertension as defined by DCEMS PCGs:
2. Any symptomatic patient regardless of blood pressure
3. Heart rate $\geq$ 140 or $\leq$ 60 with accompanied hypotension.
4. Any other emergent condition not outlined above.
5. Heart rate $\geq$ 110 bpm, it is recommended oral or tympanic temperature be taken, if body core temperature is $\geq$ 100.6° F, the firefighter should not be permitted to wear protective equipment or re-enter the active work environment until his/her temperature and pulse has decreased. If his/her temp is $\geq$ 101.0° F the individual will not be permitted to return to duty for the remainder of the incident and should be considered for transport to the closest Emergency Department.
6. Measure Carboxyhemoglobin; if signs/symptom or levels show poisoning, follow Carbon Monoxide Poisoning Guidelines

Note: During any amount of time when a Firefighter is involved with performing work on the fire scene without using a SCBA when deemed necessary (i.e. overhaul) the use of the DCEMS Electronic Gas Analyzer will be requested (from the DCEMS Captain.) to measure carbon monoxide levels. Refer to Carbon Monoxide Exposure chart and protocol.

The following criteria shall serve as a guideline for releasing personnel from Rehab:

1. Normal blood pressure as defined by EMS Patient Care Guidelines.
2. Heart rate must be $\leq$ 110 bpm.
3. Oral, tympanic or temporal temperature must be $\leq$ 100.6° F
4. No orthostatic changes of vital signs.
5. No symptoms: confusion, headache, chest pain, abdominal pain, dizziness, blurred vision, etc.
6. Personnel must have received appropriate hydration.

If the person refuses Rehab and/or treatment, his/her immediate supervisor and Incident Command shall immediately be notified for disposition. This person shall not be recommended for re-entry to the fire ground. Document all information on Delaware County EMS patient care report.

VITAL SIGNS GUIDELINES

Heart Rate

- $\leq$ 110 = within normal limits on arrival
- $\leq$ 100 = within normal limits 5 min. after arrival
- If $\geq$ 110 to 100, check temperature

Temperature

- 100.6° F = within normal limits monitor for possible extended rehab
- If $\geq$ 100.6° F, but $\leq$ 100.9° F monitor every 5 min until WNL, consider transport
- If $\geq$ 101.0° F transport to nearest appropriate Emergency Department
- If temp $\leq$ 100.6° F but heart rate $\geq$ 110, increase rehab time

Respirations

- $\leq$ 26 = within normal limits on arrival
- $\leq$ 20 = within normal limits 5 min. after arrival
- If $\geq$ 20 after 5 min, consider transport

Emergency Incident Rehabilitation (cont.)

Blood Pressure

- Systolic $\leq$ 150 Diastolic $\leq$ 100 = WNL on arrival
- Systolic $\leq$ 140 or Diastolic $\leq$ 90 = WNL 5 min after arrival
- If Systolic $\geq$ 140 or Diastolic $\geq$ 90 after 15 min, consider transport

Skin Condition

- May be somewhat flushed on arrival
- Should be improved within 5 min. of arrival
- If skin remains flushed, re-check temperature

Mental Status

- Should be alert & oriented on arrival
- If any alteration of mental status, TRANSPORT

History / Meds

- Antihistamines (Actifed, Benadryl, etc.) may impair the body's ability to sweat.
- Beta blockers and Calcium Channel blockers impair the body to compensate overheating.

History of cardiac, respiratory, or hypertension problems should be considered when evaluating personnel.

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Masimo RAD-57

In the pre-hospital setting, carbon monoxide poisoning should always be a diagnosis of exclusion. The SpCO reading is to be used as an additional screening measure. The patient's clinical picture, signs and symptoms, must be the primary consideration when making treatment and transportation decisions. Other identifiable causes with similar symptoms should also be considered. This is especially important in any instance involving only one patient. As always, treat the patient, not the device.

Any patient with suspected carbon monoxide poisoning should receive oxygen via NRB mask.

The RAD-57 may be used as a screening tool for **ASYMPTOMATIC** potentially exposed people:

1. If there is a CO alarm in a residence, the RAD-57 may be used to test for levels on the occupants of the location.
2. Any asymptomatic patient with a level of greater than 15% should receive oxygen for 30 minutes, and then reassess the patient.

The RAD-57 may be used as a screening tool for **SYMPTOMATIC** patients.

1. If there is a CO alarm in a residence, the RAD-57 may be used to test for levels on the ill occupants of the location.
2. Carbon monoxide poisoning does not have specific, clear cut symptoms, and other medical conditions may present with dizziness, nausea or confusion.
3. All symptomatic patients should be transported, regardless of RAD-57 level.

CONSIDERATION of direct transport to a hyperbaric center if the patient's SpCO reading is > 30 AND/OR the patient is unconscious has significant altered mental status or the patient is pregnant.

Special Considerations:

- Pediatrics – The RAD-57 is not intended for use on patients weighing <30 kg
- Pregnant Women – The fetal SpCO may be 10-15% higher than the maternal reading
- Smokers – Heavy smokers may have baseline SpCO levels up to 10%
- A misapplied or dislodged sensor may cause inaccurate readings
- Never use tape to secure the sensor
- Do not place the sensor on the thumb or 5th digit
- Direct light may affect the reading – **use the light cover provided.**

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Medical Abbreviations

To ensure consistency in patient care reporting, the following list of abbreviations approved by the Medical Director of DCEMS has been supplied:

-A-

A&Ox3 - Alert & oriented to (PPT)
AAA - Abdominal aortic aneurysm
Abd - Abdomen
ABC - Airway, breathing, circulation
a.c. - Before meals
A/C Aircraft
ACE - Angiotensin-converting enzyme
ACLS - Advanced Cardiovascular Life Support
ACS - Acute Coronary Syndrome
a.d. - Right ear (auris dexter)
ADD - Attention deficit disorder
A.E. - Above elbow (amputation)
AED - Automated external defibrillator
A Fib - Atrial fibrillation
AF - Atrial flutter
AIDS - Acquired immunodeficiency syndrome
AIVR - Accelerated Idioventricular rhythm
A.K. - Above knee (amputation)
AMI - Acute myocardial infarction
Ant - Anterior
AOS TF - Arrived On Scene to Find
APAP - Acetaminophen
APS - Adult Protective Services
APGAR - Appearance, Pulse, Grimace, Activity, Respiratory effort
AS - Left ear (auris sinistra)
ASA - Acetyl salicylic acid (aspirin)
ATF - Arrived to find
AV - Atrioventricular
AVA - Alternate vascular access
AVM - Arteriovenous malformation

-B-

BBB - Bundle branch block
BBS - Bilateral breath sounds
B.E. - Below elbow (amputation)
BGL - Blood glucose level
b.i.d. - Twice a day
B.K. - Below knee (amputation)
BLS - Basic life support
BM - Bowel movement
BP - Blood Pressure
BS - Breath, bowel sounds
BSA - Body surface area
BVM Bag valve mask

-C-

Cº - Centigrade
C/C - Chief complaint
c/o - Complains / complaining of
CA - Carcinoma, cancer
Ca^{+} - Calcium
CABG - Coronary artery bypass graft
CAD - Coronary artery disease
CAO x 3 or 4 or PPT - Conscious, Alert, & Oriented to Person, Place, Time & Events
Cc - Cubic centimeter
Cm - Centimeter
CCB - Calcium channel blocker
CHF - Congestive heart failure
CHI - Closed head injury
CID - Cervical Immobilization Device
Cl - Chlorine
CNS - Central nervous system
COPD - Chronic obstructive pulmonary disease
CO - Cardiac output / carbon monoxide
CO_2 - Carbon dioxide
+CMS - Positive circulatory, motor & sensory function
CNS - Central nervous system
CP - Chest pain
CPAP - Continuous positive airway pressure
CPR - Cardiopulmonary resuscitation
CPS - Child Protective Services
CRT - Capillary refill time
C-spine - Cervical spine
CSF - Cerebrospinal fluid

CSM - Carotid sinus massage
CTA - Clear to auscultation
CVA - Cerebrovascular accident
CVP - Central venous pressure
Cx - Chest
CXR - Chest x-ray

-D-

DCAPS BTLS - Deformities, Contusions, Abrasions, Penetrations, Paradoxical movements, Burns, Tenderness, Lacerations, Swelling
Diff - Difficulty
Disch - Discharge
D&C - Dilatation & curettage
dL - Deciliter (1/10 liter: 100 ml)
DKA - Diabetic ketoacidosis
DM - Diabetes mellitus
DNAR - Did not attempt resuscitation
DNR - Do-not-resuscitate
DOB - Date of birth
DOE - Dyspnea on exertion
DOS - Dead on scene
DPT - Diphtheria, pertussis, tetanus
DT's - Delirium tremens
D_5W - Dextrose 5% in water
D_{50} - Dextrose 50%
DVT - Deep vein thrombosis
Dx - Diagnosis

-E-

ECG – Electrocardiogram
ECF – Extended Care Facility (Nursing Home)
EDC - Estimated date of confinement
EEG - Electroencephalogram
EF - Ejection fraction
e.g. - For example
EPS - Electrophysiological study
ER/ED - Emergency room/department
Epi - Epinephrine
Est. - Estimated
ESRD - End stage renal disease
ETA - Estimated time of arrival
ET - Endotracheal
$ETCO_2$ - End-tidal carbon dioxide
ETOH - Ethyl alcohol, alcoholic beverage
ETT - Endotracheal tube
EXP - Expansion
EXT - Extremity(s)

-F-

F - Female
Fº - Fahrenheit
FBAO - Foreign body airway obstruction
FHx - Family history
FHR - Fetal heart rate
Fr - French
FSP - Full spinal precaution
FUO - Fever of unknown origin
Fx - Fracture

-G-

G (+ #) - Gravida (G3, G4 etc.)
GCS - Glasgow coma scale/score
GERD - Gastroesophageal reflux disease
GI - Gastrointestinal
Gm, g - Gram
Gtts - Drops
GU - Genitourinary
GYN - Gynecology

-H-

h, hr - Hour
H/A - Headache
HAV - Hepatitis A virus
HBV - Hepatitis B virus
HCTZ - Hydrochlorothiazide
HCV - Hepatitis C virus
HEENT - Head, eyes, ears, nose, throat
Hg - Mercury
HIV± - Human immunodeficiency virus
HR - Heart rate
HRT - Hormone replacement therapy
hs - At bedtime
HTN - Hypertension
Hx - History

-I-

ICD - Implanted cardioverter defibrillator
ICP - Intracranial pressure
IDDM/DM I - Insulin dependent diabetes mellitus (Type I)
IM - Intramuscular
IMV - Intermittent mechanical ventilation
Inf - Inferior
IO - Intraosseous
IPPB - Intermittent positive pressure breathing
IU - International units
IV - Intravenous
IVP - IV push
IVR - Idioventricular rhythm

-J-

J - Joules
JVD - Jugular venous distention

-K-

K^+ - Potassium
KED - Kendrick extrication device
KTD - Kendrick traction device
KVO - Keep vein open
Kg - Kilogram

-L-

L - Liter
L spine - Lumbar spine
L&D - Labor and delivery
L/S - Lung sounds
Lac - Laceration
LAD - Left axis deviation / left anterior descending
Lbs - Pounds
LBBB - Left bundle branch block
Liq - Liquid
LLQ - Lower left quadrant
LMA - Laryngeal Mask Airway
LMP - Last menstrual period
LOC - Level/loss of consciousness
Lpm - Liter per minute
LR - Lactated Ringer's
LSB - Long spine board
LSD - Lysergic acid diethylamide
LUQ - Left upper quadrant
LVAD - Left Ventricular Assist Device
LVH - Left ventricular hypertrophy

-M-

m - Meter
M - Male
mA - Milliamperes
mg - Milligram
MAE - Moves all extremities
MAP - Mean arterial pressure [(DBPx2) +SBP] ÷3
Mcg - Microgram
MCL - Midclavicular line, modified chest lead
MDI - Metered dose inhaler
mEq - Milliequivalent
mL - Milliliter
mm - Millimeter
MMR - Measles, mumps, rubella
MOI - Mechanism of injury
mph - Miles per hour
MS - Multiple Sclerosis
MVA/MVC - Motor vehicle accident/crash
MVP - Mitral valve prolapse

-N-

Na^+ - Sodium
NAD - No apparent / acute distress
N/C - Nasal cannula
NES - Non-English Speaking
NGT - Nasogastric tube
NH - Nursing home
NIDDM/DM II - Non insulin dependent diabetes mellitus (Type II)
NKA - No known allergies
NKDA - No known drug allergies
NMB - Neuromuscular blockade
NOI - No obvious injury
NPA - Nasopharyngeal airway
NPO - Nothing by mouth
NRB - Non-rebreather mask

NS - Normal saline
NSAID - Non-steroidal anti-inflammatory drug
NT - Nasotracheal
NTG - Nitroglycerin
N/V/D - Nausea, vomiting, diarrhea

-O-

O_2 - Oxygen
OB - Obstetrics
OBS - Organic brain syndrome
OBV - Obvious
OD - Overdose, right eye (oculus dexter)
OOH - Out of hospital
OPA - Oropharyngeal airway
OPP - Organophosphate poisoning
OR - Operating room
OS - Left eye (oculus sinister)
OSS - Oregon Spine Splint
oz -. Ounce
Ø - No or none

-P-

p - After
p.c. - After meals
P (+ #) - Parity (P3, P4 etc)
PA - Physician assistant, pulmonary artery
PAI - Pharmacologically assisted intubation, Pre-Arrival Instructions
PCI - Percutaneous coronary intervention
pCO_2 - Carbon dioxide pressure
PCP - Phencyclidine, Primary Care Physician
PCT - Patient care to
PE - Physical exam, pulmonary emboli, pulmonary edema
PEA - Pulseless electrical activity
PEEP - Positive end expiratory pressure
PERRL - Pupils equal round reactive to light
PID - Pelvic inflammatory disease
PMD - Primary/Private medical doctor
Pn – Pain
PNB – Pulseless Non Breather
PND - Paroxysmal nocturnal dyspnea
PO_2 - Partial pressure of oxygen
PO - By mouth
POC - Position of comfort
post. - Posterior
POV - Privately operated/owned vehicle
PR - Per rectum
PRBC's - Packed red blood cells
PRN - As needed
PSVT - Paroxysmal supraventricular tachycardia
Pt - Patient
PTA/PTOA - Prior to (our) arrival
PTS - Pediatric trauma score
PVC - Premature ventricular contraction
PVT - Polymorphic ventricular tachycardia
P/W/D - Pink warm and dry

-Q-

Q - Every
Qh - Every hour
q.i.d. - Four times a day

-R-

RAD - Right axis deviation, reactive airway disease
RBBB - Right bundle branch block
RBC - Red blood cell, red blood (cell) count
RCA - Right coronary artery
RHD - Rheumatic heart disease
RLQ - Right lower quadrant
ROSC - Return of spontaneous circulation
+ROM - Positive range of motion
RN - Registered nurse
RR - Respiratory rate
RSV - Respiratory syncytial virus
RTS - Revised trauma score
RUQ - Right upper quadrant
Rx - Prescription

-S-

s/s - Signs / symptoms
SAO_2 - Oxygen saturation of arterial oxyhemoglobin
SARS - Severe acute respiratory syndrome
SBP - Systolic blood pressure
SQ - Subcutaneous
SCI - Spinal cord injury

SIDS - Sudden infant death syndrome
SL - Sublingual, Saline Lock
SOB - Shortness of breath
SROM - Spontaneous Rupture of Membranes
St - States
STD - Sexually transmitted disease
SUV - Sport utility vehicle
SVT - Supraventricular tachycardia
SX - Symptoms

-T-

T spine - Thoracic spine
TBI - Traumatic brain injury
Temp - Temperature
tab - Tablet
TB - Tuberculosis
Tbsp - Tablespoon
TCP - Transcutaneous pacing
TCA - Tricyclic antidepressant
TdP - Torsades de Pointes
TIA - Transient ischemic attack
t.i.d. - Three times a day
TKO - To keep open
TOT - Turned Over To
Tsp - Teaspoon
TX - Treatment

-U-

µg - microgram
U/A - Upon arrival, urine analysis
URI - Upper respiratory infection
UTI - Urinary tract infection
UTL - Unable to locate
UTO - Unable to obtain

-V-

Vol - Volume
VO - Verbal order
VF - Ventricular fibrillation
VS - Vital signs
Vt - Tidal volume
VT - Ventricular tachycardia

-W-

w/ - With
w/o - Without, wide open
WDWN - Well developed, well nourished
WNL - Within normal limits
WPW - Wolf-Parkinson-White

-X-

X-fer - transfer
X-prt - Transport

-Y-

y/o - years old

-Symbols-

α - Alpha
β - Beta
@ - At
? - Questionable, possible
1° - First degree
2° - Second degree
3° - Third degree
x - Times
+ - Positive
– - Negative
= - Equal
↓ - Decreased / below / lower
↑ - Elevated / increased / upper
→ - Move/went to
- Number

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SECTION VIII - MEDICATIONS

Acetaminophen (Tylenol) (Acephen, Feverall, Neopap)

Actions:

- May block pain impulses peripherally that occur in response to inhibition of prostaglandin synthesis; does not possess anti-inflammatory properties; antipyretic action results from inhibition of prostaglandins in the CNS (hypothalamic heat-regulating center).

Indications:

- Fever ≥ 100.8° F

Contraindications:

- Hypersensitivity to acetaminophen.

Route:

- PO,PR

Dosage:

- **325 to 650 mg PO** every 4 to 6 hours

Adverse Reactions:

- Hypersensitivity, CNS stimulation, drowsiness, nausea / vomiting, abdominal pain

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Adenosine (Adenocard)

Actions:

- Slows conduction thru the AV node, can interrupt reentry pathways through the AV node, and can restore normal sinus rhythm in patients with SVT.

Indications:

- Supraventricular tachycardia (SVT), including that associated with accessory bypass tracts (Wolff-Parkinson-White syndrome).
- Stable wide complex monomorphic V-Tach.

Contraindications:

- Hypersensitivity to Adenosine
- Second or Third degree AV heart block
- Sick sinus syndrome
- Atrial flutter or atrial fibrillation

Route:

- IV

Dosage:

- Initial Dose: **6 mg rapid IV (over 1 to 2 seconds)**
- Repeat Dose: **12 mg rapid IV (over 1 to 2 seconds)** may be repeated once if no response within 1 to 2 minutes, maximum total cumulative dose 30 mg.
- Adenosine should be given as a rapid IV bolus. To be certain the solution reaches the systemic circulation quickly, it should be injected into an IV line as close to the patient as possible and followed by a saline flush (20 to 30 ml).

Adverse Reactions:

- Nausea, facial flushing, lightheadedness.

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Albuterol Sulfate (Proventil)

Actions:

- Causes bronchodilation by its action on β2 (pulmonary) receptors by increasing levels of cAMP, which relaxes smooth muscle; produces bronchodilation, as well as increased diuresis and gastric acid secretion.

Indications:

- As an aerosol bronchodilator for bronchial asthma and the treatment for exacerbation of COPD.

Contraindications:

- Hypersensitivity to Albuterol Sulfate
- Administer with caution if heart rate is greater than 150 bpm (must be on cardiac monitor), or in cases of heart block.

Route:

- Inhaled via nebulized aerosol mist.

Dosage:

- **2.5 mg (diluted in 3 ml) nebulized** combined with 0.5 mg of Ipratropium (Atrovent). Continuous administration may be indicated

Precautions:

- Patients with cardiovascular disease, seizure disorders, hyperthyroidism, or diabetes mellitus.
- Patients who use bronchodilators excessively.

Side Effects:

- Tachycardias, agitation, tremors, ectopy, vasodilatation, hypertension, angina, vomiting, and vertigo.

Note:

- Most patients will have a decrease in heart rate and blood pressure with a relief of their bronchospasm. Therefore, do not withhold therapy in patients with hypertension and/or tachycardia.

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Aspirin

Actions:

- Blocks pain impulses in CNS, inhibition of prostaglandin synthesis, antipyretic action results from vasodilation of peripheral vessels.
- Inhibits platelet aggregation and thereby reduces risk of thrombus formation.

Indications:

- Traumatic amputations & avulsions
- Acute coronary syndromes and myocardial infarction.

Contraindications:

- Hypersensitivity to Aspirin.
- Do not administer in patients with decreased level of consciousness.
- Known history of aspirin allergy or peptic ulcer disease.
- Do not administer in children ≤ 12 years old, with flu-like symptoms.

Route:

- PO

Dosage:

- Adults: **324 mg (four baby chewable tablets) chewed PO**

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Atropine Sulfate

Actions:

- Anticholinergic; inhibits acetylcholine at the parasympathetic neuroeffector junction, blocking vagal effects on the SA node, thus enhancing conduction into the AV node and increasing the heart rate.

Indications:

- Symptomatic bradycardia and bradyarrhythmias (sinus, junctional or escape rhythms).
- Nerve agent exposure and organophosphate poisonings
- Blocking vagal reflexes as a pretreatment in Rapid Sequence Induction & Intubation (RSII)

Route:

- ET, IM, IV, IO

Dosage - for Bradyarrhythmias

- **0.5 to 1.0 mg IV**, repeat every 5 minutes to a maximum of 0.04 mg/kg if needed.

Dosage - for Nerve Agent Exposure and Organophosphate Poisoning:

- Adult: **1-2 mg IV** May repeat every 5 minutes until a decrease in secretions is observed. No max dose.

Dosage - for RSII premedication if needed (bradycardia)

- Adult: **1 mg IV**

Adverse Reactions:

- Hypotension, ataxia, dizziness, agitation, confusion, tachycardia, mydriasis (dilated pupils), photophobia and dry mouth.

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Calcium Chloride

Actions:

- Cation needed for maintenance of nervous, muscular, skeletal function, enzyme reactions, normal cardiac contractility, coagulation of blood; affects secretory activity of endocrine, exocrine glands.

Indications:

- Hyperkalemic cardiac arrest
- Calcium channel blocker overdose

Contraindications:

- Hypersensitivity to Calcium Chloride
- Hyperkalemia due to digitalis toxicity
- Known hypercalcemia

Route:

- IV, IO

Dosage:

- **500 mg slow IV**

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Dextrose 10% (D10)

Commented [AM73]: D10 Added

Actions:

- Needed for adequate utilization of amino acids; decreases protein, nitrogen loss, prevents ketosis.

Indications:

- To treat unconsciousness caused by hypoglycemia.
- To treat unconsciousness caused by unknown etiology.
- To treat blood sugar reading < 70 with Glucometer.

Contraindications:

- Hyperglycemia
- In intracranial or intraspinal hemorrhage
- CHF

Route:

- IV, IO

Dose:

- **25 grams (250 cc) of Dextrose 10% IV**. May repeat as necessary.

Administration:

- Give intravenously, through a **free flowing** intravenous line.

Caution:

- May cause necrosis if administered via an infiltrated IV line.
- Obtain blood glucose reading prior to administration if possible.

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Dextrose 50% (D50)

Actions:

- Needed for adequate utilization of amino acids; decreases protein, nitrogen loss, prevents ketosis.

Indications:

- To treat unconsciousness caused by hypoglycemia.
- To treat unconsciousness caused by unknown etiology.
- To treat blood sugar reading < 70 with Glucometer.

Contraindications:

- Hyperglycemia
- In intracranial or intraspinal hemorrhage
- CHF

Route:

- IV, IO

Dose:

- **25 grams (50 cc) of Dextrose 50% IV**. May repeat as necessary.

Administration:

- Give intravenously, through a **free flowing** intravenous line.

Caution:

- May cause necrosis if administered via an infiltrated IV line.
- Obtain blood glucose reading prior to administration if possible.

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Diltiazem (Cardizem)

Actions:

- Inhibits calcium ion influx across cell membrane during cardiac depolarization; produces relaxation of coronary vascular smooth muscle, dilates coronary arteries, slows SA/AV node conduction times, dilates peripheral arteries.

Indications:

- Atrial Fibrillation and Atrial Flutter with rapid ventricular response (RVR)
- PSVT

Contraindications:

- Hypersensitivity to Diltiazem
- Cardiogenic shock present, Hypotensive
- 2nd or 3rd degree AV Block, and sick sinus syndrome
- CHF or Acute Myocardial Infarction (AMI)

Route:

- IV, IO

Dose:

- **0.25 mg/kg IV (12.5 mg 18 mg 25 mg) over 2 minutes.**
- If heart rate remains > 110, repeat at **0.35 mg/kg IV (18 mg, 25 mg, 35 mg) over 2 minutes.**
- Following IV dose, response usually occurs within 3 minutes, rarely converting atrial fibrillation or atrial flutter to NSR, but decreases heart rate; lasting 1 to 3 hours.

Special Considerations:

- **Diltiazem is NOT indicated in pediatric patients**

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Diphenhydramine (Benadryl)

Class:

- Antihistamine

Indications:

- Prevention or treatment of Allergic Reaction

Contraindications:

- Asthmatic Attack, Pregnancy, Lactating Females, Known hypersensitivity to Benadryl

Side effects:

- CVS - Hypotension, Tachycardia, Palpitations
- CNS - Drowsiness, Dizziness, Confusion, Headache, Excitement (especially Pediatrics), Seizure
- OTHER -Dry Mouth, Nose and Bronchi, Blurred Vision, Nausea / Vomiting

Route:

- IVP or Deep IM Over 3 Minutes (Same in Pediatrics)

Dosage:

- Following Epinephrine 1:1,000 in respiratory emergencies administer:

Adult:

- **25-50 mg IVP or Deep IM** over 3 minutes. May repeat x1 to **max of 50 mg**

Commented [SK74]: Clarify dosage & max dose. 8-18-14

Supplied:

- 50 mg/1ml Ampule

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Dopamine (Intropin)

Action:

- Causes increased cardiac output; acts on β1- and α-receptors, causing vasoconstriction in blood vessels; β1 stimulation produces inotropic effects with increased cardiac output.

Indications:

- Management of nontraumatic hypoperfusion.

Commented [GU75]: Changed to "nontraumatic hypoperfusion". Took out trauma. -SK

Contraindications:

- Not for management of traumatic hypoperfusion.
- Hypersensitivity to dopamine.
- Uncorrected tachyarrhythmias or ventricular fibrillation
- Any underlying hypovolemia must be corrected, if possible, prior to use.

Route:

- IV, IO

Dosage:

- **5 to 10 mcg/kg/min IV.** Titrate to maintain systolic BP > 90 mmHg not to exceed 50 mcg/kg/min. Mix 400 mg Dopamine in 250 ml, see below.

Adverse Reactions:

- Headache, palpitations, tachycardia, hypertension, nausea / vomiting

Special Notes:

- The infusion site MUST be monitored closely for infiltration. Extravasation requires IMMEDIATE discontinuation of the drug! SHUT OFF IV AND LEAVE INFILTRATED IV CATHETER IN PLACE. Notify ER staff immediately of infiltrated site prior to or upon arrival. Document notification appropriately.

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Dopamine (Intropin) Chart

Reference Charts						Dopamine 400 mg Infusion						
Dopamine 400mg in 250ml												
Body Weight			Drip Rate per Minute to Achieve Desired Dose in mcg/kg/min									
kgs	lbs	1 mcg	3mcg	5mcg	6mcg	8 mcg	10mcg	12 mcg	14 mcg	16 mcg	18 mcg	20 mcg
40	88	1.5	5	8	9	12	15	18	21	24	27	30
45	99	1.5	5	8	10	14	17	20	24	27	30	34
50	110	2	6	9	11	15	19	23	27	30	34	38
55	121	2	6	10	12	17	21	25	29	33	37	41
60	132	2	7	11	14	18	22	27	32	35	40	45
65	143	2.5	7	12	15	20	25	30	35	40	45	49
70	154	2.5	8	13	16	21	26	32	37	42	47	53
75	165	3	8	14	17	23	28	35	40	45	50	55
80	176	3	9	15	18	24	30	35	42	48	55	60
85	187	3	10	16	19	26	32	38	45	50	57	63
90	198	3.5	10	17	20	27	34	40	47	55	60	68
95	209	3.5	11	18	21	29	35	43	50	57	65	70
100	220	3.5	11	19	23	30	38	45	53	60	68	75
105	231	4	12	20	24	32	40	47	55	63	70	80
110	242	4	12	21	25	33	41	50	58	66	74	83
115	253	4.5	13	22	26	34	43	52	60	69	77	86
120	264	4.5	14	23	27	36	45	54	63	72	81	90
125	275	4.5	14	23	28	38	47	56	66	75	84	94
130	286	5	15	25	29	39	49	59	69	78	88	98
135	297	5	15	26	31	41	51	61	71	82	92	102
140	308	5	16	26	32	42	53	63	74	84	95	105

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Epinephrine

Actions:

- β_1- and β_2-agonist causing increased levels of cAMP producing bronchodilation, cardiac, and CNS stimulation; large doses cause vasoconstriction via α-receptors; small doses can cause vasodilation via β_2-vascular receptors.

Indications:

- All pulseless non-breathing patients, anaphylaxis, bronchial asthma, and hypotension.

Contraindications & Precautions:

- Age > 45, or previous cardiac history
- Epi's positive inotropic and chronotropic effects can precipitate or exacerbate cardiac ischemia

Route:

- IV, IO, ET, IM, SQ, SL,

Dose:

- PNB: **1 mg IV (1:10,000)**, repeat every 3 to 5 minutes, no max dose. If no IV, administer ET at 2 x IV dose.
- Infusion: **Mix 1 mg in 1000 cc NS*; start infusion at 1-2 mcg/min** (1-2 ml/min or 60-120ml/hour). Titrate to maintain systolic BP > 90 mmHg. Max dose of 5mcg/min (5ml/min or 400ml/hour)

  *Ensure to **CLEARLY** mark on the infusion bag the infusion medication, and the concentration (1mcg/ml)
- Anaphylaxis: **0.3 mg SQ, 0.2 mg SL injection, 1 mg ET (1:1,000)**

Commented [SK76]: Updated epi infusion to new formula 10-23-14

Commented [GU77]: Added SL & ET routes. -SK

Special Notes:

- Should not be given concurrently with sodium bicarbonate.

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Etomidate (Amidate)

Actions:

- An imidazole derivative that is primarily a hypnotic. It has minimal respiratory or myocardial depression. It attenuates the rise in intracranial pressure that is associated with laryngoscopy and intubation. It does so by decreasing cerebral blood flow and cerebral metabolic oxygen demand with adversely affecting cerebral perfusion pressure. The onset is 20 to 30 seconds with full recovery in 7 to 14 minutes.

Indications:

- Rapid Sequence Induction & Intubation (RSII).

Contraindications:

- Known hypersensitivity to the drug.

Route:

- IV, IO

Dose:

- **0.3 mg/kg IV**. One time dose for adults over 12 years old only.

Adverse Reactions/Side Effects:

- Myoclonic jerking. nausea, vomiting, hiccups, and pain on injection (inject with wide open IV)
- Does not provide any pain control.

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Fentanyl (Sublimaze)

Actions:

- Inhibits ascending pain pathways in CNS, increases pain threshold, and alters pain perception by binding to opiate receptors.

Indications:

- For the relief of acute and chronic pain in patients > 3 y/o.

Contraindications:

- Known hypersensitivity or intolerance to opiates.

Route:

- IV, IO, IM, IN

Dose:

- **50 to 100 mcg slow IV**.
- May repeat initial dose once to a **max total of 200 mcg**.

Commented [SK78]: Increase in initial dose

Commented [SK79]: Increase in total dose

Special Notes:

- Monitor respiratory status carefully, as Fentanyl may cause respiratory depression. Naloxone may be used to reverse Fentanyl.
- Rapid administration may cause chest wall rigidity.

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Furosemide (Lasix)

Actions:

- A potent diuretic. Inhibits re-absorption of sodium and chloride at proximal and distal tubule and in the loop of Henle. This loss of sodium and chloride will cause water to follow, hence a loss of water from the circulatory system. A decrease in intravascular volume will occur.

Indications:

- Acute Pulmonary Edema
- Hypertension

Contraindications:

- Hypersensitivity to Furosemide.
- Use caution as excessive diuresis my result in dehydration and reduction in blood volume with circulatory collapse.

Route:

- IV, IO, IM

Dose:

- **20-40 mg IV.** may repeat x1 to max of 80 mg

Adverse Reactions:

- Dehydration, orthostatic hypotension, hyperglycemia, hypokalemia.

Cautions:

- May cause transient deafness if pushed too fast

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Glucagon

Mechanism:

- Raises blood glucose levels by promoting catalytic depolymerization of hepatic glycogen to glucose.

Indications:

- Severe hypoglycemia when unable to establish an intravenous line. Symptomatic blood glucose < 60.

Contraindications:

- Known hypersensitivity to Glucagon
- Patients with pheochromocytoma (Adrenal gland tumor).

Route:

- IM

Dosage:

- **1 mg IM, 2mg IN.**

Side Effects:

- Glucagon is relatively free of adverse reactions, except for occasional nausea and vomiting. This may also occur with hypoglycemia.

Cautions:

- Use only the diluents supplied by the manufacturer.
- Glucagon is of little help in patients with adrenal insufficiency.
- Administration of Glucagon should be followed by supplemental carbohydrates.

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Glutose (Oral glucose)

Action:

- Needed for adequate utilization of amino acids; decreases protein, nitrogen loss; prevents ketosis

Indications:

- Hypoglycemia. Must be awake and alert with a patent airway and intact ability to swallow.

Contraindications:

- Decreased LOC
- Head injury/CVA

Precautions:

- Obtain blood glucose reading prior to administration

Route:

- PO

Dose

- **15 g (one tube) PO**, May repeat x 1 in 5 to 10 minutes

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Haloperidol Lactate (Haldol)

Mechanism:

- Haldol is similar to phenothiazines. It blocks dopamine receptors altering mood and behavior.

Indications:

- Acute psychotic episodes.
- Severe combativeness
- Severe agitation

Contraindications:

- CNS depression
- Coma
- Pregnancy
- Severe liver or cardiac disease

Route:

- IM

Commented [SK80]: Removed IV as an available route 10-14-14

Dose:

- **2 to 5 mg IM** (must be placed on cardiac monitor when pt is cooperative)

Adverse Reactions:

- Dose-related extrapyramidal reactions-Pseudoparkinsonism, Akathisia, Dystonias
- Hypotension
- Nausea/Vomiting
- Blurred vision

Cautions:

- Other CNS depressant may potentiate effect.
- May inhibit vasoconstrictor effects of epinephrine.

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Hydromorphone (Dilaudid)

Commented [SK81]: Added Dilaudid to protocol 2-3-15

Actions:

- Analgesia and sedation through stimulation of opiate receptor sites. Onset of action is within 15 minutes and can last 2-5 hours.

Indications:

- For relief of acute and chronic pain.

Contraindications:

- Known hypersensitivity.

Route:

- IV, IO, IM, IN

Dosage:

- Adults: **0.5 – 1 mg**
- May repeat initial dose to a **max total of 2 mg**

Special notes:

- Narcan for reversal if needed.

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Hydroxocobalamin (Cyanokit®)

Indication:

- **If available:** Indicated for the treatment of cyanide poisoning. Cyanide poisoning may be suspected when unconscious occupants are involved in an enclosed space fire.

Commented [SK82]: Added "if available"

Route:

- IV

Dose:

- **5 grams slow IV over fifteen minutes. If signs and symptoms persist consult medical control for second dose.**

Adverse Effects:

- Headache, hypertension, nausea, rash and other IV site reactions.

Cautions:

- Do not delay administration.
- Incompatible with other drugs. Use separate IV line.

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Ipratropium (Atrovent)

Actions:

- Inhibits interaction of acetylcholine at receptor sites on the bronchial smooth muscle, resulting in decreased cGMP and bronchodilation.

Indications:

- For relief of acute bronchospasm (reversible airway obstruction)

Contraindications:

- Hypersensitivity to Ipratropium or to Atropine and/or its derivatives.

Commented [SK83]: Removed contraindication for soy & peanut allergies 2-3-15

Route:

- Inhaled via nebulization

Dosage:

- **0.5 mg by nebulized**; combined with Albuterol (*Proventil*) in 3 ml of 0.9% NS.

Precautions:

- May cause bronchoconstriction to worsen. This is thought to be related to the hypotonicity of the solution or to additives, such as benzalkonium chloride. It is for this reason that beta-adrenergic agonists should be given first or in combination with Ipratropium.
- Use caution in patients with narrow angle glaucoma, prostatic hypertrophy or bladder-neck obstruction.

Adverse Reactions:

- Glaucoma patients may experience pain/blurred vision if solution comes in contact with the eyes.

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Lidocaine (Xylocaine)

Mechanism:

- Increases electrical stimulation threshold of ventricle, HIS-Purkinje system, which stabilizes cardiac membrane, decreases automaticity.

Indications:

- Ventricular dysrhythmias.
- Prevents the increased intracranial pressure associated with rapid sequence intubation.

Route:

IV, IO, IM, ET

Dose:

- **to 1.5 mg/kg IV**. Repeat half of this original dose every 3 to 5 minutes until arrhythmias subsides or side effects develop. Don't exceed 300 mg total bolus dose during a 1 hour period. Maximum dose 3 mg/kg.
- A bolus dose has a very short half-life; it must be followed by an infusion at 2 to 4 mg/min.
- All doses should be halved for those patients that are elderly (≥ 70 years old), CHF, Hepatic diseased, Renal failure

Adverse Effects:

- CNS depression: tremors, restlessness, convulsions, euphoria, slurred speech, lightheadedness.
- Cardiovascular: hypotension, bradycardia, arrhythmias
- Other: tinnitus, blurred, or double vision.

Caution:

- Contraindicated if allergic to other amide type anesthetics such as Nupercaine.
- Caution in patients with greater than second degree heart block.
- DC drug if signs of toxicity appear (i.e.: dizziness, convulsions or confusion. Convulsions may be the first sign of toxicity).
- Use in caution in patients with digitalis toxicity.

ECG Notes:

- Excessive cardiac depression may be seen by P-R interval and/or QRS prolongation.
- When patient also presents in A-Fib or Flutter, an increase in ventricular rate may be seen upon drug administration.

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Lidocaine Jelly 2% (Xylocaine)

Actions:

- When applied to the oropharynx or nasopharynx, may provide comfort for the patient when an endotracheal tube is in the process of being inserted or upon proper placement.

Indications:

- Local anesthetic and is applied topically.
- Provides lubrication for instrumentation.
- May be used to control gagging.
- May be used to relieve laryngospasm when orally intubating.
- May reduce discomfort associated with nasal intubation.

Route:

- Topical

Dose:

- Apply a liberal amount to device prior to insertion. For nasal intubation, apply to nasopharyngeal airway and insert (leave in place for at least 1 minute) prior to nasal intubation attempt; if at all possible.

Adverse Effects:

- Local allergic reaction.

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Lorazepam (Ativan)

Mechanism:

- Benzodiazepine with anti-anxiety and anticonvulsant effects. When given IV it suppresses the propogation of seizure activity produced by foci in the cortex, thalamus, and limbic areas.

Indications:

- Seizures, to include status epileptics
- Secondary choice for sedation.

Contraindications:

- Hypersensitivity to benzodiazepines
- Psychosis
- Substance abuse
- Severe hypotension
- Preexisting CNS depression

Route:

- IV, IM, IO

Dose:

- **1 to 2 mg IV,** Over 2-5 minutes, may repeat q 5-15 minutes to a max dose of 6mg.

Adverse Reactions:

- Respiratory depression, tachycardia/bradycardia, hypotension, sedation, ataxia, psychomotor impairment, confusion.

Cautions:

- Use with caution in shock and alcohol intoxications.
- Use with caution in those patients with limited respiratory reserve.
- Expires in six weeks without refrigeration.
- May precipitate CNS depression and psychomotor impairment in patients currently taking CNS depressants.

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Magnesium Sulfate

Actions:

- Increases osmotic pressure, neutralizes HCl

Indication:

- Hypertensive disorders and Seizures due to toxemia of pregnancy.
- May reduce the incidence of post-infarction ventricular arrhythmias, and is a treatment of choice for Torsades de Pointes (TdP).

Route:

- IV, IO

Dose:

- For Ventricular arrhythmias, administer **2 grams slow IV**
- For Obstetrical emergencies (Pre-Eclampsia, Eclampsia, Uterine Inversion), administer **4 grams slow IV** diluted in 100 ml of fluid over 5-10 minutes
- For Asthma, administer **4 grams slow IV** diluted in 100 ml of normal saline

Adverse reactions:

- Toxicity may cause flushing, sweating, mild bradycardia and hypotension.

Mixing Suggestions Magnesium Sulfate:

- Remove saline in 50 ml bag of NS with an amount equivalent to be administered. Inject dosage of Magnesium Sulfate into 50 ml bag of NS; initiate an infusion with infusion pump.

Commented [SK84]: No longer diluting in .9%NS for Ventricular arrhythmias & TdP. 4-28-15

Commented [SK85]: Standardized all OB Mag to 4g in 100ml 10-23-14

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Methylprednisolone (Solu-Medrol)

Actions:

- Decreases inflammation by suppression of migration of polymorphonuclear leukocytes, fibroblasts; reversal of increased capillary permeability and lysosomal stabilization.

Indications:

- Acute exacerbation of reactive airway disease (COPD and Asthma).
- Acute spinal cord injury with paresis/paralysis.

Contraindications/Precautions/Side Effects:

- Hypersensitivity to Methylprednisolone.
- Psychosis.

Route:

☐ IV, IM, IO

Dosage:

☐ reactive airway disease: **125 mg slow IV**.

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Midazolam (Versed)

Actions:

- Depresses subcortical levels in CNS; may act on limbic system, reticular formation; may potentiate
- γ-aminobutyric acid (GABA) by binding to specific benzodiazepine receptors. A short acting (15 to 20 minutes) benzodiazepine depressant with anti-seizure actions.

Indication:

- Agent for conscious sedation during cardioversion or intubation
- To control the increase in intracranial pressure due to anxiety and restlessness.
- Secondary sedation in the combative patient who places him/herself or others in danger.
- For management of seizures.

Route:

- IV, IO, PR, IM, IN

Dose:

- **2 to 5 mg IV**. May be repeated q 5-15 minutes to max dose of 10 mg.

Adverse Reactions:

- Nausea and Vomiting
- Hypotension if pushed too fast.
- Respiratory depression is common, supportive airway adjuncts must be available

Caution:

- Not recommended in pregnancy; refer to Magnesium Sulfate for Eclampsia.

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Morphine Sulfate

Actions:

- Depresses pain impulse transmission at the spinal cord level by interacting with opioid receptors. Also manifests hemodynamic effects by increasing venous capacitance and systemic vascular resistance, relieving pulmonary congestion.

Indications:

- Severe and chronic pain
- Ischemic chest pain
- Pulmonary edema

Contraindications:

- Use with caution in patients with respiratory insufficiency or depression

Route:

- IV, IO, IM, SC

Dosage:

- **2 to 5 mg IV**, slowly titrate to effect. May be repeated every 5 minutes for a total of 10 mg if pain persists and systolic BP ≥ 90 mmHg.

Precautions:

- Systolic BP < 90 mmHg (may need to manage with fluid bolus).
- Watch for respiratory depression and be prepared to support ventilations.
- Naloxone (Narcan) should be readily available when administering Morphine.

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Naloxone (Narcan)

Actions:

- Competes with opioids at opiate receptor sites.

Indication:

- To reverse respiratory depression or refractory circulatory shock induced by opioids.

Route:

- IV, SC, IN, Neb

Dose:

- For patients with respiratory arrest, severe depression or circulatory collapse due to opioid overdose, administer **0.4 to 2.0 mg IV, IN**. May repeat every 2 to 3 minutes to a **max dose of 4 mg**.
- For patients where opioid overdose is suspected and patient is not in the above situation, but may still have a reduction in LOC due to opioid overdose, administer **2 mg / 2 ml nebulized.**

Adverse Reactions:

- Nausea and Vomiting
- Withdrawal symptoms in opioid dependent patients

Notes:

- Effects last 1 to 4 hours, patients should be watched closely. Narcotic effect will often outlast the antagonist actions.
- Subsequent IM dose will prolong IV effects.

Commented [SK86]: Removed IM, ET, IO 2-3-15

Commented [SK87]: Added Nebulized to route

Commented [SK88]: Clarified doses/routes 2-9-15

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Nitro-Paste (Nitro-Bid Ointment)

Actions:

- Decreases preload, afterload, which is responsible for decreasing left-ventricular end-diastolic pressure, systemic vascular resistance, dilates coronary arteries, and improves blood flow through coronary vasculature.

Indications:

- Myocardial ischemia, hypertension, and CHF

Contraindications:

- PDE_5 inhibitors within the past 24 hours (such as *Viagra, Levitra,* or *Cialis*)
- Head trauma

Commented [SK89]: Added contraindications consistent with chest pain protocol. 10-8-14

Route:

- Transdermal

Dose:

- **Apply 1-2 inches over Left upper chest wall;** cover with transparent tape and secure with tape.

Adverse Reactions:

- Headache, dizziness, orthostatic hypotension, palpitations, nausea and vomiting.

Cautions:

- Treat secondary hypotension quickly with fluid boluses.
- Use caution in any patient whom is intoxicated.
- Be sure to remove any transdermal system before defibrillation.

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Nitroglycerin (Nitrostat, Tridil)

Actions:

- Decreases preload, afterload, which is responsible for decreasing left-ventricular end-diastolic pressure, systemic vascular resistance, dilates coronary arteries, and improves blood flow through coronary vasculature.

Indications:

- Myocardial ischemia, hypertension, and CHF

Route:

- IV, IO, SL

Dose:

- **0.4 mg SL** (tablet or spray), may repeat every 3-5 minutes x 2. Maintain systolic BP > 90 mmHg.

Adverse Reactions:

- Headache, dizziness, orthostatic hypotension, palpitations, nausea and vomiting.

Cautions:

- Treat secondary hypotension quickly with fluid boluses.
- Contraindicated in head trauma.
- Use caution in any patient whom is intoxicated.
- Be sure to remove any transdermal system before defibrillation.

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Ondansetron (Zofran)

Action:

- Prevents nausea and vomiting by blocking serotonin peripherally, centrally, and in the small intestine.

Indications:

- Prevention of nausea and vomiting

Contraindications:

- Hypersensitivity to Ondansetron (*Zofran*)

Route:

- IV, IM, IO

Dosage:

- **4 mg undiluted, IM or slow IV**. May repeat once to max of 8 mg

Adverse Reactions:

- Dizziness, drowsiness, fatigue, abdominal pain

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Oxymetazoline HCl (Afrin)

Action:

- Causes local vasoconstriction of dilated arterioles, reducing blood flow and nasal congestion.

Indications:

- Nasal congestion.
- Prior to nasal intubations to lessen the chance of causing epistaxis.

Precautions:

- Known hypersensitivity

Dose:

- **2 to 3 sprays in each nostril** 1 to 2 minutes prior to intubation

Note:

- Single patient use. Dispose of bottle after each patient.

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Oxygen (O_2)

Therapeutic Effects:

- Reverses the deleterious effects of hypoxemia on the brain, heart and other vital organs.

Indications:

- Any condition in which global or local hypoxemia may be present:

Contraindications:

- May depress respirations in rare patients with chronic obstructive pulmonary disease. This is not a contraindication to its use, but simply means that such patients must be watched closely and assisted to breathe if the respiratory rate declines.

Side Effects:

- None when given for short periods to adults (less than 24 hours).

Administration:

- Administered by inhalation from a dosage mask, nasal cannula, endotracheal tube, bag mask valve assembly, etc.
- A patent airway and adequate ventilation must be ensured.

Route:

- Inhaled

Dosage:

- Varies / depends upon the condition being treated.

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Pralidoxime Chloride (Protopam Chloride, 2PAM)

Action:

- A relatively slow acting cholinesterase re-activator. Binds with organophosphate (OP), removing it from cholinesterase. Relieves paralysis of the respiratory muscles. Must be used within the first 24 hours, before enzyme OP bond "ages." Must be used secondarily to Atropine.

Indications:

- Treatment of poisoning due to the pesticides and chemicals of the organophosphate class that have anticholinesterease activity. May be used with the carbonate type insecticides if symptoms are severe, or under direct physician order.
- **Mild to Moderate exposure:** Always remember the symptoms in the acronym SLUDGEM:
  - **S** - salivation / **L** - Lacrimation / **U** - urination / **D** - defecation / **G** - gastrointestinal upset / **E** - emesis / **M** - muscle twitching and miosis (pinpoint pupils).
  - **These patients should receive one (1) auto-injector. If symptoms persist and/or dyspnea occurs in 5 to 8 minutes, a second auto-injector should be administered for a total of two (2). They may be given at the same time if the patient presents with moderate symptoms.**
- **Severe exposure:** Patients that have the **SLUDGEM** symptoms and are seizing or have loss of consciousness should be given three (3) auto-injectors.

Dosage:

- **1 gram IM**
- One (1) Mark-1 auto-injector is: **Atropine (AtroPen) - 2 mg and Pralidoxime Chloride (2PAM) - 600 mg**, administered deep IM.

Precautions / Adverse Effects:

- Tachycardia, laryngospasm and muscle rigidity have been reported when administered to quickly (does not apply to auto-injectors)
- Dizziness, blurred vision, diplopia, headache, drowsiness, nausea, hyperventilation and muscle weakness are all commonly reported side effects.
- When atropine and pralidoxime chloride are used together, the signs of Atropinization may occur earlier than might be expected, as compared to when Atropine is used alone.
- Pralidoxime is not effective in the treatment of poisoning due to phosphorus, inorganic phosphates or organophosphate not having anticholinesterease activity.
- Pralidoxime is not generally recommended to treat intoxication from the carbonate.

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Racemic Epinephrine (Vaponephrin)

Actions:

- Reduces upper airway swelling and beta effects on bronchial muscle may relieve bronchospasm. Regular epinephrine 1:1,000 may be used if racemic epinephrine is not available.

Indications:

- Treatment of life-threatening airway obstruction in croup and epiglottitis. May also be used in conjunction with SQ Epi in acute anaphylaxis in IV access in unobtainable.

Contraindications:

- Use in caution in patients with cardiovascular disorders including coronary insufficiency and hypertension.

Route:

- Inhaled via nebulization

Dose:

- **2.5 mg (0.5 cc) mixed with 3 cc of NS nebulized**. May be repeated every 20 minutes.

Special Notes:

- Adverse effects include tremor, nervousness, tachycardia, palpitations, and occasionally, hypertension.

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Sodium Bicarbonate ($NaHCO_3$)

Mechanism:

- By neutralizing acid and returning the blood towards its normal physiologic composition. Sodium Bicarbonate enhances the effects of Sympathomimetic agents, such as epinephrine, on the heart. Given in conjunction with epinephrine enhances the effectiveness of defibrillation.

Indications:

- The lack of proven efficiency and numerous adverse effects associated with Sodium Bicarbonate have led to the reconsideration of its role in cardiac resuscitation. Should be used, if at all, only after other more definitive interventions such as prompt defibrillation, CPR, intubation, hyperventilation with 100% O_2, and the use of Epinephrine and Lidocaine have been used.

Route:

- IV, IO

Dose:

- In PNB patients: **1 mEq/kg IV**. Repeat with 0.5 mEq/kg every 10 minutes of cardiac arrest if blood gases not available.
- In tricyclic antidepressant overdose patients: **1 mEq/kg IV**.
- In crush injury patients, refer to crush injury guideline.

Adverse Effects:

- Hypernatremia, alkalosis, hypokalemia

Special Considerations:

- Because each mEq of bicarbonate contains also a mEq of sodium, Bicarbonate has the same effect as any sodium solution. It increases vascular volume (1 syringe of Bicarb is equivalent to 300 ml of normal saline). Patients in CHF tolerate salt loads poorly. Also lowers serum potassium.
- If potassium falls too low, the heart may become irritable, especially if the patient is taking a digitalis preparation.

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Succinylcholine (Anectine)

Actions:

- An ultra-short acting depolarizing type, skeletal muscle paralytic. Inhibits transmission of nerve impulses by binding with cholinergic receptor sites, antagonizing action of acetylcholine; causes release of histamine.

Indications:

- As an adjunct to sedation during endotracheal intubation.

Precautions:

- Be prepared to manage the airway with multiple techniques.

Contraindications:

- Hypersensitivity
- Hyperkalemia
- Renal failure
- Neuromuscular disease
- Massive burns greater than 24 hours old still currently being treated by a medical provider. i.e. Rehab, burn unit
- Head injuries greater than 24 hours old currently being treating by a medical provider. i.e. Rehab, ICU
- Penetrating eye injuries
- Crush injuries
- History of malignant hyperthermia
- Known anatomical airway anomalies.

Commented [SK90]: Clarified contraindications for consistency throughout protocol 2-9-15

Route:

- IV administration ONLY

Dose:

- **1-1.5 mg/kg IV** may be repeated once. Onset is within 30 to 60 seconds, duration is 3 to 10 minutes.

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Tranexamic acid: TXA

Commented [SK91]: Added TXA to protocol 2-3-15

Actions:

- Blocks the action of plasminogen, an enzyme that dissolves clots.

Indications:

- Suspected severe traumatic hemorrhagic shock. For sustained Systolic BP <80, HR >120, or obvious signs of sustained traumatic hemorrhagic shock **following 1000 ml 0.9 Normal Saline IV fluid bolus**.

Contraindications:

- Isolated head injury; known hypersensitivity; <18 years old, history of known thromboembolic disease ie: DVT, PE

Side Effects:

- Seizures, vision changes, renal impairment and hypotention with rapid injection.

Route:

- IV, IO

Dosage:

- Adults: **1 gram bolus in 100ml 0.9 Normal Saline over 10 minutes (600ml/hr).**

Special Concerns:

- Must be started within 3 hours from time of injury, best results if started within 1st hour of time of injury.
- Trauma Team Staff **MUST BE NOTIFIED** of TXA treatment.

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Zemuron (Rocuronium Bromide)

Actions:

- A non-depolarizing neuromuscular blocking agent with a rapid to intermediate onset of action, depending on dose, and with an intermediate duration of action. Rocuronium produces neuromuscular blockade by competing with acetycholine for cholinergic receptors at the motor end plate.

Indications:

- As an adjunct to sedation during endotracheal intubation.

Precautions:

- Be prepared to manage the airway with multiple techniques.

Contraindications:

- Hypersensitivity, Acid/Base imbalance, cachexia, cardiovascular disease, hepatic function impairment, pulmonary hypertension, valvular heart disease, renal function impairment.

Route:

- IV, IO

Dose:

- **1 mg/kg IV** may be repeated once. Onset is within 30 to 60 seconds, duration is 20 to 45 minutes

Commented [SK92]: Change to 20-45 min

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Medications Routes

Commented [AM93]: D10 needs added

Medication	Route	Medication	Route
Acetaminophen (Tylenol) (Acephen, Feverall, Neopap)	PO, PR	Ipratropium (Atrovent)	Nebulized
Activated Charcoal	PO, NG	Lidocaine (Xylocaine)	IV, IO, IM, ET
Adenosine (Adenocard)	IV, IO	Lidocaine Jelly 2% (Xylocaine)	Topical
Albuterol Sulfate (Proventil)	Nebulized	Lorazepam (Ativan)	IV, IO, IM
Amiodarone (Cordarone)	IV, IO	Magnesium Sulfate	IV, IO
Aspirin	PO	Methylprednisolone (Solu-Medrol)	IV, IO, IM
Atropine Sulfate	IV, IO, ET, IM	Midazolam (Versed)	IV, IO, PR, IM, IN
Calcium Chloride	IV, IO	Morphine Sulfate	IV, IO, IM, SC
Dextrose 50% (D50) Dextrose 10% (D10)	IV, IO	Naloxone (Narcan)	IV, SC, IN, Nebulized
Diltiazem (Cardizem)	IV, IO	Nitro-Paste (Nitro-Bid Ointment)	Transdermal
Diphenhydramine (Benadryl)	IV, IO, IM	Nitroglycerin (Nitrostat, Tridil)	IV, IO, SL
Dopamine (Intropin)	IV, IO	Ondansetron (Zofran)	IV, IO, IM
Epinephrine	IV, IO, ET, IM, SQ, SL	Oxymetazoline HCl (Afrin)	IN
Etomidate (Amidate)	IV, IO	Oxygen (O2)	Inhaled
Fentanyl (Sublimaze)	IV, IO, IM, IN	Pralidoxime Chloride (Protopam Chloride, 2PAM)	IM
Furosemide (Lasix)	IV, IO, IM	Racemic Epinephrine (Vaponephrin)	Nebulized
Glucagon	IM, IN	Sodium Bicarbonate (NaHCO3)	IV, IO
Glutose (Oral glucose)	PO	Succinylcholine (Anectine)	IV, IO
Haloperidol Lactate (Haldol)	IM	Vasopressin (Pitressin)	IV, IO
Hydroxocobalamin (Cyanokit®)	IV, IO	Zemuron (Rocuronium Bromide)	IV, IO

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