2017 COMMON EMS PROTOCOLS

Version 1.3

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UPDATES .....INSERTS

2017

EMERGENCY MEDICAL SERVICES

COMMON PROTOCOLS

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EMERGENCY MEDICAL SERVICES MEDICAL OPERATIONS MANUAL

2017 EDITION

Version 1.3

Virgil Fernandez, Fire Chief
Frederick M. Keroff, M. D., FACEP, Medical Director

INTRODUCTION

This 2017 EMS Common Medical Operations Manual is dedicated to the men and women of the Coral Gables Fire Department, Hialeah Fire Department, Miami Beach Fire Department, Miami Fire Rescue, and Village of Key Biscayne Fire Rescue, who ensure that the highest quality standards of pre-hospital emergency care is delivered every day to the citizens and visitors they serve.

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"High quality standards, patient safety, and customer service establish the foundation that we embrace as our vision of patient care and treatment. Through high compliance with evidence based practices, these results continue to drive change in our service delivery model. With disciplined science, the "art" of emergency pre=hospital medicine is practiced.

We are accountable to continuously improve ourselves, our practice, and our organizations to better serve our patients."

– SF

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Introduction

There are many causes of abdominal pain. However, diagnosing the causes of abdominal pain in the pre-hospital environment is usually not indicated, but having an understanding of the possible reasons for a patient's abdominal pains can assist in the management of these patients.

In the pre-hospital environment, the management of a patient with abdominal pain is determined by the presence of any associated signs or symptoms.

These include:

1. Hypotension
   a. Vascular emergencies such as ruptured abdominal aortic aneurysms
   b. Ruptured ectopic pregnancies
   c. Bowel obstructions causing fluids to build up within the gut
   d. Traumatic damage to a solid organ; spleen, kidney, liver
   e. Gastrointestinal Bleeding

2. Nausea and/or vomiting

3. Bleeding from the mouth or rectum

Important points to remember when evaluating patients with abdominal pain:

1. **Upper abdominal pain** (everything above the umbilicus):
   a. Any male 35 years or older needs a 12-lead ECG.
   b. Any female 45 years or older needs a 12-lead ECG.

2. **Lower abdominal pain** (everything below the umbilicus):
   a. Females of childbearing years should be treated as a possible ectopic pregnancy until proven otherwise.

The past medical/surgical history is frequently helpful in determining the cause of the patient's current episode of abdominal pain. Determination of current medication use can also assist in understanding reasons for the patient's abdominal pains.

Location of the pain is the most helpful piece of information when trying to determine the cause of the pain.

1. **Renal colic** (kidney stones) starts in the posterior flank and radiates around to the lower abdomen on the side of the pain and never crosses the midline.

2. **Right upper quadrant pain**:
   a. Gallbladder pain starts in the right upper quadrant but may move around the upper abdomen into the mid back.

3. **Right lower quadrant pain**:
   a. Kidney stones
   b. Ectopic pregnancy
   c. Classic appendicitis pain starts in the mid-upper abdomen or around the umbilicus and later moves to the right lower quadrant.

4. **Left upper quadrant pain**:
   a. Pancreatitis – look for a history of pancreatitis, alcohol abuse, or gallbladder stones.

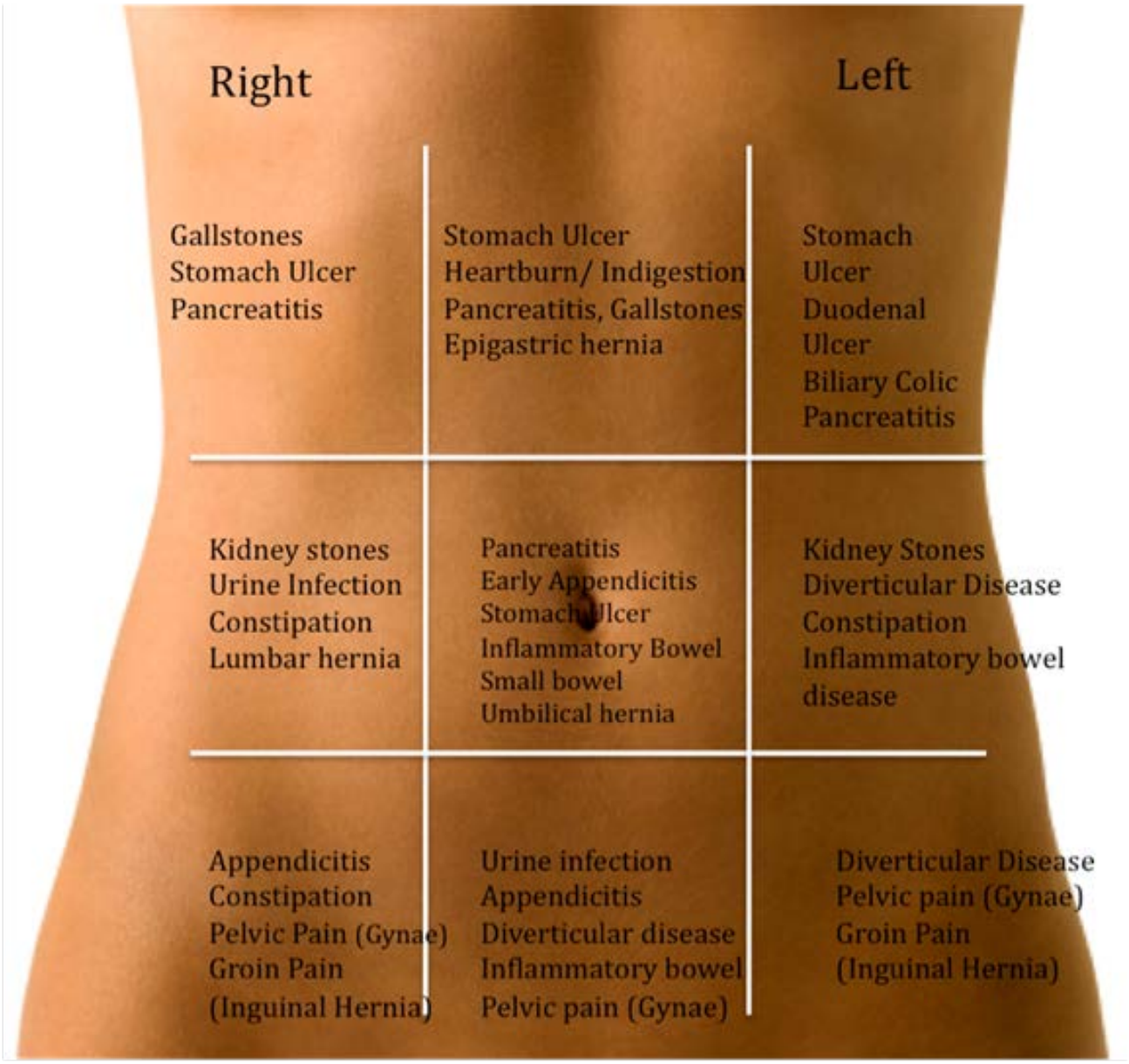
5. **Left lower quadrant pain**:
   a. Diverticulitis
   b. Ectopic pregnancy
   c. Kidney stones

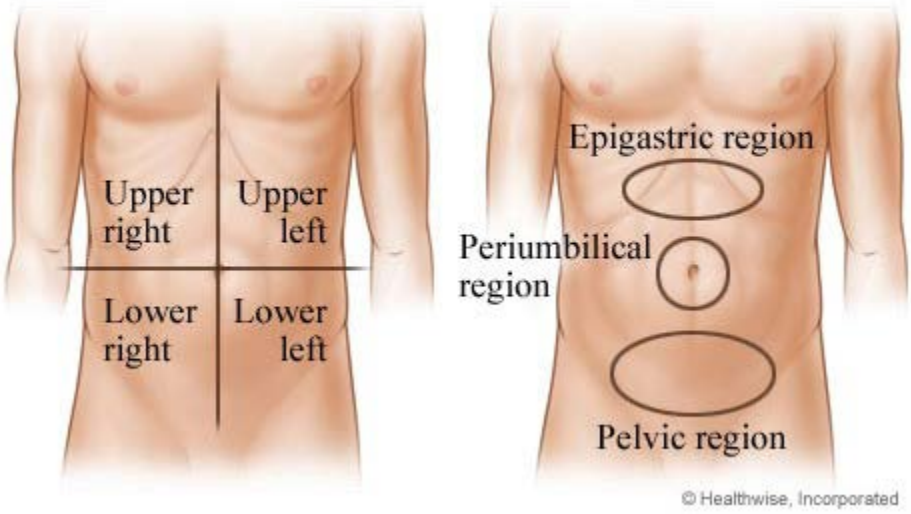
Abdominal pain may be associated with nausea and/or vomiting, diarrhea or constipation, urinary symptoms, difficulty breathing, cough, fever.

Patients who have had gastric bypass surgery are at increased risk for having complications. These complications can occur shortly after surgery to many years following the surgical procedure. All of these patients who are now complaining of abdominal pain should be transported to a hospital for further evaluation.

Questions to Ask:

1. Onset sudden or gradual?
2. Since onset, is the pain constant or intermittent?
3. Has the pain moved since it started?
4. Have you had this type of pain before?
5. Is there anything that makes the pain worse, or better?
6. Are there any other associated symptoms or clinical findings, for example, nausea, vomiting, diarrhea, urinary symptoms, and/or shortness of breath?
7. On a scale of 1 to 10 with 10 being the worst pain, how bad is the pain now?
8. Have you taken any medications to make yourself feel better? If so, did it make any difference?
6. When appropriate, timing of last menses.


Right
Left
Gallstones
Stomach Ulcer
Pancreatitis
Stomach Ulcer
Heartburn/ Indigestion
Pancreatitis, Gallstones
Epigastric hernia
Stomach
Ulcer
Duodenal
Ulcer
Biliary Colic
Pancreatitis
Kidney stones
Urine Infection
Constipation
Lumbar hernia
Pancreatitis
Early Appendicitis
Stomach Ulcer
Inflammatory Bowel
Small bowel
Umbilical hernia
Kidney Stones
Diverticular Disease
Constipation
Inflammatory bowel
disease
Appendicitis
Constipation
Pelvic Pain (Gynae)
Groin Pain
(Inguinal Hernia)
Urine infection
Appendicitis
Diverticular disease
Inflammatory bowel
Pelvic pain (Gynae)
Diverticular Disease
Pelvic pain (Gynae)
Groin Pain
(Inguinal Hernia)



TREATMENT

1. Universal Initial Adult Patient Assessment / Care.
2. Hypotension
   a. Administer normal saline, **500 mL IV bolus.** May repeat once if needed.
   b. Advise receiving hospital of patient's status.
3. Nausea/Vomiting
   a. Administer ondansetron (Zofran) ODT, **8 mg PO**.
   b. Many patients with abdominal pain will have associated nausea and frequently treating the abdominal pain will also relieve the patient's nausea.
4. Consider Pain Management
5. Vomiting Blood or Bleeding Large Amounts Per Rectum
   a. Start a saline lock. Only administer normal saline if patient also has hypotension or tachycardia.

Reporting to Community Services

Whenever a Fire-Rescue employee encounters a person, as a patient or under other circumstances, whom he/she believes would benefit from the assistance provided through the Elder-Links Project or other Community Services, the Fire Rescue employee shall:

1. Complete the Elder-Helpline Referral Form.
2. Deliver or fax the completed form to the Rescue Division.
3. If the person is a patient, document the referral in the narrative section of the Patient Care Record.
4. Elder Links Information:
   - **Florida Department of Elder Affairs, Alliance for Aging Inc. (Elder Links)**
   - Phone: 305-670-HELP (4357) or 1-800-96ELDER (1-800-963-5337)
   - Fax: 305-670-6516 or 305-671-7229

Reporting ABUSE, NEGLECT, or EXPLOITATION of Children or Vulnerable Adults

As defined by Florida Statute 415, any Fire-Rescue employee who knows or has reasonable cause to suspect abuse, neglect, or exploitation of a child or vulnerable adult will immediately report such knowledge or suspicion to the Florida Abuse Hotline.

1. Notify Police
2. Notify the Rescue Division Supervisor prior to the end of your shift.
3. These incidents should be reported by calling the Florida Abuse Hotline

   1-800-96ABUSE (1-800-962-2873).

4. Obtain the following information:
   a. The victim's name
   b. The full address (including zip code, apartment, building, or lot number)
   c. Telephone number

d. Date of birth, age, race, and sex

e. Social Security Number

f. Brief description of physical, mental, or behavioral indications demonstrating that the person is infirm or disabled

g. Signs or indications of harm or injury, including a physical description if possible

h. A brief history including medical conditions and the situation found in the home

i. Incident number and police case number if applicable

5. Complete the Florida Abuse Hotline Fax Transmittal Form, and if contact was made with the FL Abuse Hotline, document the counselor's name and identification number above the Incident Number on the form.

6. Deliver or Fax the completed form to the Rescue Division for follow up with the local office of the Florida Department of Children and Family Services.

   NOTE: DO NOT fax forms to the Florida Abuse Hotline, as there is no guaranteed process to confirm that the forms have been received.

7. Document the referral and method of referral in the narrative section of the Patient Care Record.

Additional Information

Response by a police agency to the incident scene or transportation of the neglected or exploited person to a hospital, does not release the Unit from the responsibility of reporting the incident to the Florida Abuse Hotline.

THE AGITATED PATIENT / EXCITED DELIRIUM SYNDROME

Fire Rescue may be called to the scene to manage patients that are agitated and presenting with verbally and/or physically threatening behavior. These patients are agitated, restless, sometimes crying, sometimes confused, and they appear to be out of control. Their agitated condition may be related to mental illness and/or drug use (particularly stimulants such as cocaine). Alcohol withdrawal and head trauma may contribute to the condition.

Excited Delirium Syndrome

Agitated patients may be experiencing an excited delirium syndrome, and when managing the care of these patients it is important to evaluate the agitated patient for possible excited delirium syndrome.

Patients with the Excited Delirium Syndrome may demonstrate some or all of these finds:

- Extremely aggressive or violent behavior
- Constant physical activity, restless
- Not responsive to police/fire presence
- Attracted to bright lights, loud sounds, their own reflections in glass or mirrors
- May be naked or near naked
- Rapid breathing
- Profuse sweating
- Little response to pain
- Superhuman strength
- Hot to the touch

Law enforcement agencies may utilize a TASER, as a non-lethal method to temporarily incapacitate individuals who exhibit threatening behavior.

Thus, it is important when approaching a patient who has been TASERed, to evaluate the patient for possible excited delirium syndrome. Patients with excited delirium syndrome typically continue to be agitated again after being TASERed.

TREATMENT

1. **Have enough personnel on the scene to handle the situation, and if necessary, to physically manage the patient.**

2. **Secure the scene and use universal precautions.**

3. Attempt to calm the patient down. Speak softly and non-threateningly. Avoid loud noises and sudden movements.

4. Use the least restrictive method of restraint. **Providers should ensure their own safety.** If possible, allow the patient to correct inappropriate behavior. Use restraints if unable to calm the patient down, and the patient remains a threat to himself/herself or others. If restraint is necessary, **DO NOT put the patient prone (face down)**. Use a supine or recovery position. Use as many providers/police present to safely restrain the patient.

5. If chemical restraint is indicated and available, administer ketamine, **4 mg/kg IM (maximum dose 400 mg).** Ketamine may be given in the mid shaft anteriolateral aspect of the thigh OR the lateral deltoid muscle of the shoulder. It may be given through clothing.

6. If the patient becomes agitated or aggressive as the effects of the ketamine are starting to wear off, **OR IF KETAMINE IS NOT AVAILABLE.**

   a. If vascular access is available:

      1) Administer lorazepam (Ativan), **2 mg IV *slowly over 1 minute***
      OR
      2) Administer midazolam (Versed), **5 mg IV**.

   b. If vascular access is **NOT** available:

      1) Administer lorazepam (Ativan), **2 mg IM**
      OR
      2) Administer midazolam (Versed), **10 mg IM / IntraNasal.**

   c. Both medications may each be repeated in 3-5 minutes if indicated.

7. Universal Initial Adult Patient Assessment / Care.

8. Ensure a maintainable airway.

9. Obtain a blood glucose level and treat with dextrose 50% (D50W), if indicated.

10. Monitor cardiac rhythm, $ETCO_2$ and SpO_2. Give supplemental O_2, if indicated.

11. Treat any medical complaint per the appropriate protocol(s).

12. IF THE AGITATED PATIENT IS EXHIBITING SIGNS OF EXCITED DELIRIUM **AND** THE PATIENT IS FEBRILE OR HOT TO THE TOUCH (temperature reading of 104°F (40°C) or higher **OR** if unable to obtain a temperature and the patient feels hot to the touch) attempt to cool the patient down.

a. Remove as much clothing as possible.

b. If possible, move patient to a cooler environment and/or fan blowing on patient.

c. If available, apply ice packs to the neck, axillae, and groin areas.

d. If available, take and document a baseline temperature before administering cold normal saline. Also take and document a temperature at the time of patient transfer in the ED.

e. Establish vascular access and **bolus cold (34°F)** normal saline, **30 mL/kg IV/IO (maximum 2 Liters)**.

f. If Ativan or Versed have not already been given, AND the patient is shivering, administer midazolam (Versed), **5 mg IV/IO** or **10 mg IM / IntraNasal.**

g. If the patient is agitated and/or in pain after midazolam (Versed) and the systolic BP remains at 90 mmHg or greater, administer morphine sulfate, **5 mg IV/IO.** If the patient continues with agitation and/or pain, the morphine may be repeated once in 5 minutes. The total amount of morphine given should not exceed 10 mg.

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AICD (AUTOMATIC IMPLANTABLE CARDIOVERTER/DEFIBRILLATOR)

Introduction

An Automatic Implantable Cardioverter/Defibrillator (AICD) is a device usually implanted in the soft tissues of the patient's chest wall.

It consists of:

- A lead system that senses cardiac electrical activity,
- Computer circuitry to analyze ECG rhythms,
- A power supply for the unit functions and generation of voltage, and
- A capacitor that stores and delivers shocks to the heart when indicated.

TREATMENT

AICD Discharges

1. Universal Initial Adult Patient Assessment/Care.
2. Airway Management
3. Monitor the ECG and SpO_2. Maintain SpO_2 at 94% or greater.
4. Establish vascular access.
5. Treat dysrhythmias per appropriate protocol(s).
6. Transport ALS to the closest appropriate hospital.

AICD Confirmed by ECG to be Discharging Inappropriately

1. Monitor ECG, verify rhythm, AND any inappropriate defibrillator discharge(s).
2. For repetitive discharges, consider Pain Management in the conscious patient.

Notes:

- Identification information of the AICD type is usually given to the patient as a wallet card. This information should accompany the patient to the hospital.
- CPR may be performed over an actively firing internal defibrillator without risk to the paramedic. If external defibrillation is required, avoid placing the defibrillator patches over the implanted device.

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Assessment of a patient's respiratory status is divided into two categories, evaluation of the upper airway and evaluation of the lower airway. The upper airway is defined as everything at or above the vocal cords, i.e., tongue, soft palate, throat, oropharynx, and vocal cords. The lower airway is defined as everything in the respiratory tree below the vocal cords including the trachea, bronchi and lungs.

Evaluation of the **upper airway** is an assessment of the openness or patency of the upper airway. Is the patient able to get air into their lungs? The patency of the upper airway may be compromised by an obstruction, either a foreign body, vomitus, or swelling of the tissues of the upper airway, e.g., allergic reactions, medication reactions, or infections. The upper airway may also be compromised in patients with an altered mental status, especially in those patients with a diminished or absent gag reflex. These patients are at risk for airway obstruction from the tongue falling back against the back of the throat or from aspirating their own vomitus.

Evaluation of the **lower airway** is an assessment of two elements:

1. Is the patient able to ventilate, i.e., to move air in and out of their lungs?

2. Is the patient able to oxygenate, i.e., is the blood moving through the lungs able to be perfused with oxygen so that the patient has adequate levels of oxygen in their blood?

Assessment of the **upper airway** is easier in the alert patient. An alert patient that is able to speak clearly and has no complaints regarding speaking, breathing or swallowing has a clear upper airway. The presence of gurgling, gasping, snoring, stridor, or an otherwise noisy airway/breathing suggests an upper airway obstruction. Application of a CO_2 monitor, if available, will allow assessment of a patient's ventilatory status and is particularly helpful in evaluating patients with altered levels of consciousness to determine whether their airway is in need of management.

A clinical assessment of the **lower airway** can be helpful, but the patient's recent and past medical history, as well as the medications that the patient is currently taking, may be more helpful in assessing the cause of any respiratory difficulties being experienced by the patient. The clinical assessment of the lower airway has several elements:

1. Assessment of the patient's mental status - (alert, confused, responsive to verbal stimuli, responsive to painful stimuli, or unresponsive).

2. Assessment of the patient's skin - warm/dry, pink, ashen or cyanotic (cyanosis can be central involving only the lips, or peripheral involving only the fingers).

3. Assessment of the chest wall and the ribs and muscles used to assist in moving air in and out of the chest – are there retractions or accessory muscles being used to assist in breathing? Is there abdominal breathing?

4. Listening for lung sounds - wheezing, a musical sound heard in either or both inspiration and expiration; rhonchi, a deeper coarse almost gargling sound; rales, a fine crackling sound similar to listening with an ear close to a glass of a carbonated beverage; and finally the absence of breath sounds on either one or both sides.

5. There is a continuum of options available to the healthcare provider in the management of a patient in apparent respiratory distress. These include the following listed from the least invasive to the most invasive:

a. Nasal Cannula
b. Simple Face Mask
c. NRB mask
d. BVM with reservoir
e. CPAP
f. Invasive Advanced Airways
    1) Supraglottic devices
    2) Oral ETT
    3) Cricothyrotomy

Least invasive

Most invasive

When initiating oxygen treatment of a patient, start with one of the choices from the above list that seems most reasonable. These questions can help you choose a starting point:

1. Is the patient conscious?

2. If the patient is conscious, are they able to speak, and are they able to cooperate with their treatment?

Regardless of which one you choose as your starting point, the key in managing these patients is repeated re-evaluations to determine whether the initial management chosen for a particular patient is the correct choice.

Invasive Airways are usually reserved for patients with severe respiratory distress with depressed levels of consciousness. After you have started oxygen treatment, the patient should be monitored by following their level of consciousness, their SpO_2 levels, and their capnography waveforms.

The level of consciousness is a good measure of whether the target organs are receiving enough oxygen. The SpO_2 levels are a measure of whether there is sufficient oxygen in the blood to feed the cells of the body. The capnography waveforms monitor the patient's ventilations or the ability to move oxygen in and out of the lungs.

The approach to managing a patient in apparent respiratory distress is to understand that whatever tool for administering oxygen is chosen as a starting point; if the patient is not oxygenating well, not ventilating well, or their level of consciousness falls, move on to another, more invasive level of oxygen administration. Consider oxygen treatment as administering a drug. You must reevaluate the patient periodically to determine whether the treatment provided to the patient is solving the patient's problem regarding oxygenation and ventilation.

Intubation of the patient accomplishes in a controlled manner oxygenation, ventilation, and protection of the airway in patients without a gag reflex.

Respiratory Adjuncts

Consider the options available to stabilize the patient when treating patients in respiratory distress. The presentation of a patient exhibiting signs of respiratory distress will change from minute to minute and requires an on-going evaluation of the patient and their response to your treatment. Oxygen at levels greater than what is present in the air is a medication. Below are the available choices when starting oxygen and some recommendations on which delivery system may be the appropriate starting point in a particular patient. If the patient does not respond to one choice, then go to the next level. When in doubt, it is always better to make a choice of the higher level of oxygen delivery.

The SpO_2 goal should be 94% or greater, except in patients with severe COPD or emphysema where the goal SpO_2 should be 88-92%.

1. **Nasal Cannula:** used with mild respiratory distress and with a pulse oximeter reading of less than 94%. Oxygen is not indicated for patients with ischemic chest pain who have a normal SpO_2 reading of 94% or greater.

2. **Non-Rebreather Mask (NRBM):** used with moderate respiratory distress, with normal respiratory rate and volume, and a pulse oximeter reading of less than 94%.

3. Nebulizer Mask: used with ipratropium/albuterol (DuoNeb) for acute bronchospasm (wheezes) as with asthma or allergic reaction, or with normal saline for control of upper airway edema (patient has stridor) as in children with croup.

4. **Positive Pressure Ventilation (PPV):** used for severe respiratory distress or when respirations are too slow or too shallow. Three adjuncts are available for PPV:

    a. **CPAP:** Best for Acute Pulmonary Edema. Patient must be awake and able to follow directions. CPAP may also be used for respiratory distress (COPD and Acute Bronchospasm) that does not respond to medication. CPAP may be applied to any patient with acute respiratory distress and a low SpO_2 even if the lung sounds are clear.

b. **Automatic Ventilator:** is used for PPV (positive pressure ventilation) in either the demand mode (assist patient with breathing that is too shallow) or manual mode (assist patient with breathing that is too shallow and/or too slow) or automatic mode (used with an advanced airway in apneic patients).

c. **BVM:** Used when CPAP or Automatic Ventilator is indicated, but not available. It may be used (without the mask) in conjunction with the use of advanced airways. Use enough BVM compression to visualize chest rise. If more volume is needed, use the Automatic Ventilator. If available, the manometer should be set at 10.

5. **Advanced Airway:** When the patient is in respiratory arrest, or prolonged PPV is required with a BVM or Automatic Ventilator, an advanced airway should be properly placed. There is a choice of a Supraglottic Airway or an oral Endotracheal Tube. In preparation for an advanced airway the patient should be given 100% oxygen while preparing for the procedure.

   a. **Supraglottic Airway:** is placed in the initial set of compressions in cardiac arrest. It can also be used in respiratory arrest and respiratory distress when there is no gag reflex. Supraglottic Airways are contraindicated when there is damaged tissue in the supraglottic area or there is a high risk of aspiration**. I-gel** is an example of a supraglottic airway.

   b. **Endotracheal Tube (ETT):** is **no longer** the primary airway in cardiac arrest. It is the airway of choice when there is a high risk of aspiration. It is also usually indicated when Supraglottic Airways are contraindicated.

   c. **Bougie:** if available, can be used to place an ETT. The bougie is placed through the vocal cords and the ETT is passed over the bougie into the trachea. A bougie can also be used to change the airway from an I-gel to an ETT. With an I-gel already properly placed, insert the bougie into the I-gel and through the vocal cords until you feel resistance. Holding the bougie in place, remove the I-gel and introduce the ETT with the 20 mm marker at the lips. Listen for bilateral breath sounds, and confirm placement with waveform capnography.

   d. If an advanced airway is established:

      1) Secure the advanced airway device.
      2) Maintain the patient's head and neck in the neutral position. Flexion and/or hyperextension may dislodge the device.
      3) If the patient's condition deteriorates and/or the SpO_2 drops to less than 94%, consider the following possibilities (**DOPE**):
         - **D**isplacement of the device. Check for neutral head/neck position
         - **O**bstruction of the device.
         - **P**neumothorax. Check for bilateral breath sounds.
         - **E**quipment failure. Check pop-off valve

TREATMENT

All patients should have Universal Initial Adult Patient Assessment / Care

Spontaneous Breathing Present but Impaired

(based on patient complaint or EMS findings):

1. Ensure a patent airway, and maintain proper head positioning (head- tilt/chin-lift), observing cervical spine precautions if indicated (modified jaw-thrust maneuver).
2. Evaluate/manage any suspected obstructions.
3. Suction as necessary.
4. Monitor pulse oximetry. Maintain a pulse oximeter reading equal to or greater than 94% (except in known COPD patients, maintain at 88%- 92%).
5. Administer supplemental oxygen, if indicated.
6. Listen to breath/lung sounds. If abnormal, refer to the appropriate protocol.
7. Has the patient's breathing improved? Is the SpO_2 equal to or greater than 94%?
   a. **If yes**, then continue with current airway management and transport.
   b. **If not**, consider more invasive airway management.
8. When appropriate and if available, assess non-intubated $ETCO_2$ and treat appropriately (Normal range is 35 to 45 mmHg).

Spontaneous Breathing Absent or Severely Compromised:

1. Ensure a patent airway, and maintain proper head positioning (head- tilt/chin lift), observing cervical spine precautions if indicated (jaw-thrust maneuver).
2. Evaluate/manage any suspected obstructions.
3. Suction as necessary.
4. Ventilate with 100% O_2. Use an Automatic Ventilator or a BVM with a reservoir @ 15 LPM. Consider CPAP if the patient is awake with severely compromised breathing.

5. If unable to see chest rise, reposition the head, and try again. If still unable to see chest rise, consider an airway obstruction, and manage appropriately.

    a. In respiratory/cardiac arrest, deliver 1 breath every 6 seconds (10-12 breaths per minute).

6. **Has the patient's breathing improved?** Is the SpO_2 equal to or greater than 94%?

    a. **If YES**, then continue with current airway management and transport.

    b. **If NOT**, insert a Supraglottic Airway device, or intubate the patient with an appropriate sized ETT, if indicated, and confirm and monitor proper placement with capnography.

7. If the patient has a **difficult airway** to open (Trismus – clenched jaw muscles) and/or has an active gag reflex:

    a. If you are **ABLE** to establish vascular access, intubate using amidate (Etomidate), **0.3 mg/kg IV/IO *slowly over 15-60 seconds* – OR** if amidate (Etomidate) is NOT available, administer midazolam (Versed), **10 mg IV/IO**.

    b. If you are **UNABLE** to establish vascular access, or amidate (Etomidate) is not available, administer midazolam (Versed), **10 mg IM / IntraNasal.**

8. Confirm correct tube placement, and secure properly. Intubation should only be attempted 2 times. **Use Supraglottic Airway if ETT intubation attempts are not successful.**

9. If patient becomes combative following a successful placement of an Advanced Airway:

    a. Reconfirm proper Advance Airway placement with $ETCO_2$ and SpO_2 measurements.

    b. Consider sedation with midazolam (Versed), **5 mg IV/IO**. May repeat once in 5 minutes as needed.

    c. If there is no vascular access, administer midazolam (Versed), **10 mg IM / IntraNasal or Buccal** (part the patient's lips and without opening the jaws, place the medication laterally between the teeth and cheek with **half of the dose on each side of the mouth**).

10. In cardiac arrest, ventilate once every 6 seconds (10-12 breaths per minute), attach a CO_2 sensor, if available, and monitor waveform capnography.

11. Consider insertion of an Oral Gastric Tube in situations where abdominal distention persists after successful endotracheal intubation.

12. Monitor and record $ETCO_2$ after successful placement of an Advanced Airway and again upon every patient transfer. Continuously monitor $ETCO_2$ in all patients with an Advanced Airway (Supraglottic or ETT).

13. If unable to place an advanced airway or deliver effective BVM breaths:

    a. Re-attempt BVM ventilation by inserting 2 NPAs (one in each nostril) and 1 OPA (if possible)

    b. Also, use additional EMS personnel:

        1) One medic uses both hands to maintain a good mask seal with a jaw thrust maneuver.
        2) Another medic uses both hands to deliver forceful BVM breaths.
        3) If needed, a third medic can assist with positioning the head and jaw thrust.

14. If unable to ventilate patient by any means, perform a cricothyrotomy if clinically warranted.

Partial Airway Obstruction

(Patient is able to speak, "I have something in my throat," but patient is in obvious respiratory distress.)

1. Allow patient to assume a position of comfort.

2. If patient will allow it, apply a NRBM with high flow oxygen.

3. Transport and monitor.

Complete Airway Obstruction in CONSCIOUS patients:

(Includes children 1 year and older according to AHA.)

1. Administer abdominal thrusts (use chest thrusts for obese or pregnant patients).

2. Repeat until cleared **or** the patient becomes unconscious.

Complete Airway Obstruction in UNCONSCIOUS patients with a pulse:

(Includes children 1 year and older according to AHA.)

1. Open the airway.

2. Attempt to ventilate. If unable to ventilate, reposition the head and try again. If still unable to ventilate, perform 5 cycles of 30:2 CPR.

3. Check the mouth, and if an object is visible, attempt to manually remove it or use suction. **DO NOT** perform blind sweeps on any patients Adult, Child, or Infant.

4. Attempt to ventilate. If still unsuccessful, repeat steps 2 & 3 above.

5. If the airway remains obstructed, use a laryngoscope to visualize the obstruction and attempt to remove the obstruction using the Magill forceps.

6. If still unable to remove the obstruction and unable to place an advanced airway or deliver effective BVM breaths:

   a. Re-attempt BVM ventilation by inserting 2 NPAs (one in each nostril) and 1 OPA (if possible)

      Also, use additional EMS personnel:
      - One medic uses both hands to maintain a good mask seal with a jaw thrust maneuver.
      - Another medic uses both hands to deliver forceful BVM breaths.
      - If needed, a third medic can assist with positioning the head and jaw thrust.

   b. If there is no success with the above procedure, perform an emergency cricothyrotomy if clinically warranted.

      OR, as a last resort:

   c. Intubate the trachea, and force the obstruction into one of the main stem bronchi with the ETT.

   d. Another option is to get an ETT and cut off the Murphy eye at the tip. Attach the ETT to suction with a Meconium Aspirator. Intubate until you meet resistance apply suction and attempt to remove the obstruction by withdrawing the ETT while maintaining suction.

Introduction

Alcohol is a CNS depressant, and Acute Alcohol Intoxication should be suspected in patients with an altered mental status and/or the patient exhibits any of the signs and symptoms listed below during the physical exam.

Signs & Symptoms

- Respiratory depression
- Malnourished
- Delirium tremens
- Red (bloodshot) eyes
- Slurred speech
- Smell of alcohol on the patient's breath

Assessment

1. Universal Initial Adult Patient Assessment and Care

2. Adults with no history of or clinical evidence on examination of recent head trauma **AND** who are believed to be under the influence of drugs and/or alcohol can be placed into one of three categories:

   a. **Green**: **All of these must be present**

      1) Alert and able to respond to questions
      2) Can state name (if on a university or high school campus ask for student ID# and campus address)
      3) Able to stand and walk under own power

   b. **Yellow**: **If one or more of these behaviors are exhibited**

      1) Unable to walk and stand under own power
      2) Vomiting
      3) Difficulty speaking or identifying self (if on a university or high school campus, patient doesn't know name, student ID# or campus address)
      4) Violent or threatening behavior

   c. **Red**: **If one or more of these behaviors are exhibited**

      1) Person is passed out, unconscious, or unresponsive.
      2) Breathing seems slow and irregular; difficulty breathing
      3) Vomiting blood
      4) An injury requiring medical attention is present.

3. Police may be called to evaluate situations of apparently intoxicated individuals and may subsequently call for a dispatch of fire department units.

   a. Typically fire department units will not be dispatched on **Green** category patients but if dispatched will respond accordingly.

   b. All **Yellow** category patients ***should*** be transported.

   c. All **Red** category patients ***shall*** be transported.

4. Transportation guidelines:

   a. **Green** category patients can be transported BLS when appropriate. The patient can sign AMA (against medical advice) if the patient refuses transportation and is of legal age.

   b. **Yellow** category patients ***should*** be transported via an ALS unit to the closest appropriate facility, unless patient can be left under care of responsible adult.

   c. **Red** Category patients ***shall*** be transported via an ALS unit to the closest appropriate facility.

TREATMENT

1. **Green**: **Walking and talking**

   a. Establish baseline vitals, level of consciousness, glucose testing, rule out possible drug ingestion/overdose. Try and talk the patient into going to an appropriate hospital. Any refusals shall be signed and witnessed.

   b. If the patient refuses and police will not employ the Marchman Act (FS397.6811), fire department crews will have patient sign AMA when of legal age.

2. **Yellow**: **Slurred speech, trouble walking straight line, increased reaction times. Disoriented to Person/Place/Time/Event.**

   a. Establish baseline vitals, level of consciousness, glucose testing, rule out possible drug ingestion/overdose.

   b. Establish vascular access.

   c. Treat with dextrose 50% (D50W) if indicated.

   d. **This patient SHOULD be transported to the closest appropriate facility.**

e. Once the decision has been made by the OIC that the patient needs to be seen by a physician, and if the patient refuses, police will utilize the Marchman Act (FS397.6811), and fire department crews will transport to the closest appropriate facility.

3. **Red**: **Unconscious / Death**

   a. Airway Management

   b. Check for pulse, monitor for arrhythmias, and treat if indicated.

   c. Supplemental Oxygen, BVM/supraglottic/intubate, as indicated.

   d. Check blood glucose, treat with dextrose 50% (D50W) if indicated.

   e. Establish IV / IO.

   f. CPR / AutoPulse if indicated.

   g. Transport to closest appropriate facility.

Delirium tremens (DTs), a sign of Alcohol Withdrawal, may present as anything from fine tremors to tonic-clonic seizures. Delirium Tremens usually begins 6-24 hours after a decrease in the patient's usual intake of alcohol. If the patient is agitated and/or combative treat per the Agitated Patient protocol.

If the patient is uncooperative and a threat to themselves or to others, they can be held and treated under the Marchman Act (FS397.6811).

Consider concurrent drug overdose. Drugs and alcohol can be a deadly combination.

Individuals that have consumed highly caffeinated alcoholic drinks may not demonstrate the true level of their alcohol intoxication. Appropriate management of these individuals might include transport to the closest appropriate facility for further observation.

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Mild Allergic Reaction

Treatment is aimed at making the patient comfortable and continually assessing for the development of respiratory distress and/or anaphylaxis.

Mild reactions include:
- Local/systemic redness (flushing)
- Itching and/or urticaria (hives)
- Periorbital edema
- Conjunctivitis (red, bloodshot eyes)
- Rhinitis (runny nose)
- Mild bronchospasm (wheezing)

TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. Administer diphenhydramine (Benadryl), **50 mg *slow* IVP or IM.**

3. If bronchospasm, administer ipratropium/albuterol (DuoNeb), **0.5 mg/3 mg** of premixed single unit dose via nebulizer at 6 LPM. May repeat once if needed.

Anaphylaxis (Severe Allergic Reaction)

Anaphylaxis is a condition resulting from a severe allergic reaction. The patient will present in circulatory shock and/or acute respiratory distress as a result of angioedema and/or acute bronchospasm. **EVALUATION OF LUNG SOUNDS AT THIS TIME IS CRITICAL** in determining severity of the allergic reaction.

Severe reactions include:
- Angioedema (localized swelling, particularly mouth, tongue, or throat)
- Laryngeal edema (voice changes, difficulty speaking)
- Hypotension
- Respiratory failure (low SpO_2 or high CO_2)
- Shock

TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. If available, administer one injection from the **Epi-Pen** into the lateral thigh or upper arm for a moderate to severe anaphylactic reaction **OR** administer epinephrine 1:1,000, **0.3 mg IM (0.3 mL)** for asthma or allergic reactions.

3. In addition to epinephrine in the hypotensive patient, administer normal saline, **500 mL IV fluid bolus**. May repeat once if needed.

4. If patient remains hypotensive (BP less than 90 mmHg systolic **OR** with no radial pulse), OR they develop acute upper airway obstruction within 3-5 minutes after the IM epinephrine and normal saline fluid bolus, administer epinephrine 1:10,000, **0.1 mg (1 mL) IV/IO**. May repeat every 3 to 5 minutes as needed to a **maximum dose of 0.5 mg (5 mL)**.

5. Administer diphenhydramine (Benadryl), **50 mg *slow* IVP or IM.** Benadryl is slower in onset, but longer in duration than epinephrine and should take effect just as epinephrine is losing effectiveness.

6. If the hypotension persists, administer premix dopamine, **400 mg in 250 mL D5W** (1,600 mcg/mL), start at **30 drops per minute** and titrate until BP is equal to or greater than 90 mmHg systolic.

7. If bronchospasm is not relieved by the administration of the first dose of epinephrine, administer ipratropium/albuterol (DuoNeb), **0.5 mg/3 mg** of premixed single unit dose via nebulizer at 6 LPM. May repeat once if needed.

Dystonic Reaction

Dystonia or extrapyramidal symptoms (EPS) are the result of side effects related to a number of anti-psychotic and anti-emetic drugs.

Signs and symptoms include:

- Protrusion of the tongue
- Jaw/teeth clenching
- Facial grimacing
- Deviation of the head to one side
- Sustained upward deviation of the eyes
- Extreme arching of the back
- Or rarely, laryngospasm

Suspect possible dystonia in the patient exhibiting these signs and who has taken any of the following medications**:**

- Haloperidol (Haldol)
- Perphenazine (Trilafon)
- Thiothixene (Navane)
- Trimethobenzamide HCL (Tigan)
- Fluphenazine HCL (Prolixin)
- Prochlorperazine (Compazine)
- Trifluoperazine (Stelazine)
- Metoclopramide (Reglan)

NOTE: The individuals taking any of these medications may have been prescribed benztropine mesylate (Cogentin) to combat these above untoward effects.

TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. Administer diphenhydramine (Benadryl), **50 mg *slow* IVP or IM**.

Angioedema

Localized edema-swelling usually of the lips, tongue, and/or throat.

Patients taking blood pressure medications of the class called angiotensin-converting enzyme inhibitors (ACE-inhibitors) e.g.:

- Captopril (Capoten)
- Enalapril (Vasotec, Renitec)
- Zofenopril (Bifril, Zofenil, Zofepril, Zopranalol)
- Ramipril (Altace, Tritace, Ramace, Ramiwin)
- Quinapril (Accupril)
- Perindopril (Coversyl, Aceon)
- Lisinopril (Listril, Lopril, Novatec, Prinivil, Zestril)
- Benazepril (Lotensin)
- Fosinopril (Monopril)

can present with localized angioedema particularly of the lips, tongue, and throat; and partial upper airway obstruction with stridor, rather than bronchospasm with wheezing.

During transport, these patients should be observed for any developing or increasing respiratory difficulty and/or changes in their voices that may represent swelling involving the pharynx/vocal cords.

This condition can occur in patients who are taking these medications for a short period of time and in those patients who have been taking these medications for many years. The swelling can be severe enough to block the upper airway.

TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. **This is NOT an allergic reaction; however, some patients may benefit from treatment with epinephrine and Benadryl.**

   a. Administer epinephrine 1:1,000, **0.3 mg (0.3 mL) IM**.

b. Administer diphenhydramine (Benadryl), **50 mg slow IVP or IM**. Benadryl is slower in onset, but longer in duration than epinephrine and should take effect just as epinephrine is losing effectiveness.

3. Changes in the tone of voice or a muffled speech may be the first sign of upper airway obstruction in these patients.

4. These patients require careful monitoring and protection of the upper airway. On occasion these patients will require endotracheal intubation. Unless the need for airway intervention is emergent, any airway intervention should be under a controlled environment at the hospital.

5. All of these patients should be transported to the nearest appropriate hospital.

6. Monitor $ETCO_2$ and SpO_2 during transport.

BACK PAIN

Understanding the medical problem that a patient with back pain is experiencing is made easier by the anatomical location of the back pain. Upper back pain or thoracic spine pain is more often the result of some internal condition. Lower back pain or lumbar pain is most often the result of trauma and is muscular or skeletal in origin. Pain located in the posterior flanks is usually related to the kidneys that lie just below the soft tissues in that area.

A good history taken from the patient will provide much more insight than most clinical exams.

Questions to Ask:

1. Is there a history of similar pain?

    a. Patients with chronic lower back pain will experience frequent exacerbations of their back pain. Understanding what medications the patient is taking will help in understanding the chronic nature of a complaint.

    b. Even patients with chronic lower back pain can have acute events. It is important to ask about any new motor weakness or sensory changes in the lower extremities. Is the patient having bowel or bladder incontinence or unable to urinate?

2. Is there a history of recent trauma?

    a. Was there a significant mechanism of injury?

    b. Are there other associated injuries?

3. When did the pain begin? Sudden or gradual onset?

4. Has the pain moved? Into the abdomen, chest, or down the legs?

5. Is there anything that the patient does that makes the pain worse, for example, movement or breathing?

6. Are there other associated new symptoms that began with the back pain, for example, fever, cough, difficult or painful urination, SOB, nausea or vomiting?

Lower Back Pain

1. **Musculoskeletal pain**

2. **Sciatica** (pinched nerve)

Flank Pain

1. **Kidney infection** - usually one-sided and associated with fever, nausea, vomiting and urinary difficulties.

2. **Kidney stones** - usually one-sided, may radiate into the lower abdomen and associated with nausea and vomiting, may have blood in the urine.

Upper Back Pain

1. **Dissecting aortic aneurysm** - classically associated with chest pain that penetrates through to the back and is tearing in nature.

2. **Acute Coronary Syndrome (ACS)** - can present with chest and left shoulder pain that radiates into the left scapular area.

3. **Acute cholecystitis** - (gallbladder stones/disease) may radiate from the RUQ of the abdomen, under the right ribs in front, around into the mid- back on one side or both sides.

4. **Pulmonary embolus** - blood clots in the lung that can present with a sudden onset of upper back pain associated with SOB.

TREATMENT

1. Universal Initial Adult Patient Assessment/Care.

2. Monitor vital signs.

3. If the patient is hemodynamically unstable (has a low blood pressure), administer normal saline, **500 mL IV bolus**. Re-evaluate the vital signs after the patient has received the fluids. May repeat once if needed.

4. Consider Pain Management as indicated.

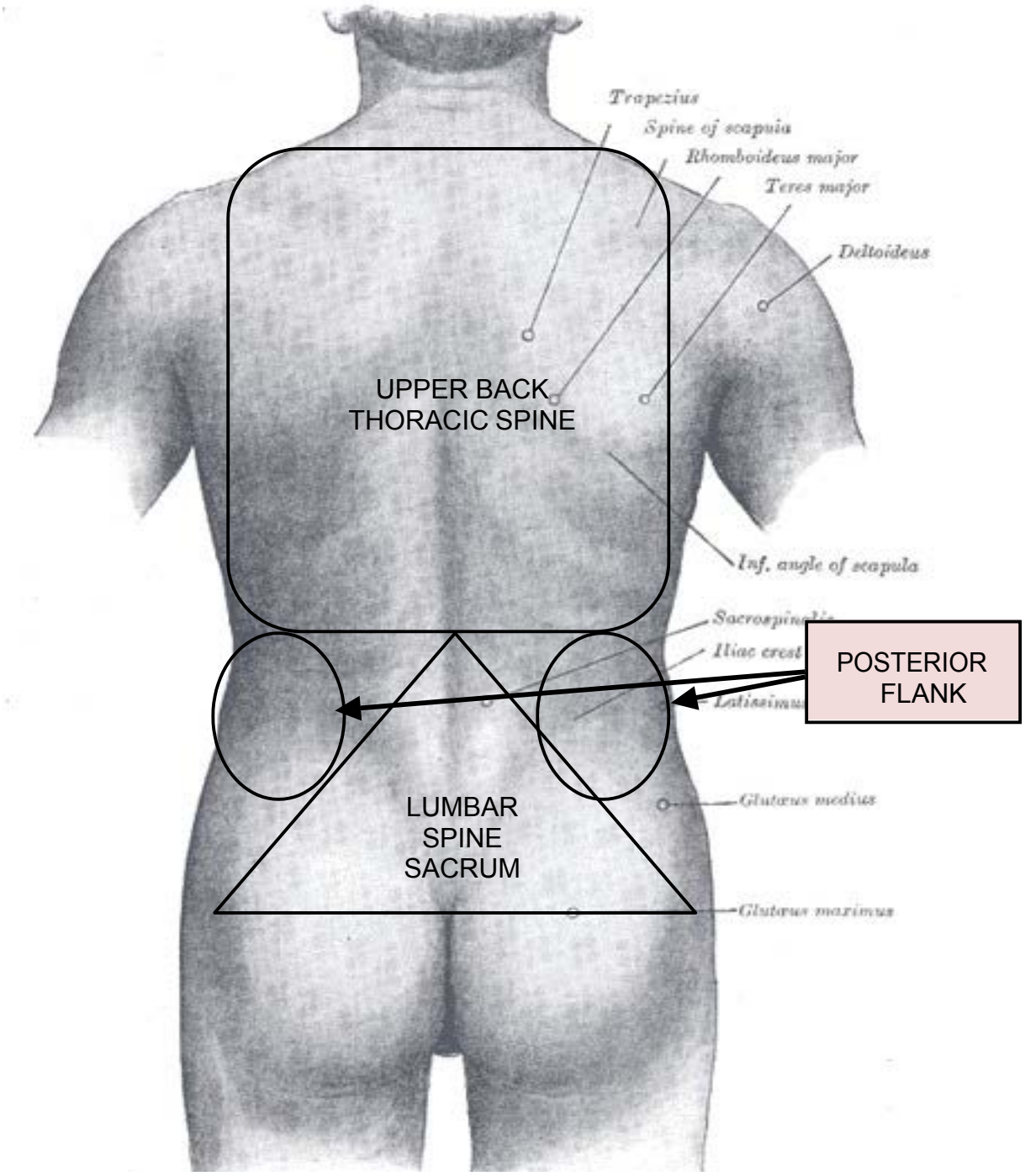
5. With acute **upper** back pain:
   a. Any male 35 years or older needs a 12-lead ECG.
   b. Any female 45 years or older needs a 12-lead ECG.

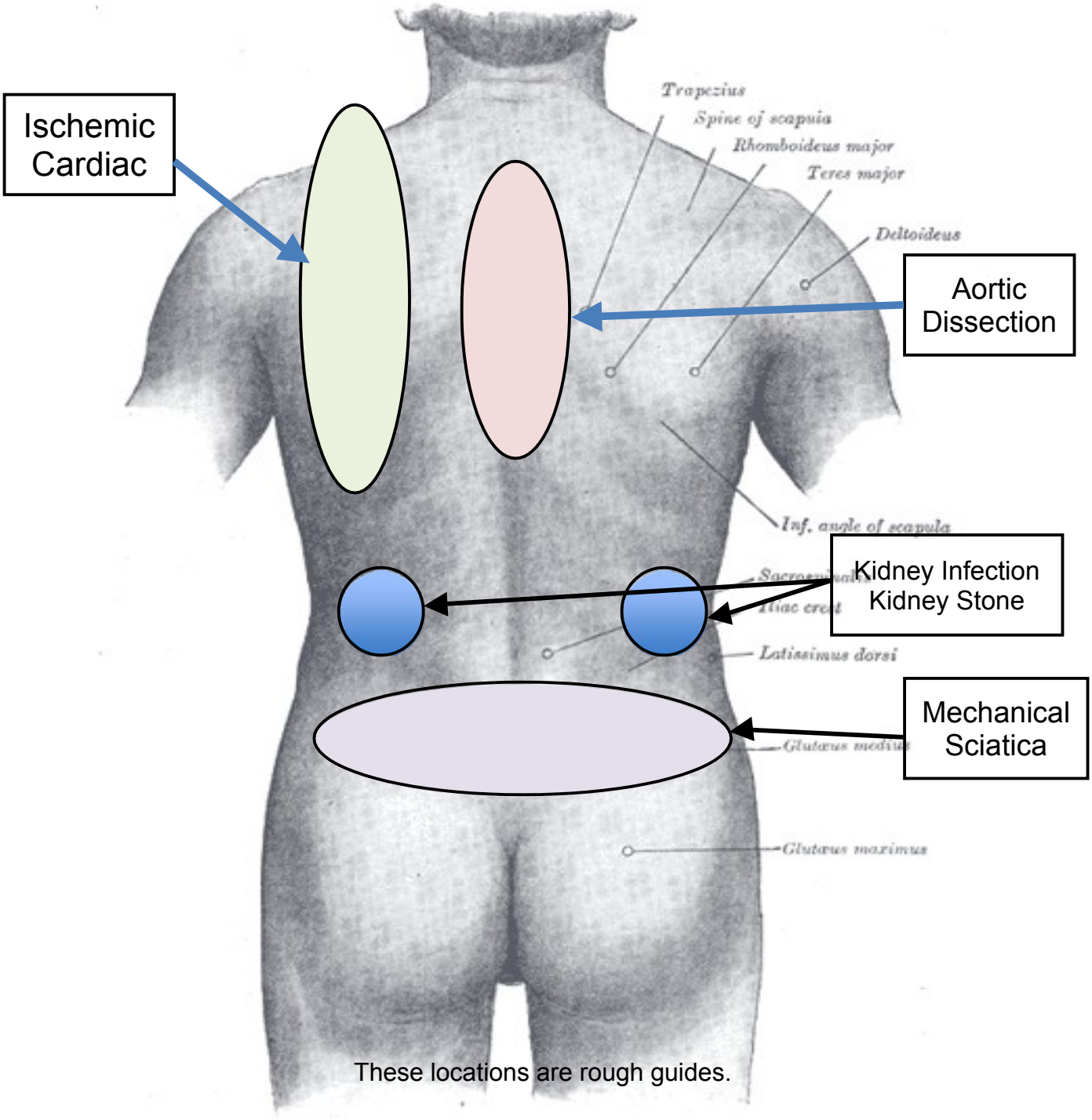
6. With acute **lower** back pain, perform a neurological exam evaluating motor and sensory function in the lower extremities.

7. If the back pain is a result of a traumatic injury, follow the appropriate trauma protocol.

8. If there is associated shortness of breath or a low SpO_2, follow the appropriate airway management protocol.

9. If there is associated nausea, administer ondansetron (Zofran) ODT, **8 mg PO**.




Ischemic Cardiac
Aortic Dissection
Kidney Infection
Kidney Stone
Mechanical Sciatica
Trapezius
Spine of scapula
Rhomboideus major
Teres major
Deltoideus
Inf. angle of scapula
Latissimus dorsi
Glutæus maximus
These locations are rough guides.

Per FS 401.445, Fire Rescue personnel may examine, treat, and/or transport a patient without their informed (verbal) consent under certain conditions where the patient is incapacitated. Refer to Consent and Refusal.

Baker Act

Involuntary Examination, Florida Mental Health Act ("The Baker Act", FS 394.463)

1. A person may be taken to a receiving facility for involuntary examination if there is reason to believe that the person has a mental illness and because of his or her mental illness:

   a. The person has refused voluntary examination after conscientious explanation and disclosure of the purpose of the examination; **or**

   b. The person is unable to determine for himself or herself whether examination is necessary; **and**

   c. Without care or treatment, the person is likely to suffer from neglect or refuse to care for himself or herself; such neglect or refusal poses a real and present threat of substantial harm to his or her well-being; and it is not apparent that such harm may be avoided through the help of willing family members or friends or the provision of other services; **or**

   d. There is a substantial likelihood that without care or treatment the person will cause serious bodily harm to himself or herself or others in the near future, as evidenced by recent behavior.

2. The Baker Act can only be imposed by the following individuals:

   a. A Judge
   b. A sworn law enforcement officer
   c. A physician, clinical psychologist, or psychiatric nurse, mental health counselor, marriage and family therapist, or clinical social worker.

3. For the purposes of patient exam, treatment, or transportation, the Baker Act will not be considered unless it is clearly understood by all parties that the patient has met the required criteria above (**1.a–d**).

4. Reasonable force (restraint) may be applied. If restraint is necessary, **DO NOT** place the patient in a prone (face down) position. Use a supine or recovery position.

5. Careful documentation on the Patient Care Record, including the name and agency of the person imposing the Baker Act will be required.

6. The Baker Act preserves the rights of individuals, including informed consent, the right to refuse treatment, privacy, confidentiality, communications, and/or abuse reporting.

7. **The Baker Act is NOT:**

   a. To be used to enforce medical procedures.

   b. A substitute for the Marchman Act (substance involved).

   c. To be used for punitive purposes or as a method of arbitrary control.

8. Patients under the Baker Act have the right to refuse any testing, taking of vital signs, blood draws, IV fluids, medications, and other treatments.

   a. However, clinical judgment must be used when the patient's wellbeing is at risk. When a patient's immediate health is at risk for life or limb and the patient is refusing any health care interventions, for example, as above, the healthcare provider should take the appropriate steps to manage the situation so that care may be rendered to the patient.

   b. This should include attempting to convince the patient, family, or friends of the need for healthcare interventions.

   c. If there is no success in verbally persuading the patient, controlled, appropriate steps including restraints may be employed to administer testing and treatment to these patients.

   d. All of the above should be documented in the patient's medical record.

Marchman Act

1. The Marchman Alcohol and Other Drug Services Act may be implemented when a patient has threatened or inflicted physical harm toward themselves or others while under the influence of drugs or alcohol.

2. Additionally, the implementation of the Marchman Act may be considered if it appears that the individual's judgment is so impaired by alcohol or drugs that while in this state they cannot make appropriate judgments as relates to their health and well-being.

3. The Florida State Statute is cited below.

   e. 397.675 Criteria for involuntary admissions, including protective custody, emergency admission, and other involuntary assessment, involuntary treatment, and alternative involuntary assessment for minors, for purposes of assessment and stabilization, and for involuntary treatment.—A person meets the criteria for involuntary admission if there is good faith reason to believe the person is substance abuse impaired and, because of such impairment:

      1) Has lost the power of self-control with respect to substance use;

         AND/EITHER

      2) Has inflicted, or threatened or attempted to inflict, or unless admitted is likely to inflict, physical harm on himself or herself or another;

         OR

      3) Is in need of substance abuse services and, by reason of substance abuse impairment, his or her judgment has been so impaired that the person is incapable of appreciating his or her need for such services and of making a rational decision in regard thereto;

      4) However, mere refusal to receive such services does not constitute evidence of lack of judgment with respect to his or her need for such services.

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For any reptile or spider bite whether known or unknown if venomous, request the Miami-Dade County Venom 1 Unit.

GENERAL TREATMENT

1. Universal Initial Adult Patient Assessment / Care.
2. Monitor ECG and SpO_2.
3. Attempt to identify the insect, reptile, or animal that caused the injury if it is safe to do so. If unknown or it is a known venomous reptile bite or spider bite, **have dispatch contact Miami-Dade Fire Rescue Venom 1**. If **Venom 1** is providing anti-venom, they respond to the receiving facility, not to the scene. **Ensure Venom 1 knows your transport destination**.
4. Be alert for the development of any anaphylactic reaction and treat according to the Systemic Reactions Protocol.
5. Immobilize the affected area. Keep the patient calm.
6. Remove and secure in a safe location any rings, bracelets, jewelry, etc. that may be on the injured area before swelling prevents easy removal of these items.
7. Do not apply tourniquets or cold packs. Do not make incisions around the area, or attempt to suction the area.
8. Contact the **Poison Control Center, 1-800-222-1222**, for assistance in managing specific envenomations.
9. Maintain SpO_2 of 94% or greater.
10. Establish vascular access with a saline lock on the unaffected extremity.

North American Pit Vipers

(Includes rattlesnakes, copperheads, and cottonmouths/moccasins)

1. For any known or suspected bite, alert **Venom 1**.

2. Evaluate for specific signs/symptoms:

   - Distinct "fang marks" or puncture wounds.
   - Swelling and pain at the site.
   - Weakness, nausea, and vomiting.
   - Muscle twitching.
   - Numbness and tingling around the face and head.
   - Metallic taste, change in taste sensation.
   - Hypotension and shock.
   - Allergic reactions.

3. Mark the end point of the initial swelling and the time directly on the skin. This should be repeated every 15 minutes if applicable. The time of the bite should also be recorded on the Patient Care Record.

4. If possible, keep the injured area low, and splint to minimize movement.

5. Provide rapid transport, and alert the receiving facility of the specific snake.

Coral Snake Bites

Patients who have been bitten by a Coral Snake may not have any symptoms for a few hours. If there is a reliable history of a possible Coral Snake bite, the patient should be transported to the hospital for further observation and evaluation. Coral snakes do not have fangs but have small milk teeth. The typical story is that a patient is bitten on the finger or toe and the patient has to shake the snake off.

"Red next to yellow can kill a fellow"
(Coral Snake)

"Red next to black is a friend of Jack"
(King Snake, non-poisonous)

1. For any known or suspected bite, alert **Venom 1**.

2. Evaluate for specific signs/symptoms:

   - Most signs and/or symptoms may be delayed up to 12 hours and are related to the type of venom, which is a neurotoxin; therefore, CNS disturbances may be observed.
   - Stroke-like signs and/or symptoms.

3. Respiratory paralysis may develop. Be prepared to manage respiratory distress and provide ventilation assistance.

4. Wrap an ace bandage snugly around the affected limb starting at the site of the bite and working towards the heart (proximal), wrapping the entire extremity. Wrap the ace bandage as snug as you would for a sprained ankle. Monitor distal circulation by capillary refill and/or pulse to ensure the wrap does not become a tourniquet.

5. If possible, keep the injured area low and splint to minimize movement.

6. Provide rapid transport and alert the receiving facility of the specific snake.

Exotic Snakes

(Includes cobras, vipers, mambas, etc.)

In the case of an exotic bite, it is imperative to identify the snake's scientific name or at least its common name. Signs and symptoms will vary greatly among different species. **Have Dispatch contact Venom 1 immediately.**

Brown Recluse Spider Bites

1. Evaluate for specific signs/symptoms:
   - Small bleb (blister) surrounded by a white ring.
   - Localized pain, redness and swelling.
   - Localized tissue necrosis.
   - Most patients are unaware that they were bitten until the area becomes ischemic and ulcerates.

2. There is no specific pre-hospital treatment.

Black Widow Spider Bites

1. For any known or suspected bite, alert **Venom 1**.

2. Evaluate for specific signs/symptoms:

   - Immediate localized pain.
   - Progressive muscle spasms (usually beginning in the back and abdomen).
   - Rigid abdomen.
   - Seizures.
   - Paralysis.

3. To reduce severe muscle spasms, if indicated, administer midazolam (Versed), **5 mg *slow* IV** or **10 mg IM / IntraNasal**.

4. If patient still has severe muscle spasms after Versed, and the systolic BP remains at 90 mmHg or greater, administer morphine sulfate, **5 mg IV/IO**. If patient continues to complain of severe muscle spasms, the morphine may be repeated every 5 minutes as indicated. **Do not exceed at total dose of 20 mg morphine**.

5. Consider Pain Management in the conscious patient.

6. Provide rapid transport. The patient may require specific Antivenin injections.

Scorpion Stings

1. Evaluate for specific signs/symptoms:

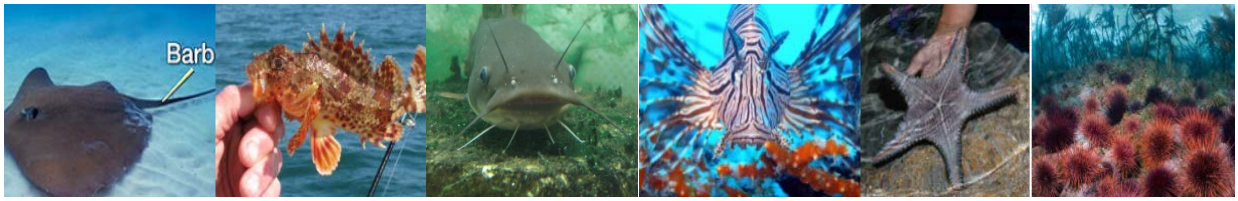
   - Mild to sharp pain which often progresses to numbness.
   - Salivation.
   - Slurred speech.
   - Muscle twitching.
   - Allergic reaction.

2. Consider Pain Management in the conscious patient.

3. Provide rapid transport if symptomatic.

Marine Animal Envenomations

(Includes Stingrays, Scorpion fish, Catfish, Lionfish, Starfish, and Sea Urchins)



1. Immerse the puncture(s) in non-scalding hot water as warm as tolerable (110- 113°F) to achieve pain relief. Transport should not be delayed. Immersion in non-scalding hot water may be continued during transport, as it may take 30-90 minutes for total relief.

2. If the spine is still embedded, **do not attempt removal in the field**.

3. Consider Pain Management in the conscious patient.

Marine Animal Stings

(Includes stings from Jellyfish, Man-O-War, Sea Lice, Hydroids and Fire Coral)

1. Evaluate ABCs for evidence of an allergic reaction, severe inflammation and swelling that might compromise airway and breathing.

2. Attempt to remove any visible tentacles using 4x4s with a double-gloved hand. Avoid contact with unprotected skin as the stinging cells are activated on contact, even after the animal has been out of the water for hours.

3. If available, apply a vinegar (acetic acid) soaked gauze (if available) to the affected areas for 30 minutes.

4. Consider Pain Management in the conscious patient.

5. After there has been pain relief, attempt to remove any remaining tentacles by using shaving cream and gentle scraping action with a wooden tongue depressor (if not available use something with a rigid edge like a credit card/driver's license).

Bees/Wasps/Hornets/Yellow Jackets/Ant Stings

Most patients will have significant pain with these bites. Some patients may develop localized allergic reactions to these bites and/or some may develop anaphylactic reactions from the stings of these insects.

1. Apply local ice packs.

2. Consider Pain Management in the conscious patient.

3. If the patient develops an allergic reaction and/or an anaphylactic reaction refer to the appropriate protocol.

Bradycardia is a heart rate less than 60 beats per minute (bpm). The patient's presenting signs and symptoms may or may not be related to their low heart rate. Further assessment, including patient history and medications, is needed.

Symptomatic bradycardia means that the patient's signs and symptoms are related to the bradycardia. Symptomatic bradycardia patients are categorized as either **STABLE** (monitor and transport) or **UNSTABLE** (requires immediate treatment).

STABLE bradycardia patients have adequate perfusion on exam.
Signs and symptoms may include:

- Generalized Weakness / Dizziness
- Nausea
- Mild anxiety

UNSTABLE bradycardia includes at least 2 of the following:

- New onset of Altered Mental Status
- Syncope
- Respiratory distress / CHF
- Chest pain
- Low blood pressure
- Signs / Symptoms of Shock
- STEMI

TREATMENT OF UNSTABLE BRADYCARDIAS

1. Universal Initial Adult Patient Assessment / Care.

2. As with all patients, use a team approach in the management of patients with an unstable bradycardia. One paramedic should start an IV while another paramedic applies the external pacemaker. Begin external pacing as soon as possible. Do not delay pacing while waiting for vascular access or for atropine to take effect.

3. Ensure adequate ventilations. Check rate and depth. Remember that hypoxia/ inadequate ventilations are a common cause of bradycardia.

4. Administer atropine sulfate, **0.5 mg IVP/IO**. This may be repeated every 2-3 minutes until a **maximum dose of 0.04 mg/kg or 3 mg** for the average adult is reached.

5. If the patient is conscious and not tolerating the pain from pacing, consider pain management.

6. If the above treatments are successful in raising the patient's heart rate above 60 bpm, but the **BP remains less than 90 mmHg**:

   a. Administer a **fluid bolus** of normal saline, **500 mL IV/IO**. May repeat once as needed.

   b. If the BP still remains less than 90 mmHg **after** fluid administration, administer premix dopamine, **400 mg in 250 mL D5W** (1,600mcg/mL) **IV/IO**, start at **30 drops per minute** and titrate until BP is equal to or greater than 90 mmHg systolic.

   c. Consider other causes of shock, but do not delay transport.

SPECIAL CIRCUMSTANCES

1. If the bradycardia is the result of a **Beta Blocker or Calcium Channel Blocker excess / OD:**

   a. Administer atropine sulfate, **1 mg IV** every 2-3 minutes to a maximum of 3 mg.

   b. If patient is bradycardic and hypotensive administer calcium chloride, **1 gram IV *slowly over 1 minute***. Flush with at least **20 mL** of normal saline. This may be repeated in 2-3 minutes if indicated.

   c. If the patient remains hypotensive after the administration of calcium chloride, administer normal saline, **500 mL IV bolus**, may repeat once if patient remains hypotensive.

2. If the bradycardia is the result of an **Organophosphates Overdose**:

   a. Administer atropine sulfate, **2 mg IVP every 5 minutes** until drying of the secretions (atropinization) occurs, or **2 mg IM** with an Atropen Auto Injector if available.

4. In a patient with an **acute inferior wall myocardial infarction** and a bradycardia due to a high-grade **Mobitz II** or a **Third Degree Heart Block** (complete heart block), external pacing is preferred as the first treatment.

5. If the patient has a **heart rate of 40 bpm or less** but is otherwise stable, apply the external pacemaker pads without turning the pacer on and observe for any signs/symptoms suggesting that the patient is unstable.

6. Patients with bradycardia will frequently demonstrate **ventricular ectopy**. This ventricular ectopy (rate dependent PVC) is an escape beat that the heart uses to attempt to maintain adequate blood flow. These patients should **NOT** be given lidocaine or amiodarone for these ventricular ectopic beats but should be given atropine or external pacing to raise the heart rate. Frequently, raising the heart rate will cause the ventricular ectopies to disappear.

7. Patients with **heart transplants** and bradycardia will not respond to atropine and need external pacing to correct the heart rate.

8. **Dialysis patients** may develop high levels of serum potassium (hyperkalemia). These patients present with a wide complex QRS and bradycardia. In addition to atropine and external pacing, calcium chloride and sodium bicarbonate may be administered.

    a. Administer sodium bicarbonate,**1 mEq/kg IV/IO**. May repeat with 0.5 mEq/kg in 10 minutes.

    b. If no response, flush the IV access line with at least **20 mL** of normal saline and then administer calcium chloride, **1 gram IV/IO *slowly over 1 minute***.

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INITIAL PATIENT ASSESSMENT

1. Check for responsiveness, breathing, and pulse.

2. If the patient is unresponsive, determine presence or absence of a pulse.

3. Start chest compressions and continue uninterrupted until the monitor or AED is ready to assess the rhythm. Primary attention is paid to immediate continuous chest compressions and assessment of the patient's cardiac rhythm.

4. Defibrillator pads should be applied without interrupting compressions.

5. **Quickly determine whether the patient has a shockable rhythm, and if so, immediately DEFIBRILLATE.**

6. If defibrillated, resume compressions immediately after, and manage according to the appropriate protocol(s).

7. If patient **does not** have a shockable rhythm, resume compressions and manage according to the appropriate protocol(s).

8. If a pulse returns (**Return Of Spontaneous Circulation – ROSC**), Initiate Post Resuscitation Care.

9. If no **ROSC**, refer to Death in the Field Protocol.

CHEST COMPRESSIONS

1. In cardiac arrest, the **emphasis is on continuous chest compressions with adequate rate and depth**, rather than on ventilations.

2. **PUSH HARD. PUSH FAST. ALLOW FULL CHEST RECOIL. MINIMIZE INTERRUPTION OF COMPRESSIONS.**

   a. **Compress** at a rate of **100-120 compressions per minute.**

   b. **One adult cycle** is **2 minutes of compressions.**

   c. Perform **2 minutes** of CPR between each rhythm check. **DO NOT CHECK FOR A PULSE UNLESS THERE IS AN ORGANIZED RHYTHM ON THE MONITOR AND THERE HAS BEEN AN INCREASE IN THE CO_2 LEVEL OF 10 MM OR MORE.**

   d. Change the compressor (with manual compressions) after every 2 minutes of CPR.

e. Compressions must be delivered on a **HARD SURFACE.**

f. Minimize interruptions of chest compressions to less than 10 seconds.

g. **DO NOT INTERRUPT COMPRESSIONS** to establish vascular access or to administer medication.

h. Once the **Advanced Airway** is **in place**, attach the **CO_2** sensor and ventilate once every 6 seconds (10-12 breaths per minute). **DO NOT INTERRUPT COMPRESSIONS** to ventilate.

i. **Monitor waveform capnography (CO_2 levels).**

3. If an automatic compression device (AutoPulse) is available, do not apply until **2 minutes of manual compressions** have been performed.

   a. Do not interrupt a 2-minute cycle of compressions to place the device.

   b. Set up and position the device during compressions and place it to begin the next 2-minute cycle of compressions.

   c. For optimal performance, and easy transport, consider using a carry-all or backboard.

4. The monitor or AED should be charged while continuing chest compressions in order to minimize the time from stopping compressions and delivering the shock as well as to minimize any interruption in chest compressions.

5. Immediately resume chest compressions after a shock is delivered without pausing to check for rhythm/pulse.

AIRWAY MANAGEMENT

1. If there is no pulse, and the patient is not breathing, continue compressions and start ventilations with a BVM until ready to place an Advanced Airway (if any difficulty ventilating, consider an airway obstruction).

   a. **Advanced Airway:** When the patient is in respiratory arrest, or prolonged PPV is required with a BVM or an Automatic Ventilator, an advanced airway should be properly placed. There is a choice of a Supraglottic Airway or an oral Endotracheal Tube. In preparation for an advanced airway the patient should be given 100% oxygen while preparing for the procedure.

1) **Supraglottic Airway:** is placed in the initial set of compressions in cardiac arrest. It can also be used in respiratory arrest and respiratory distress when there is no gag reflex. Supraglottic Airways are contraindicated when there is damaged tissue in the supraglottic area or if there is a high risk of aspiration**.** I-gel is an example of a supraglottic airway.

2) **Endotracheal Tube (ETT):** is **no longer** the primary airway in cardiac arrest, however use of an ETT is acceptable on the initial **Advanced Airway** attempt and if not successful then immediately go to a **Supraglottic Airway**. It is the airway of choice when there is a high risk of aspiration. It is also usually indicated when Supraglottic Airways are contraindicated.

b. If you have not already done so, attach an $ETCO_2$ sensor and monitor wave capnography during resuscitation efforts.

c. Ventilate once every 6 seconds (10-12 breaths per minute) without interrupting compressions to ventilate. Avoid excessive ventilation.

2. **What is the best approach for airway management in the patient with a cardiac arrest?**

a. In a patient with a **witnessed/unwitnessed cardiac arrest,** the emphasis is on continuous compressions and early defibrillation if a shockable rhythm is present.

b. Charge the defibrillator as soon as it is ready. Determine the rhythm and deliver a shock if appropriate.

c. Airway management can be deferred to the next cycle of compressions and can be safely managed with the quick placement of a Supraglottic Airway.

d. There are situations where endotracheal intubation might be the preferred initial airway management intervention. These include, but are not limited to:

1) Suspected upper airway inhalation burns
2) Severe facial trauma
3) Presence of vomitus in the mouth.

e. If you are going to use endotracheal intubation:

1) Attempt endotracheal intubation **once** after defibrillating and/or checking the rhythm.

2) If the vocal cords are not immediately visible, or the single endotracheal tube intubation attempt fails, then immediately resume compressions and quickly insert a Supraglottic Airway without interrupting compressions.

3) Attach an $ETCO_2$ sensor and monitor waveform capnography during resuscitation efforts to ensure proper placement of the Advanced Airway, and also for an increase of 20 mm or greater in the CO_2 level, which is frequently an indicator of ROSC.

f. Early ventilation is appropriate in the following situations:

1) Respiratory Arrests
2) Pediatric Arrests
3) Near drowning
4) Asystole / PEA
5) Unwitnessed arrest

VASCULAR ACCESS

1. In cardiac arrest, the preferred vascular access should be **IO.** However, if paramedic judgment suggests IV access is obtainable and can be performed within 30-60 seconds, then IV access is acceptable and should only be attempted once.

2. As a last resort, and only if both IO and IV access are not successful, the **Advanced Airway route** may be used.

   a. Only epinephrine, atropine sulfate and naloxone (Narcan) can be given down the **Advanced Airway**, at **2 times** the IO/IV dose diluted with normal saline to a total of 10 mL. After the drug has been administered, provide 5 rapid ventilations to enhance the drug delivery into the lungs. Repeat epinephrine every 3 to 5 minutes during the arrest**.**

   b. If available, use the MADett™ for the 7.5 ETT.

3. Medications should be given early in the 2-minute compression cycle to allow time for them to circulate before pulse checks and/or other interventions.

AED

1. Attach an AED as soon as possible.

   a. **Avoid placing defibrillator pads over a pacemaker, internal defibrillator or transdermal medication patch.**

   b. Do not interrupt compressions to place defibrillator pads.

2. Start CPR, **turn on the AED,** and attach defibrillator pads during CPR.

3. **Stop CPR** as soon as you are ready to identify the rhythm and follow AED prompts**.**

4. If a **shockable rhythm** is determined by the AED, the unit will charge to the appropriate joules.

   a. Verbally and visually "clear the patient" and **have the compressor discharge the AED once**.

   b. Immediately resume CPR for 2 minutes. Do NOT perform a pulse or rhythm check. After 2 minutes of CPR the AED will prompt you to repeat the above steps.

   c. Repeat this sequence for shockable rhythm as long as a pulseless and shockable rhythm persists or until a monitor/defibrillator and ALS are available.

5. If the patient is pulseless and a **NON-shockable rhythm** is present, i.e., "**shock is NOT advised**," perform CPR until a monitor/defibrillator and ALS are available.

6. If a **pulse is present (ROSC), check breathing,** then initiate Post Resuscitation Care.

MONITOR/DEFIBRILLATOR

1. Immediately start CPR.

2. Turn on the monitor/defibrillator.

3. Attach defibrillator pads during compressions and charge the monitor/defibrillator to **appropriate joules**.

   a. **Avoid placing defibrillator pads over a pacemaker, internal defibrillator, or transdermal medication patch.**

4. Determine whether the patient has a shockable rhythm. If so, **immediately DEFIBRILLATE**

5. Perform **2 minutes** of CPR between each rhythm check.

6. **DO NOT CHECK FOR A PULSE UNLESS THERE IS AN ORGANIZED RHYTHM ON THE MONITOR AND THERE HAS BEEN AN INCREASE IN THE CO_2 LEVEL OF 10 MM OR MORE.**

7. If no shockable rhythm follow the appropriate protocol.

INITIAL RECORDED RHYTHM

Ventricular Fibrillation (VF) / Pulseless V-Tach

1. If the ECG indicates **VF/ Pulseless V-Tach** **DEFIBRILLATE (#1)** and immediately resume CPR for 2 minutes without checking for a pulse or rhythm change.

DEFIBRILLATION JOULES	ZOLL	LIFEPAK	MRX
SHOCK #1	200J	360J	150J
SHOCK #2	200J	360J	200J
SHOCK #3+	200J	360J	200J

2. After 2 minutes of CPR check rhythm/pulse.

   a. If the rhythm is **NOT** shockable, check for pulse (no longer than 10 seconds) and if absent, resume CPR and treat as PEA/Asystole.

   b. If the monitor indicates **VF** or **Pulseless V-Tach**, **DEFIBRILLATE (#2)** and immediately resume CPR for 2 minutes without checking for a pulse or rhythm change.

3. Within the first minute after resuming CPR, administer epinephrine 1:10,000, **1 mg IO/IV (10 mL)** [or epinephrine 1:1,000, **2 mg (2 mL) diluted with normal saline to a total of 10 mL via Advanced Airway** if IO/IV access cannot be established. After the drug has been administered, provide 5 rapid ventilations to enhance the drug delivery into the lungs. Complete the 2 minutes of CPR without checking for a pulse or rhythm change. Repeat epinephrine every 3 to 5 minutes during the arrest**.**

4. After completing 2 minutes of CPR, check rhythm.

   a. If the rhythm is **NOT** shockable, check for pulse (no longer than 10 seconds) and if absent, resume CPR and treat as PEA/Asystole.
   b. If the monitor indicates **VF/Pulseless V-Tach**, **DEFIBRILLATE (#3)** and immediately resume 2 minutes of CPR without checking for a pulse or rhythm change.

5. Within the first minute after resuming CPR, administer amiodarone, **300 mg IOP/IVP** and complete the 2 minutes of CPR without checking for a pulse or rhythm change**.**

6. After completing 2 minutes of CPR, check rhythm.

   a. If the rhythm is **NOT** shockable, check for pulse (no longer than 10 seconds) and if absent resume CPR and treat as PEA/Asystole.

b. If the monitor indicates **VF/Pulseless V-Tach**, **DEFIBRILLATE (#4)** and immediately resume 2 minutes of CPR without checking for a pulse or rhythm change.

7. Within the first minute after resuming CPR, administer epinephrine 1:10,000, **1 mg IO/IV (10 mL)** [or epinephrine 1:1,000, **2 mg (2 mL) diluted with normal saline to a total of 10 mL via Advanced Airway** if IO/IV access cannot be established. After the drug has been administered, provide 5 rapid ventilations to enhance the drug delivery into the lungs. Complete the 2 minutes of CPR without checking for a pulse or rhythm change. Epinephrine may be repeated every 3-5 minutes during the arrest.

8. After completing every 2 minute cycle of CPR, check rhythm, and if the patient remains in a shockable rhythm, **DEFIBRILLATE**.

   a. If the rhythm is not shockable, check for pulse (no longer than 10 seconds) and if absent resume CPR and treat as PEA/Asystole.

   b. If the monitor indicates **VF/Pulseless V-Tach**, if available consider **DOUBLE SEQUENTIAL DEFIBRILLATION* (#5)** and immediately resume 2 minutes of CPR without checking for a pulse or rhythm change.

      ***Double Sequential Defibrillation** – **If 2 defibrillators are available** on scene, **DEFIBRILLATE** at 400 joules if two Zolls or two MRXs, or at 560 joules if one MRX plus one LifePak AED.

      1) New research and clinical experience suggest that maximum energy levels using two defibrillators simultaneously (sequentially) may be effective when standard defibrillation levels have failed to convert.

      2) Attempt a double sequential defibrillation after the 4 initial defibrillations have failed:

         a) One set of pads will already be placed in either the Anterior/Apex position or Anterior/Posterior position.
         b) The second set of pads should be placed in the alternative position.
         c) Ideally, the same person will hit both "SHOCK" buttons at the same time
         d) Alternatively, the discharges should be done with an oral signal.
         e) All subsequent defibrillations should be at the same maximum joules.
         f) Ensure that ED personnel know that maximum shocks have been delivered.

9. Within the first minute after resuming CPR, administer second dose of amiodarone, at **150 mg IO/IVP.** Complete the 2 minutes of CPR without checking for a pulse or rhythm change.

10. After 10 minutes of cardiac arrest, consider sodium bicarbonate, **1 mEq/kg IO/IV**. May repeat after an additional 10 minutes at **0.5 mEq/kg IO/IV**.

    Sodium bicarbonate may be administered earlier in the protocol if a preexisting metabolic acidosis is suspected such as:
    - Near Drowning
    - Insulin dependent patients, e.g., Diabetic Ketoacidosis
    - Renal Dialysis
    - Psychiatric medication OD
    - Cocaine intoxications
    - Patients with Excited Delirium

11. Consider administration of magnesium sulfate, **4 grams IO/IV** in patients with:
    - Torsades de Pointes
    - Recurrent ventricular fibrillation (V-Fib that recurs more than 5 seconds after a successful defibrillation).
    - Persistent ventricular fibrillation not responsive to above medications.

12. If a pulse returns (**Return Of Spontaneous Circulation – ROSC**), Initiate Post Resuscitation Care.

13. If no **ROSC**, refer to Death in the Field Protocol.

Pulseless Electrical Activity (PEA) and Asystole

(Including Agonal and Idioventricular rhythms)

PEA is a clinical situation and not a specific rhythm on the monitor/defibrillator. It is defined as a clinical situation where there is an organized rhythm other than ventricular tachycardia on the cardiac monitor in a patient without a palpable carotid pulse.

The treatment for a patient with **PEA** will depend on the rhythm that presents on the monitor.

Patients with a pacemaker may present with **asystole** and the rhythm strip will demonstrate pacer spikes without capture.

Asystole was once thought to be the "Death" rhythm. Now we understand that it frequently follows **PEA**. Therefore the approach to Asystole, as in PEA, is CPR, epinephrine, and to evaluate for and treat the underlying cause(s) (**Hs** and **Ts**). The best indicator of a viable asystole is a CO_2 reading of 20, with good CPR, on waveform capnography.

All of these patients need oxygen. Listen to the lungs bilaterally, as patients with a Tension Pneumothorax can present with a PEA situation.

NORMAL / FAST and NARROW Rhythm with PEA

1. Immediately resume CPR for 2 minutes.

2. During compressions, administer epinephrine 1:10,000, **1 mg IO/IV (10 mL)** [or epinephrine 1:1,000, **2 mg (2 mL) diluted with normal saline to a total of 10 mL via Advanced Airway** if IO/IV access cannot be established. After the drug has been administered, provide 5 rapid ventilations to enhance the drug delivery into the lungs. Repeat epinephrine every 3 to 5 minutes during the arrest**.**

3. Is this patient hypovolemic? Is there a recent history of fluid loss? Administer a normal saline, **500 mL IO/IV bolus**. May repeat once as needed.

SLOW and WIDE Rhythm with PEA

1. Immediately resume CPR for 2 minutes.

2. During compressions, administer epinephrine 1:10,000, **1 mg IO/IV (10 mL)** [or epinephrine 1:1,000, **2 mg (2 mL) diluted with normal saline to a total of 10 mL via Advanced Airway** if IO/IV access cannot be established. After the drug has been administered, provide 5 rapid ventilations to enhance the drug delivery into the lungs. Repeat epinephrine every 3 to 5 minutes during the arrest**.**

3. Administer atropine sulfate, **1 mg IO/IV**. However atropine is **NOT** indicated for PEA occurring as 2nd Degree Mobitz II and 3rd Degree AV Blocks.

4. Consider External Pacing.

5. Kidney dialysis patients may present with a slow and wide cardiac rhythm without a carotid pulse. These patients may have high serum levels of potassium.

   a. Administer sodium bicarbonate, **1 mEq/kg IO/IV**. May repeat in 10 minutes at **0.5 mEq/kg IO/IV**.

   b. If no response, flush the IO/IV access line with at least with 20 mL normal saline and then administer calcium chloride, **1 gram IO/IV slowly over one minute.**

SLOW and NARROW Rhythm with PEA

1. Immediately resume CPR for 2 minutes.

2. During compressions, administer epinephrine 1:10,000, **1 mg IO/IV (10 mL)** [or epinephrine 1:1,000, **2 mg (2 mL) diluted with normal saline to a total of 10 mL via Advanced Airway** if IO/IV access cannot be established. After the drug has been administered, provide 5 rapid ventilations to enhance the drug delivery into the lungs. Repeat epinephrine every 3 to 5 minutes during the arrest**.**

3. Administer atropine sulfate, **1 mg IO/IV**. However atropine is **NOT** indicated for PEA occurring as 2nd Degree Mobitz II and 3rd Degree AV Blocks.

4. Is this patient hypovolemic? Is there a recent history of fluid loss? Administer a normal saline, **500 mL IO/IV bolus**. May repeat once as needed.

5. Consider External Pacing

ASYSTOLE

1. Confirm Asystole in at least two leads. You must attach limb leads to perform this procedure.

2. Immediately resume CPR for 2 minutes.

3. During compressions, administer epinephrine 1:10,000, **1 mg IO/IV (10 mL)** [or epinephrine 1:1,000, **2 mg (2 mL) diluted with normal saline to a total of 10 mL via Advanced Airway** if IO/IV access cannot be established. After the drug has been administered, provide 5 rapid ventilations to enhance the drug delivery into the lungs. Repeat epinephrine every 3 to 5 minutes during the arrest**.**

4. **Pacing is NOT recommended for Asystole**.

5. If no **ROSC** and $ETCO_2$ remains equal to or less than 10 mmHg, refer to Death in the Field Protocol.

6. **PEA,** if not treated, will progress to **Asystole**. Therefore determining and correcting the underlying causes of PEA, also applies to Asystole.

With all PEA rhythms remember the 6Hs and 5Ts.

- **Hypovolemia:** normal saline fluid challenge(s) / dopamine **/** rapid transport.
- **Hypoxemia:** confirm adequacy of oxygenation.
- **Hydrogen Ion Acidosis:** administer sodium bicarbonate.
- **Hypothermia:** warm the patient.
- **Hyperkalemia:** sodium bicarbonate, calcium chloride.
- **Hypoglycemia:** administer dextrose 50% (D50W).
- **Tension Pneumothorax:** perform needle decompression.
- **Toxins / OD:** contact Poison Control 1-800-222-1222 for antidote. [e.g., calcium channel blocker overdose, administer calcium chloride.
- **Thrombus:** (Coronary or Pulmonary) Clot Buster in the ER.
- **Tamponade**: (Cardiac) normal saline fluid challenge(s).
- **Trauma**: (Hypovolemia) normal saline fluid challenge(s)

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The following protocol is designed as an approach to the conscious patient presenting with a primary complaint of chest pain, chest discomfort, and/or atypical signs/symptoms of a cardiac nature (e.g., shortness of breath from CHF).

The following information needs to be considered in their management:

1. Past medical history

    - The best indicator that the patient's current chest pain is cardiac in origin is a history of previous coronary artery disease.
    - Diabetics are at increased risk for heart disease regardless of their age, but frequently present with atypical signs and symptoms of SOB and/or general malaise without chest pain.

2. Patient's age

    - Males younger than 35 years and women less than 40 years are less likely to have cardiac disease but still need to have an ECG performed. The initial assessment and approach to these patients needs to be the same for all chest pain patients. The treatment may be different in these patients according to the ECG findings.

3. Patient's current medications

    - Cardiac medications
    - Cocaine and methamphetamine use place even young patients at risk for coronary artery disease.

12-lead ECGs should be performed but not only limited to situations when patients present with any of the following complaints:

- Chest pain or discomfort
- Shortness of breath
- Weakness or fatigue, unexplained diaphoresis, nausea and/or vomiting
- Syncope, altered mental status
- Upper abdominal pain
- Fast or slow heart rates / cardiac dysrhythmia / PVC's > 6/min
- Drug or toxic ingestions
- Post cardiac arrest
- Acute Stroke patients
- Any significantly ill patient.
- Electrical/lightning injuries.
- Non-traumatic jaw or arm pain
- Unexplained (non-traumatic) back pain
- Known or suspected Carbon Monoxide poisoning

While patients with **ST Segment Elevation Myocardial Infarction (STEMI)** require rapid transport to the appropriate STEMI center, it is important to remember that patients with **Acute Coronary Syndrome (ACS)** who do not have ST segment elevation on their ECG's are seriously ill and need appropriate care and transport. Even patients with normal ECGs may be having a heart attack.

1. Call a **STEMI ALERT immediately** if:

   a. ST elevation in 2 or more contiguous leads.

   b. J point elevation greater than 2 mm in leads V2 and V3* and 1 mm or more in all other leads.
      1) *2.5 mm in leads V2 and V3 in men less than 40 years of age.
      2) *1.5 mm in leads V2 and V3 in all women.

   These patients should be transported to the appropriate STEMI/PCI (Percutaneous Coronary Intervention) facility.

2. **Acute Coronary Syndrome (ACS)** should be suspected when a patient presents with one or more of the following

   a. Acute cardiac chest pain whether it is relieved or not by nitroglycerin

   b. ECG findings that are not STEMI, but may represent cardiac ischemia and/or heart damage include the following:
      1) ST segment depression
      2) T wave inversion

   c. A common presentation of myocardial ischemia in the elderly is shortness of breath, while chest pain is less frequent. Other patient populations, for example: women, the elderly, and diabetics, may present with sweating, nausea, and/or shortness of breath, and general malaise with no chest pain. Inferior Wall STEMIs (II, III, avF) commonly present with upper abdominal pain, belching, nausea.

   d. An atypical presentation, which the patient identifies as similar to a previous experience (e.g., jaw pain or left shoulder pain), which was diagnosed as ACS.

TREATMENT for PRESUMED / POSSIBLE CARDIAC SOURCE of CHEST PAIN

1. Refer to Universal Initial Adult Patient Assessment / Care

2. Administer chewable baby aspirin, **324 mg** (4 baby tablets) **PO** (orally). Have the patient chew and swallow four baby aspirin.

a. Aspirin is also indicated for the patient that is a confirmed STEMI, by 12-lead.

b. Prior to administration, assess the patient for contraindications to aspirin administration that include:
   1) Known allergy to aspirin (must have had significant allergic symptoms such as, wheezing or tongue and facial swelling, or urticaria and hives).
   2) Active GI bleeding.

3. Perform a 12-Lead ECG and report pertinent findings to the receiving facility and/or medical control. Call a **STEMI ALERT immediately** if a STEMI has been identified. **Obtaining a 12-Lead should not delay transport of an unstable cardiac patient.**

4. Patients with **Inferior Wall MIs** on their ECGs should have a **V4R** obtained to determine whether they are having a **Right Ventricular Infarction**. In these patients, IV access should be established **before** administration of medications. Patients with evidence of an Inferior Wall MI and right ventricular infarction **(positive ST segment elevation in V4R)**, should receive a normal saline, **500 mL IV/IO bolus** regardless of the blood pressure.

5. All Acute Coronary Syndrome patients should receive continuous cardiac monitoring, oxygen if SpO_2 is less than 94%, and vascular access.

6. Nitroglycerin (NTG)

   a. If the patient continues to have chest pain, and/or presents with an Acute MI, administer nitroglycerin, **0.4 mg SL**. May repeat nitroglycerin every 3-5 minutes until complete relief of chest pain, as long as systolic BP remains above 90 mmHg.

   b. Patients with a systolic BP less than 90 mmHg should **NOT** receive nitroglycerin.

   c. Patients with a systolic BP between 90 and 100 mmHg should have vascular access established before administering the nitroglycerin.

   d. Patients with a **Right Ventricular MI** that have been identified with 1mm ST segment **elevation in the V4R lead** on the 12-Lead ECG may become hypotensive with administration of nitroglycerin **and/or** morphine sulfate **and/or** furosemide (Lasix). If these patients become hypotensive, administer an **additional** normal saline, 500 mL IV/IO bolus, and lay patient flat, if tolerated.

   e. **DO NOT administer nitroglycerin if a patient is known or suspected to have taken any sexually enhancing drugs and/or drugs prescribed for pulmonary hypertension. Examples include: Viagra/Revatio (sildenafil) or Levitra (vardenafil) within the past 24 hours, or Cialis/Adcirca (tadalafil) within the past 72 hours. There may be other sexually enhancing drugs that apply.**

Revatio is prescribed for pulmonary hypertension.
NOTE: Try to question the patient discretely when asking about sexually enhancing medication use.

7. Morphine sulfate

   a. If needed for pain relief OR if the patient is very agitated or continues to have significant chest pain after nitroglycerin has been administered, and as long as the systolic BP remains above 90 mmHg, morphine sulfate, **5 mg IV** may be given for pain relief. If after 5 minutes there is not adequate pain relief, and the pain score remains 6 or more on a scale of 1 to 10, an additional **5 mg IV** may be given. This may be repeated as needed for continued pain, until the **total of the multiple doses given does not exceed 20 mg**.

   b. The calculation for the **initial dose of morphine is 0.1 mg/kg**. Therefore, a larger individual weighing **more than 100 kg (220 lbs) may need a larger starting dose of morphine**. Again, this may be repeated as needed for continued pain until the total of the multiple doses given does not exceed 20 mg.

   c. Individuals **70 years of age or older** may be started at **lower doses** of morphine, **for example 2.5 mg IV**.

8. Normal saline

   a. To treat hypotensive STEMIs, administer normal saline, **500 mL IV bolus** and reassess the BP.

   b. If the patient's BP improves with the initial fluid challenge, but does not reach 90 mmHg systolic, administer a **second** bolus of normal saline, **500 mL IV** and reassess the BP.

9. Dopamine

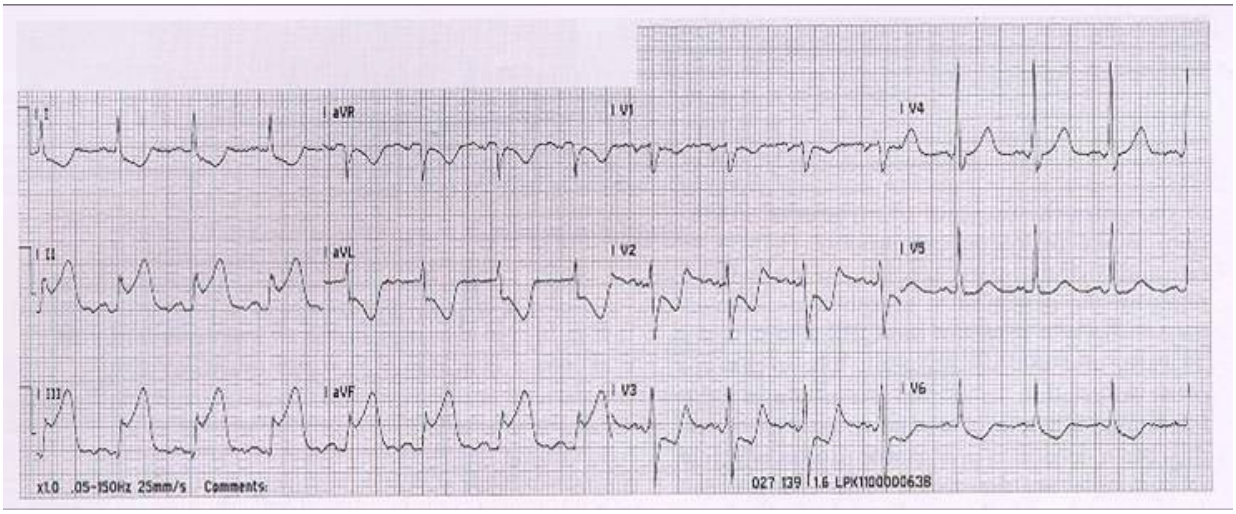
   a. If fluid challenges are not effective and the systolic BP still remains below 90 mmHg, administer premix dopamine, **400 mg in 250 mL D5W** (1,600 mcg/mL) **IV/IO**, start at **30 drops per minute** and titrate until BP is equal to or greater than 90 mmHg systolic.

10. Lidocaine

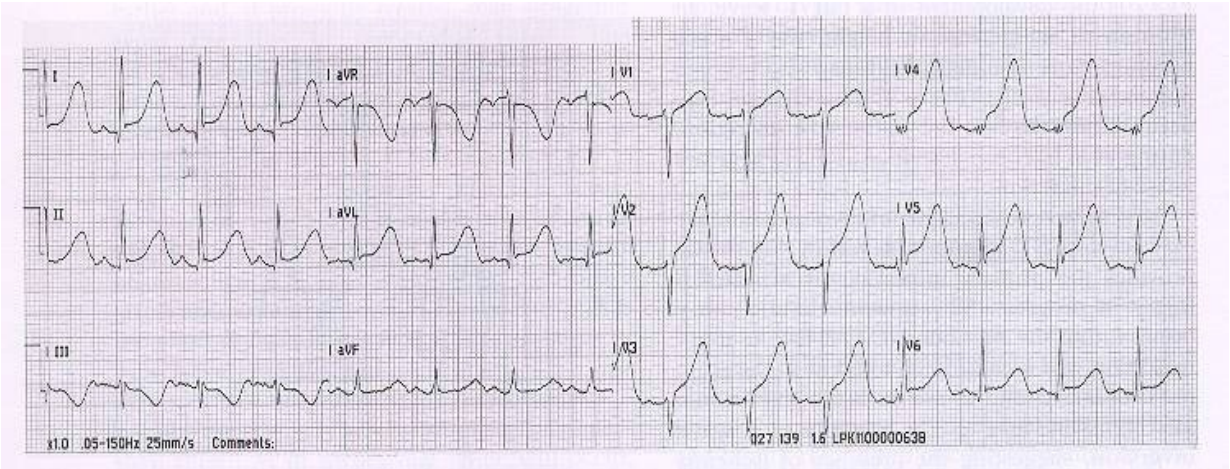
    a. In the chest pain patient who demonstrates **frequent** (more than 6/minute) **or multifocal PVCs** that do not resolve following the use of NTG and oxygen, administer lidocaine, **1 mg/kg IV/IO**.

An Acute Myocardial Infarction is usually due to the presence of a clot (thrombus) in one or more of the Coronary Arteries. Below are some examples of the different ECG findings that suggest a **STEMI**.

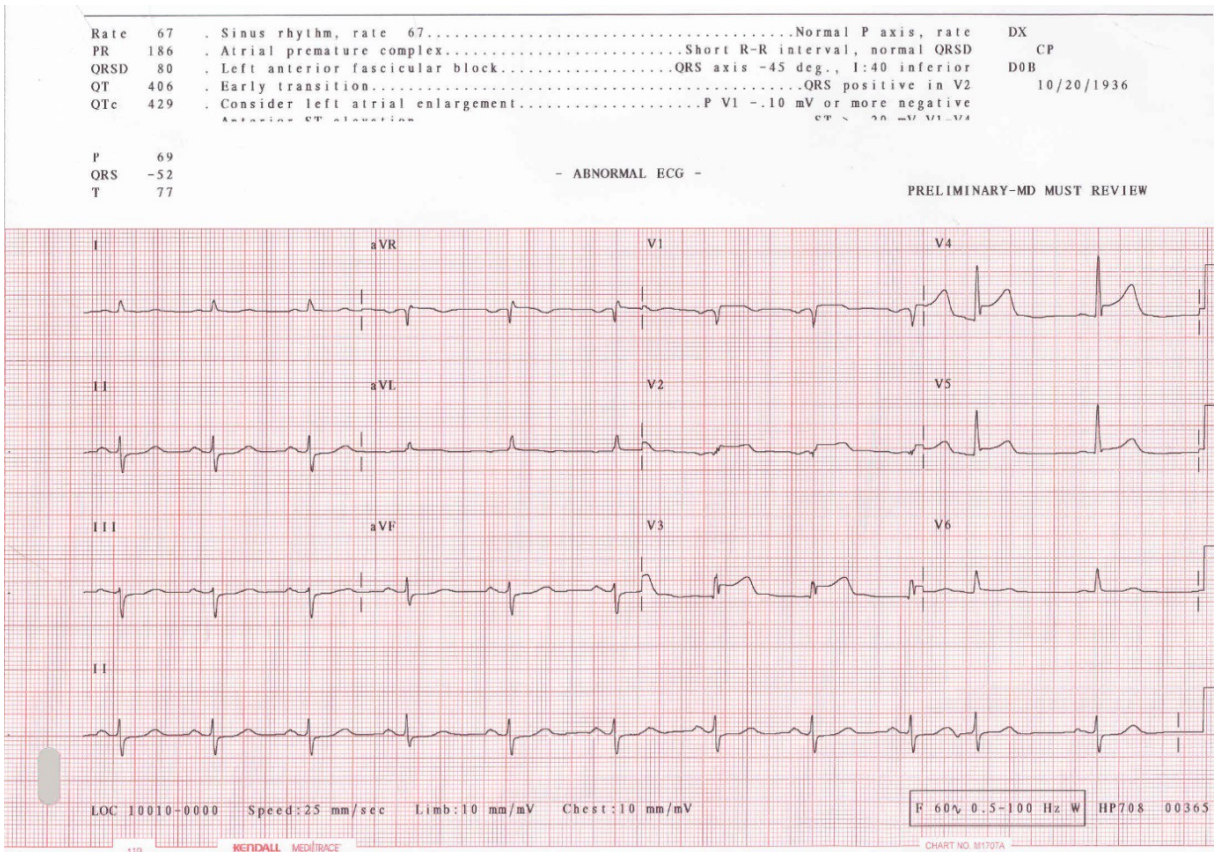
INFERIOR WALL STEMI (LEADS II, III & AVF)



ANTERIOR (LEADS V1-V4) LATERAL WALL (I, AVL, V5, V6) STEMI



ANTERIOR WALL MI (LEADS V1-V4)



Most STEMIs are the result of a blood clot blocking coronary artery flow to a portion of the heart. The most effective treatment is to open the blocked artery (or arteries). This is done most effectively in the Coronary Catheterization Lab or by administering a clot buster. **"Time is heart muscle"**, and the longer it takes to open the coronary artery, the more damage there is to the heart muscle. This damage can mean major disability or death for your patient.

It is critical that in cases when an Acute MI (Heart Attack) is suspected, that you:

1. Perform a 12-Lead ECG as soon as possible.
2. Call a **STEMI Alert** immediately upon knowledge/identification of a STEMI.
3. If available, transmit the 12 lead to the STEMI center.

This means you do NOT wait to "Transport" to call the STEMI Alert or rely on dispatch to relay the information. You notify dispatch to time stamp the Alert, but contact the STEMI Hospital directly.

Early notification of the STEMI Alert allows the Coronary Catheterization Lab to assemble their team and prepare their equipment. This is a time saving measure critical to the patient. Success or failure may depend on the minutes you save by identifying the STEMI as soon as possible with a 12 Lead ECG and then alerting the Cath Team with a STEMI Alert.

Patients that achieve ROSC after a cardiac arrest should have a 12-lead ECG if possible. If this patient's ECG demonstrates a STEMI, **call a STEMI Alert immediately**, and the patient should be transported to a STEMI center.

Other causes of chest pain

There may be other significant causes of chest pain that are not cardiac in origin but still need immediate medical attention.

- Aortic dissection
- Pneumothorax
- Pulmonary emboli
- Sickle cell disease with chest pain
- Acute pericarditis
- Acute abdominal emergencies
- Primary pulmonary hypertension (maybe on erectile dysfunction agent)

TREATMENT

1. Refer to Universal Initial Adult Patient Assessment / Care
2. Perform 12-Lead ECG.
3. Consider Pain Management.

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Introduction

Patients or Firefighters who become ill or are being evaluated for a possible Carbon Monoxide (CO) exposure will be monitored on a **CO Monitor (i.e., Rad 57)** as close to the time of exposure as possible. The CO level is used to determine transport and treatment options.

There is no pre-hospital test for CN and treatment is based on a high clinical index of suspicion for CN poisoning. In the setting of a building fire, consider possible Cyanide (CN) exposure, particularly in firefighters who develop an altered level of consciousness and/or hemodynamic instability.

Signs and Symptoms for CO/CN Poisoning

1. The signs and symptoms for Carbon Monoxide poisoning are non-specific:

   - Dyspnea
   - Headache
   - Chest pain
   - Muscle weakness
   - Nausea
   - Vomiting
   - Dizziness
   - Altered mental status
   - Death

2. Cyanide poisoning may result from inhalation, ingestion, or dermal exposure. Prior to administration of Cyanokit, smoke inhalation victims should be assessed for:

   a. Exposure to fire or smoke in an enclosed area
   b. Presence of soot around the mouth, nose, or oropharynx
   c. Altered mental status

3. In addition to Cyanokit, treatment of cyanide poisoning must include:

   a. Immediate attention to airway patency
   b. Adequacy of oxygenation
   c. Adequacy of hydration
   d. Cardiovascular support
   e. Management of any seizure activity

High Risk Situations

1. Your best asset will be a high index of suspicion in high risk situations (especially in fire scene rehab and treatment sectors).

2. The following are to be considered as high risk:

   - **Building fires**, including salvage & overhaul
   - **Areas where generators are used or misused**
   - The report of symptomatic or unconscious patient(s) in a car where the garage door is closed
   - Areas where paint or varnish is stripped from furniture
   - Areas where gasoline engines, gas powered heaters or water heaters are run with poor ventilation
   - In some cases with symptomatic divers from contaminated air in their SCUBA tanks
   - Indoor grills
   - Hookah Bars

High Risk Patients

1. Patients at higher risk include:

   - Elderly
   - Children
   - Pregnant women
   - Patients with cardiac disease
   - Patients with chronic lung disease
   - Patients with chronically elevated CO levels (e.g., cigarette smokers)

Special Circumstances for Consideration

1. An individual who is exposed to a high-risk situation and experiences hemodynamic instability and/or a cardiac arrest may also have cyanide (CN) toxicity.

2. During the management of these high-risk situations, including cardiac arrest, shock, seizures and coma, consider administration of Cyanokit.

Indications for obtaining a CO level.

1. Apply to patients when CO poisoning is suspected.
2. Apply to patients being treated for Smoke Inhalation.
3. Apply to individuals when CO poisoning must be ruled out as with firefighters in the rehab sector of a major fire. This should routinely be done when evaluating vital signs of firefighters during rehab.

Caution

Poor perfusion states where circulation to the fingers is severely compromised may make readings inaccurate or unattainable.

Procedure

1. Apply finger probe to finger with capillary refill less than 5 seconds.
2. SpCO less than 3% – No further evaluation for SpCO needed.
3. SpCO less than 12% with NO symptoms – No further evaluation for SpCO needed.
4. SpCO less than 12% with symptoms – transport on 100% O_2 to nearest ER.
5. SpCO 12% or greater, but less than 25%, with symptoms or pregnant –transport on 100% O_2 to a hyperbaric oxygen facility.
6. SpCO 25% or greater - transport on 100% O_2 to a hyperbaric oxygen facility.

TREATMENT

1. Universal Initial Adult Patient Assessment / Care
2. All patients should receive 100% Oxygen via NRB.
3. Document the CO reading in your Patient Care Record.
4. If condition does not improve or gets worse after treatment with100% O_2, consider treating for Cyanide Poisoning with Cyanokit.

SpCO%	Signs & Symptoms
5	Mild headache
10	Mild headache and SOB (with heavy exertion)
10-20	Moderate headache and SOB (with mild exertion)
20-30	Worsening headache, fatigue, nausea, dizziness
30-40	Severe headache, vomiting, vertigo, altered mental status
40-50	Altered mental status, syncope
50-60	Seizures, shock, respiratory arrest, coma
60-70	Seizures, shock, coma, cardiac arrhythmia

Cardiopulmonary resuscitation will be initiated on all patients who have sustained a cardiopulmonary arrest, UNLESS:

Natural Death In Field:

1. Do Not Resuscitate Order (DNRO) – those terminally ill patients who have properly documented their desire not to be resuscitated through a valid Do Not Resuscitate Order (DNRO). CPR may be terminated if a valid DNRO (yellow copy) is presented after CPR was begun.

2. Patients with **obvious death**. Patients with these conditions will be pronounced dead in the field. No ECG or attempts at resuscitation are necessary in these patients. These criteria are applicable to all ages.

   These conditions include:

   a. **Decapitation**
   b. **Massive crush** injury to head or torso
   c. **Incineration** with black charring of the whole body
   d. **Evisceration/Expulsion** from the body of vital organ(s): brain, heart, liver, or both lungs
   e. **Hemicorpectomy** (body cut in half through the torso)
   f. **General body decomposition**

3. Patients with **apparently irreversible death**. The following conditions require asystole recorded on a cardiac monitor and confirmed in at least 2 leads

   a. **Rigor mortis** - hardening of the body muscles, which makes the joints rigid. This sign is not reliable for true death if the patient is a victim of hypothermia.

   b. **Livor mortis** - large areas of dark red or purple discoloration that do not blanch with pressure and that are seen in the dependent body parts - where the venous blood pools after death due to gravity. This sign must not be confused with birthmarks, traumatic contusion, skin rashes, or the milder discoloration seen in patients with shock who have been lying in one position for an extended period of time. Livor mortis can start as soon as 30 minutes after death and usually becomes fixed 6-8 hours after death.

Livor Mortis

Further Recommendations

Consider the following in adults:

1. **Resuscitation efforts may be terminated** in the field if **ALL** of the following conditions are met:

   a. The event was not witnessed by emergency medical services personnel.
   b. There is no Return of Spontaneous Circulation (ROSC) after **30 minutes of resuscitation efforts**.
   c. Patients with asystole or an agonal terminal rhythm at the time of termination of CPR.

2. Patients with persistent PEA rhythms **OR** Ventricular Fibrillation **OR** Ventricular Tachycardia without a pulse should be transported to the closest appropriate facility.

3. Resuscitation efforts may be withheld in any patient with **blunt trauma** who, based on the paramedics' thorough primary patient assessment, is **found apneic, pulseless, and without organized ECG activity (asystole) upon the arrival of EMS at the scene**.

4. Resuscitation efforts may be withheld in any patient with **penetrating trauma** to the head, neck, or torso who, based on the paramedics' thorough primary patient assessment, is **found apneic, pulseless, and without organized ECG activity (asystole) upon the arrival of EMS at the scene**.

5. In suspected Traumatic Cardiac Arrest patients where the mechanism of injury does not correlate with the clinical condition, suggesting a non-traumatic cause of the arrest, Resuscitate and Transport. For example, a patient in cardiac arrest found at the scene of a minor motor vehicle accident.

6. **WHEN IN DOUBT – RESUSCITATE AND TRANSPORT**

7. Pediatric cardiac arrests are excluded from termination in the field, UNLESS the child meets the criteria for obvious death OR apparently irreversible death OR has a valid DNRO. (see above or appropriate Pediatric Death In Field Protocol),

8. Cardiac arrests in obviously pregnant women are excluded from termination in the field, UNLESS the mother meets the criteria for obvious death OR apparently irreversible death OR has a valid DNRO.

9. Consider the possibility of the patient being an Organ Donor. However, this should not be the sole reason for resuscitation and transport.

When Resuscitation is Withheld or Terminated at the Scene.

1. The local law enforcement agency with jurisdiction will be responsible for the body once death has been determined.

2. The body is to be left at the scene until a disposition has been made by the Medical Examiner's Office.

3. When releasing the scene/body, document officer/persons on scene assuming responsibility.

Additional Information

1. Refer to VALID DNRO for further information and DH Form 1896

2. ePCR documentation must include the following:

   a. Reason(s) for terminating or not initiating resuscitation.
   b. All resuscitative measures, if applicable, including the location(s) of unsuccessful vascular access attempts.

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HYPOthermia

Hypothermia can be seen even in South Florida. The elderly, the malnourished, patients with hypothyroidism or certain other diseases, and/or patients taking certain medications are particularly susceptible to hypothermia because of their decreased ability to regulate temperature.

Consider hypothermia in near drowning victims and others exposed to cool conditions.

TREATMENT

1. If you believe that your patient may be hypothermic; skin may be pale, cool, and/ or mottled, make sure to cover the patient with blankets.

2. If the patient is wet, be sure to dry the body, especially the head.

HYPERthermia / Heat-Related Illness

1. Heat-related illnesses occur when either one or both of two conditions exists:

   a. Overproduction of heat, **or**
   b. Problems with heat loss, **or**
   c. Inability to cool down

2. Overproduction of heat can occur as a result of several circumstances:

   a. Strenuous exertion
   b. Metabolic conditions such as hyperthyroidism
   c. Drug ingestions such as ecstasy, phencyclidine (PCP), cocaine, and other sympathomimetic (e.g., amphetamines, MDMA, FLAKKA, bath salts, GHB, etc.)
   d. Hot environmental conditions

3. Situations that can create problems with heat loss are:

   a. Some medications interfere with cooling down mechanisms (e.g., antihistamines, diuretics, beta-blockers, tricyclic antidepressants, phenothiazines, MAO inhibitors).
   b. Hot environmental conditions.
   c. Dehydration

4. The elderly are frequently at increased risk for developing heat-related illnesses because of:

   a. An increased use of medications
   b. Chronic illnesses

5. Alcohol use increases fluid losses and makes heat-loss more difficult.

6. Tight-fitting clothing retains heat and reduces heat-loss.

7. There are three stages of heat-related illnesses

   a. Mild form with heat cramps
   b. Moderate form with heat exhaustion
   c. Life-threatening situation with heat stroke

8. It is not important to determine which stage describes the patient's condition. The important clinical finding to recognize is a change in the patient's mental status or the development of seizures.

HYPERthermia TREATMENT

1. All patients with heat-related illnesses should be treated with the following:

   a. Universal Initial Adult Patient Assessment / Care

   b. Move patient to cooler environment and/or fan blowing on patient.

   c. Oral electrolyte solutions, not plain water.

   d. Establish vascular access and administer normal saline, **500 mL IV/IO bolus** if unable to take oral fluids. May repeat once as needed.

   e. Remove as much clothing as possible.

2. Patients with temperatures of 104°F (40°C) or higher (OR if unable to obtain a temperature and the patient feels hot to the touch), who usually exhibit hot and dry skin with changes in their mental status and/or develop seizures should also have the following rapid cooling treatments:

   a. If available, place ice packs in the neck, axillae and groin areas.

   b. If available, take and document a baseline temperature before administering cold normal saline. Also take and document a temperature at the time of patient transfer in the ED

   c. Establish vascular access and **bolus cold** (34°F) normal saline, **30 mL/kg IV or IO (max 2 Liters)**.

   d. Administer midazolam (Versed), **5 mg *slow* IV/IO** or **10 mg IM / IntraNasal** to reduce shivering, if indicated.

e. If the patient is agitated and/or in pain after midazolam (Versed) and the systolic BP remains at 90 mmHg or greater, administer morphine sulfate, **5 mg IV/IO.** If the patient continues with agitation and/or pain, the morphine may be repeated once in 5 minutes. The total amount of morphine given should not exceed 10 mg.

f. Anticipate combativeness and seizures.

Neuroleptic Malignant Syndrome

All patients who develop neuroleptic malignant syndrome are taking anti- psychotic medications, e.g., haloperidol (Haldol).

Some or all of the following signs/symptoms can be found in this syndrome. The most common findings are the elevated body temperature and severe muscle rigidity (lead-pipe).

- Severe muscle rigidity
- Elevated body temperature, frequently more than 104°F (40°C).
- Tachycardia,
- Shortness of breath
- Hypotension
- Extrapyramidal symptoms (EPS)
- Agitation
- Drooling
- Urinary incontinence

Pre-hospital TREATMENT is limited to the following:

1. Universal Initial Adult Patient Assessment / Care

2. Move patient to cooler environment and/or fan blowing on patient.

3. Remove as much clothing as possible.

4. If patient's temperature is 104°F (40°C) or higher (OR if unable to obtain a temperature and the patient feels hot to the touch) and symptomatic, establish vascular access and initiate Therapeutic Hypothermia / Rapid cooling:

   a. Place ice packs in the neck, axillae and groin areas.

   b. If available, take and document a baseline temperature before administering cold normal saline. Also take and document a temperature at the time of patient transfer in the ED

   c. **Bolus cold** (34°F) normal saline, **30 mL/kg IV or IO (max 2 Liters)**.

d. Administer midazolam (Versed), **5 mg *slow* IV/IO** or **10 mg IM / IntraNasal** to reduce shivering, if indicated.

e. If the patient is agitated and/or in pain after midazolam (Versed) and the systolic BP remains at 90 mmHg or greater, administer morphine sulfate, **5 mg IV/IO.** If the patient continues with agitation and/or pain, the morphine may be repeated once in 5 minutes. The total amount of morphine given should not exceed 10 mg.

5. Constant cardiac monitoring.

Electrical Injuries

Electrical burns can be either through direct contact or indirect contact such as with an arc or a flash burn.

Cardiac arrest can occur with electrical accidents. After cardiac arrests the worst effects of an electrical burn is through the damage that is done to the entrance and exit sites.

Secure the area and ensure patient and EMS provider safety.

TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. Cervical immobilization is indicated when spinal trauma is suspected.

3. Patients who have experienced electrical injuries should have a 12-Lead ECG and constant cardiac monitoring.

4. Patients with any significant signs/symptoms should have vascular access established, preferably in a non-involved extremity.

5. Administer normal saline, **500 mL IV/IO bolus** for patients with any evidence of burn injury. May repeat once as needed.

6. Splint all obvious fractures.

7. Consider pain management

Transport Decision

Patients who remain in cardiac arrest following an electrical injury despite resuscitative efforts should be transported to the closest facility.

Lightning Injuries

1. Care of a victim of a lightning strike is the same as for other electrical injuries. The major difference is that victims of a lightning strike that are in cardiac arrest and appear dead should receive full resuscitation efforts.

2. Lightning strikes can cause ventricular fibrillation and/or asystole. An otherwise healthy heart will be stunned for a few minutes, but cardiac electrical activity will return. (This is similar to the long asystolic pause that is sometimes seen after a cardiac defibrillation.)

3. At the same time, the respiratory center of the spinal cord is stunned and so the patient also stops breathing. When the heart electrical activity begins again, if the patient is not breathing, the patient will then develop another cardiac arrest this time secondary to a respiratory arrest from the temporary paralysis of the spinal cords respiratory center.

4. Thus it is important in these patients to provide a full resuscitation effort including early ventilations.

5. Should include the same treatment as for Electrical Injuries above.

6. In an MCI resulting from a lightning strike, **TREAT** respiratory and cardiac arrest victims first, even those patients that display asystole on their cardiac monitors. Treat asystole with atropine sulfate.

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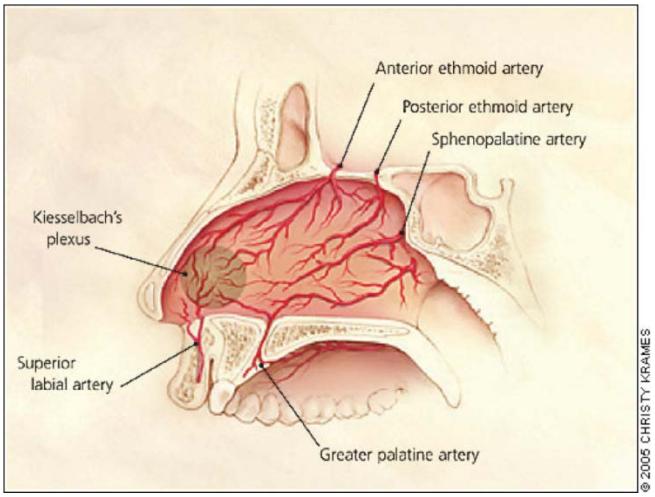
Introduction

Epistaxis or nosebleeds are not uncommon and frequently are spontaneous and atraumatic. The cause maybe as simple as local trauma from a sneeze or picking one's nose to the presentation of an underlying systemic disease affected the blood's ability to clot.

Questions to ask:

- Are they taking any blood thinners?
- How much have they bled?
- Are they using any nasal sprays?
- Have they recently snorted cocaine?

Spontaneous, atraumatic nosebleeds can be roughly placed into two categories: **Anterior** and **Posterior** nosebleeds.



Anterior Nosebleeds

Anterior nosebleeds usually originate from Kiesselbach's plexus and can be visualized on the nasal septum that internal piece of cartilage that separates the two nostrils that is covered by a thin layer of mucus membrane.

These nosebleeds usually bleed from one nostril and not both. Unless the bleeding is significant, these patients will bleed from the nose and not from the mouth.

TREATMENT

1. Universal Initial Adult Patient Assessment / Care
2. Have the patient compress their nose for 10 minutes to determine whether the bleeding has stopped.
3. Have the patient bend forward so that any bleeding continues to come out the nose.
4. Patients who are taking blood thinners should be taken to the hospital for further evaluation.
5. Patients who continue to bleed after nasal compression should be transported to the closest appropriate hospital.

Posterior Nosebleeds

Patients with posterior nosebleeds more commonly bleed from the sphenopalatine artery or posterior ethmoid artery. These patients commonly bleed backward into their throats and may complain of choking on the blood. They frequently will cough up clots of blood. Posterior nosebleeds tend to bleed more than anterior nosebleeds.

The bleeding site is commonly not visible with looking up the nostrils. Commonly, there will be bleeding noted in the back of the throat.

Patients with posterior nosebleeds are frequently anxious.

TREATMENT

1. Universal Initial Adult Patient Assessment / Care
2. All of these patients should be transported to the closest appropriate facility.
3. Monitor SpO_2 levels.
4. Monitor cardiac rhythm.
5. If patient is hypotensive, systolic blood pressure is less than 90 mmHg, administer normal saline, **500 mL IV bolus**. May repeat once if the systolic BP remains less than 90 mmHg.
6. Place icepack on the forehead between the eyebrows. This may cause vasoconstriction of the nasal blood vessels.

Introduction

Fire Department operations frequently involve working and/or training under strenuous conditions and hot environments. Structure fires, vehicle extrications, hazardous materials incidents, and water rescue operations are some of the situations that could predispose fire personnel to heat-related emergencies, over-exertion emergencies, and/or toxic conditions.

Officers responsible for Rehab Operations should attempt to find the most appropriate location for rehab group set-up. Shaded locations, away from the immediate operational area are preferred.

Firefighters shall be assigned to rehab:

- Based on departmental S.O.G.s
- If 2 SCBA tanks are used or after 30 minutes of strenuous operations.
- If ANY member feels that another member needs evaluation by the rehab group.
- If ANY member exhibits abnormal physical or mental functioning.
- If ANY member has ANY medical complaint.

The Incident Commander should always be advised of any fire personnel sent to rehab for any reason.

TREATMENT

Standard rehabilitation for all firefighters involved in strenuous operations shall include the following:

1. Universal Initial Adult Patient Assessment / Care (this includes a completed patient record as per SOG)
2. CO levels monitored and recorded for all fire incidents. If CO level is elevated, or firefighter exhibits signs and symptoms suggestive of significant CO exposure, refer to CO/CN Exposure Protocol.
3. For all emergency operations, oral **fluid replacement*** of up to 20 ounces for each 20 minutes of activity.

   * **An electrolyte solution should contain at least 100 mg of sodium and 8-14 mg of carbohydrate per 12 fluid oz. (Gatorade, Powerade, etc…)**

4. A seated rest interval of at least **10 minutes**. Air conditioning or shade from heat and sunlight should be used. Bunker gear should be removed to aid with heat dissipation and recovery.

5. An assessment for any heat-related emergency signs and symptoms must be performed on every firefighter in rehab:

   a. Vital Signs including Blood Pressure, Heart Rate, Respiratory Rate, SpO_2, CO levels, and ECG.
   b. Altered Mental Status
   c. Fatigue and weakness
   d. Nausea and/or vomiting
   e. Headache
   f. Dizziness
   g. Muscle cramps
   h. Irritability or ANY CNS dysfunction

6. If nausea or intolerance to oral fluids is present, establish vascular access and administer normal saline, **500 mL IV** should be administered. This may be repeated once if additional fluids are indicated after reassessment of vital signs.

7. If ANY heat related emergency symptoms are present and/or the firefighter has abnormal vital signs, the firefighter should be cooled rapidly and given ample oral hydration fluids. (Ample shall mean at least 1 ounce for each 1 minute of operational activity.)

   a. Remove as much clothing as possible.

   b. Move firefighter to cooler environment and/or fan blowing on them.

   c. Firefighters with temperatures of 104°F (40°C) or higher (OR if unable to obtain a temperature and the firefighter feels hot to the touch), with changes in their mental status and/or develop seizures should also have the following rapid cooling treatments:

      1) If available, place ice packs in the neck, axillae and groin areas.

      2) If available, take and document a baseline temperature before administering cold normal saline. Also take and document a temperature at the time of patient transfer in the ED

      3) Establish vascular access, and **bolus cold** (34°F) normal saline, **30 mL/kg IV/IO (maximum 2 Liters)**.

4) Administer midazolam (Versed), **5 mg *slow* IV/IO** or **10 mg IM / IntraNasal** to reduce shivering, if indicated.

5) If the patient is agitated and/or in pain after midazolam (Versed) and the systolic BP remains at 90 mmHg or greater, administer morphine sulfate, **5 mg IV/IO.** If the patient continues with agitation and/or pain, the morphine may be repeated once in 5 minutes. The total amount of morphine given should not exceed 10 mg.

8. Any firefighter seen in rehab should be reevaluated after their recovery. The reevaluation exam should be documented appropriately as per department SOG.

9. For operations lasting longer than **2 hours**, nutritional supplementation should be provided at a rate of at least 500 calories per hour for each member.

10. Treat any other medical complaint as per the appropriate protocol (chest pain, difficulty breathing, traumatic injury, etc.)

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Introduction

There are few pre-hospital patients with an elevated blood pressure that require treatment. This protocol is to provide some guidance in the identification and treatment of the appropriate patients to consider for treatment of severe hypertension.

Patients that may require early lowering of their blood pressure are patients that have a markedly elevated blood pressure and evidence of an acute end-organ dysfunction specifically the brain and the heart.

For the pre-hospital situation, a severely elevated blood pressure is defined as:

- Elevated systolic blood pressure equal to or greater than **220 mmHg** on two readings at least 5 minutes apart **AND** the patient is symptomatic.

  AND/OR

- Elevated diastolic blood pressure equal to or greater than **120 mmHg** on two readings at least 5 minutes apart **AND** the patient is symptomatic.

Patients that **may** require acute treatment of their severely elevated blood pressure include patients with:

- Hypertensive encephalopathy
- Pre-eclampsia / Eclampsia
- Acute Pulmonary Edema with severe hypertension
- Cardiac Ischemia with severe hypertension

Patients with the following presentation(s) are **NOT** candidates for acutely lowering their blood pressure in the pre-hospital urban setting:

- Patients suspected of having an acute stroke
- Trauma patients, including patients with isolated head injury

All patients that may require acute treatment of their severely elevated blood pressure should have the following:

GENERAL TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. ECG / Cardiac monitoring.

3. Establish vascular access.

4. If using nicardipine (Cardene), check the patient's blood pressure every five (5) minutes after starting the drip infusion. If the systolic blood pressure reaches 180 mmHg or less **AND/OR** the diastolic blood pressure reaches 110 mmHg or less, **STOP** the drip.

Hypertensive Encephalopathy

Patients present with an acute onset of symptoms and a severely elevated blood pressure. Acute symptoms include: severe headaches, vomiting, and changes in mental status (e.g. confusion, agitation, decreased level of awareness).

TREATMENT

1. If the symptoms are suggestive of an acute stroke (but there are no abnormal findings on the STROKE Alert checklist), do **not** treat the patient's blood pressure.

2. If available, administer nicardipine (Cardene), pre-filled IV infusion at **50 drops per minute (5 mg/hour)**.

3. After 2 additional BP readings 5 minutes apart, if the BP remains elevated, increase the rate to **75 drops per minute (7.5 mg/hour)**.

Pre-eclampsia / Eclampsia

Pre-eclampsia is a condition in patients with Pregnancy Induced Hypertension (PIH). It should be suspected in any symptomatic female in her second half of pregnancy presenting with a blood pressure **equal to or greater than 140/90 mm Hg** and any pregnant female whose blood pressure exceeds **30 mmHg systolic and/or 15 mm Hg diastolic above her normal B/P**. Pre-Eclampsia / Eclampsia may occur up to 6 weeks after delivery.

See OB/Childbirth Emergencies for a more complete explanation.

TREATMENT

1. If the patient's BP remains 140/90 or greater on 2 successive readings taken 5 minutes apart, administer magnesium sulfate, **4 grams IV/IO *slow over 2 minutes.***

2. If the systolic blood pressure remains at 160 mmHg or greater **AND/OR** the diastolic blood pressure remains at 100 mmHg or greater 5 minutes after the complete administration of magnesium sulfate, consider giving Cardene.

    a. If available, administer nicardipine (Cardene), pre-filled IV infusion at **50 drops per minute (5 mg/hour)**.

b. After 2 additional BP readings 5 minutes apart, if the BP remains elevated, increase the rate to **75 drops per minute (7.5 mg/hour)**.

3. If at any time the patient develops eclampsia and starts to seize, refer to OB/Childbirth Emergencies protocol.

Acute Pulmonary Edema with Severe Hypertension

See Respiratory Emergencies Protocol for a more complete explanation.

TREATMENT

1. If available and if the patient is cooperative, place the patient on CPAP mask device as soon as possible.

2. Administer nitroglycerin:

   a. If the systolic BP is **between 90 mmHg and 160mmHg**, administer **0.4 mg SL**. Repeat every 3 to 5 minutes if needed as long as the systolic BP remains greater than 90 mmHg **OR** until relief of signs or symptoms.

   b. If the systolic BP is **greater than 160 mmHg**, administer **0.8 mg SL (two tabs)**. Repeat every 3 to 5 minutes if needed as long as the systolic BP remains greater than 160 mmHg **OR** until relief of signs or symptoms.

3. In treating cardiac Pulmonary Edema, the emphasis is on providing Positive Pressure Ventilation and administering nitroglycerin.

4. **DO NOT administer nitroglycerin if a patient is known or suspected to have taken any sexually enhancing drugs and/or drugs prescribed for pulmonary hypertension. Examples include: Viagra/Revatio (sildenafil) or Levitra (vardenafil) within the past 24 hours, or Cialis/Adcirca (tadalafil) within the past 72 hours. There may be other sexually enhancing drugs that apply. Revatio is prescribed for pulmonary hypertension.**

   NOTE: Try to question the patient discretely when asking about sexually enhancing medication use.

5. If the patient remains symptomatic after these interventions, and the systolic BP remains above 90 mmHg, administer furosemide (Lasix), **20 mg IVP** if the patient is not currently taking a diuretic **or 40 mg IVP** if the patient is currently taking a diuretic.

Cardiac Ischemia with Severe Hypertension

TREATMENT

1. Administer nitroglycerin, **0.4 mg SL**. Repeat every 3 to 5 minutes if needed until the systolic blood pressure reaches 180 mmHg or less **AND/OR** the diastolic blood pressure reaches 110 mmHg or less, and as long as the systolic BP remains above 90 mmHg.

2. **DO NOT administer nitroglycerin if a patient is known or suspected to have taken any sexually enhancing drugs and/or drugs prescribed for pulmonary hypertension. Examples include: Viagra/Revatio (sildenafil) or Levitra (vardenafil) within the past 24 hours, or Cialis/Adcirca (tadalafil) within the past 72 hours. There may be other sexually enhancing drugs that apply. Revatio is prescribed for pulmonary hypertension.**

   NOTE: Try to question the patient discretely when asking about sexually enhancing medication use.

4. If the blood pressure remains elevated (systolic equal to or greater than 220 mmHg **AND/OR** diastolic equal to or greater than 120 mmHg),

   a. If available, administer nicardipine (Cardene), pre-filled IV infusion at **50 drops per minute (5 mg/hour)**.

   b. After 2 additional BP readings 5 minutes apart, if the BP remains elevated, increase the rate to **75 drops per minute (7.5 mg/hour).**

Single Impaired Patient at scene

TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. Determine and document the Glasgow Coma Scale (GCS) on Initial Assessment, and document time last known well.

3. Obtain and document a blood glucose level using a glucometer. If hypoglycemic, follow Hypoglycemia protocol below.

4. Obtain and document a pulse oximeter reading. Maintain SpO_2 of at least 94%, and administer oxygen if indicated.

5. Assess non-intubated end-tidal CO_2 (if available) and treat appropriately (normal range is 35 to 45 mmHg)

6. Establish vascular access.

7. Patients with a temperature reading of 104°F (40°C) or higher (**OR** if unable to obtain a temperature and the patient feels hot to the touch), who usually exhibit hot and dry skin with changes in their mental status and/or develop seizures should also have the following rapid cooling treatments:

   a. Move patient to cooler environment and/or fan blowing on patient.

   b. Remove as much clothing as possible.

   c. If available, apply ice packs to the neck, axillae, and groin.

   d. If available, take and document a baseline temperature before administering cold normal saline. Also take and document a temperature at the time of patient transfer in the ED.

   e. **Bolus cold** (34°F) normal saline, **30 ml/kg IV/IO (maximum 2 Liters)**.

   f. Administer midazolam (Versed), **5 mg *slow* IV** or **10 mg IM / IntraNasal** to reduce muscle shivering, if indicated.

   g. If the patient is agitated and/or in pain after midazolam (Versed) and the systolic BP remains at 90 mmHg or greater, administer morphine sulfate, **5 mg IV/IO.** If the patient continues with agitation and/or pain, the morphine may be repeated once in 5 minutes. The total amount of morphine given should not exceed 10 mg.

8. Evaluate and document pupil size and reactivity.

9. Obtain 12-Lead ECG and monitor the rhythm. Stabilize abnormal rhythms per protocol.

10. Obtain and document a CO reading. Treat for CO Poisoning for abnormally high CO readings.

11. If an overdose is suspected or is identified, treat per protocol and/or contact **Poison Control at 1-800-222-1222.**

12. In some patients, altered mental status is chronic (e.g. Alzheimer's, CVA). This is best determined by obtaining an accurate medical history from the caretaker or person who made the call.

13. If the patient is **combative**, refer to Agitated Patient / Excited Delirium protocol.

Multiple Impaired Patients at scene:

TREATMENT

1. Ensure scene safety.

2. Universal Initial Adult Patient Assessment / Care

3. Determine and document the Glasgow Coma Scale (GCS) on Initial Assessment, and document time last known well.

4. Obtain and document a blood glucose level using a glucometer. If hypoglycemic, follow Hypoglycemia protocol below.

5. Obtain and document a pulse oximeter reading. Maintain SpO_2 of at least 94%, and administer oxygen if indicated.

6. Obtain and document a CO reading. Treat for CO Poisoning for abnormally high CO readings.

7. Assess non-intubated $ETCO_2$ (if available) and treat appropriately (normal range is 35 to 45 mmHg)

8. Establish vascular access.

9. Patients with a temperature reading of 104°F (40°C) or higher (**OR** if unable to obtain a temperature and the patient feels hot to the touch), who usually exhibit hot and dry skin with changes in their mental status and/or develop seizures should also have the following rapid cooling treatments:

    a. Move patient to cooler environment and/or fan blowing on patient.

    b. Remove as much clothing as possible.

    c. If available, apply ice packs to the neck, axillae, and groin.

    d. If available, take and document a baseline temperature before administering cold normal saline. Also take and document a temperature at the time of patient transfer in the ED.

    e. **Bolus cold** (34°F) normal saline, **30 ml/kg IV/IO (maximum 2 Liters)**.

    f. Administer midazolam (Versed), **5 mg *slow* IV** or **10 mg IM / IntraNasal** to reduce muscle shivering, if indicated.

    g. If the patient is agitated and/or in pain after midazolam (Versed) and the systolic BP remains at 90 mmHg or greater, administer morphine sulfate, **5 mg IV/IO.** If the patient continues with agitation and/or pain, the morphine may be repeated once in 5 minutes. The total amount of morphine given should not exceed 10 mg.

10. Evaluate and document pupil size and reactivity.

11. Obtain 12-Lead ECG and monitor the rhythm. Stabilize abnormal rhythms per protocol.

12. If an overdose is suspected or is identified, treat per protocol and/or contact **Poison Control at 1-800-222-1222.**

13. In some patients, altered mental status is chronic (e.g. Alzheimer's, CVA). This is best determined by obtaining an accurate medical history from the caretaker or person who made the call.

14. If the patient is **combative**, refer to Agitated Patient/Excited Delirium protocol.

15. Consider the possibility of poison or toxic gas.

Hypoglycemia / Insulin Shock:

TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. If the blood glucose is **less than or equal to 60 mg/dL**

   a. If the patient is conscious and able to swallow, administer one single-dose tube of oral glucose (Glutose) OR have the patient drink dextrose 50% (D50W), **25 grams (50 mL) PO (orally)**.

   b. If the patient is **NOT able** to take glucose orally, administer dextrose 50% (D50W), **25 grams (50 mL) IV.**

   c. If unable to establish an IV, administer glucagon, **1 mg IM.**

   d. Five minutes after administering glucose, either orally or IV, if the patient remains unresponsive or symptomatic, repeat the blood glucose test.

   e. If a repeat blood glucose is equal to or less than 60, administer a second bolus of dextrose 50% (D50), **25 grams (50 mL) IV/IO** OR an additional dose of oral oral glucose Glutose) OR dextrose 50% (D50W), **25 grams (50 mL) PO (orally)** OR glucagon, **1 mg IM.**

Hyperglycemia / Diabetic Ketoacidosis (DKA)

(Glucose is high or greater than 300 mg/dL and without evidence of CHF)

TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. Administer normal saline, **500 mL IV**. This may be repeated once, except in dialysis patients or patient 70 years of age or older.

Suspected Opiate-Type Overdose Or Unconsciousness Of Unknown Origin

TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. If there are signs of narcotic OD (e.g., pinpoint pupils, track marks) with respiratory depression (including morphine/fentanyl OD) **or unconsciousness of unknown origin**, administer naloxone (Narcan), **2 mg slow IV/IM or IntraNasal (or 4 mg diluted with normal saline to a total of 10 mL though an Advanced Airway** if IV access cannot be established**.** After the drug has been administered, provide 5 rapid ventilations to enhance the drug delivery into the lungs). This can be repeated once in 2-3 minutes.

HEAD INJURY Or Signs Of Increased Intracranial Pressure (ICP) (Cushing's Triad: HTN, bradycardia, irregular respirations) Without Hypotension

TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. Keep the head elevated approximately 30 degrees (12-18"). The patient can either be placed in a semi-fowlers position, or in the case of the suspected C-spine injury, immobilized on a backboard and the head of the entire backboard elevated.

3. Avoid administration of dextrose solutions (D50W, D5W) unless hypoglycemia (glucose less than 60) is identified. Dextrose may increase cerebral edema.

4. If GCS is less than or equal to 8, **AND** an advanced airway is established, hyperventilate (ventilate at a rate adequate enough to maintain an $ETCO_2$ of 30-34 mmHg) **ONLY** with signs of brainstem herniation (e.g. dilated pupil, a blown pupil, or decorticate/decerebrate posturing).

5. **Start a saline lock, but restrict fluid administration, or run IVs at TKO.**

6. If the patient's BP is less than 90 mmHg administer normal saline, **500 mL IV/IO** to maintain at least 90 mmHg. This may be repeated once.

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GENERAL TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. Obtain and document the following history:

   a. Number of previous pregnancies (Gravida).

   b. Number of prior live births greater than 20 weeks gestation (Para).

   c. When did contractions begin?

   d. How far apart are the contractions? Confirm this by timing the contractions from beginning to beginning or end to end.

   e. Evidence of bloody show, spotting.

   f. Any history of premature or multiple births?

   g. Any history of complications in prior births?

   h. For questions below, if answered yes, there is a potential for a complicated delivery, so you should prepare equipment and manpower accordingly.

      Remember **(MMPN):**

      1) **Meconium**: Did the mother note an unusual foul odor or a discharge resembling pea soup when her bag of water broke? Is the meconium thick or thin?

      2) **Multiple Births**: Does the mother know or suspect that she is having more than one baby?

      3) **Prematurity**: Is the patient delivering before their Estimated Delivery Date?

      4) **Narcotics**: Any maternal use of narcotics in the last four hours?

         (a) Establish vascular access.

         (b) Transport to OB capable facility per Patient Transport Protocol.

NOTE: Ectopic pregnancy should be considered in any woman of childbearing age who presents with lower abdominal pain with or without vaginal bleeding.

Hemorrhage during pregnancy

First 3 months (1st trimester)
(Uterus not easily palpable with the abdominal exam)

Possible causes of vaginal bleeding in the first trimester are:
- Threatened miscarriage
- Ectopic pregnancy

TREATMENT

1. Establish vascular access.

2. If patient is HYPOtensive (systolic BP less than 90 mmHg), administer normal saline, **500 mL IV**. This may be repeated if the systolic BP remains below 90 mmHg after the first NS bolus.

3. Monitor and Transport

During the last 6 months of pregnancy (2nd/3rd trimester)
(Uterus palpable during the abdominal exam)

Three major causes of massive vaginal bleeding in the third trimester are:
- Abruptio Placenta
- Placenta Previa
- Uterine Rupture

TREATMENT

1. Establish vascular access.

2. If the pregnant patient with a palpable uterus on the abdominal exam becomes HYPOtensive, treat as below:

   a. Place the patient in the recovery position on her left side (if necessary raise the patient's right side).

   b. Position is critical in the 3rd trimester. Must keep the baby off the mother's Inferior Vena Cava. If the mother is on a backboard raise the right side of the backboard with a rolled up blanket.

   c. Treat Hypovolemic Shock.

HYPERtension in Pregnancy

HYPERtension should be suspected in any female in her second half of pregnancy presenting with a blood pressure **equal to or greater than 140/90 mm Hg** and who otherwise has a normal blood pressure. Additionally, any pregnant female whose blood pressure **exceeds 30 mmHg systolic and/or 15 mm Hg diastolic above her normal BP** should also be treated for PIH.

TREATMENT (asymptomatic patient)

1. Place the patient in the **recovery position** on her left side (if necessary raise the patient's right side).
2. Establish vascular access.
3. Monitor and transport.

Pre-Eclampsia

Pre-eclampsia is a condition in patients with **HYPERtension** in pregnancy. It should be suspected in any symptomatic female in her second half of pregnancy presenting with a blood pressure **equal to or greater than 140/90 mm Hg** and any pregnant female whose blood pressure **exceeds 30 mmHg systolic and/or 15 mm Hg diastolic above her normal B/P**. Pre-Eclampsia may occur up to six (6) weeks after delivery.

Symptoms associated with pre-eclampsia include:

- Generalized edema is the usual presenting sign and can be often noted in the patients face, hands, sacral area, lower extremities, and the abdominal wall
- Headaches that will not go away
- Pain in the upper abdomen
- Blurred vision or any visual disturbances, seeing spots
- Nausea, vomiting
- Irritability
- Difficulty breathing

TREATMENT

1. Place the patient in the recovery position on her left side (if necessary raise the patient's right side).
2. Establish vascular access.

3. During transport, lights should be dim and discretion should be used in the operation of audible devices (sirens, air horns). Bright lights and loud noises have been known to cause seizures in the pre-eclamptic patient.

4. Perform an external exam of the patient for evidence of vaginal bleeding and document findings. Do not perform a manual pelvic exam.

5. Patients should be treated **IF:**

   - Systolic BP equal to or greater than 140 mmHg **AND/OR** diastolic BP equal to or greater than 90 mmHg on **TWO (2)** readings at least 5 minutes apart in the pregnant patient during the second half of her pregnancy **AND the patient is complaining of headache, recent visual changes, or other neurological symptoms.**

OR

   - Systolic BP equal to or greater than 160 mmHg **AND/OR** diastolic BP equal to or greater than 110 mmHg on **TWO (2)** readings at least 5 minutes apart in the pregnant patient during the second half of her pregnancy **WITH OR WITHOUT ANY ASSOCIATED SYMPTOMS.**

   a. Administer magnesium sulfate, **4 grams IV/IO *slow over 2 minutes***.

   b. If the systolic blood pressure remains at 160 mmHg or greater **AND/OR** the diastolic blood pressure remains at 110 mmHg or greater 5 minutes after the complete administration of magnesium sulfate, if available, consider giving nicardipine (Cardene). With the use of nicardipine (Cardene) the goal should be to achieve a systolic of approximately 140 mmHg and a diastolic of 90 mmHg.

      1) If available, administer nicardipine (Cardene), **(0.1 mg/mL) pre-filled IV infusion at 50 drops per minute (5 mg/hour)**. If nicardipine (Cardene) is NOT available, quickly transport and notify the receiving facility.

      2) After 2 additional BP readings 5 minutes apart, if the BP remains elevated, increase the rate to **75 drops per minute (7.5mg/hour).**

Eclampsia

Eclampsia is all of the signs and symptoms associated with pre-eclampsia **AND** the patient has a seizure. Eclampsia may occur up to six (6) weeks after delivery. Any patient with a recent delivery who presents with visual changes, mental status changes,

and/or headaches, and an elevated BP of at least 140/90 mmHg should be treated for pre-eclampsia / eclampsia.

TREATMENT

1. **The treatment is the same as with pre-eclampsia above.**

2. **If the seizing patient is pregnant in the 3rd trimester or recently delivered, treat as an eclamptic seizure.**

   a. Administer magnesium sulfate, **4 grams IV *slowly over 2 minutes*** (if there is no vascular access, magnesium sulfate may be given **5 grams IM once in each buttock for a total of 10 grams**).

   b. After magnesium sulfate, if the patient continues to seize, and

      1) If vascular access is available, administer lorazepam (Ativan), **2 mg IV slowly over one minute, OR** midazolam (Versed), **5 mg IV**.

      2) If vascular access is **NOT** readily available, administer lorazepam (Ativan), **2 mg IM OR** midazolam (Versed), **10 mg IM/IntraNasal or Buccal** (part the patient's lips and without opening the jaws, place the medication laterally between the teeth and the cheek with half of the dose on each side of the mouth).

Normal Childbirth

TREATMENT

1. Place the mother in a comfortable, supine position, knees up.

2. Consider nitrous oxide (Nitronox), if available, for pain management in the childbirth setting.

3. Prepare to receive the newborn. Don appropriate PPE. Use sterile OB Kit, if available.

4. Gently and carefully assist expulsion of the newborn from the birth canal in its natural descent. Do not pull or push fetus.

5. Upon complete presentation of the newborn's head:

   a. Inspect and palpate the newborn's neck for the umbilical cord. If the cord is around the neck, carefully unwrap the cord from the neck. If the cord cannot be easily unwrapped, place 2 clamps and cut in between the clamps to release the cord.

b. **DO NOT** routinely suction. If child is in **distress**, clear the airway by gently suctioning **the mouth, then each nostril** with a bulb syringe. Suctioning of the oropharynx may produce a vagal response and cause bradycardia and/or apnea.

6. Upon complete delivery, the newborn should be evaluated by assessing the heart rate, skin color, and respiratory effort. Obtain and document a one-minute and five-minute APGAR score.

   a. If the APGAR score is 7 or greater AND if the pulse is **greater than 100 bpm**
      1) Apply two umbilical cord clamps
      2) First clamp 4-6 inches from the newborn
      3) Second clamp should be placed further away from the newborn, about 2 inches from the first clamp
      4) Cut the cord between the two clamps when appropriate.

   b. If the pulse is **less than 100 bpm**, refer to Newborn Resuscitation.

   c. Dry and wrap the newborn in a blanket to preserve body heat. Be sure to cover the head of the infant as this is a major area of heat loss.

   d. Evaluate and manage newborn as outlined in Newborn Examination.

7. **DO NOT** pull on the umbilical cord. **DO NOT** perform manual massage of the uterus unless the placenta has been delivered.

8. If the placenta has delivered and active vaginal bleeding is noted, apply firm, continuous massage to the uterine fundus.

9. If the placenta delivers, place it in a plastic bag and transport it with the mother.

10. Establish maternal vascular access in all cases of imminent delivery or as soon as practical during emergency childbirth.

Breech Delivery

A breech delivery is when the head is not the presenting part (first part of the body out of the vagina during delivery). A frank breech is when the buttock is the presenting portion of the body. On rare occasions, the lower extremities will be the presenting portion.

The best approach is to avoid delivery in the field if at all possible. If delivery is imminent, the mother should be strongly encouraged not to push while she is being transported to the hospital.

TREATMENT

1. Notify receiving hospital of breech delivery.

2. Administer oxygen via NRB to the mother.
3. Place gloved hand in vagina and attempt to keep fetus from delivering.

4. Establish maternal vascular access enroute to the hospital.

5. If the legs and buttocks of the newborn are delivered, support them with the palm of your hand and your arm.

6. If the head is not delivered within 3 minutes, you must take action to prevent suffocation of the newborn.

   a. Place a gloved hand in the vagina, with your palm toward the newborn's face and create an air space for the newborn until delivery of the head.

   b. You must maintain this position during transport if the head does not deliver.

Umbilical Cord Prolapse

TREATMENT

1. Place the mother on her left side or in a knee-chest position, and tell the mother not to push with her contractions.

2. Do not attempt to push the cord back. Wrap cord in moist saline dressing.

3. Palpate the cord for a pulse. If no pulse is felt push the newborn's head or presenting part back only far enough to regain a pulse in the umbilical cord. **Do not push on the fontanels**.

4. Continue to monitor pulse in the cord and maintain sufficient pressure on the newborn's head to maintain a pulse in the cord during transport.

5. Establish vascular access.

6. Transport and notify the receiving facility.

Uterine Inversion

A condition following the birth of the newborn, when the uterus protrudes through the vagina with the placenta still attached, and may be associated with severe vaginal bleeding and shock.

TREATMENT

1. Keep patient in a recovery position.
2. If the placenta is still attached, do not attempt to remove it.
3. Cover all protruding tissues lightly with moist, sterile dressings.
4. Establish maternal vascular access.
5. If indicated, treat for HYPOvolemic shock.
6. Transport and notify the receiving facility.

Newborn Examination

TREATMENT

1. If the heartrate is less than 100 bpm or the baby is limp, ensure a clear airway by gently **suctioning the mouth, then nose** using a bulb syringe. Deep suctioning of the oropharynx may produce a vagal response and cause bradycardia and/or apnea.
2. Evaluate respirations, pulse, and color. Administer 100% O_2 with BVM and refer to Newborn Resuscitation if:

   a. If the **Respirations** are shallow, gasping or slow, and/or
   b. **Pulse** is less than 100, and/or
   c. **Color** is centrally cyanotic

APGAR

	0 (Points)	1	2
Appearance	Blue or pale all over	Blue extremities, but torso pink	Pink all over
Pulse	None	< 100	≥ 100
Grimace	No response	Weak grimace when stimulated	Cries or pulls away when stimulated
Activity	None	Some flexion of arms	Arms flexed, legs resist extension
Respirations	None	Weak, irregular or gasping	Strong cry

0-3 Critically Low, 4-6 Fairly Low, 7-10 Generally Normal

Suspected Meconium Aspiration

Characterized by a green to green/black, or mustard-like, watery particulate discharge upon rupture of the bag of waters. A foul odor may be present. The newborn may also be covered with a thick, dark substance.

TREATMENT

1. When the newborn's head has delivered, gently wipe the mouth and nose with a 4x4. Instruct the patient to stop pushing until **aggressive** upper airway suctioning of **the mouth and then nose** with a bulb syringe can be accomplished.

2. If the Meconium is cleared, and the newborn cries and has a good pulse and color, handle as Normal Childbirth.

3. If thick meconium is obstructing the airway, then suction. If the patient is apneic, intubate the trachea and suction the lower airways with an endotracheal tube fitted with a Meconium Aspirator Device.

4. After suctioning, intubate the trachea with another clean endotracheal tube, and ventilate with 100% O_2. Secure the ET tube and attach a Capnometer.

5. Transport ASAP. Check pulse and handle as Newborn Resuscitation.

Prematurity

TREATMENT

1. Anticipate respiratory distress or respiratory arrest.

2. Prepare for positive pressure ventilation and an Advanced Airway.

Multiple births

TREATMENT

1. Anticipate the problems of prematurity.

2. Have sufficient personnel and equipment for multiple births.

3. Be prepared to transport after the first delivery, as there may be a break in labor before the delivery of the next sibling.

Narcotic use by mother in the last 4 hours prior to delivery

TREATMENT

1. Anticipate respiratory distress or respiratory arrest.

2. Prepare for positive pressure ventilation and an Advanced Airway.

3. If no response to positive pressure ventilation, establish umbilical vascular access and administer naloxone (Narcan), **0.1 mg/kg OR** if unable to establish umbilical vascular access administer the naloxone (Narcan) **IM or IntraNasal**. May repeat once in 2-3 minutes.

Newborn Resuscitation

Upon delivery, the newborn should be evaluated by assessing the heart rate, skin color, and respiratory effort. Obtain and document a one-minute and five-minute APGAR score.

TREATMENT

1. When the head delivers, and there is no sign of meconium, DO NOT suction routinely. Suctioning of the oropharynx may produce a vagal response and cause bradycardia and/or apnea. If the child is in distress, clear the airway by gently suctioning **the mouth, then each nostril** with a bulb syringe. Follow protocol if suspected meconium aspiration.

2. After delivery, stimulate the newborn and keep dry and warm. Remember to dry and cover the head.

3. If the APGAR score is 7 or greater **AND** pulse is **greater than 100 bpm**,
   a. Apply two umbilical cord clamps
   b. First clamp 4-6 inches from the newborn
   c. Second clamp should be placed further away from the newborn, about 2 inches from the first clamp
   d. Cut the cord between the two clamps when appropriate.

4. The pulse is **less than 100 bpm AND/OR** the respirations are gasping, shallow or compromised, and the newborn remains cyanotic.

   a. Provide ventilations with a BVM and 100% oxygen, just sufficient to cause chest rise, at a rate of 40 breaths per minute or 1 breath for every 1½ seconds.

   b. Apply two umbilical cord clamps.
      1) First clamp 4-6 inches from the newborn
      2) Second clamp should be placed further away from the newborn, about 2 inches from the first clamp.
      3) Cut the cord between the two clamps when appropriate

   c. Position the newborn on its back with the head in the sniffing position. This may be accomplished by placing a 1-inch thick folded towel beneath the newborn's shoulders.

   d. Attach an ECG monitor and pulse-oximeter and constantly monitor respiratory status.

   e. If after 30 seconds of assisted ventilations, the newborn's heart rate is greater than 100 bpm – transport to appropriate facility and continue monitoring.

   f. If after 30 seconds of assisted ventilations the pulse is less than 60 bpm start CPR.

   g. If after 30 seconds of assisted ventilations, the pulse is greater than 60 bpm but less than 100 bpm insert an Advanced Airway. Confirm and monitor the Advanced Airway placement with a CO_2 detector when the newborn is greater than 2 kg.

   h. If newborn's pulse remains less than 100 bpm after the insertion of an Advanced Airway, perform CPR at least 120 compressions/minute. Provide 1 breath for every 3 compressions.

   i. Establish umbilical vascular access (UVA) cannulating the umbilical vein. Keep in mind that the priority is the airway. IV access is a secondary concern.

   j. If CPR fails to establish a pulse of at least 100 bpm, consider the following treatments via the umbilical vascular access where applicable:

1) Administer epinephrine 1:10,000, **0.01 mg/kg Umbilical vascular access (0.1 mL/kg) OR** as per the pediatric medication guide. May repeat every 3 to 5 minutes.

2) If the pulse is 60 bpm or less administer atropine sulfate, **0.02 mg/kg OR** as per the pediatric medication guide. **Umbilical vascular access** for increased vagal tone or primary AV block. May repeat once. **Minimum dose 0.1 mg and maximum single dose 0.5 mg.**

3) Fluid bolus normal saline, **10 mL/kg Umbilical vascular access**.

4) For suspected narcotic overdose, administer naloxone (Narcan), **0.1 mg/kg Umbilical vascular access OR** as per the pediatric medication guide. May repeat in 2 minutes if necessary. **Max dose 2 mg**.

5) If blood glucose is less than 60 mg/dL, administer dextrose 10%. **5 mL/kg IV/IO/Umbilical vascular access OR** as per the pediatric medication guide.

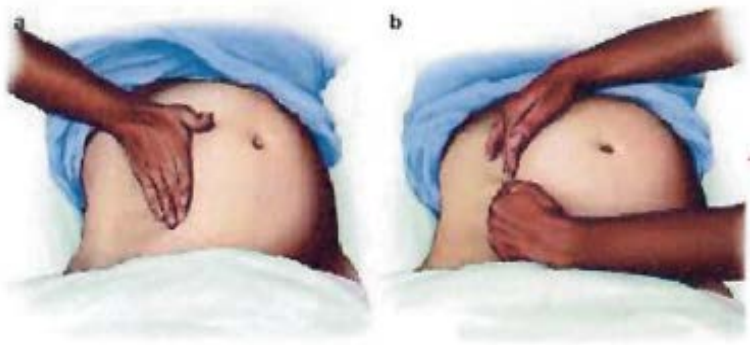
Maternal Cardiac Arrest in Women at 20 weeks or more gestation (Uterus at or above umbilicus)

1. Universal Initial Adult Patient Assessment / Care

2. Early transport within 6 minutes to a facility with OB capabilities for an emergency C-section.

3. Manual chest compressions should be initiated. Airway management.

4. Perform manual left uterine displacement. Displace uterus to the patient's left side and hold it there in place to relieve aortic and vena cava compression.



5. Initiate the use of a mechanical CPR device after the initial 2 minutes of manual chest compressions.

6. Attach Quick Combo pads to obtain ECG rhythm.

7. Refer to the appropriate cardiac protocol based on the ECG rhythm.

8. The preferred vascular access is the antecubital vein for any medication administration.

9. CPR / Drugs / Defibrillations are the same for pregnant patients as with any other patient.

10. ACLS **Hs and Ts** and in addition in the pregnant patient consider:

BEAU-CHOPS
1) **B**leeding
2) **E**mbolism
3) **A**nesthetic complications.
4) **U**terine loss of tone (atony).
5) **C**ardiac Disease
6) **H**ypertension.
7) **O**ther.
8) **P**lacenta abruption / Placenta previa.
9) **S**epsis

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PAIN MANAGEMENT

Introduction

Pain is a symptom commonly encountered in the pre-hospital setting. It represents not only a psychological stressor to the patient, but is also a source of physiologic stress that might impact negatively on both the assessment and management of many chronic or acute illnesses or injuries. Pain management, therefore, may provide both physiologic and psychological support to our patients. Pain management must be instituted with sound judgment considering both the risks, as well as the benefits of these treatment options.

Patients should be asked about the intensity of their pain on a 1 to 10 scale, with 1 being minimal pain and 10 being the most intense pain. Five minutes after administration of nitrous oxide or morphine sulfate, the patient should be asked whether their pain has changed on the 1 to 10 scale. If the pain remains 6 to 10 after administration of nitrous oxide to appropriate patients, then consider administration of morphine sulfate.

If available and unless contraindicated, nitrous oxide is a good choice in managing a patient's pain. However, we use a mixture of Nitrous Oxide that is 50% nitrous oxide and 50% oxygen. At this concentration, only about 50% of patients will receive significant pain relief.

It is paramedic judgment as to whether the first choice in pain management is nitrous oxide or fentanyl/morphine. A patient with an obviously painful injury might be a good situation where it would be more appropriate to use fentanyl or morphine as the first choice for pain control.

If there are obvious contraindications to the use of nitrous oxide in a particular patient, or if it is not available, then use morphine sulfate as the first choice for managing the patient's pain.

TREATMENT

1. Some pain can be managed with the following:

    a. Whenever it is safe and practical, allow the patient to maintain his/her own position of comfort.

    b. Cover wounds to limit air circulation (especially with burns)

    c. Treat Burns as indicated

    d. Treat Sickle Cell Patients as indicated

e. Elevate, apply cold pack(s), and apply pressure dressing(s) to musculoskeletal extremity injuries. Controlling edema is an important part of pain management.

f. Splint or immobilize extremity injuries to limit movement.

2. Administer nitrous oxide (Nitronox), if available.

   a. Prepare the equipment. Nitronox units consist of a nitrous oxide cylinder, a blending regulator, an oxygen cylinder, and a mask.

   b. Contraindications include:
      1) Altered level of consciousness
      2) COPD
      3) Acute pulmonary edema
      4) Pneumothorax
      5) Decompression illness
      6) Air embolus
      7) **Pregnancy (except during labor)**
      8) Abdominal pain with distension or suspicion of obstruction
      9) Inability to self-administer the medication

   c. Turn the oxygen and nitrous oxide (Nitronox) cylinder valves to the "on" position. Make sure the device shows appropriate blending of the gases.

   d. Attach a mask to the Nitronox unit regulator and provide it to the patient for self-administration. The patient must be able to self-administer the medication. If he/she cannot self-administer the nitrous oxide (Nitronox), it should not be used.

   e. Monitor the patient's vital signs and pulse oximeter. If the patient's vital signs become unstable or the patient becomes symptomatic from the side effects, discontinue the nitrous oxide (Nitronox).

3. As long as the systolic BP remains above 90 mmHg, morphine sulfate, **5 mg IV** may be given for pain relief. If after 5 minutes there is not adequate pain relief and the pain score remains 6 or more on a scale of 1 to 10 an additional **5 mg IV** may be given. This may be repeated as needed for continued pain until the total of the multiple doses given does not exceed 20 mg.

4. The calculation for the **initial dose of morphine is 0.1 mg/kg**. Therefore, a larger individual weighing **more than 100 kg (220 lbs) may need a larger starting dose of morphine**. Again, this may be repeated as needed for continued pain until the total of the multiple doses given does not exceed 20 mg.

5. Individuals **70 years of age or older** may be started at **lower doses** of morphine, **for example 2.5 mg IV**.

6. If unable to establish vascular access, and if available, administer fentanyl, **100 micrograms IntraNasal**. If after 5 minutes there is not adequate pain relief and the pain score remains 6 or more on a scale of 1 to 10, an additional **100 micrograms** of fentanyl may be given **IntraNasal**.

7. For patients 70 years of age or older, fentanyl, **50 micrograms IntraNasal** should be used for each dose given to the patient.

8. If vascular access is obtained after giving one dose of fentanyl, ONE dose of morphine, **5 mg IV** may be given to the patient if additional pain relief is indicated.

9. If indicated for pain control and vascular access **IS NOT** available, nitrous oxide and fentanyl may be given to the same patient.

10. If indicated for pain control and vascular access **IS** available, nitrous oxide and morphine may be given to the same patient.

11. If morphine sulfate OR fentanyl causes respiratory depression **AND/OR** a SpO_2 of less than 94%, administer naloxone (Narcan), **2 mg IV/IM or IntraNasal** to reverse this action. May repeat once in 2-3 minutes.

    NOTE: Caution should always be taken when mixing different pain medications. The patient should have their SpO_2, $ETCO_2$, and cardiac rhythm monitored.

NAUSEA / VOMITING

The effects of uncontrolled nausea and vomiting can be significant. Patients may develop dehydration, electrolyte imbalances, aspiration pneumonia, and/or malnutrition.

1. Patients with severe nausea and/or repeated vomiting may be given ondansetron (Zofran), **8 mg ODT (Oral Dissolving Tablet).**

2. Some patients who have been given morphine or fentanyl for pain may develop nausea and/or vomiting. These patients may be given ondansetron (Zofran), **8 mg ODT.**

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PEPPER SPRAY EXPOSURES

Introduction

Oleoresin capsicum is an oily extract of pepper plants. It is used as a spice in salsa, chili, curries, and hot sauces and is the principal active ingredient in "pepper spray".
The capsaicinoid content determines the hotness of the extract. The capsaicinoid contents of extracts used in pepper sprays varies widely among manufacturers from 1.2% to 12.6%.
Exposure to pepper spray can occur with skin contact, eye contact or by inhalation.

Effects

1. Skin exposures causes:
   a. Tingling
   b. Intense burning pain
   c. Swelling
   d. Redness
   e. Occasionally blistering

2. Respiratory responses include:
   a. Burning of the throat
   b. Wheezing (bronchospasm)
   c. Dry cough
   d. Shortness of breath
   e. Gagging
   f. Gasping
   g. Inability to speak or breathe, laryngospasm
   h. Cyanosis and respiratory arrest (rarely)

3. Nasal exposures cause:
   a. Sneezing
   b. Runny nose

4. Eye exposures cause:
   a. Redness
   b. Swelling
   c. Severe burning pain
   d. Watery eyes
   e. Blephlarospasm (spasm of the periorbital eye muscles, inability to open their eyes)

GENERAL TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. If restraint is necessary, **DO NOT** place the patient prone (face down). Use a supine or recovery position.

3. Monitor and document ECG.

Inhalation Exposure

TREATMENT

1. Move the patient to fresh air. Monitor for and treat any respiratory distress.

2. Document pulse oximetry readings upon initial evaluation. If the patient develops cough or difficulty breathing and the SpO_2 is less than 94%, administer oxygen and assist ventilation as required.

3. Treat bronchospasm with ipratropium/albuterol (DuoNeb), **0.5 mg/3 mg** of premixed single unit dose via nebulizer at 6 LPM. May repeat once if needed.

4. Administer epinephrine 1:1,000, **0.3 mL IM** if DuoNeb is not effective.

Eye Exposure

TREATMENT

1. Irrigate exposed eye(s) with copious amounts of water (or normal saline if water is not available) until relief.

2. If available, apply tetracaine HCL, **2 ophthalmic drops** in the affected eye(s) as a topical anesthetic for pain relief. May repeat once after 15 minutes, if needed.

Skin Exposure

TREATMENT

1. Remove contaminated clothing and wash exposed area thoroughly with soap and water (if available).

2. If the burning pain is not relieved by washing and irrigation, apply an aqueous burn gel or burn gel soaked gauze.

NOTE: Pepper spray exposures occasionally precipitate serious medical condition(s). Assess and treat per appropriate protocols.

GENERAL TREATMENT

1. Universal Initial Adult Patient Assessment/Care.
2. Stabilize airway, breathing, and circulation.
3. Attempt to identify any medications or products taken. Save any drug vials, pills, or material. Estimate the amount taken.
4. Be alert for changes in respiratory and circulatory status. Monitor cardiac rhythm, $ETCO_2$ and SpO_2. Give supplemental oxygen if SpO_2 is less than 94%.
5. Be alert for the development of any altered mental status and treat according to the Impaired or Altered Consciousness Protocol.
6. Manage active Seizures.
7. Treat any Systemic / Anaphylactic Reactions.
8. Treat per any appropriate protocols and procedures as needed.
9. Determine if you have an antidote.

Morphine / Fentanyl / Percocet / Vicodin / Dilaudid / Methadone / Carfentanil / Opiates Excess / OD:

(pinpoint pupils, respiratory depression)

a. Administer naloxone (Narcan), **2 mg *slow* IV or IM or IntraNasal** (or **4 mg diluted with normal saline to a total of 10 mL via Advanced Airway** if IV access cannot be established. After the drug has been administered, provide 5 rapid ventilations to enhance the drug delivery into the lungs. This can be repeated once in 2-3 minutes. Additional doses may be given after consultation with Poison Control (1-800-222-1222).

Beta Blocker or Calcium Channel Blocker excess / OD:

(typically bradycardia)

a. Administer atropine sulfate, **1 mg IV** every 2-3 minutes to a **maximum of 3 mg**.

b. If patient is bradycardic and hypotensive administer calcium chloride, **1 gram IV *slowly over 1 minute***. Flush with at least **20 mL** of normal saline. This may be repeated once in 2-3 minutes if indicated.

c. If the patient remains hypotensive after the administration of calcium chloride, administer normal saline, **500 mL IV bolus.** May repeat once if patient remains hypotensive.

Organophosphates Overdose:

a. Administer atropine sulfate, **2 mg IVP/IM every 5 minutes** until drying of the secretions (atropinization) occurs, or **2 mg IM** Atropen Auto Injector, if available.

Antipsychotic Meds excess / OD (for example: haloperidol (Haldol)):

(signs and symptoms of EPS / Dystonic Reactions).

a. Administer diphenhydramine (Benadryl), **50 mg IV *slow* or IM.**

Tricyclic Antidepressant excess / OD:

a. Administer sodium bicarbonate, **1 mEq/kg IVP** for wide QRS 0.12 sec or greater (3 small boxes) AND/OR Ventricular Fibrillation/Ventricular Tachycardia.

b. If hypotensive, administer normal saline, **500 mL IV bolus**. May be repeated once if indicated.

c. If actively **seizing**:

1) If vascular access is available, administer lorazepam (Ativan), **2 mg IV OR** midazolam (Versed), **5 mg IV**.

2) If vascular access is **NOT** available, administer lorazepam (Ativan), **2 mg IM OR** midazolam (Versed), **10 mg IM / IntraNasal or Buccal** (part the patient's lips and without opening the jaws, place the medication laterally between the teeth and the cheek with half of the dose on each side of the mouth).

3) Both medications may each be repeated in 3-5 minutes if indicated.

Cocaine excess / OD:

For acute agitation,

a. If vascular access is available, administer lorazepam (Ativan), **2 mg IV *slowly over 1 minute*, OR** midazolam (Versed), **5 mg IV**.

b. If vascular access is **NOT** available, administer lorazepam (Ativan), **2 mg IM OR** midazolam (Versed), **10 mg IM / IntraNasal or Buccal** (part the patient's lips and without opening the jaws, place the medication laterally between the teeth and the cheek with half of the dose on each side of the mouth)..

c. Both medications may each be repeated in 3-5 minutes if indicated.

10. **Contact Poison Control, 1-800-222-1222,** for assistance in managing specific overdoses. If a telephone is not available, have dispatch contact Poison Control or call the ED of the receiving facility.

    NOTE: Spell out the name of the medication(s) so that it will not be confused with other similar sounding medication(s). Example: Zantac, Xanax.

    a. When contacting the Poison Control Center, the following information should be provided and documented in the Patient Care Record:

    - Patient's age
    - Patient's weight
    - Vital signs
    - Medication(s) name (Trade, Generic, Chemical). Spell it out
    - Strength of medication
    - Dose or amount of product taken
    - Number of each type of pills/liquid consumed
    - Active ingredients
    - Time taken
    - Does the medication belong to the patient
    - Any history of medication allergies

    b. If Poison Control recommends the patient be seen at an Emergency Department, transport per department guidelines. If the patient is to be transported to the hospital, bring with the patient all suspected ingestions including: medications, pill bottles, and containers of harmful compounds.

    c. Document and follow all recommendations from the Poison Control Center as to possible antidotes, mode of transport (if any), and follow-up care.

11. If the overdose/poisoning is related to a known or suspected suicide attempt, police presence should be requested. All of these patients should be transported to the closest appropriate facility.

12. Consider rapid cooling if the patient is **HYPER**thermic [temperature 104°F (40°C) OR if unable to obtain a temperature and the patient feels hot to the touch]. Consider Agitated Patient / Excited Delirium or Environmental Emergencies protocols.

13. Alcohol, acetaminophen (Tylenol), and aspirin are common co-ingested agents. Ask about them.

"BATH SALTS"

"Bath salts" is the name given to a family of man-made synthetic drugs, for example FLAKKA. There are multiple "bath salt" products readily available in the marketplace and on the internet. All of them are synthetic cathinones that are chemically related to, and share properties with, Ecstasy (MDMA), cocaine and methamphetamines. These bath salt products can be ingested, smoked, or injected.

These patients can present with some or all of the following symptoms:

- Agitation
- Sweating
- Tachycardia
- Dilated pupils
- Seizures
- Hallucinations
- Delusional behaviors including self-mutilation
- Hyperpyrexia (elevated body temperature)
- Psychosis

The acute psychosis and delusional behaviors have been reported to last weeks after a single exposure. Of all of the symptoms, the hyperpyrexia [elevated body temperatures greater than 104.1°F (40°C)] is the most life threatening and can lead to multiple organ failures. This phenomenon can also be seen in patients who have taken Ecstasy (MDMA).

TREATMENT

1. **Have enough personnel on the scene to handle the situation, and if necessary, to physically manage the patient.**

2. **Secure the scene and use universal precautions.**

3. Attempt to calm the patient down. Speak softly and non-threateningly. Avoid loud noises and sudden movements.

4. Use the least restrictive method of restraint. **Providers should ensure their own safety.** If possible, allow the patient to correct inappropriate behavior. Use restraints if unable to calm the patient down, and the patient remains a threat to himself/herself or others. If restraint is necessary, **DO NOT put the patient prone (face down)**. Use a supine or recovery position. Use as many providers/police present to safely restrain the patient.

5. If chemical restraint is indicated and available, administer ketamine, **4 mg/kg IM (maximum dose 400 mg).** Ketamine may be given in the mid shaft anteriolateral aspect of the thigh OR the lateral deltoid muscle of the shoulder. It may be given through clothing.

a. If the patient becomes agitated or aggressive as the effects of the ketamine are starting to wear off, **OR IF KETAMINE IS NOT AVAILABLE.**

   1) If vascular access is available, administer lorazepam (Ativan), **2 mg IV *slowly over 1 minute*, OR** midazolam (Versed), **5 mg IV**.

   2) If vascular access is **NOT** available, administer lorazepam (Ativan), **2 mg IM OR** midazolam (Versed), **10 mg IM / IntraNasal or Buccal** (part the patient's lips and without opening the jaws, place the medication laterally between the teeth and the cheek with half of the dose on each side of the mouth)..

   3) Both medications may each be repeated in 3-5 minutes if indicated.

6. Universal Initial Adult Patient Assessment/Care.

7. Ensure a maintainable airway.

8. Obtain a blood glucose level and treat with dextrose 50% (D50W), if indicated.

9. Monitor cardiac rhythm, $ETCO_2$ and SpO_2. Give supplemental O_2, if indicated.

10. Treat any medical complaint per the appropriate protocol(s).

11. IF THE AGITATED PATIENT IS EXHIBITING SIGNS OF EXCITED DELIRIUM **AND** PATIENT IS FEBRILE OR HOT TO THE TOUCH [temperature reading of 104°F (40°C) or higher **OR** if unable to obtain a temperature and the patient feels hot to the touch] attempt to cool the patient down.

    a. Remove as much clothing as possible.

    b. If possible, move patient to a cooler environment and/or fan blowing on patient.

    c. If available, apply ice packs to the neck, axillae, and groin areas.

    d. If available, take and document a baseline temperature before administering cold normal saline. Also take and document a temperature at the time of patient transfer in the ED.

    e. Establish vascular access, and **bolus cold** (34°F) normal saline, **30 mL/kg IV/IO (maximum 2 Liters)**.

    f. Administer midazolam (Versed), **5 mg *slow* IV** or **10 mg IM / IntraNasal** to reduce muscle shivering, if indicated.

    g. If the patient is agitated and/or in pain after midazolam (Versed) and the systolic BP remains at 90 mmHg or greater, administer morphine sulfate, **5 mg IV/IO.** If the patient continues with agitation and/or pain, the morphine may be repeated once in 5 minutes. The total amount of morphine given should not exceed 10 mg.

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TREATMENT

1. Following successful resuscitation (ROSC), the patient will be evaluated for:

   a. Presence of a carotid pulse

   b. Is there adequate ventilation/oxygenation? Avoid hyperventilation. Monitor SpO_2 and CO_2 waveform capnography.

   c. If there is a carotid pulse try to obtain a Blood Pressure.

2. Continuously monitor SpO_2 and CO_2 waveform capnography.

3. After ROSC, and there is an arrhythmia, treat per the appropriate protocol.

4. After ROSC, and there are frequent (more than 6/minute) or multifocal PVCs, administer lidocaine, **1 mg/kg IV bolus**. If indicated, may repeat at half dose in 10 minutes.

5. Routine administration of anti-arrhythmics following ROSC is NOT indicated.

6. If the systolic BP is less than 90 mmHg. Administer a fluid bolus of normal saline, **500 mL IV/IO**. This may be repeated once.

7. If normal saline boluses are not successful (i.e., systolic BP remains less than 90 mmHg), administer premixed dopamine, **400 mg in 250 mL D5W** (1,600 mcg/mL), start at **30 drops per minute** and titrate until BP is equal to or greater than 90 mmHg systolic.

8. If time permits, perform a 12-lead ECG, and if a STEMI is present **call a STEMI Alert immediately**.

9. Attempt to determine and then treat the underlying causes of the cardiac arrest.

10. **Transport all ROSC patients to a STEMI center even if there is no ST segment elevation. However, only call a STEMI Alert if there is ST segment elevation.**

11. Following successful resuscitation (ROSC) of an atraumatic cardiac arrest, if the patient remains unconscious and is not pregnant, call an **ICE ALERT** to the **STEMI Center**.

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Introduction

Psychiatric Emergencies may be due to either unstable mood disorders, acute psychoses, or to acute crises which may also have an underlying drug or alcoholic etiology.

REMEMBER that patients with psychiatric issues may also have acute medical conditions.

Personal Safety of patients and responders is a primary concern.

TREATMENT

1. **Secure scene**:
   a. Are any weapons present?
   b. Is the patient a threat to himself or others?
   c. Are police needed?
2. Universal Initial Adult Patient Assessment / Care
3. If the patient is combative and restraint is necessary, avoid placing the patient in a prone or face-down position. Use a supine or recovery position.
4. Obtain an accurate glucose level and treat as indicated.
5. Rule out Excited Delirium. Refer to Agitated Patient/Excited Delirium Protocol.
6. If the patient is spitting, apply a NRBM to the patient's face with O_2 at 15 LPM.
7. If an overdose is identified, consider an antidote. Consider calling **Poison Control 1-800-222-1222.**
8. If the patient is suicidal or homicidal due to suspected mental illness consider the Baker Act.
9. If the patient is uncooperative and places their own wellbeing or the wellbeing of others at risk due to being under the influence of drugs or alcohol consider the Marchman Act.

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RAPE MANAGEMENT

Rape may be seen in victims in all age groups from very young children to elderly adults. When working with rape victims, you must remember that the psychological trauma of such an intimate violation can greatly exceed the physical trauma. Your questions, your comments, and your medical management will impact on their psychological recovery. Such victims need to be managed with great compassion and consideration.

There is also a need for preservation of evidence. The victim should be advised not to shower or douche prior to being seen at the Rape Treatment Center. All clothing involved with the rape should accompany the victim to the Rape Treatment Center. In most cases the police on the scene will handle this.

TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. **Assess for life threatening injuries and hemorrhaging and treat accordingly.**

3. If patient is alert, be sure to explain any procedure that involves touching them. Also, get their permission before proceeding. This includes simple things like taking vital signs.

4. Patients with life threatening injuries should be taken to the closest appropriate facility for evaluation.

5. Patients without life threatening injuries should be taken to the Jackson Memorial Hospital Emergency Department for medical clearance.

6. Patients should be transported by an ALS Rescue Unit.

7. Notify police, if they are not already on scene or enroute.

8. To ensure patient privacy during radio transmissions, the term **"RTC patients"** should be used.

9. The **Rape Treatment Center** is located at the Jackson Memorial Hospital (main campus) Emergency Department.

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This protocol will focus on patients with medical causes as a source of their respiratory emergency. Management of patients with difficulty breathing associated with trauma is not covered in this protocol. Obtain and document a pulse oximetry reading and a waveform capnography reading during assessment and after treatment on all patients with respiratory emergencies. Treat any problems as per protocol(s).

This protocol looks at the most common presentations with the patient in respiratory distress. These include:

- Rales/Rhonchi
- Wheezing
- Unilateral absence of breath sounds.

GENERAL TREATMENT

All patients with Respiratory distress should have the following:

1. Universal Initial Adult Patient Assessment / Care
2. Airway Management Protocol
3. Initiate ventilation, oxygen, vascular access, and monitoring. Monitoring should include: ECG rhythm, pulse oximetry, waveform capnography, and repeated vital signs assessment.

Respiratory Distress with Rales and/or Rhonchi

A patient's history is the most useful assessment tool in determining whether a patient's respiratory distress **with rales and/or rhonchi is due to primarily cardiac or pulmonary causes**.

Congestive Heart Failure (CHF)

- Congestive heart failure is usually a chronic illness with acute exacerbations. These patients usually have SOB for days rather than hours.
- They may also present with swelling of both lower extremities.
- They may also be taking diuretics and cardiac medications.
- These patients are frequently more comfortable sitting up.

Cardiac Pulmonary Edema

- Acute pulmonary edema may develop within minutes.
- These patients may have watery, frothy sputum.
- As Pulmonary Edema develops, lung sounds will be progressively absent starting from the bases up.

TREATMENT for both CHF and Cardiac Pulmonary Edema

1. If available and if the patient is cooperative, place the patient on CPAP mask device as soon as possible.
2. Administer nitroglycerin
   a. If the systolic BP is **between 90 mmHg and 160 mmHg** administer nitroglycerin, **0.4 mg SL**. Repeat every 3 to 5 minutes if needed as long as the systolic BP remains greater than 90 mmHg **OR** until relief of signs or symptoms.
   b. If the systolic BP is **greater than 160 mmHg** administer nitroglycerin, **0.8 mg SL (two tabs)**. Repeat every 3 to 5 minutes if needed as long as the systolic BP remains greater than 160 mmHg **OR** until relief of signs or symptoms.
3. In treating cardiac Pulmonary Edema, the emphasis is on providing Positive Pressure Ventilation and administering nitroglycerin.
4. **DO NOT administer nitroglycerin if a patient is known or suspected to have taken any sexually enhancing drugs and/or drugs prescribed for pulmonary hypertension. Examples include: Viagra/Revatio (sildenafil) or Levitra (vardenafil) within the past 24 hours, or Cialis/Adcirca (tadalafil) within the past 72 hours. There may be other sexually enhancing drugs that apply. Revatio is prescribed for pulmonary hypertension.**

   NOTE: Try to question the patient discretely when asking about sexually enhancing medication use.
5. If the patient remains symptomatic after these interventions, and the systolic BP remains above 90mmHg, then administer furosemide (Lasix), **20 mg IVP/IO** if the patient is not currently taking a diuretic ***or*** **40 mg IVP/IO** if the patient is currently taking a diuretic.
6. **If the systolic BP is less than 90 mmHg,** administer normal saline, **500 mL IV bolus** and reassess patient.

7. If systolic BP is still below 90 mmHg, administer premix dopamine, **400 mg in 250 mL D5W** (1,600 mcg/mL) **IV/IO**, start at **30 drops per minute** and titrate until systolic BP is equal to or greater than 90 mmHg.

8. If able to raise systolic BP to at least 90 mmHg go to step 1 above. (CPAP/NTG)

Cough With Fever (Pneumonia)

- Patient may be febrile (elderly patients may have pneumonia without a fever).
- Symptoms usually include a history over days with a productive cough and shortness of breath.

TREATMENT

1. Administer Oxygen via NRBM at 15 LPM and measure SpO_2.

2. If SpO_2 remains below 94%, and if CPAP is available, and the patient is cooperative, place the patient on CPAP mask device as soon as possible.

3. If the systolic BP is less than 90 mm Hg administer normal saline, **500 mL IV bolus** and reassess patient. This may be repeated once if the systolic BP remains below 90 mmHg.

4. If no improvement with normal saline, administer premix dopamine, **400 mg in 250 mL D5W** (1,600 mcg/mL) **IV/IO**, start at **30 drops per minute** and titrate until systolic BP is equal to or greater than 90 mmHg.

Acute Non-Cardiac Pulmonary Edema

- These may include toxic inhalations and drownings.
- These are usually evident from the environment and the patient's history.
- The patient may also have wheezing with these situations.

TREATMENT

1. If the patient is wheezing, (shark fin on capnography) consider administration of ipatropium/albuterol (DuoNeb), (**0.5 mg/3mg)** of premixed single unit dose via a nebulizer at 6 LPM. May repeat once if needed.

2. If the systolic BP is equal to or greater than 90 mmHg, and if the patient is cooperative, place the patient on CPAP mask device as soon as possible, if available.

3. If the systolic BP is less than 90 mmHg administer normal saline, **500 mL IV bolus** and reassess patient.

4. If no improvement with normal saline, administer premix dopamine, **400 mg in 250 mL D5W** (1,600 mcg/mL) **IV/IO**, start at **30 drops per minute** and titrate until systolic BP is equal to or greater than 90 mmHg.

COPD / Asthma / Emphysema / Acute Wheezing

TREATMENT

1. Administer ipatropium/albuterol (DuoNeb), (**0.5 mg / 3 mg)** of premixed single unit dose via a nebulizer at 6 LPM. May repeat once if needed.

2. If the patient is **NOT** improving with the above treatments or is demonstrating severe distress (severe distress is identified by absent or diminished lung sounds, the patient speaking in 1 to 3 word sentences, or obvious labored respirations), consider the additional treatments below:

   a. If the pulse oximetry reading remains below 94%*****, if available, and patient is cooperative, place patient on CPAP or PPV if CPAP is not used.

   b. If CPAP is immediately indicated for the management of the patient's respiratory distress AND the patient is acutely wheezing, administer ipatropium/albuterol (DuoNeb) thru the CPAP mask, if available.

   c. If the patient is **NOT** improving with the CPAP, administer epinephrine 1:1,000, **0.3 mg IM (0.3 mL)**. May repeat once in 3 minutes.

   d. If the patient's condition does not improve with the above treatments, consider administering magnesium sulfate, **2 grams *slow* IVP.**

   e. Refer to Anaphylaxis / Systemic Reactions

   f. *****In COPD patients, administer O_2 until SpO_2 comes up to 88%-92%.

Unilateral Absence of Breath Sounds.

Consider the following causes:

Endotracheal Tube Displacement

- If the patient is intubated, the ETT may have advanced too far into a mainstem bronchus.

- If an advanced airway is established, and the patient's condition deteriorates and/or the SpO_2 drops to less than 94%, consider the following possibilities (DOPE):
  - **D**isplacement of the device. Check for neutral head/neck position
  - **O**bstruction of the device.
  - **P**neumothorax. Check for bilateral breath sounds.
  - **E**quipment failure. Check pop-off valve

Pneumothorax

- Atraumatic Spontaneous Pneumothorax
- Pneumothorax may also be associated with blunt and penetrating trauma.

Pneumothorax may be classified as either:

- Simple: Normal blood pressure, some air hunger, but not in significant distress - or
- Tension: Severe distress, may have hypotension, clammy, mottled skin, neck vein distention, and/or tracheal shift

  o If the patient appears to have a tension pneumothorax, refer to chest decompression procedure.

Hemothorax

- Large pleural effusions may be the result of trauma or a medical condition.

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Seizures in the adult may be a result of:

- Trauma
- Infection
- Eclampsia in Pregnancy
- Systemic illness
- Low blood glucose
- Low oxygen blood levels
- Generalized seizure disorder
- Medications, e.g., Wellbutrin
- Drug use/abuse/OD
- Hypotensive states

There are several different types of seizures. The most commonly recognized is the TONIC-CLONIC event. This type of seizure is typified by an initial generalized contraction of all body muscles (TONIC), followed by a pattern of generalized body muscle contractions alternating with general flaccidity (CLONIC) which gives the generalized shaking that most people would associate with a seizure. Generalized seizures require loss of consciousness followed by varying periods of post-ictal confusion. During these generalized seizures, patients lose all motor control and stop breathing as the diaphragm also seizes. The patient may bite their tongue and may be incontinent of urine or stool. The absence of tongue biting or incontinence does not mean that the patient did not have a seizure.

Focal seizures are the presence of an on-off rhythmic contraction of a specific part of the body and not the whole body. Focal seizures can remain focal or spread and become the generalized seizures mentioned above. Patients can remain conscious with a focal seizure, and if they do remain conscious, the patient has no control over the seizing portion of their body.

Recently Reported Seizure

- Active seizing by the patient may have ended by the time that EMS personnel arrive.
- Most seizures in patients with a history of seizures will last less than 2 minutes.
- Patients who have experienced a seizure will frequently have a post-ictal period of confusion and may be poor historians during that time.

TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. Protect the patient from injury. Place in the recovery position if no C-spine injury is suspected.

3. Obtain a blood glucose level using a finger stick. If the glucose is equal to or less than 60 mg/dL, administer dextrose 50% (D50W), **25 grams (50 mL) IVP** OR if there is no IV, administer glucagon, **1 mg IM**.

4. Evaluate the patient and determine whether IV access can be easily established. If so, establish an IV or saline lock device.

5. Transport.

Active Seizures

TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. Protect the patient from injury. Place in the recovery position (if possible) if no C-spine injury is suspected.

3. Evaluate patient and determine whether IV access can be easily established.

   a. Establish an IV or saline lock device, and administer lorazepam (Ativan), **2 mg IV *slowly over one minute*, OR** midazolam (Versed), **5 mg IV**.

   b. If IV access is **NOT** readily available, administer lorazepam (Ativan), **2 mg IM OR** midazolam (Versed), **10 mg IM / IntraNasal or Buccal** (part the patient's lips and without opening the jaws, place the medication laterally between the teeth and the cheek with half of the dose on each side of the mouth).

4. Obtain a blood glucose level using a finger stick. If the glucose is equal to or less than 60 mg/dl, administer dextrose 50% (D50W), **25 grams (50 mL) IV OR** if there is no IV, administer glucagon, **1 mg IM.**

5. If the patient continues to seize after 5 minutes, repeat lorazepam (Ativan), **OR** midazolam (Versed).

6. If the seizing patient is pregnant in the 3rd trimester or recently delivered, treat as an eclamptic seizure.

   a. Administer magnesium sulfate, **4 grams IV *slowly over 2 minutes*** (if there is no vascular access, magnesium sulfate may be given **5 grams IM once in each buttock for a total of 10 grams**).

   b. After magnesium sulfate, if the patient continues to seize, and vascular access is available, administer lorazepam (Ativan), **2 mg IV slowly over one minute, OR** midazolam (Versed), **5 mg IV**.

   c. If IV access is **NOT** readily available, administer lorazepam (Ativan), **2 mg IM OR** midazolam (Versed), **10 mg IM / IntraNasal or Buccal** (part the patient's lips and without opening the jaws, place the medication laterally between the teeth and the cheek with half of the dose on each side of the mouth).

Introduction

Shock is a state where the body's vital organs are not being adequately perfused. Perfusion of vital organs is dependent on the integrity of the three parts of the vascular system: the **heart**, the **blood**, and the **vascular tree (**i.e., arteries and veins). Any significant damage or loss of function to any of the three parts will initially cause a response from the other two parts attempting to restore normal perfusion. If the responses are not adequate, then the body's vital organs will not be adequately perfused.

Looking at the three components of the vascular system allows one to understand what happens in various types of shock.

GENERAL TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. General treatment of the patient in shock includes proper positioning of the patient. The *Recovery Position* is the optimal position in patients where spinal cord trauma is not suspected.

3. All patients in shock should receive oxygen through at least a non-rebreather mask. An Advanced Airway may be indicated in some patients.

4. When a patient is hypotensive, there is no additional clinical value to elevating the patient's legs or placing the head lower than the legs, or said another way, the *Trendelenburg Position* is of no clinical value and may actually be harmful.

Cardiogenic shock

(The heart)

Cardiogenic shock is either rate-related or pump failure.

TREATMENT

1. **Rate-related –** means the heart is either beating **too fast** or **too slow** to provide adequate circulation to the body.

   a. Follow appropriate Cardiac Protocol(s).

2. **Pump failure -** is when the heart muscle is damaged and can no longer adequately push the blood forward. This occurs with heart attacks, trauma, some infections, and some congenital defects.

a. To treat hypotensive STEMIs, administer normal saline, **500 mL IV bolus** and reassess the BP.

b. If the patient's BP improves with the initial fluid challenge, but does not reach 90 mmHg systolic, administer a **second** bolus of normal saline, **500 mL IV** and reassess the BP.

c. If the fluid challenges are not effective, and the systolic BP still remains below 90 mmHg systolic, administer premix dopamine, **400 mg in 250 mL D5W** (1,600mcg/mL), start at **30 drops per minute** and titrate until systolic BP is equal to or greater than 90 mmHg.

Hypovolemic shock
(The blood)

Hypovolemic shock may be due to internal bleeding, trauma, or dehydration from excessive sweating, vomiting, and/or diarrhea.

TREATMENT

1. Administer normal saline, **500 mL IV/IO bolus** and reassess BP. In patients with a pulse, IV is the preferred route for fluid challenge. If an IV cannot be established on 2 attempts, give fluid IO and try again to start an IV after the IO fluid challenge.

2. If the patient's BP improves with the initial fluid challenge, but does not reach 90 mmHg systolic, administer a **second** bolus of normal saline, **500 mL IV** and reassess the BP.

3. If the fluid challenges are not effective, and the systolic BP still remains below 90 mmHg, administer premix dopamine, **400 mg in 250 mL D5W** (1,600mcg/mL) and start at **30 drops per minute** and titrate to a systolic BP of 90 mmHg.

Vascular Tree
(Arteries and/or veins)

Shock occurs when the blood vessels are dilated and cause a loss of systemic pressure and retention of increased amounts of the circulating blood volume in the peripheral circulation.

Neurogenic Shock

Usually the result of the loss of CNS smooth muscle control of blood vessels that dilate when control is lost. In effect the pool is bigger with the same amount of fluid.

TREATMENT

1. Administer normal saline, **500 mL IV/IO bolus.** This may be repeated once.

2. If the fluid challenges are not effective, and the systolic BP still remains below 90 mmHg, administer premix dopamine, **400 mg in 250 mL D5W** (1,600mcg/mL) and start at **30 drops per minute** and titrate to a systolic BP of 90 mmHg.

Septic Shock

Results in vasodilatation similar to Neurogenic Shock.

TREATMENT

1. Administer normal saline, **500 mL IV/IO bolus.** This may be repeated once.

2. If the fluid challenges are not effective, and the systolic BP still remains below 90 mmHg, administer premix dopamine, **400 mg in 250 mL D5W** (1,600mcg/mL) and start at **30 drops per minute** and titrate to a systolic BP of 90 mmHg.

Anaphylactic Shock

Also causes vasodilatation. These patients may also have pronounced bronchoconstriction that presents with wheezing and diminished breath sounds. These patients should be treated according to anaphylaxis in the Systemic Reactions Protocol.

TREATMENT

1. Patients with a severe allergic reaction and who exhibit signs of decreased perfusion of the body (e.g., hypotension) should be administered epinephrine 1:1,000, **0.3 mg IM (0.3 mL).** .

2. In addition to epinephrine in the hypotensive patient, administer normal saline, **500 mL IV fluid bolus**. May repeat once if needed.

3. If the patient remains hypotensive (BP less than 90 mmHg systolic or with no radial pulse) after 3-5 minutes after the IM epinephrine and normal saline, administer epinephrine 1:10,000, **0.1 mg IV/IO (1 mL)**. May repeat every 3 to 5 minutes as needed to a **maximum dose of 0.5 mg (5 mL).**

4. Administer diphenhydramine (Benadryl), **50 mg slow IVP or IM**. Benadryl is slower in onset, but longer in duration than epinephrine and should take effect just as epinephrine is losing effectiveness.

5. If the hypotension persists, administer premix dopamine, **400 mg in 250 mL D5W** (1,600mcg/mL), start at **30 drops per minute** and titrate until systolic BP is equal to or greater than 90 mmHg.

6. If bronchospasm is not relieved by the administration of the first dose of epinephrine, administer ipratropium/albuterol (DuoNeb), **0.5 mg/3 mg** of premixed single unit dose via a nebulizer at 6 LPM. May repeat once if needed.

SICKLE CELL PATIENTS

Sickle cell patients can present with painful crises. This occurs when the blood of the patient with sickle cell disease is unable to pass through the smaller blood vessels and the local tissue becomes ischemic. These areas can be extremely painful. All of these patients will be able to provide their history of sickle cell disease and can tell you whether their symptoms are typical for a pain crisis episode.

TREATMENT

1. Universal Initial Adult Patient Assessment / Care
2. Apply oxygen with a non-rebreather mask.
3. Administer normal saline, **500 mL IV bolus.**
4. Refer to Pain Management as needed.

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This protocol for triage, assessment, care, and transportation of acute Stroke or "brain attack" victims complies with FS 395.3041 for prehospital Emergency Medical Services.

When assessing a patient suffering from a suspected Stroke, the **most critical element** in the subsequent treatment of this patient at a Stroke Center is the accurate determination of the **LAST TIME the patient was WITHOUT SYMPTOMS of a Stroke**.

TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. Perform the FOAMD Stroke Checklist exam determining (F.A.S.T. - E.D.), and mark your findings on the Patient Care Record.

   a. **F**acial Droop
   b. **A**rm Drift
   c. **S**peech abnormalities
   d. **T**ime last seen normal
   e. **E**ye / Gaze Deviation
   f. **D**enial / Neglect

3. Establish as accurately as possible the **LAST TIME the patient was WITHOUT SYMPTOMS of a stroke**.

   a. Use family members or caretakers to establish time markers such as at lunch time or just before going to bed as to when patient was last seen without symptoms.

   b. Also record in your Patient Care Record the name and phone (cell) number of the witness reporting the onset of symptoms.

4. Provide supplemental O_2, if indicated, to maintain SpO_2 of 94% or more.

5. Perform a blood glucose test and document it in the ePCR. Avoid giving glucose unless hypoglycemia is confirmed to be less than 60 mg/dL by a glucometer reading.

6. Using the FOAMD Stroke Checklist, determine if the patient meets the criteria for a **Stroke Alert**.

7. Using the FOAMD Stroke Checklist, determine whether either a Primary or Comprehensive Stroke Center is the appropriate destination.

8. Transport **Stroke Alert** patients in the semi-fowler position, head elevated 30-45°.

9. If the time of onset of symptoms is determined to be **greater than 12 hours** or if time of onset of symptoms cannot be determined, do not call a Stroke Alert, but still transport the patient to the closest Stroke Center.

10. DO NOT delay transport for any interventions.

11. If the FOAMD Stroke Checklist exam is normal, but a stroke is suspected due to presence of suspicious symptoms (such as a headache particularly with altered levels of consciousness or a decreasing level of consciousness that develops in the presence of EMS personnel, and/or stiff neck without fever, transport the patient to the closest Stroke Center.

12. Some patients may have an acute neurological deficit on the initial exam only to have the symptoms resolve on subsequent exams (for example: TIA, complex migraines, hypoglycemia, postictal patients). Patients with suspected TIAs regardless of whether the acute stroke symptoms have resolved, should be transported to the closest Stroke Center.

13. **There is no current indication for the pre-hospital treatment of an elevated blood pressure with signs and symptoms of stroke.**

14. However, hypotensive patients with a systolic blood pressure of less than 90 mmHg should be treated to maintain an appropriate blood pressure. Refer to Hypotension / Shock Protocol.

FOAMD STROKE ALERT CHECKLIST LINK

SYNCOPE

Syncope is defined as a brief loss of consciousness. It is not a specific disease or condition, but rather the result of some underlying disease or condition. Also, consider Trauma if the patient falls during the syncopal episode. The work up and treatment includes considering the following:

- Hypoxemia
- Hypoglycemia
- Seizure
- Drug reaction
- Dysrhythmia
- Heat Illness
- Anaphylaxis
- Hypovolemia
- Vasovagal

TREATMENT:

1. Universal Initial Adult Patient Assessment / Care
2. Blood glucose check and manage as indicated.
3. Obtain a 12-lead ECG and maintain continuous ECG monitoring. If the heart rate is less than 60 bpm or greater than 150 bpm treat as per specific protocol.
4. If a STEMI is identified, call a **STEMI ALERT immediately,** and treat per protocol.
5. Monitor and record SpO_2 and CO_2 levels and treat appropriately.
6. If circumstances dictate, monitor and record CO levels and treat appropriately.
7. Establish vascular access.
8. If patient is hypotensive, treat per Hypotension / Shock Protocol.
9. Call a **TRAUMA ALERT** for patients who have sustained blunt head trauma, have a GCS less than 15, and who are taking blood thinners (other than aspirin).
10. Transport to the closest appropriate facility.

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Tachycardia is defined as a heart rate greater than 100 beats per minute (BPM). Heart rates less than 150 bpm are usually the heart reacting to other bodily conditions, while sustained heart rates greater than 150 bpm are frequently cardiac rhythm events.

Multiple factors may increase a patient's heart rate. Some are minor such as pain, fever, anxiety, and excitement. Serious causes may include conditions that affect the lungs, abdomen and circulatory system including shock, pulmonary emboli, and serious intra-abdominal conditions.

Further assessment, including patient history and medications, is needed. In an adult heart, rates less than 150 bpm usually do not require any treatment other than oxygen, IV access, and possibly IV fluids.

A 12-lead ECG should be obtained on all of these patients.

Patients with tachycardia should be assessed by looking at the following:

1. **Stable** vs. **Unstable**
2. **Narrow Complex** vs. **Wide Complex**
3. **Regular** vs. **Irregular rhythm**
4. **Wide Monomorphic Complex** vs. **Wide Polymorphic Complex**

Stable vs. **Unstable**.

These two categories are identified by evaluating patient signs or symptoms related to the tissue perfusion and organ function. The organ systems that can be assessed are the brain, heart, lungs, kidneys, and skin.

1. A **stable patient** has adequate tissue perfusion and organ function.

2. **Unstable patients** present with signs or symptoms related to inadequate tissue perfusion and organ function (**shock**). For example, inadequate perfusion may present as:

   a. **Brain**: altered mental status, confusion, or agitation/ combativeness.
   b. **Heart**: severe chest pain, heart failure, hypotension
   c. **Lungs**: Rales, CHF (heart failure)/pulmonary edema
   d. **Skin**: cool, clammy, delayed capillary refill, diminished pulses

NOTE: For electrical therapy you need **CASH**.
The **unstable** patient has **CASH**.

- **C**hest pain (cardiac ischemia)
- **A**ltered Mental status
- **S**hortness of breath
- **H**ypotension

During the assessment of a patient with tachycardia, it should be determined if another condition is causing the fast heart rate or whether the fast heart rate is causing the patient's symptoms. Rate-related symptoms are uncommon if the heart rate is less than 150 bpm.

If the heart rate is 150 bpm or greater, the rhythm strip (ECG) should be reviewed to determine:

1. Whether the QRS complex is narrow or wide (0.12 sec / 3 boxes or wider)

2. Whether the rhythm is regular or irregular.

   NOTE: Regular rhythms with a rate greater than 100 bpm but less than 150 bpm are most likely sinus tachycardia.

3. **Narrow Complex-Regular Tachycardias may include:**
   a. SVT
   b. Atrial Flutter
   c. Sinus Tachycardia

4. **Narrow Complex-Irregular Tachycardias may include:**
   a. Atrial flutter
   b. Atrial fibrillation

5. **Multifocal Atrial Tachycardia** (MAT - usually COPD patients where rhythm does not require immediate treatment)

6. **Wide Complex-Regular Tachycardias (Monomorphic) may include:**
   a. Ventricular Tachycardia
   b. SVT with aberrant conduction
   c. Bundle branch blocks with fast heart rates
   d. Wolff-Parkinson-White syndrome

7. **Wide Complex-Irregular Tachycardias (Polymorphic) may include:**
   a. Multi-focal ventricular tachycardia (for example, torsades de pointes)
   b. Atrial fibrillation with aberrant conduction.

GENERAL TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. Hypoxemia is a common cause of tachycardia. Obtain a pulse oximetry on these patients, and administer Oxygen if indicated to maintain SpO_2 of at least 94%.

3. A 12-Lead ECG should be obtained on all of these patients

4. A team approach shall be used with all patients. The following actions should occur concurrently: while one individual is starting the IV, another evaluates the patient and rhythm, another should be preparing for possible synchronized cardioversion.

5. If at any time the patient becomes unstable, or if IV access is delayed and/or patient's condition deteriorates, Perform **Synchronized Cardioversion Immediately**

SYNCHRONIZED CARDIOVERSION

ZOLL	LIFEPAK	MRX
100 J	100 J	100 J
150 J	200 J	150 J
200 J	300 J	200 J

6. **IF TIME PERMITS**, consider pain management in the conscious patient before performing a synchronized cardioversion, but do not delay treatment.

7. If at any time the patient loses their pulse, **and has a shockable rhythm, Defibrillate.**

DEFIBRILLATION	ZOLL	LIFEPAK	MRX
SHOCK #1	200 J	360 J	150 J
SHOCK #2	200 J	360 J	200 J
SHOCK #3+	200 J	360 J	200 J

SINUS TACHYCARDIA

Sinus tachycardia is defined as a heart rate greater than 100 bpm and usually less than 150 bpm. (There can be some overlap with some SVTs. Some sinus tachycardias can be faster than 150 bpm depending on the age of the patient. Some SVTs can be slower than 150 bpm.) Sinus tachycardias are usually related to another condition and are not primary cardiac events.

TREATMENT

1. Supportive care. If tachycardia is found to be a result of other conditions from a thorough assessment and history (for example, sepsis with fever or trauma), treat per appropriate protocol(s).

2. Consider normal saline, **500 mL IV fluid bolus** and reassess vital signs. May repeat once if indicated.

SUPRAVENTRICULAR TACHYCARDIA (SVT) (NARROW COMPLEXES)

TREATMENT

1. **STABLE – SVT (Narrow Complex)**

   a. Have the conscious patient perform Valsalva (vagal) maneuvers

      1) Have patient hold breath and bear down.

   b. If the SVT persists, and the patient is less than 55 years of age and there is no previous stroke history, perform Carotid Massage.

      1) Patients 55 years of age or greater should NOT receive carotid massage in the field setting due to the possibility of emboli from plaque in the carotid arteries.

      2) Carotid massage should only be performed on one side of the neck at a time.

   c. If the SVT persists, using the *two-syringe technique*, administer adenosine, **12 mg *rapid* IVP/IO** immediately followed by a normal saline, **20 mL *rapid* IV/IO flush**

      1) The preferred IV location is **AC** with the arm raised during medication administration.

      2) Print a continuous ECG rhythm strip during the administration of adenosine.

      3) Recheck the rhythm after each dose. It is not unusual that a rapid Atrial Fibrillation may appear as a SVT. When the rhythm slows with adenosine, Atrial Fibrillation may be unmasked. These rhythms will frequently speed up again to a tachycardia.

      4) Before giving adenosine, advise the patient they should not be afraid and that the medication may make them feel worse, but that it will only last seconds.

   d. If the SVT persists, administer another dose of adenosine, **12 mg *rapid* IVP/IO** immediately followed by a normal saline, **20 mL *rapid* IV/IO flush** two minutes after the first dose.

   e. If transport is delayed and the stable patient remains in an SVT rhythm after 2 doses of adenosine, administer diltiazem (Cardizem), **0.25 mg/kg IV/IO *over 2 minutes*** (usual adult dose is 20 mg).

f. If IV access is delayed and/or patient's condition deteriorates, **perform Synchronized Cardioversion immediately.**

g. Consider pain management in the conscious patient, but do not delay treatment.

2. **UNSTABLE – SVT (Narrow Complex)**

a. Unstable patients that are alert and oriented can be treated initially by giving the patient adenosine as administered above.

b. For unstable patients that are **NOT** conscious, **perform Synchronized Cardioversion immediately**

c. If IV access is delayed and/or patient's condition deteriorates, **perform Synchronized Cardioversion immediately.**

d. Consider pain management in the conscious patient, but do not delay treatment.

ATRIAL FIBRILLATION / ATRIAL FLUTTER

TREATMENT

1. **STABLE – A-Fib / A-Flutter**

a. Administer diltiazem (Cardizem), **0.25 mg/kg IV/IO *over 2 minutes*** (usual adult dose 20 mg).

b. If at any time patient becomes unstable or IV access is delayed, **perform Synchronized Cardioversion immediately.**

c. Consider pain management in the conscious patient, but do not delay treatment.

d. Atrial Fibrillation is only treated if tachycardia present.

2. **UNSTABLE – A-Fib / A-Flutter**

a. Unstable patients that are alert and oriented can be treated initially by giving the patient diltiazem as administered above.

b. For unstable patients that are **NOT** conscious and alert, **perform Synchronized Cardioversion immediately**.

c. If IV access is delayed and/or patient's condition deteriorates, **perform Synchronized Cardioversion immediately.**

d. Consider pain management in the conscious patient, but do not delay treatment.

e. Atrial Fibrillation is only treated if Tachycardia is present and the patient is symptomatic

WIDE COMPLEX TACHYCARDIA – REGULAR (Monomorphic)

TREATMENT

1. **STABLE – Wide Complex (Regular)**

   a. Administer lidocaine, **1 mg/kg IV/IO**.

   b. If at any time patient becomes unstable or IV access is delayed, **perform Synchronized Cardioversion immediately.**

   c. Consider pain management in the conscious patient, but do not delay treatment.

2. **UNSTABLE – Wide Complex (Regular)**

   a. If the patient is conscious and hemodynamically **unstable, perform Synchronized Cardioversion immediately**.

   b. Consider pain management in the conscious patient, but do not delay treatment.

   c. If at any time the patient loses their pulse, **Defibrillate**.

WIDE COMPLEX TACHYCARDIA –IRREGULAR (Polymorphic)

TREATMENT

1. **STABLE – Wide Complex (Irregular)**

   a. Administer amiodarone, **150 mg in 50 mL D5W / NS** and run a regular drip (macro drip set) **IV/IO at 50 drops per minute *over 10 minutes*.**

   b. Another choice is lidocaine, **1 mg/kg IV/IO**.

c. After the administration of amiodarone or lidocaine, if the patient remains stable and in the same wide complex tachycardia, administer magnesium sulfate, **4 grams IV/IO slow over 2 minutes**.

d. If at any time the patient is or becomes **Unstable, Defibrillate Immediately.**

2. **UNSTABLE – Wide Complex (Irregular)**

a. If at any time the patient is or becomes **Unstable, Defibrillate Immediately.**

TORSADES de POINTES

Torsades de Pointes is a wide complex irregular (Polymorphic) tachycardia with changing appearance of the QRS complexes. Additionally, there are runs of predominately positive complexes alternating with runs of predominantly negative complexes.

This paroxysmal form of polymorphic ventricular tachycardia must meet three (3) criteria to be labeled as Torsades de Pointes:

- Ventricular rate greater than 200 bpm,
- Changing QRS axis, positive to negative back to positive, etc., and
- Episodes that last less than 90 seconds.

Torsades De Pointes may present with or without a pulse.

TREATMENT

1. **With a pulse**, administer magnesium sulfate, **4 grams IV/IO *slow over 2 minutes***.

2. **Without a pulse OR hemodynamically unstable**,

a. **Defibrillate**

b. After defibrillation, administer magnesium sulfate, **4 grams IV/IO *slow over 2 minutes***.

Wolff-Parkinson-White

Wolff-Parkinson-White (WPW) syndrome is the classic accessory pathway syndrome that is characterized by a tract of conduction tissue that bypasses the AV node and connects the atria to the ventricles. This bypass tract has a faster electrical conduction and recovery speed.

The AV node usually cannot process electrical impulses from the atria faster than 180-200 per minute. A bypass tract can exceed that rate.

Patients with a wide complex QRS, an irregular rhythm, and rates exceeding 200 bpm should be considered to have WPW.

Atrial fibrillation in a patient with WPW can have ventricular rates that exceed 200 per minute and can approach 300 per minute. Fast rates like these are usually short lived and can lead to ventricular fibrillation.

TREATMENT

1. If ventricular rate is 250 bpm or greater, **Defibrillate** at maximum joules.
2. If the patients ventricular rate is 200-249 bpm:
    a. Stable – Monitor and transport.
    b. Unstable – **Defibrillate** at maximum joules.
3. **AVOID** giving adenosine or cardizem.
4. Consider pain management in the conscious patient, but do not delay treatment.

Law enforcement agencies may utilize a taser, as a non-lethal method to temporarily incapacitate individuals. Typically it is not the taser use that leads to the need for transport to the hospital, but rather abnormal conditions that were present in the individual before the taser was deployed.

History:

For those patients being evaluated after being tasered, a medical history and a history of the events leading up to being tasered can provide valuable information:

- Evidence of Excited Delirium prior to being tasered
- History or behavior consistent with amphetamine or hallucinogenic drug use
- Cardiac history

Signs or Symptoms:

Consider transport for any of the following:

- Abnormal vital signs.
- Altered level of consciousness.
- Bizarre or aggressive behavior
- Evidence of hyperthermia and/or profuse sweating (patients may disrobe to cool down when they are hyperthermic.)
- Abnormal subjective complaints, including difficulty breathing, chest pain, nausea, or headaches.
- Sustained injuries (e.g. trauma from fall) as a result of being tasered.
- Probe(s) lodged in a sensitive area: head, neck, genitals or female breast

TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. 12-Lead ECG and monitoring with documentation.

3. If the probes are still in the patient, ensure the probes are not attached to the taser Unit. Stabilize the probes. Do not remove the taser probes if lodged in a sensitive area: head, neck, genitals, or female breasts.

4. Ensure a maintainable airway and consider supplemental O_2, if indicated.

5. After being tasered, if a patient remains combative or becomes combative again, see the Agitated Patient Protocol.

6. If restraint is necessary, DO NOT place the patient in a prone position (face down). Use a supine or recovery position.
7. Monitor pulse oximetry and obtain a blood glucose level.

8. Treat any medical complaint per the appropriate protocol.

9. Consider rapid cooling per the Therapeutic Hypothermia protocol if the agitated patient is exhibiting signs of excited delirium **AND** patient is **hyper**thermic / febrile (temperature reading of 104°F (40°C) or higher **OR** if unable to obtain a temperature and the patient feels hot to the touch).

THERAPEUTIC HYPOTHERMIA / RAPID COOLING

Indication

Consider Therapeutic Hypothermia when treating Environmental Emergencies such as Heat Stroke, and Malignant Hyperthermia, or Agitated Patient / Excited Delirium.

This protocol is appropriate for patients whose temperature reading is 104°F (40°C) or higher (**OR** if unable to obtain a temperature and the patient feels hot to the touch), who exhibit mental status changes including agitation, and/or confusion, and/or decreased levels of consciousness.

TREATMENT

1. Remove as much clothing as possible
2. If possible, move patient to a cooler environment and/or fan blowing on patient.
3. Ensure a maintainable airway.
4. If available, apply ice packs to the neck, axillae, and groin areas.
5. Establish vascular access.
6. If available, take and document a baseline temperature before administering cold normal saline. Also take and document a temperature at the time of patient transfer in the ED.
7. **Bolus cold** (34°F) normal saline, **30 mL/kg IV/IO (maximum 2 L)**.
8. Administer midazolam (Versed), **5 mg IV** or **10 mg IM / IntraNasal** to reduce muscle shivering, if indicated.
9. If the patient is agitated and/or in pain after midazolam (Versed) and the systolic BP remains at 90 mmHg or greater, administer morphine sulfate, **5 mg IV/IO.** If the patient continues with agitation and/or pain, the morphine may be repeated once in 5 minutes. The total amount of morphine given should not exceed 10 mg.

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UNIVERSAL INITIAL PATIENT ASSESSMENT / CARE

This protocol is the foundation for all patient care and is designed to provide personnel with a systematic approach to the evaluation and treatment of the ill or injured patient.

Additional protocols should be instituted as necessary. Judgment must be used in determining the appropriate level of care. This protocol is frequently a bridge to other protocols and procedures that may override it in recommending more specific therapy.

Initiate treatment as soon as the need is determined.
This may include, but is not limited to:

- Ventilation
- Oxygen
- Vascular / Intraosseous Access
- Cardiac / SpO_2 / $ETCO_2$ Monitoring
- CPR / Hemorrhage Control / Chest Decompression

Every patient encounter requires a timely, completed, individual Patient Care Report (ePCR). Documentation must be complete, accurate, and appropriate to the patient encounter. Documentation should be completed, no later than, the end of shift.

A patient is anyone who:

1. Has either requested EMS; and/or
2. Has had EMS requested on his/her behalf; and/or
3. Presents, in any way, to any on-duty Fire-Rescue personnel, and has voiced (by self, family member, or bystander) symptoms of an illness or injury; and/or
4. Has obvious signs of an illness or injury (with or without voicing a complaint); and/or
5. Has a mechanism of injury suggesting a potential injury.

Fire-Rescue personnel should at least seek further care for the individual, even if not personally rendering aid.

A patient encounter is dependent on neither treatment, nor transport, nor cooperation from the patient.

It is important to note that a Patient Care Report is still required even though there is no patient, but a request for services was made and personnel responded.

Never hesitate to contact medical control for a patient who refuses transport.

UNIVERSAL INITIAL PATIENT ASSESSMENT / CARE

The following apply to all patient encounters:

1. Universal (blood, body fluids, and/or respiratory as appropriate) precautions shall be used for all patients. Personnel are to follow their departmental policies concerning blood and body fluid precautions.

2. The highest medical authority on scene (usually the Paramedic) is responsible for ensuring the completion of the initial assessment / overall care of all patients.

3. After making patient contact, the paramedic is responsible for the patient until there is an appropriate transfer of care, the patient is deemed non-viable, or a release is signed.

4. EMT/Paramedics may only perform the skills and therapies as outlined in the patient care protocols and within their own Scope of Practice.

5. If you suspect CHILD or ADULT abuse or neglect, follow appropriate protocol(s) and also report it to the receiving nurse and/or physician. Contact the Florida Abuse Hotline at 1-800-96-ABUSE.

6. **ALL PATIENT INFORMATION IS CONFIDENTIAL and protected under HIPAA Law!**

Scene Assessment

1. Perform a Scene Assessment and determine:

   a. Scene safety
   b. Mechanism of injury
   c. Number of patients and need to call MCI
   d. Severity of the patients' injury
   e. If patient(s) meet Adult Trauma Alert Transport Criteria
   f. If 2 or more patients present with the same signs and symptoms, consider Environmental Emergency, Impaired or Altered or HAZ-MAT emergency.
   g. Crime scene preservation

2. For **ALL** calls, be prepared to administer **immediate life-saving interventions** (CPR, defibrillation, airway management, emergency meds, etc.) upon INITIAL patient contact.

3. **Before patient contact: What Personal Protective Equipment is indicated?** Don PPE before patient and environmental contact.

Treatment Priority

1. Most patients can be readily assessed by evaluating the following: **(RPM)**

   - **R**espiratory status
   - **P**ulse: present strong or weak or absent
   - **M**ental Status or Alertness

2. **Critical** (*Priority 1*) – (life-threatening) conditions that must be treated immediately.

3. **Serious** *(Priority 2)* – (potentially life-threatening or disabling) conditions must be managed as soon as critical conditions are stabilized.

4. **Stable** (*Priority 3*) – (not potentially life-threatening) any other illness or injury not specified above.

Patient Assessment

PRIMARY ASSESSMENT

This evaluation will be completed on every patient attended to by a responder. The purpose of the primary assessment is to identify and rapidly treat problems that are life threatening. Moving thru the Primary Assessment, immediately treat critical conditions found on each step before moving to the next step.

Airway

1. Ensure a patent airway.

2. If trauma is the suspected cause of the patient's condition, maintain the head and neck in a neutral, in-line position.

Breathing

1. Determine if respirations are absent, ineffective or labored.

2. Note the rate of respirations

3. Note the effort or work of breathing:

   a. Shallow or full
   b. Use of accessory muscles
   c. Symmetrical chest movements

4. If breathing is abnormal, ensure the patency of the airway and:

    a. Listen for abnormal sounds: wheezing, rhonchi, rales (crackles), absence of breath sounds, etc.

    b. Evaluate for trauma (penetrating wounds, bruises, rib fractures, etc.)

Circulation

1. Assess for obvious external blood loss. Control obvious hemorrhage.

2. Record patient's pulse including:

    a. Rate
        - Normal more than 60 and less than 100

    b. Rhythm
        - Regular
        - Irregular

    c. Quality (strength)
        - Thin
        - Thready
        - Normal
        - Bounding
        - Compare peripheral pulses with carotid or femoral pulse. Note any differences.

    d. A rapid assessment for systolic blood pressure can be obtained by palpating pulses at:

        - Carotid – approx. 40 mmHg
        - Brachial – approx. 60 mmHg
        - Femoral – approx. 60 mmHg
        - Radial – approx. 80 mmHg

    e. Evaluate the patient's skin perfusion

        - Peripheral pulses present (radial, pedal)
        - Capillary refill time less than or greater than 2 seconds
        - Skin appearance (pink, pale, cyanotic, cherry red, jaundiced)
        - Skin temperature (cool, warm or hot)
        - Skin condition (dry, wet)

Disability / Neurological Exam

1. Mental Status **AVPU**

   - **A** - **Alert** (eyes open/able to make eye contact)
   - **V** - responds to **Verbal**
   - **P** - responds to **Painful** stimulus only
   - **U** - **Unresponsive**

2. Determine the Adult Glasgow Coma Score.

3. Assess the patient's pupils for size and their reaction to light

4. If the patient is moving, do all extremities move equally?

SECONDARY ASSESSMENT

This assessment is a more thorough evaluation of the patient. These procedures can be carried out simultaneously along with the primary assessment and treatment.

1. Identify a chief complaint (what the patient or witness tells you).

2. Document at least **two** sets of vital signs.

3. Document a pertinent medical history: (**SAMPLE**)

   - **S** - Signs and Symptoms
   - **A** - Allergies
   - **M** - Medications the patient takes currently
   - **P** - Past medical history
   - **L** - Last oral Intake (medications, food, drink)
   - **E** - Events that led up to this situation or complaint

4. Complete a head-to-toe survey. Utilize the patient's complaint to guide your assessment.

5. Reassess as appropriate. Record response to treatments.

Patient Care / Treatment

MEDICAL

1. Airway Management
2. Administer Oxygen, if indicated. Obtain and document a pulse oximetry reading.
3. If considered appropriate, assist with patient's prescribed medication administration such as:
   a. Inhalers (Ventolin, Proventil, etc.) for difficulty breathing.
   b. Oral glucose for conscious diabetics.
   c. EpiPen for acute anaphylaxis.
4. Perform a blood glucose check via finger stick, if indicated.
5. Perform advanced airway management, if indicated.
6. If an advanced airway is established.
   a. Secure the advanced airway device.
   b. Maintain the patient's head and neck in the neutral position. Flexion and/or hyperextension may dislodge the device.
   c. If the patient's condition deteriorates and/or the SpO_2 drops to less than 94%, consider the following possibilities (**DOPE**):
      - **D**isplacement of the device. Check for neutral head/neck position
      - **O**bstruction of the device.
      - **P**neumothorax. Check for bilateral breath sounds.
      - **E**quipment failure. Check pop-off valve
7. ECG monitoring with documentation, if indicated.
8. Establish vascular access, if indicated.

TRAUMA

1. Airway Management with C-spine control, if cervical injury is suspected.

2. Administer Oxygen if indicated. Obtain and document a pulse oximetry reading.

3. Control obvious hemorrhage.

4. If the patient is in shock and without airway compromise, place the patient in a supine position.

5. If the patient meets trauma criteria, call a **Trauma Alert immediately** and directly contact the trauma center.

6. In patients with entrapment and prolonged extrication, consider contacting the trauma center to have a trauma surgeon on scene. If, during the extrication, the patient remains hypotensive after fluid administration discuss with the trauma center the possibility of pre-hospital administration of blood products.

7. Bandage & splint, if indicated.

8. Advanced airway management, if indicated.

9. If an advanced airway is established.

   a. Secure the advanced airway device.

   b. Maintain the patient's head and neck in the neutral position. Flexion and/or hyperextension may dislodge the device.

   c. If the patient's condition deteriorates and/or the SpO_2 drops to less than 94%, consider the following possibilities (**DOPE**):

      - **D**isplacement of the device. Check for neutral head/neck position
      - **O**bstruction of the device.
      - **P**neumothorax. Check for bilateral breath sounds.
      - **E**quipment failure. Check pop-off valve

   d. Establish vascular access, if indicated.

   e. ECG monitoring, if indicated.

   f. The mode of transportation to a Trauma Center will be decided as soon as possible if the patient meets the Trauma Transport Criteria. In these cases, emphasis in pre-hospital care will be on rapid packaging and initiating transport

to a Trauma Center; therefore, on-scene delays should be minimal. In cases where Air Rescue is being utilized, advise Air Rescue as soon as possible of the number of patients

Transport Guidelines

1. Scene times should not be unnecessarily prolonged. Non-urgent interventions and a secondary assessment may be performed during transport.

2. The initial care of life threatening medical conditions should be started at the scene and the patient's airway, breathing, and circulation stabilized as much as possible prior to transport.

3. EMS personnel should attempt to keep the total patient contact time from initial contact to turn over to appropriate hospital personnel less than 30 minutes in patients with STEMI ALERT, STROKE ALERT, and TRAUMA ALERT.

4. Refer to Patient Treatment and Transport Protocol, as necessary.

Ventricular Assist Devices (VADs)

A **V**entricular **A**ssist **D**evice (**VAD**) is a mechanical device that's surgically implanted into the patient's chest to augment cardiac output, or the ability to pump blood. **VADs** can be used as a "bridge to transplant" or as "destination therapy." The compact size and portability of **VADs** affords patients the opportunity to be discharged from the hospital and have an improved survival and quality of life.

VADs are used as a bridge to transplant in patients who meet the qualifications for cardiac transplantation but need temporary support to survive their condition until a suitable heart donor becomes available.

VADs are also used as destination therapy for patients with advanced heart failure who are symptomatic despite optimal medical therapy and who don't meet the qualifications for cardiac transplantation. The goal of destination therapy is to minimize heart failure symptoms and improve quality of life. Destination therapy means that the patient will live with the device for the rest of their life. It's used not as a temporary solution, but as a permanent therapy to improve quality of life. There's no expectation or plan to progress to heart transplant.

The majority of patients with a **VAD** have an ejection fraction (EF)—the percentage of blood pumped from the left ventricle with each contraction—of less than 25%. Normal EF is 55–65%.

The most common type of **VAD** is a left-ventricular assist device (**LVAD**, when the device is connected to the left ventricle to augment the flow of blood to the body), but **VADs** may also be placed, as in the right-ventricular, known as an **RVAD**, or both ventricles, known as a **BiVAD**.

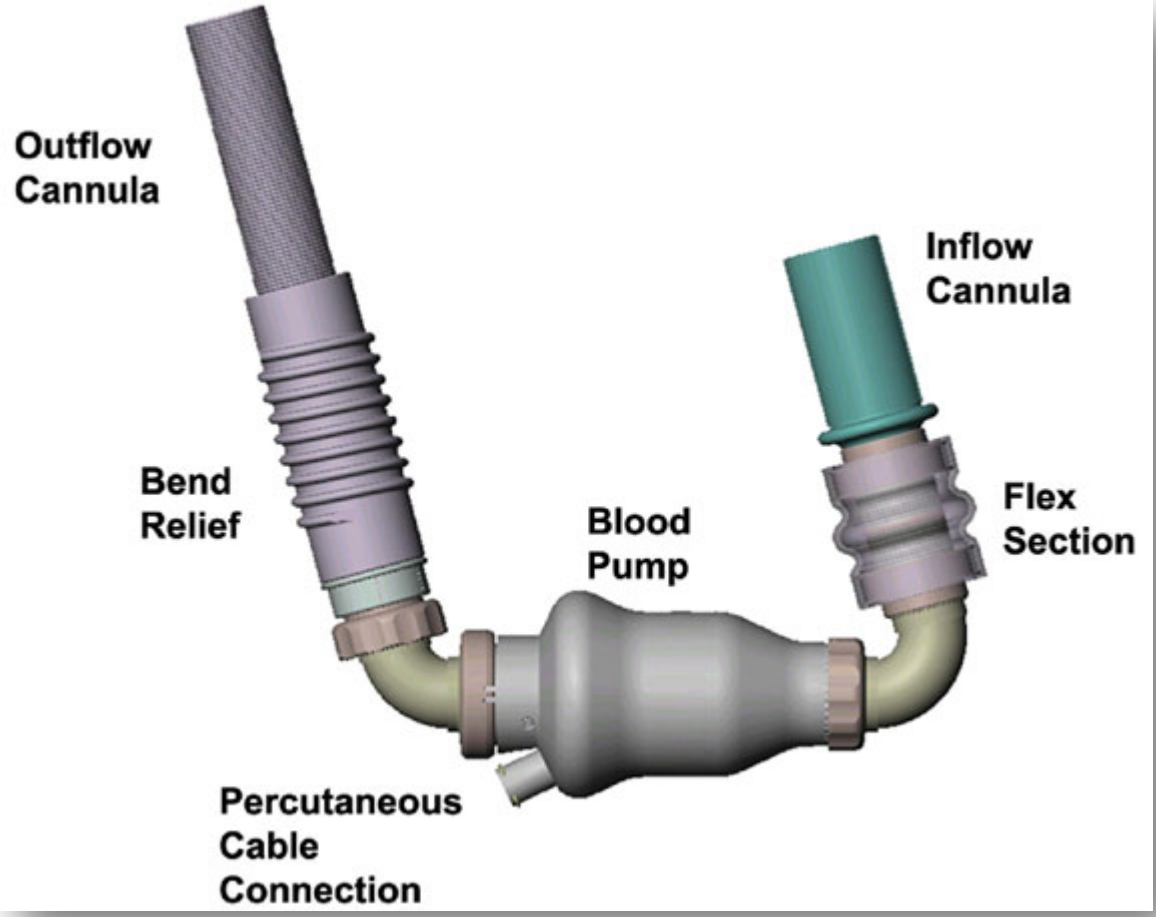
LVAD:

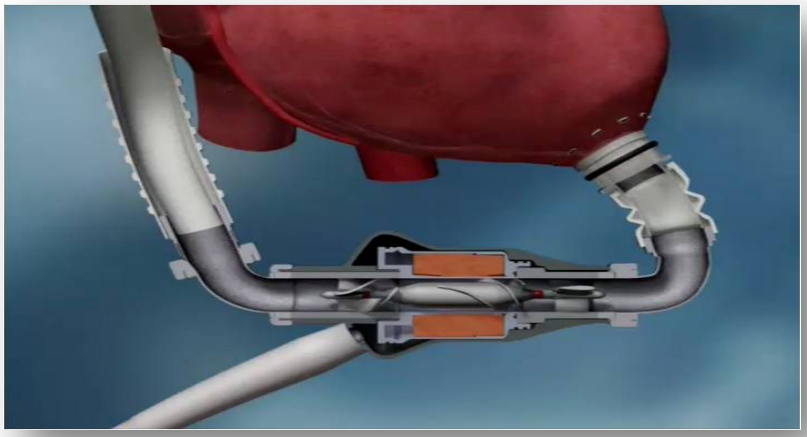
1. An electric pump.
2. Implanted in abdominal and chest cavity (see illustrations below).
3. Augments the cardiac output of a failing left ventricle (L ventricle output less than 25%).

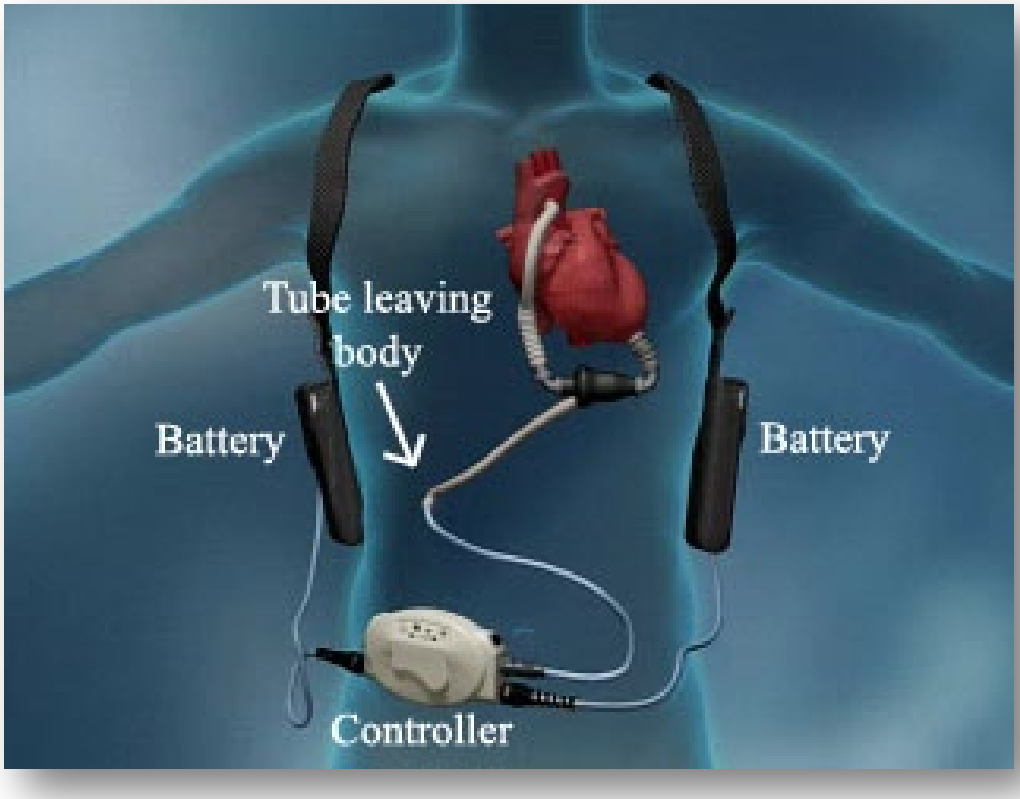
COMPONENTS OF LVAD:

1. When the left ventricle contracts, blood from the bottom of the heart enters the **inflow tube** of the **VAD** that is grafted to the left ventricle at the apex of the heart. Blood from the top of the left ventricle enters the aorta through the aortic valve (normal pathway).
2. The enhanced left ventricle output will now increase the volume of blood in the aorta.
3. The **VAD** pump will now increase the flow of blood through the aorta.
4. Blood from the **inflow tube** enters the continuous flow electric pump.
5. The **VAD** pumps blood into the **outflow tube** which is grafted to the ascending aorta.

6. An electrical cable or power line connects the pump below the skin with an electrical control unit (system/pocket controller) above the skin.
7. The system/pocket controller is powered by battery (8-12 hours from 2 batteries) or an AC powered base module.
8. A percutaneous cable, also called the driveline, exits the abdominal wall, connecting the internal pump to the external controller, which is connected to an electrical source (batteries or an AC-power module.) The controller is the brains of the device and contains the settings, alarms, and diagnostic information about the pump.






Tube leaving body
Battery
Battery
Controller

ASSESSMENT

1. Pulse and Blood Pressure **CANNOT** be assessed in the standard manner, as there is no systole and diastole with a continuous flow. Some patients may have a faint pulse, but most will not have a pulse. There is no value in the evaluation of these patients in checking for a pulse or blood pressure.

2. Mental status and skin color are the best indicators of perfusion.

3. Listen to the precordial area of the chest over the pump pocket at the lower left rib margin on the anterior chest. A humming or whirring sound indicates the pump is working.

4. If the pump is silent, make sure that the driveline and two sources of power (dual batteries or AC power) are connected to the system controller. Most patients will have extra batteries with them or a charging device is available.

5. Place the patient on a cardiac monitor. The presence of an awake and alert **VAD** patient "weak and dizzy" can be VF and missed unless you routinely do an EKG.

6. **VAD** failure may produce altered mental status, chest pain, and/or shortness of breath.

TREATMENT

1. Most arrhythmias and medical problems are treated according to the appropriate protocol(s).

2. In a **VAD** patient with altered mental

   a. Check glucose and treat if necessary.

   b. Administer normal saline, **500 mL IV**. This fluid challenge works well with the 2 common problems of bleeding and sepsis.

   c. Assess airway and breathing and treat as indicated **BEFORE** starting chest compressions.

3. **AVOID CHEST COMPRESSIONS EXCEPT AS A LAST RESORT** as it may dislodge the catheters.

4. Defibrillation, Cardioversion and pacing are acceptable when indicated, but do not place Combipads over the pump/cable area. **Anterior-posterior** left chest placement is recommended. Be careful not to cut cable when removing clothing.

5. Restarting a **VAD** that has stopped is not always the best thing to do. Contact the **VAD** Coordinator to determine the best course of action.

ADDITIONAL INFORMATION

1. If time permits, consult with the **VAD** coordinator to determine treatment.

2. Family members usually have **VAD** training and are a good source of information.

3. Emergency and **VAD** coordinator information also in the emergency travel pack.

4. One of the most common problems is a driveline infection, essentially an infection of the power cable that comes out of the body. Although frank septic shock from these infections is uncommon, patients may have significant cellulitis at the exit site.

5. Patients with **VADs** require blood thinning medication and bleeding is common. In addition to chronic anticoagulant use, these patients acquire a bleeding diathesis similar to dialysis patients, an acquired Von Willebrand's deficiency. Patients may present with GI hemorrhage, nose bleeds, or intracranial bleeds.

6. Patients may develop pump thrombosis (clotting in the pump).

7. The patient can handle normal activity, but the electrical pump will not compensate by change in speed for increased activity.

TRANSPORT

1. Do not place straps over cable/controller when securing patient to stretcher.

2. Make sure the cable is not pulled or kinked.

3. **Regardless of the patient's complaint, transport to a designated VAD facility.** The batteries for the VAD have a half-life that may not be long enough for a hospital emergency department evaluation and the facility needs to have the VAD equipment available to re-charge the batteries.

4. Bring all of the patient's VAD equipment to the hospital.

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Near Drowning – Conscious

1. Universal Initial Adult Patient Assessment / Care

2. Administer oxygen, monitor SpO_2 levels, and manage appropriately. Avoid laying patients completely flat. Maintain in a semi-fowlers position.

3. Remove wet clothing. Dry and cover the patient as quickly as feasible to maintain normal body temperature to protect against hypothermia. Consider turning off air conditioning in vehicle while transporting.

4. Near drowning victims frequently vomit and caregivers need to be prepared for this situation by appropriately positioning the patient and clearing the airway.

5. Evaluate for concurrent trauma (C-spine injury, marine bites and stings and watercraft injuries) and manage accordingly.

6. Determine important history from the patient or bystanders, which includes:

   a. Duration of submersion.
   b. Water temperature.
   c. History of seizure activity.
   d. Any associated drug or alcohol use.
   e. How did the patient enter the water?
   f. Was it a fresh or saltwater submersion?
   g. Clean or dirty water?
   h. Is there a medical problem that caused the near-drowning, e.g., heart attack, diabetes, seizures, strokes?

7. Establish vascular access.

Near Drowning – Unresponsive

1. In addition to the above treatments for Near-Drowning Conscious, perform these additional steps:

2. If the patient is **pulseless**, begin CPR and refer to Cardiac Arrest Protocol.

   a. ACLS in patients who have had a near drowning or drowning episode should be managed in the order of:
      - Airway
      - Breathing
      - Circulation

3. If the patient **has a pulse**, but is in respiratory arrest and is apneic, unresponsive, and without a gag reflex, use an advanced airway to ventilate and oxygenate.

4. If the patient appears to have gastric distention, consider decompressing/suctioning the stomach with an orogastric tube, if available, in patients who have an advanced airway.

5. Treat dysrhythmias per specific protocols. Consider hypoxia as a primary cause of the dysrhythmias. Monitor and document pulse oximetry readings.

6. Drowning victims in cardiac arrest develop lactic acidosis and early administration of sodium bicarbonate, **1 mEq/kg IV** is indicated.

7. Atropine, **1 mg IV/IO** is indicated in those drowning victims who have bradycardia PEA or asystole.

8. **All near-drowning victims must be transported** to the appropriate hospital for evaluation, regardless of how well they may seem to have recovered. Delayed death and/or complications due to pulmonary edema or aspiration pneumonia are common in the 12 to 24 hour period after an apparent recovery during patient contact.

Decompression Sickness/Air Embolism (Barotrauma)

1. Universal Initial Adult Patient Assessment / Care

2. Evaluate for specific signs and symptoms:

   a. Pain (primarily joint pain)
   b. Altered level of consciousness
   c. Generalized numbness or confusion
   d. Weakness or paralysis
   e. External or diagnosed internal bleeding
   f. Extreme vertigo

3. The patient should be transported in a supine position or recovery position if indicated**. <u>The patient should not be placed in a Trendelenburg position.</u>**

   NOTE: This was once thought to reduce the degree of cerebral embolization, but it has been found to increase intracranial pressure and facilitate gas embolization to the coronary circulation.)

4. If this is a **SCUBA diving accident**, obtain a history from the patient or bystanders to include:

    a. Was the victim breathing compressed air (Includes an air pocket in a submerged car) or other gas mixtures (Heliox, Nitrox, etc.)

    b. Elapsed time (bottom time) of the dive

    c. Maximum depth of the dive

    d. Were multiple (repetitive) dives made? Note depths and times

    e. Time since ascent

    f. Has the patient been at a high altitude, 1,000 feet or greater (depressurized aircraft) since the dive?

5. If possible, transport all the dive equipment (the tanks, dive calculator, and regulator) with the patient.

6. Determine patient's CO level with a CO monitor.

7. Ask the patient or bystanders; "Were any dangerous marine life noted by victim or other divers?"

8. Administer high flow oxygen via NRBM.

9. Establish vascular access.

10. Manage patient according to the appropriate protocol(s).

11. Transport to an emergency department with an approved hyperbaric chamber per the hospital capability chart. Make the arrangements through Fire Rescue dispatch.

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ADULT TRAUMA MENU

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11. PREGNANCY ..... pg. 205
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Amputated Body Parts

GENERAL TREATMENT

1. Universal Initial Adult Patient Assessment / Care
2. Control bleeding and refer to appropriate trauma protocol as indicated.
3. Consider Pain Management.

Preservation of an Amputated Part

1. A patient with an amputation of the following may be a candidate for re-implantation

   a. Scalp
   b. Extremities
   c. Hands
   d. Fingers
   e. Feet
   f. Toes
   g. Nose
   h. Ears
   i. Penis

2. If in doubt, bring all parts, including teeth (Avulsed Tooth Salvage).
3. Considerations for re-implantation therapy may include:

   a. Any amputation in a child.

   b. Any clean guillotine amputation.

   c. Bilateral hand injuries.

   d. Amputation of multiple digits.

   e. Amputation of the hand.

   f. Amputation of the thumb, even in cases of moderate to severe crush injuries.

   g. Occupational value of the digits (e.g. ring and little fingers are of great importance to a person who handles a hammer or a knife)

   h. Associated disability, such as paralysis on the opposite side.

4. The amputated part should be gently washed in a normal saline solution and heavily wrapped in moist sterile gauze.

5. The body part should be placed in a plastic bag, cooled and transported with the patient. The plastic bag should be labeled with the patient's name and run report number.

6. The following information should be documented on the rescue report:

   a. Receiving facility name.

   b. Receiving healthcare provider's name and ID number who is receiving the patient and patient's body part.

   c. Signature of the receiving healthcare provider along with the date and time of the transfer(s).

Burn Injuries

GENERAL TREATMENT

1. Universal Initial Adult Patient Assessment / Care
2. Remove jewelry and clothing as appropriate.
3. Determine the type of burn (thermal, chemical, electrical, radiation).
4. Evaluate for inhalation injury. Assess and secure the airway in the presence of any swelling/edema that may compromise and/or obstruct the patient's airway.
5. For patients with chemical or radiation exposures/burns perform gross decontamination and/or wrap patient in a sheet or blanket (thermal blanket) prior to placing patient in the vehicle for transport
6. Call a Trauma Alert and establish vascular access on all of the following victims:
   a. Adults with second or third degree burns greater than 15% BSA
   b. Pediatric patients with second or third degree burns greater than 10% BSA
   c. **Adults greater than 55 years old**, **Pulse of 120 or faster**, **respirations of 30 or faster** or **BMR of 5 or less**.
7. Consider pain management.

Thermal

1. Cover burned areas with burn gel (Water Jel®) dressings. If not available, cover the burned areas with dry sterile dressings.
2. Determine the depth of burn
   a. Superficial (1st degree)
   b. Partial Thickness (2nd degree)
   c. Full Thickness (3rd degree)
3. Determine the extent with the Rule of Nines
4. Establish IV or IO access on all victims meeting Trauma Alert Criteria. Avoid using extremities that are damaged by burns.

5. Partial Thickness and Full Thickness burns of the **hands** or **feet** or **face** or **genital area** are Burn Center transports.

6. Partial Thickness and Full Thickness circumferential burns of the chest or any extremity are also Burn Center transports.

7. Avoid aggressive cooling of large burn surface areas.

8. Do not break blisters.

9. Determine if the patient was in an enclosed space.

10. On fire scenes, determine and document CO level.

11. On fire scenes, treat for Cyanide (CN) poisoning when patients with elevated CO levels do not respond to Oxygen therapy or deteriorate after Oxygen administration.

Chemical

1. **Liquid**

   a. Liquid chemical burns are acidic or alkaline.

   b. Do not attempt to neutralize, because mixing acids and bases can cause a thermal burn

   c. Irrigate with copious amounts water and remove contaminated clothing.

2. **Solid (powder)**

   a. Brush off product (powder) and/or remove contaminated clothing before irrigating.

   b. Do not use water on powders (e.g., Sodium) that react violently with water.

Electrical

1. Scene safety is critical. Make sure power is off or that the patient is not still in contact with the energy source.

2. Assess patient and treat per appropriate protocol (also refer to the Electrical Injuries Protocol.

3. Obtain a 12-Lead ECG to determine the presence of cardiac dysrhythmias and if in cardiac arrest to determine the presence of a shockable rhythm. Treat per protocol.

4. Be sure to assess for entry and exit injury.

5. High voltage and lightning burns are considered **full thickness burns**.

6. Refer to Environmental Emergencies for electrical and lightning injuries.

Radiation

1. **Alpha** and **Beta** products are low energy with minimal ability to penetrate.

   a. Wear proper PPE.

   b. Remove contaminated clothing and as much product as possible. Product should not be disposed.

   c. Determine and report if product has been inhaled and/or ingested.

2. **Gamma radiation** is highly energetic and penetrating.

   a. Avoid exposure to the source.

   b. The exposed patient is not a source of radiation.

   c. Treat Pain and Nausea/Vomiting per protocol.

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CRUSH INJURY

TREATMENT

1. If the patient's extremity / extremities has / have been trapped by a heavy object, and there has been a loss of peripheral perfusion of the entrapped extremity / extremities, the patient must be treated to prevent reperfusion injury.

2. The lower extremities (74%) are the most commonly affected areas associated with crush injuries with upper extremities (10%) and torso (9%) the next most common.

3. Crush injury is to be distinguished from simple entrapment.

4. Do **NOT** treat patients with tourniquets, fluids, or medications if the crush injury / entrapment is less than one-hour duration.

5. There are three main issues of concern when dealing with the reperfusion following a crush injury:

   a. Potassium being released from the damaged cells flooding the circulation has the potential to cause cardiac dysrhythmias, and

   b. Release of myoglobin from the damaged muscle cells can cause acute renal failure.

   c. Elevation of the serum lactic acid levels.

6. This treatment must be administered **PRIOR TO** the object being lifted from the patient. Application of a tourniquet proximal to the crushed area of the extremity may help in delaying the release of the potassium and myoglobin into the general circulation.

7. Consider the possibility of muscle damage in patients with altered mental status who are found in any position for an extended period of time.

8. Universal Initial Adult Patient Assessment / Care.

9. Continuous ECG monitoring.

10. Establish vascular access before extrication and then administer a bolus of normal saline, **500 mL IV/IO**. This may be repeated every hour during a prolonged extrication.

11. Simultaneously administer sodium bicarbonate, **1 mEq/kg IVP/IO**.

12. If patient develops any cardiac dysrhythmias, specifically widening of the QRS complex (more than 3 small boxes) or loss of the "P" waves, administer calcium chloride, **1 gram (10 mL) *slow IV over 2 minutes*.**

    NOTE: If the patient has already been given sodium bicarbonate, you must flush the IV/IO line with **20 mL** of normal saline prior to administering calcium chloride.

13. With the above ECG changes, in addition to the calcium chloride administer ipratropium/albuterol (DuoNeb), **(0.5 mg/3 mg) of premixed single unit dose via nebulizer at 6 LPM**. This will drive the potassium out of the circulation and into the cells, reducing the serum potassium

14. Consider Pain Management.

Entrapment

With patient entrapment, the emphasis is on rapid initial assessment and transport of the patient to achieve definitive care. If transport of the patient is delayed due to entrapment (motor vehicle collision, structural collapse, confined space environments, or trench collapse), the patient must be treated appropriately while technical rescue operations are under way to free the patient.

TREATMENT

1. Assess the scene. Consider the need for mutual aid for specialized equipment and tactical rescue personnel.
2. Don the appropriate protective gear for the environment
3. Stabilize the scene.
4. Gain access to the patient.
5. Protect the patient from further harm.
6. Universal Initial Adult Patient Assessment / Care
7. Airway management
8. In cases where spinal injury is suspected, provide initial immobilization by manual means until you are able to use equipment to stabilize the patient. The environment may require special patient packaging equipment (e.g. Stokes Basket, KED, or a backboard). Patient packaging and extrication should be coordinated with the Extrication Sector.
9. Establish vascular access before extrication and then administer a bolus of normal saline, **500 mL IV/IO**. This may be repeated every hour during a prolonged extrication.
10. Refer to appropriate protocols as indicated.
11. Consider Pain Management

NOTE: In patients with entrapment and prolonged extrication, consider contacting the trauma center to have a trauma surgeon on scene. If, during the extrication, the patient remains hypotensive after fluid administration discuss with the trauma center the possibility of prehospital blood products. Refer to Field Blood Transfusion protocol.

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Eye Injuries

TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. Obtain a brief injury history including the mechanism of injury, possible chemical exposure, and allergies.

3. Examine the eye(s) for signs of penetrating injury, foreign body, irritation, hemorrhage, prosthesis, or contact lenses.

4. If possible, remove or ask the patient to remove contact lenses if still in the affected eye(s).

5. Determine gross visual acuity in both eyes. Have the patient read the largest letters on the computer tablet at arm length.

6. If penetrating injury is known or suspected:

   a. Stabilize obvious penetrating objects.

   b. Avoid direct pressure on the eye(s) or any maneuvers that might increase intraocular pressure.

   c. Apply an ocular shield, goggles, or similar rigid device loosely over affected eye(s). **Cover both eyes.**

7. If an enucleation (eyeball has been forced out of the socket) has occurred, cover the entire eye area with a rigid container, such as a disposable drinking cup. Avoid direct contact with the exposed globe. If bleeding, control by direct pressure with a sterile moist dressing.

8. If there is a history or signs/symptoms of an ocular exposure to chemicals or foreign body, without any obvious or suspected penetrating injury or laceration of cornea or globe, irrigate the eye(s) with Normal Saline IV solution.

   a. If available, administer Tetracaine HCL Eye Drops, **2 drops to the affected eye(s)** as an anesthetic and may be repeated once, after 15 minutes, if needed.

   b. Plug an IV tube into a nasal cannula, and hang it over the nasal bridge to irrigate the eyes with a 1 Liter of normal saline IV bag solution.

9. Consider Pain Management.

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TRAUMA: FIELD BLOOD TRANSFUSION

On rare occasions, prolonged extrication of a trauma victim from entrapment resulting from a structural collapse or motor vehicle collision, can delay transport of the victim to a Trauma Center. Significant internal or external blood loss may occur. After initial fluid challenges, continued volume replacement with normal saline may be detrimental. Transfusion of **P**acked **R**ed **B**lood **C**ells (**PRBC**) would be indicated.

All usual attempts to transport the patient from the scene to the Trauma Center should be made. In the event that extrication of the patient is difficult and prolonged, IV lines should be placed and isotonic crystalloid resuscitation with **500 mL** normal saline should be initiated. If the patient has been trapped, consider treating for Crush Injury.

If evidence of major blood loss exists (external hemorrhage, fractured femur(s), fractured pelvis, distended abdomen, etc.) and no rapid extrication is expected, consideration should be given to requesting blood for transfusion on-scene. This is a complex procedure and requires time; therefore, the decision must be made thoughtfully but expeditiously.

NOTE: Refusal on the part of a competent adult based on religious objections should be honored and thoroughly documented.

1. Only the OIC or the Incident Commander shall determine the need for a field transfusion by contacting a physician at the Trauma Center.

2. Dispatch will make contact with the Trauma Center as quickly as possible.

3. Upon approval from the Trauma Center, the OIC/Incident Commander will request that Dispatch send an emergency response unit to the Trauma Center to provide transport for the blood and the Trauma Center designee to the scene. **PRBC** units will be secured from the Trauma Center Blood Bank along with proper filters, administration sets, and documentation while waiting for pick-up by the emergency response unit.

4. The Trauma Center designee will be responsible for all documentation and the administration of blood to the patient.

5. Once the extrication is completed, the patient will be transported to the Trauma Center with the Trauma Center designee, all applicable documentation, and any unused blood.

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Field Amputation – Field Surgical Kit

Introduction

In the rare event of a patient entrapment in which all resources have failed to successfully extricate the patient, or in which the patient's life is in danger with prolonged extrication, field amputation of the trapped extremity should be considered.

This procedure requires the skills of a Trauma Surgeon equipped with a Field Surgical Kit that contains special surgical instruments. The Field Surgical Kit also includes equipment for surgical airways, for chest tube insertion, and for central venous lines.

Procedure for Requesting

1. Only the Unit OIC or the Incident Commander shall determine the need for a possible field amputation or other related advanced procedures.

2. Dispatch will make contact with a Trauma Center as quickly as possible. The Attending Surgeon or designee equipped with a Field Surgical Kit will respond to the scene.

3. In the event the Attending Surgeon or designee will require transport from the Trauma Center, the Rescue Supervisor or the Incident Commander will determine the most expeditious manner to transport the Surgeon to the scene.

4. Once on the scene, the Surgeon will assess the situation and make the final decision regarding the need for a field amputation.

5. Upon completion of the procedure and patient extrication, the Surgeon will be transported with the patient, when applicable to the Trauma Center.

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Suspected Fractures

TREATMENT

1. Universal Initial Adult Patient Assessment / Care
2. Refer to appropriate trauma protocol(s) as indicated.
3. Call a Trauma Alert if the patient meets Trauma Criteria factors.
4. Any fracture or suspected fracture will be immobilized, as found, to reduce the possibility of further injury.
5. Severely angulated fractures may be aligned if there is an absence of distal pulse(s) or loss of neurological function. Distal pulse(s), skin color, and skin temperature should be documented before and after splinting the angulated fracture.
6. Proximal and distal manual traction may be applied to the injured extremity, as necessary, when applying a splint. When immobilizing a bone, splint from joint to joint. When immobilizing a joint, splint from bone to bone.
7. The use of elevation and cold packs is recommended to help reduce swelling. Avoid direct application of cold packs to exposed skin.
8. Primary care of open fractures involves removal of gross contamination. If protruding contaminated bone end(s) has/have retracted back into the wound, it should be noted in the report. If grossly contaminated, wash open fracture(s) with 1 Liter of sterile saline before dressing the injury, but do not delay transport.
9. Because of the severe muscle spasm associated with femoral fractures, traction splints are to be used to adequately stabilize isolated fractures of the femur. DO NOT use the traction splint if an associated pelvic, hip, knee, tibia-fibula, ankle, and/or foot fracture is suspected.
10. Establish vascular access if fluids or medications are indicated.
11. Consider Pain Management.
12. Unstable pelvic fractures may be managed with a pelvic girdle / splint such as the T-Pod, if available, or modified application of the KED.

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Suspected Head and/or Spinal Injuries

Use of the Hard Cervical Collar

The use of cervical collars is unchanged from previous protocols. Any patient that is suspected of possible cervical spine injury should have a hard cervical collar applied and worn until the possibility of a cervical injury has been disproven.

1. Universal Initial Adult Patient Assessment / Care

2. Not all patients who have experienced physical trauma require a cervical collar / head block.

   a. GCS 15 patients with penetrating trauma to the neck without obvious neurological deficits can have their injuries managed without cervical immobilization.

   b. Patients with blunt trauma to the head, neck, or torso who may have experienced possible neck injury should be evaluated to determine whether a cervical collar / head block is indicated.

3. A patient that meets **ALL** of the following conditions does **NOT** require the use of a cervical collar / head block:

   a. Patient is alert and **NOT** under the influence of drugs or alcohol.

   b. Patient denies neck pain and tenderness.

   c. There is an absence of posterior midline cervical tenderness when palpated.

   d. There is an absence of sensory / motor neurological deficits on the patient exam. Patient has feeling and voluntary movement in all extremities.

   e. There are no painful distracting injuries.

4. The cervical collar should **NOT** cause the patient such discomfort that they cannot remain still.

5. If an appropriately sized cervical collar is not available or if application of the collar is so uncomfortable for the patient that they are unable to remain still; REMOVE the collar and stabilize / immobilize the head and neck by placing rolled towels on the sides of the patient's head and neck. Secure them with tape or other similar devices to allow for comfortable cervical stabilization/immobilization.

6. Stabilization during care and transport is best performed by placing the patient on the stretcher cushion supine and as flat as possible. If the patient is unable to tolerate this position; place the patient in a position of comfort that also respects normal anatomical alignment while maintaining the safety of the patient and crew.

Use of the Backboard

1. **Long boards should be used for extrication and not transport.**

2. **Air transport patients will be secured to a backboard to facilitate safe movement, during loading and unloading from the aircraft.**

3. There is no evidence that the use of a backboard reduces spinal injury or effectively provides anatomically appropriate spinal immobilization or protection.

4. There is evidence that backboards result in harm by causing pain, changing the normal anatomic curvature of the spine, inducing patient agitation, causing pressure ulcers, and compromising respiratory function.

5. The only practical value of backboards is for extrication to a transport vehicle. Once extricated, patients should be taken off the backboard.

6. Backboards should not be used for spinal immobilization. Placing ambulatory patients on backboards is unacceptable.

7. In general, patients should not be transported or otherwise kept on backboards for any length of time.

8. Lifting or movement of patient(s):

    a. Manual cervical and spinal stabilization/immobilization must be performed for all patient movement as appropriate.

    b. A scoop-type stretcher may be employed to facilitate the lifting or movement of a patient to or from a stretcher.

    c. Once the patient has been placed on the stretcher, the scoop-type stretcher is to be removed.

9. All patients with altered mental status should be considered to have a spinal injury. Position the patient in the most anatomically neutral position while providing emergency medical care.

10. Placing patients in the prone position (face down) is contraindicated due to the risks of compromising the patient's breathing. However, impalement and other situations may mandate the prone position. In these instances, clear documentation of the reasons for the prone position is necessary. Continuous monitoring of the patient's airway, oxygenation, and ventilatory status is essential for any patient placed in a prone position for transport.

Management of patients with Head Trauma

1. Universal Initial Adult Patient Assessment / Care

2. In the absence of hypotension on head injury patients, consider elevating the head of the stretcher 30 degrees (12-18 inches).

3. Have a high index of suspicion with the elderly patient who takes anti-coagulants.

4. **Avoid nasal airway devices and nasogastric tubes on head injury patients**.

5. Assisted Ventilations

   a. Most patients can be effectively managed with the use of a BVM. Maintain a SpO_2 of at least 94%.

   b. An Advanced Airway should be used with signs of brainstem herniation (pupils fixed and dilated, blown pupil, or decorticate / decerebrate posturing).

   c. Consider an Advanced Airway in a patient with a GCS of 8 or less or in patients who are at a risk for aspiration.

   d. An Advanced Airway, if indicated, will be attempted while maintaining in-line stabilization with no hyperextension of the head and neck.

   e. Ventilate patients with an Advanced Airway at a rate adequate enough to maintain an $ETCO_2$ of **30-34 mmHg.**

6. If trying to establish an Advanced Airway in a patient with suspected intracranial injury **and** the patient is combative, **and/or** the patient has trismus (clenched jaw):

   a. **If vascular access is established**, administer amidate (Etomidate), **0.3 mg/kg IV slowly over 15 to 60 seconds**, **OR** if amidate (Etomidate) is NOT available, administer midazolam (Versed), **10 mg IV/IO.**

b. **If unable to establish vascular access**, or amidate (Etomidate) is not available, administer midazolam (Versed), **10 mg IM / IntraNasal** to sedate conscious patient to assist in intubation. Assess/document GCS prior to and following administration of midazolam (Versed).

7. Avoid administration of dextrose solutions (D50, D5W) unless hypoglycemia equal to or less than 60 mg/dL is identified.

8. Restrict fluid administration. Keep IVs at a TKO rate unless the patient is hypotensive.

9. If the patient is hypotensive, administer normal saline, **500 mL IV bolus**. This may be repeated once.

Hypovolemic Shock

TREATMENT

1. Universal Initial Adult Patient Assessment / Care.

2. Control active hemorrhaging with direct pressure using appropriate sterile pressure dressings, and if indicated, apply hemostatic gauze (QuikClot-type product). Note the exact nature and location of blood / fluid loss (e.g., ear canals, nostrils, face, or scalp wounds). Continue with direct pressure for at least 5 minutes.

3. Tourniquets are used to **control major extremity bleeds** due to **amputation** or due to **bleeds not adequately controlled with direct pressure and elevation.** A tourniquet should be applied while maintaining pressure to and elevation of the bleeding extremity (or exposed stump in amputation).

4. In large open wounds with multiple bleeding sites and significant blood loss, the use of hemostatic gauze dressing may be attempted while applying direct pressure. Pack wound tightly with roll gauze or hemostatic gauze roll.

5. Keep patient warm. Cover with blankets and consider turning off air conditioning during patient transport.

6. Attempt to establish vascular access with at least 2 large bore IVs or one IO.

    a. Upon vascular access in patients without penetrating trauma to the torso, administer normal saline, **500 mL IV run wide open** and reassess the patient. If there is no improvement in the cardiovascular status, an additional normal saline, **500 mL IV** may be given. The goal is to maintain a systolic BP of 90 mmHg.

    b. **Permissive hypotension (Controlled Hypotension)**: in patients with penetrating trunk trauma maintain a blood pressure of at least 70 mmHg. Do NOT give IV fluids to these patients if their systolic blood pressure is at least 70 mmHg. Caution should be exercised in elevating pressure in penetrating trunk trauma as the pressure can dislodge clots and cause the patient to bleed out.

    c. If first fluid challenge is given IO, attempt to establish IV if second fluid challenge is needed.

7. **DO NOT delay transport to obtain vascular access in the Trauma Alert patient.**

8. **Hemostatic gauze is ineffective in penetrating trauma with small entrance and/or exit wounds. They are most effective in patients with large areas of avulsed tissue and oozing wounds.**

9. **For gaping wounds, apply direct pressure on top of the hemostatic gauze.**

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Trauma in Pregnancy

TREATMENT

1. Universal Initial Adult Patient Assessment / Care
2. Refer to appropriate trauma protocol(s) as indicated.
3. If patient goes into active labor, refer to OB Protocol.
4. Adequate maternal oxygenation is essential to ensure fetal well-being. Oxygen should be administered via high-flow facemask.
5. All pregnant patients in the 2nd or 3rd trimester who have been involved in a significant trauma should be transported in a left lateral recumbent position.
6. If spinal immobilization is indicated, care should be taken for pregnant women in the 2nd or 3rd trimester, as the enlarged uterus may compress the major vein returning blood to the heart and may cause hypotension.
7. All pregnant patients in their 2nd or 3rd trimester, who have been involved in any significant trauma, should be transported to the closest most appropriate hospital.
8. If signs of shock are present, administer normal saline, **500 mL IV bolus**. This may be repeated once if indicated.
9. Consider Pain Management, however, nitrous oxide (Nitronox) should **NOT** be given to women during pregnancy, but may be used if there is active labor.
10. **NOTE:** It is important to consider that post-mortem C-section may provide for fetal survival if accomplished as early as possible. Therefore, rapid transport to the closest appropriate facility is essential.

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Major Soft Tissue Injuries

Types

1. **Closed**
   a. Contusions
   b. Hematomas
   c. Sprains
   d. Strains
   e. Swelling

2. **Open**
   a. Abrasions
   b. Lacerations
   c. Penetrations/Punctures
   d. Avulsions

Assessment

1. Locate and document injuries

2. Assess motor and sensory function distal to injury

3. Assess circulation (pulses and cap refill) distal to injury

4. Repeated assessments of circulation, and motor/sensory are needed

   a. In patients with circumferential edema of an extremity to evaluate for compartment syndrome.

   b. After application of compression dressings and/or splints

TREATMENT

1. Universal Initial Adult Patient Assessment / Care

2. Control bleeding with direct pressure and/or tourniquet.

3. Cover open wounds with sterile dressing.

4. Immobilize if fracture or significant sprain is suspected.
   Use I.C.E. (Ice, Compression, Elevation)

5. Consider Pain Management

6. Refer to appropriate trauma protocol as indicated.

7. Treat Crush Injuries as per protocol.

8. **DO NOT** remove penetrating objects unless they obstruct the airway or the efficient performance of CPR. Such objects **may be cut down to 6 inches** from the point of entry to minimize movement.

9. Any apparent penetrating injuries to the chest or upper back will be covered quickly with a 3-sided occlusive-type dressing, such as foil or petroleum gauze. Consider Chest Decompression protocol.

10. Dress open wounds of the cranial vault carefully with a sterile dressing. **DO NOT** use providone-iodine topical antiseptics like Betadine.

11. Use sterile normal saline to cleanse grossly contaminated wounds. **DO NOT** use hydrogen peroxide or alcohol.

12. Penetrating, open injuries of the abdominal cavity and/or eviscerated bowel will be dressed rapidly and with care to not injure any exposed intra-abdominal organs.

    a. Exposed bowel (evisceration) will be dressed with a Water Jel® dressing or gauze moistened with sterile normal saline. This will then be covered by a dry, occlusive dressing such as a trauma dressing or foil.

    b. **Do not** attempt to put eviscerated organs back into the abdomen.

13. Amputations and open fractures will be dressed with a sterile dressing.

14. If an injury to the globe or periorbital tissues of the eye is present, apply moist, sterile dressings to both the injured and uninjured eye. DO NOT apply pressure dressings to ocular injuries. Refer to Eye Injuries.

15. Wash open fracture sites with copious amounts of normal saline before dressing/splinting.

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When treating the pediatric patient, refer to the pediatric medication guide for correct dosing and equipment information.

ABANDONED/SURRENDERED NEWBORN

The following are guidelines for compliance with requirements of Florida Statute 383.50 and 383.51 as it relates to a newborn infant(s) released to fire station personnel.

All Fire Rescue stations will accept any newborn infant(s) left with a firefighter, emergency medical technician and/or paramedic. Fire rescue personnel accepting the newborn infant(s) will consider the actions of the person delivering the newborn to be implied consent and will:

1. Universal Initial Pediatric Patient Assessment / Care

2. Initiate any needed emergency medical procedures for the newborn.

3. Arrange for rapid Fire Rescue ALS transport of the newborn to the nearest appropriate facility.

4. Any firefighter, emergency medical technician and/or paramedic accepting the newborn or providing emergency medical services to a newborn pursuant to this Florida Statute is immune from criminal or civil liability for having performed this act.

5. Except where there is actual or suspected child abuse or neglect, any parent who leaves a newborn with a firefighter, emergency medical technician and/or paramedic and expresses an intent to leave the newborn, has the absolute right to remain anonymous and to leave at any time and may not be pursued or followed. A parent of a newborn left at a fire station or hospital may claim his or her newborn up until the court enters a judgment terminating his or her parental rights.

6. In the event signs or symptoms of abuse are seen or suspected, refer to Suspected Child Abuse Protocol.

7. A newborn infant(s) left at a fire station will not be deemed abandoned, therefore is not subject to reporting and investigation requirements, unless there is actual or suspected child abuse.

8. The identity of a parent who leaves a newborn at a fire station is confidential.

Special Notes

1. Fire rescue personnel include firefighters, emergency medical technicians and/or paramedics.

2. A newborn is defined as a child that a licensed physician reasonably believes to be approximately 7 days old or younger at the time the child is left at a hospital or a fire station.

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Assessment of a patient's respiratory status is divided into two categories, evaluation of the upper airway and evaluation of the lower airway. The upper airway is defined as everything at or above the vocal cords, i.e., tongue, soft palate, throat, oropharynx, and vocal cords. The lower airway is defined as everything in the respiratory tree below the vocal cords including the trachea, bronchi and lungs.

Evaluation of the upper airway is an assessment of the openness or patency of the upper airway. Is the patient able to get air into their lungs? The patency of the upper airway may be compromised by an obstruction, either a foreign body, vomitus, or swelling of the tissues of the upper airway, e.g., allergic reactions, medication reactions, or infections. The upper airway may also be compromised in patients with an altered mental status, especially in those patients with a diminished or absent gag reflex. These patients are at risk for airway obstruction from the tongue falling back against the back of the throat or from aspirating their own vomitus.

Evaluation of the lower airway is an assessment of two elements:

1. Is the patient able to ventilate, i.e., to move air in and out of their lungs?

2. Is the patient able to oxygenate, i.e., is the blood moving through the lungs able to be perfused with oxygen so that the patient has adequate levels of oxygen in their blood?

Assessment of the **upper airway** is easier in the alert patient. An alert patient that is able to speak clearly and has no complaints regarding speaking, breathing or swallowing has a clear upper airway. The presence of gurgling, gasping, snoring, stridor, or an otherwise noisy airway/breathing suggests an upper airway obstruction. Application of a CO_2 monitor, if available, will allow assessment of a patient's ventilatory status and is particularly helpful in evaluating patients with altered levels of consciousness to determine whether their airway is in need of management.

A clinical assessment of the **lower airway** can be helpful, but the patient's recent and past medical history, as well as the medications that the patient is currently taking, may be more helpful in assessing the cause of any respiratory difficulties being experienced by the patient. The clinical assessment of the lower airway has several elements:

1. Assessment of the patient's mental status - (alert, confused, responsive to verbal stimuli, responsive to painful stimuli, or unresponsive.

2. Assessment of the patient's skin - warm/dry, pink, ashen or cyanotic (cyanosis can be central involving only the lips, or peripheral involving only the fingers).

3. Assessment of the chest wall and the ribs and muscles used to assist in moving air in and out of the chest – are there retractions or accessory muscles being used to assist in breathing? Is there abdominal breathing?

4. Listening for lung sounds - wheezing, a musical sound heard in either or both inspiration and expiration; rhonchi, a deeper coarse almost gargling sound; rales, a fine crackling sound similar to listening with an ear close to a glass of a carbonated beverage; and finally the absence of breath sounds on either one or both sides.

5. There is a continuum of options available to the healthcare provider in the management of a patient in apparent respiratory distress. These include the following listed from the least invasive to the most invasive:

   a. Nasal Cannula
   b. Simple Face Mask
   c. NRB mask
   d. BVM with reservoir
   e. CPAP
   f. Invasive Advanced Airways
      1) Supraglottic devices
      2) Oral ETT
      3) Cricothyrotomy
         (**NOT** indicated for children
         In the pre-hospital setting)

Least invasive

Most invasive

When initiating oxygen treatment of a patient, start with one of the choices from the above list that seems most reasonable. These questions can help you choose a starting point:

1. Is the patient conscious?

2. If the patient is conscious, are they able to speak, and are they able to cooperate with their treatment?

Regardless of which one you choose as your starting point, the key in managing these patients is repeated re-evaluations to determine whether the initial management chosen for a particular patient is the correct choice.

Invasive Airways are usually reserved for patients with severe respiratory distress with depressed levels of consciousness. After you have started oxygen treatment, the patient should be monitored by following their level of consciousness, their SpO_2% levels, and their capnography waveforms.

The level of consciousness is a good measure of whether the target organs are receiving enough oxygen. The SpO_2% levels are a measure of whether there is sufficient oxygen in the blood to feed the cells of the body. The capnography waveforms monitor the patient's ventilations or the ability to move oxygen in and out of the lungs.

The approach to managing a patient in apparent respiratory distress is to understand that whatever tool for administering oxygen is chosen as a starting point, if the patient is not oxygenating well, not ventilating well, or their level of consciousness falls, move on to another, more invasive level of oxygen administration. Consider oxygen treatment as administering a drug. You must reevaluate the patient periodically to determine whether the treatment provided to the patient is solving the patient's problem regarding oxygenation and ventilation.

Intubation of the patient accomplishes in a controlled manner oxygenation, ventilation, and protection of the airway in patients without a gag reflex.

Respiratory Adjuncts

Consider the options available to stabilize the patient when treating patients in respiratory distress. The presentation of a patient exhibiting signs of respiratory distress will change from minute to minute and requires an on-going evaluation of the patient and their response to your treatment. Oxygen at levels greater than what is present in the air is a medication. Below are the available choices when starting oxygen and some recommendations on which delivery system may be the appropriate starting point in a particular patient. If the patient does not respond to one choice, then go to the next level. When in doubt, it is always better to make a choice of the higher level of oxygen delivery.

The SpO_2 goal should be 94% or greater.

1. **Nasal Cannula:** used with mild respiratory distress and with a pulse oximeter reading of less than 94%.

2. **Non-Rebreather Mask (NRBM)**: used with moderate respiratory distress, with normal respiratory rate and volume, and a pulse oximeter reading of less than 94%.

3. Nebulizer Mask**:** used with ipatropium/albuterol (DuoNeb) for acute bronchospasm (wheezes) as with asthma or allergic reaction, or with normal saline for control of upper airway edema (patient has stridor) as in children with croup.

4. **Positive Pressure Ventilation (PPV):** used for severe respiratory distress or when respirations are too slow or too shallow. Three adjuncts are available for PPV:

   a. **CPAP:** may be considered with children who are alert and able to follow instructions, assuming the CPAP mask forms an adequate seal, **AND** the child is cooperative. CPAP may be applied to any child with acute respiratory distress and a low SpO_2 even if the lung sounds are clear.

b. **Automatic Ventilator:** is used for PPV (positive pressure ventilation) in either the demand mode (assist patient with breathing that is too shallow) or manual mode (assist patient with breathing that is too shallow and/or too slow) or automatic mode (used with an advanced airway in apneic patients).

c. **BVM:** Used when Automatic Ventilator is indicated, but is not available. It may be used (without the mask) in conjunction with the use of advanced airways. Use enough BVM compression to visualize chest rise.

5. **Advanced Airway:** When the patient is in respiratory arrest, or prolonged PPV is required with a BVM or Automatic Ventilator, an advanced airway should be properly placed. There is a choice of a Supraglottic Airway or an oral Endotracheal Tube. In preparation for an advanced airway the patient should be given 100% oxygen via a nasal cannula while preparing for the procedure.

   a. **Supraglottic Airway:** is placed in the initial set of compressions in cardiac arrest. It can also be used in respiratory arrest and respiratory distress when there is no gag reflex. Supraglottic Airways are contraindicated when there is damaged tissue in the supraglottic area or there is a high risk of aspiration**. I-gel** is an example of a supraglottic airway.

   b. **Endotracheal Tube (ETT):** is **no longer** the primary airway in cardiac arrest. It is the airway of choice when there is a high risk of aspiration. It is also usually indicated when Supraglottic Airways are contraindicated.

   c. **Bougie:** if available can be used to place an ETT. The bougie is placed through the vocal cords and the ETT is passed over the bougie into the trachea. A gum elastic bougie can also be used to change the airway from an I-gel to an ETT. With an I-gel already properly placed, insert the bougie into the I-gel and through the vocal cords until you feel resistance. Holding the bougie in place, remove the I-gel and introduce the ETT with the 20 mm marker at the lips. Listen for bilateral breath sounds, and confirm placement with waveform capnography.

   d. If an advanced airway is established:

      1) Secure the advanced airway device.
      2) Maintain the patient's head and neck in the neutral position. Flexion and/or hyperextension may dislodge the device.
      3) If the patient's condition deteriorates and/or the SpO_2 drops to less than 94%, consider the following possibilities (**DOPE**):
         - **D**isplacement of the device. Check for neutral head/neck position
         - **O**bstruction of the device.
         - **P**neumothorax. Check for bilateral breath sounds.
         - **E**quipment failure. Check pop-off valve

GENERAL TREATMENT

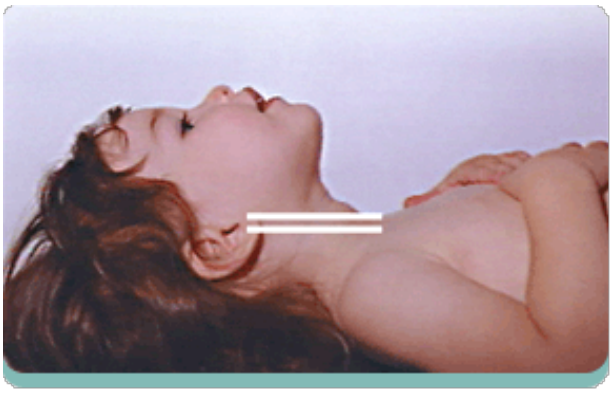
All pediatric patients should have Universal Initial Pediatric Patient Assessment / Care.

Spontaneous Breathing Present but Impaired

(based on patient complaint or EMS findings):

1. Ensure a patent airway, and maintain proper head positioning (head-tilt/chin lift) observing cervical spine precautions if indicated (jaw thrust maneuver).

2. **Do not hyperextend the neck in infants, use the sniffing position.** Proper positioning for mask ventilation and an advanced airway aligns the ear lobe with the sternal notch.



3. Evaluate/manage any suspected obstructions.

4. Suction as necessary. **Do not suction secretions in cases of suspected epiglottitis. It may lead to total airway obstruction, from spasms from the larynx and swelling tissues.**

5. Monitor pulse oximetry. Maintain a pulse oximeter reading of at least 94%.

6. Administer supplemental oxygen, if indicated.

7. Listen to breath/lung sounds. If abnormal refer to the appropriate protocol(s) (for example: Pediatric Asthma, Upper Airway Emergencies).

8. **Has the child's breathing improved?** Is the SpO_2 equal to or greater than 94%?

   a. **If YES**, then continue with current airway management and transport.
   b. **If NO,** consider more invasive airway management.

9. When appropriate and if available, assess non-intubated $ETCO_2$ levels and treat appropriately. Normal range is 35 to 45 mmHg.

Spontaneous Breathing Absent or Severely Compromised:

1. Ensure a patent airway, and maintain proper head positioning (head-tilt/chin lift) observing cervical spine precautions if indicated (jaw thrust maneuver).

2. **Do not hyperextend the neck in infants, use the sniffing position.** Proper positioning for mask ventilation and an advanced airway aligns the ear lobe with the sternal notch.

3. Evaluate/manage any suspected obstructions.

4. Suction as necessary. **Do not suction secretions in cases of suspected epiglottitis. It may lead to total airway obstruction, from spasms from the larynx and swelling tissues.**

5. Ventilate with 100% O_2. Use an Automatic Ventilator or a BVM with a reservoir at 15 LPM. Consider CPAP if the patient is awake with severely compromised breathing.

6. If unable to see the chest rise, reposition the head and try again. If still unable to see chest rise, consider an airway obstruction, and manage appropriately.

    a. In a respiratory/cardiac arrest, deliver 1 breath every 6-8 seconds (8-10 breaths per minute).

7. **Has the child's breathing improved?** Is the SpO_2 equal to or greater than 94%?

    a. **If YES**, then continue with current airway management and transport.

    b. **If NO**, insert a Supraglottic Airway (I-gel) device or intubate the patient with an appropriately sized ETT. Confirm and monitor proper placement with capnography.

8. If the child has a difficult airway to open (trismus – clenched jaw muscles) and/or an active gag reflex:

    a. If you are **ABLE** to establish vascular access, administer amidate (Etomidate), **0.3 mg/kg IV *slowly over 15 to 60 seconds*** – **OR** if amidate (Etomidate) is NOT available, administer midazolam (Versed),**0.1 mg/kg IV (maximum dose is 5 mg)** or as per pediatric medication guidelines**.**

    b. If you are **UNABLE** to establish vascular access, administer midazolam (Versed), **5 mg IM / IntraNasal or Buccal** (5 years and older) or **2.5 mg IM / IntraNasal or Buccal** (less than 5 years old) OR dosing as found in the Pediatric Medication Guide. **Buccal -** part the child's lips and without opening the jaws,

place the medication laterally between the teeth and cheek with **half of the dose on each side of the mouth**.

9. Confirm correct tube placement and properly secure. ETT should be attempted only 2 times. **Use Supraglottic Airway if ETT intubation attempts are not successful.**

10. If the child becomes combative following the successful placement of an Advanced Airway:

    a. Reconfirm proper Advanced Airway placement with $ETCO_2$ and SpO_2 measurements.

    b. Consider sedation with midazolam (Versed), **0.1 mg/kg IV (maximum dose is 5 mg)**. May repeat once in 5 minutes if indicated.

    c. If there is no vascular access, administer midazolam (Versed), **5 mg IM / IntraNasal or Buccal** (5 years and older) **or 2.5 mg IM / IntraNasal or Buccal** (less than 5 years old) OR dosing as found in the Pediatric Medication Guide. **Buccal -** part the child's lips and without opening the jaws, place the medication laterally between teeth and cheek with **half the dose on each side of mouth**.

11. In cardiac arrest, ventilate once every 6-8 seconds (8-10 breaths per minute), attach a CO_2 sensor, if available, and monitor waveform capnography.

12. Consider insertion of an Oral Gastric tube in situations where abdominal distention persists after successful endotracheal tube intubation.

13. Monitor and record $ETCO_2$ after successful placement of an Advanced Airway and again upon every patient transfer of care. Continuously monitor $ETCO_2$ in all patients with an Advanced Airway (Supraglottic or ETT).

Partial Airway Obstruction

(The child is able to speak, "I have something in my throat," but the child is in obvious respiratory distress.

1. Allow the child to assume a position of comfort.
2. If the child will allow it, apply a NRBM with high flow oxygen.
3. Transport and monitor.

Complete Airway Obstruction in CONSCIOUS Patients:

1. **Children 1 to 8 years of age.**
   a. Administer abdominal thrusts (Use chest thrusts for obese children).
   b. Repeat until cleared **OR** the child becomes unconscious.

2. **Infants one month to one year of age.**
   a. Administer five (5) back blows and five (5) chest thrusts.
   b. Repeat until the airway is cleared **OR** the infant becomes unconscious.

Complete Airway Obstruction in UNCONSCIOUS Patients:

(For children 1 to 8 years of age **AND** infants 1 month to 1 year of age)

1. Open the airway.

2. Attempt to ventilate. If unable to ventilate, reposition the head and try again. If still unable to ventilate, perform CPR: 5 cycles of 30:2 (1 rescuer),15:2 (2 rescuers).

3. Check the mouth, and if an object is visible attempt to manually remove it or use suction. DO NOT perform blind sweeps.

4. Attempt to ventilate, if still unsuccessful: REPEAT steps 2 and 3 above.

5. If the airway remains obstructed: use the laryngoscope to visualize the obstruction and attempt to remove it using the Magill forceps.

6. Initiate early transport with emergency department notifications.

7. If still unable to remove the obstruction and unable to place an advanced airway or deliver effective BVM breaths:

   a. Re-attempt BVM ventilation by inserting an OPA (if possible)

      Also, use additional EMS personnel:
      - One medic uses both hands to maintain a good mask seal with a jaw thrust maneuver.
      - Another medic uses both hands to deliver forceful BVM breaths.
      - If needed, a third medic can assist with positioning the head and jaw thrust.

      OR, as a last resort:

   b. Intubate the trachea and force the obstruction into one of the main stem bronchi with the ETT.

   c. Another option is to get an ETT and cut off the Murphy eye at the tip. Attach the ETT to suction with a Meconium Aspirator. Intubate until you meet resistance, apply suction, and attempt to remove the obstruction by withdrawing the ETT while maintaining suction.

Mild Allergic Reaction

Treatment is aimed at making the patient comfortable and continually assessing for the development of respiratory distress and/or anaphylaxis.

Mild reactions include:

- Local/systemic redness (flushing)
- Itching and/or urticaria (hives)
- Periorbital edema
- Conjunctivitis (red, bloodshot eyes)
- Rhinitis (runny nose)
- Mild bronchospasm (wheezing)

TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care

2. Administer diphenhydramine (Benadryl), **1 mg/kg slow IV or IM (max dose 50 mg**).

3. For acute bronchospasm / wheezing, administer ipratropium/albuterol (DuoNeb) via a nebulizer at 6 LPM.

   a. If child's weight is equal to or less than 10 kg, administer a **half** vial of ipratropium/albuterol (DuoNeb), **1.5 mL (0.25 mg/1.25 mg) mixed with 2 mL of** normal saline.

   b. If the child's weight is greater than 10 kg, administer adult dose, 1 vial of ipratropium/albuterol (DuoNeb), **3 mL (0.5 mg/2.5 mg).**

   c. May repeat once if needed.

Anaphylaxis (Severe Allergic Reaction)

Anaphylaxis is a condition resulting from a severe allergic reaction. The patient will present in circulatory shock and/or acute respiratory distress as a result of angioedema and/or acute bronchospasm. **EVALUATION OF LUNG SOUNDS AT THIS TIME IS CRITICAL** in determining the severity of the allergic reaction.

Severe reactions include:

- Angioedema (localized swelling, particularly mouth, tongue, or throat)
- Laryngeal edema (muffled voice, difficulty speaking)
- Hypotension
- Respiratory failure (low SpO_2 or high CO_2)
- Shock

TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care.

2. If available, administer one injection from the **Epi-Pen Jr.** into the lateral thigh or upper arm for a moderate to severe anaphylactic reaction **OR** administer epinephrine 1:1,000, **0.01 mg/kg IM (0.01 mL/kg)** (up to 0.3 mL) for asthma or allergic reactions.

3. Establish IV access. In addition to epinephrine in the hypotensive patient, administer normal saline, **20 mL/kg IV fluid bolus**. May repeat once if needed.

4. If the patient remains hypotensive, or they develop acute upper airway obstruction within 3-5 minutes after the IM epinephrine and normal saline fluid bolus, administer epinephrine 1:10,000, **0.01 mg/kg *slow* IV (0.1 mL/kg)**. This may be repeated once in 5 minutes if there is no improvement.

5. Administer diphenhydramine (Benadryl), **1 mg/kg *slow* IV or IM (maximum dose 50 mg)**. Benadryl is slower in onset, but longer in duration than epinephrine and should take effect just as epinephrine is losing effectiveness.

6. If hypotension persists, administer premix dopamine, **400 mg in 250 mL D5W** (1,600 micrograms/mL), start at **2-20 mcg/kg/min OR dosing as found in the Pediatric Medication Guide** and titrate systolic BP until patient is no longer hypotensive.

7. For acute bronchospasm / wheezing, administer ipratropium/albuterol (DuoNeb) via a nebulizer at 6 LPM.

    a. If child's weight is equal to or less than 10 kg, administer a **half** vial of ipratropium/albuterol (DuoNeb), **1.5 mL (0.25 mg/1.25 mg) mixed with 2 mL of** normal saline.

    b. If the child's weight is greater than 10 kg, administer adult dose, 1 vial of ipratropium/albuterol (DuoNeb), **3 mL (0.5 mg/2.5 mg).**

    c. May repeat once if needed.

Dystonic Reactions

Dystonia or extrapyramidal reactions are the result of side effects related to a number of anti-psychotic and anti-emetic drugs.

Signs and symptoms include:

- Protrusion of the tongue
- Jaw/teeth clenching
- Facial grimacing
- Deviation of the head to one side
- Sustained upward deviation of the eyes
- Extreme arching of the back
- Or rarely, laryngospasm

Suspect possible dystonia in the patient exhibiting these signs and who has taken any of the following medications:

- Haloperiodol (Haldol)
- Perphenazine (Trilafon)
- Thiothixene (Navane)
- Trimethobenzamide HCL (Tigan)
- Fluphenazine HCL (Prolixin)
- Prochlorperazine (Compazine)
- Trifluoperazine (Stelazine)
- Metoclopramide (Reglan)

NOTE: The individuals taking any of these medications may have been prescribed Cogentin (Benztropine Mesylate) to combat these above untoward effects.

TREATMENT

1. Administer diphenhydramine (Benadryl), **1 mg/kg *slow* IV or IM (max dose 50 mg)**.

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Obtain and document a pulse oximetry reading, and if available, waveform capnography readings (non-intubated $ETCO_2$) during assessment and after treatment(s) on all patients with respiratory emergencies. Treat any problem(s) identified as per appropriate protocol(s).

TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care

2. Airway Management

3. Oxygen should be administered to all children with asthma regardless of the SpO_2 reading.

4. For acute bronchospasm / wheezing, administer ipratropium/albuterol (DuoNeb) via a nebulizer at 6 LPM.

   a. If child's weight is equal to or less than 10 kg, administer a **half** vial of ipratropium/albuterol (DuoNeb), **1.5 mL (0.25 mg/1.25 mg) mixed with 2 mL of** normal saline.

   b. If the child's weight is greater than 10 kg, administer adult dose, 1 vial of ipratropium/albuterol (DuoNeb), **3 mL (0.5 mg/2.5 mg).**

   c. May repeat once if needed.

5. If there is no response from the nebulizer treatment **OR** if the patient is unable to comply with nebulizer treatments, administer epinephrine 1:1,000, **0.01 mg/kg IM (0.01 mL/kg).**

6. CPAP may be considered with children who are alert and able to follow instructions, assuming the CPAP mask forms an adequate seal, **AND** the child is cooperative. If CPAP is immediately indicated for the management of the child's respiratory distress **AND** the child is acutely wheezing, administer ipratropium/albuterol (DuoNeb) thru the CPAP mask, if available.

7. If the patient's condition does not improve with the above treatments, consider administering magnesium sulfate, **50 mg/kg *slow* IVP** (maximum dose 2 grams).

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For any reptile or spider bite whether known or unknown if venomous, request the Miami-Dade County Venom 1 Unit.

GENERAL TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care

2. Attempt to identify the insect, reptile, or animal that caused the injury if it is safe to do so. If available, take a photo of the snake, spider, or other animal and email it to the Venom Response Unit to assist with identification. If unknown or it is a known venomous reptile bite or spider bite, **have dispatch contact Miami-Dade County Fire Rescue Venom 1**. If **Venom 1** is providing Anti-venom, they respond to the receiving facility, not to the scene. Ensure **Venom 1** knows your transport destination.

3. Be alert for the development of any anaphylactic reaction and treat according to the Systemic Reactions Protocol .

4. Immobilize the affected area. Keep the patient calm.

5. Remove and secure in a safe location any rings, bracelets, jewelry, etc. that may be in the injured area before swelling prevents easy removal of these items.

6. Do not apply tourniquets or cold packs. Do not make incisions around the area, or attempt to suction the area.

7. Contact the **Poison Control Center, 1-800-222-1222** for assistance in managing specific envenomations.

8. Maintain SpO_2 of 94% or greater.

9. Establish vascular access with a saline lock on the unaffected extremity.

North American Pit Vipers

(Includes rattlesnakes, copperheads, and cottonmouths/moccasins)

1. For any known or suspected bite, **alert Venom 1**

2. Evaluate for specific signs/symptoms:

   - Distinct "fang marks" or puncture wounds
   - Swelling and pain at the site
   - Weakness, nausea, and vomiting
   - Muscle twitching
   - Numbness and tingling around the face and head
   - Metallic taste, change in taste sensation
   - Hypotension and shock
   - Allergic reactions

3. Mark the end point of the initial swelling and the time directly on the skin. This should be repeated every 15 minutes if applicable. The time of the bite should also be recorded on the Patient Care Record.

4. If possible, keep the injured area low and splint to minimize movement.

5. Provide rapid transport and alert the receiving facility of the specific snake.

Coral Snake Bites

Patients who have been bitten by a Coral Snake may not have any symptoms for a few hours. If there is a reliable history of a possible Coral Snake bite, the patient should be transported to the Hospital for further observation and evaluation. Coral snakes do not have fangs but have small milk teeth. The typical story is that a patient is bitten on the finger or toe and the patient has to shake the snake off.

"Red next to yellow can kill a fellow"
(Coral Snake)

"Red next to black is a friend of Jack"
(King Snake, non-poisonous)

1. For any known or suspected bite, **alert Venom 1**.

2. Evaluate for specific signs/symptoms;

   - Most signs and/or symptoms may be delayed up to 12 hours and are related to the type of venom, which is a neurotoxin. Therefore, CNS disturbances may be observed.
   - Stroke-like signs and/or symptoms.

3. Respiratory paralysis may develop. Be prepared to manage respiratory distress and provide ventilation assistance.

4. Wrap an ace bandage snugly around the affected limb starting at the site of the bite and working towards the heart (proximal), wrapping the entire extremity. Wrap the ace bandage as snug as you would for a sprained ankle. Monitor distal circulation by capillary refill and/or pulse to ensure the wrap does not become a tourniquet.

5. If possible, keep the injured area low and splint to minimize movement.

6. Provide rapid transport and alert the receiving facility of the specific snake.

Exotic Snakes

(Includes cobras, vipers, mambas, etc.)

In the case of an exotic bite, it is imperative to identify the snake's scientific name or at least its common name. Signs and symptoms will vary greatly among different species. **Have Dispatch contact Venom 1 immediately.**

Brown Recluse Spider Bites

1. Evaluate for specific signs/symptoms;
   - Small bleb surrounded by a white ring.
   - Localized pain, redness and swelling.
   - Localized tissue necrosis.
   - Most patients are unaware that they were bitten until the area becomes ischemic and ulcerates.

2. There is no specific pre-hospital treatment.

Black Widow Spider Bites

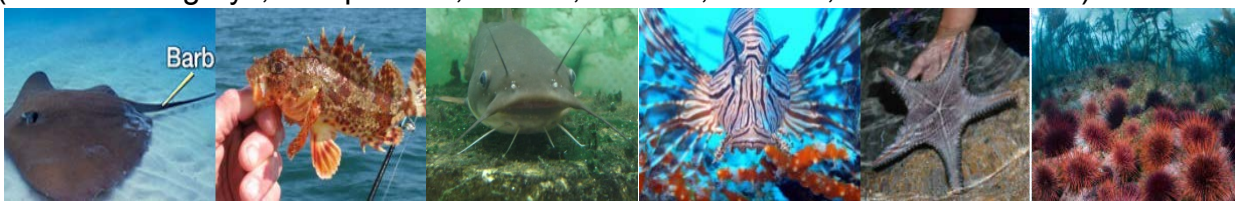
1. For any known or suspected bite, alert **Venom 1**.
2. Evaluate for specific signs/symptoms:
   - Immediate localized pain.
   - Progressive muscle spasms (usually beginning in the back and abdomen).
   - Rigid abdomen.
   - Seizures.
   - Paralysis.
3. To reduce severe muscle spasms, if indicated
   a. If vascular access is available, administer midazolam (Versed), **0.1 mg/kg IVP slowly over 1 minute** (max total dose 2 mg).
   b. If vascular access is **NOT** available, administer midazolam (Versed), **5 mg IM / IntraNasal or Buccal** (5 years and older) OR **2.5 mg IM / IntraNasal / Buccal** (less than 5 years old) OR dosing as found in the Pediatric Medication Guide. **Buccal** (part the child's lips and without opening the jaws, place the medication laterally between the teeth and cheek with half of the dose on each side of the mouth).
4. Consider Pain Management in the conscious patient.
5. Provide rapid transport. The patient may require specific Antivenin injections.

Scorpion Stings

1. Evaluate for specific signs/symptoms;
   - Mild to sharp pain which often progresses to numbness.
   - Salivation.
   - Slurred speech.
   - Muscle twitching.
   - Allergic reaction.
2. Consider Pain Management.
3. Provide rapid transport if symptomatic.

Marine Animal Envenomations

(Include: Stingrays, Scorpionfish, Catfish, Lionfish, Starfish, and Sea Urchins)



1. Immerse the puncture(s) in non-scalding hot water as warm as tolerable (110- 113°F) to achieve pain relief. Transport should not be delayed. Immersion in non-scalding hot water may be continued during transport, as it may take 30-90 minutes for total relief.

2. If the spine is still embedded, **do not attempt removal in the field**.

3. Consider Pain Management in the conscious patient.

Marine Animal Stings

(Includes stings from Jellyfish, Man-O-War, Sea Lice, Hydroids and Fire Coral)

1. Evaluate ABCs for evidence of an allergic reaction, severe inflammation and swelling that might compromise Airway and Breathing.

2. Attempt to remove any visible tentacles using 4x4s with a double-gloved hand. Avoid contact with unprotected skin as the stinging cells are activated on contact, even after being out of the water for hours.

3. Apply vinegar (acetic acid) soaked gauze (if available) to the affected areas for 30 minutes.

4. Consider Pain Management in the conscious patient.

5. After there has been pain relief, attempt to remove any remaining tentacles by using shaving cream and gentle scraping action with a wooden tongue depressor (if not available use something with a rigid edge like a credit card/driver's license).

Bees/Wasps/Hornets/Yellow Jackets/Ant Stings

1. Most patients will have significant pain with these bites. Some patients may develop either localized allergic reactions to these bites and some may develop anaphylactic reactions from the stings of these insects.

2. Apply local ice packs.

3. Consider Pain Management in the conscious patient.

4. If the patient develops an allergic reaction and/or an anaphylactic reaction refer to the appropriate protocol.

Symptomatic Bradycardia

Bradycardia is a heart rate less than 60 beats per minute (bpm). In an infant less than 1 month of age, view any heart rate under 100 bpm as bradycardia. **Hypoxemia is the leading cause of bradycardia in children.** Bradycardia in a seriously ill or injured child should be presumed to be caused by **hypoxemia** or **hypovolemia**. These conditions must be stabilized if the child is to be effectively treated. A bradycardic, hypotensive child is in a pre-arrest state.

Children with a symptomatic bradycardia and cardio-respiratory compromise **will have a pulse** and may present with any or all of the following symptoms:

- Hypotension
- Altered mental status
- Cool and pale distal extremities
- Prolonged capillary refill greater than 2 seconds
- Weak peripheral pulses compared with central pulses
- Mottling, sweating, cyanosis.

TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care

2. Airway Management. Ensure and maintain a patent airway. Assist breathing as necessary. Maintain an SpO_2 of at least 94%.

3. Monitor ECG, Blood Pressure and Pulse oximetry.

4. Establish vascular access.

5. Obtain a 12-Lead ECG, but do not delay therapy.

6. Treat underlying causes.

   Note: If Bradycardia has an underlying cause, such as hypoxemia, hypovolemia, sepsis, anaphylaxis and neurogenic shock, these conditions must be stabilized per protocol.

7. Administer atropine sulfate, **0.02 mg/kg IV/IO**. This may be repeated every 3-5 minutes until a **maximum of 0.04 mg/kg**. The **minimum** dose is 0.1 mg (1 mL = 0.1 mg) and the maximum single dose is 0.5 mg (5 mL). Atropine should not be given to patients with a new onset wide QRS, these patients should be paced.

8. **PERFORM CPR EVEN IF THE CHILD HAS A PULSE** when despite oxygenation and ventilation the heart rate is as follows:

a. Infants/Children: Less than 60 bpm.
b. Neonate: Less than 100 bpm that does not respond to airway management.

9. If bradycardia persists or atropine is NOT indicated, administer epinephrine 1:10,000, **0.01 mg/kg IV/IO (0.1 mL/kg)**. May repeat every 3 to 5 minutes.

10. Begin External Pacing at 100 per minute if the patient is hemodynamically unstable. Do **NOT** delay pacing while waiting for vascular access or for epinephrine or atropine to take effect.

11. If the patient is conscious and not tolerating the pain from pacing, consider pain management

12. If hypotensive, consider a fluid challenge with normal saline, **20 mL/kg IV/IO**. Hypovolemia (due to bleeding, vomiting, diarrhea, fluid shift) is the most common cause of bradycardia after hypoxemia. Distributive shock: septic shock, neurogenic shock, and anaphylactic shock also warrant a fluid challenge.

13. Fluid bolus may be repeated in 5 minutes if signs/symptoms of shock continue.

14. If hypotension persists, administer premix dopamine, **400 mg in 250 mL D5W** (1,600 mcg/mL), start at **2-20 mcg/kg/min OR dosing as found in the Pediatric Medication Guide** and titrate until systolic BP is no longer hypotensive.

SPECIAL CIRCUMSTANCES

Beta Blocker or Calcium Channel Blocker excess / OD:

(Typically bradycardia)

1. Administer atropine sulfate, **0.02 mg/kg IV.** This may be repeated every 3-5 minutes until a **maximum of 0.04 mg/kg**. The **minimum** dose is 0.1 mg (1 mL = 0.1 mg) and the maximum single dose is 0.5 mg (10 mL).

2. If child is bradycardic and hypotensive, administer calcium chloride, **20 mg/kg IV slowly *over 1 minute* (max dose per pediatric medication guide)**. Flush with at least **10 mL** of normal saline. This may be repeated once in 2-3 minutes if indicated.

3. If the child remains hypotensive after the administration of calcium chloride, administer normal saline, **20 mL/kg IV bolus.** May repeat once if child remains hypotensive.

Organophosphate Poisonings or Chemical Nerve Agents

1. **Body weight 18-41kg**

    a. Administer atropine sulfate, **1 mg IVP/IM every 20-30 minutes** until drying of the secretions (atropinization) occurs, or **1 mg IM** with Atropen Auto Injector if available.

2. **Body weight less than 18kg**

    a. Administer atropine sulfate, **0.5 mg IVP/IM every 20-30 minutes** until drying of the secretions (atropinization) occurs, or **0.5 mg IM** with Atropen Auto Injector if available.

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CARDIAC ARREST IN CHILDREN

When managing a cardiac arrest in a child, several points are important to remember:

1. Cardiac arrests in infants and children are more commonly secondary to hypoxemia. Thus, early ventilations are more important in a pediatric arrest than in an adult arrest.

2. Primary cardiac ventricular arrests, while uncommon in children, should be considered in any child who collapses during an athletic event. Early placement of a cardiac monitor or AED in these patients is essential.

3. Drownings are more commonly a respiratory arrest that leads to a cardiac arrest. Again, early ventilations are important in the management of these patients.

4. Commotio Cordis is a condition that occurs when there is blunt trauma to the anterior chest that causes the heart to go into Ventricular Fibrillation. Consider this condition when a child suddenly collapses and is unresponsive after a blow to the chest. Early placement of a cardiac monitor or AED in these patients is essential.

5. Children that are found to be in respiratory and/or cardiac arrest at the scene of a lightning strike should receive CPR with early ventilations.

   Because of the brief high-energy exposure, these patients may have an initial primary cardiac arrest with Ventricular Fibrillation or Asystole. Eventually, the heart's normal pacemaker may take over and re-establish an organized heart rhythm. However, a lightning strike may also temporarily suppress the brainstem's respiratory center and the patient may also stop breathing. So even if the heart starts beating again, the patient may develop a respiratory arrest that may lead to a second cardiac arrest from the hypoxemia.

6. AEDs can be used in all children. Use pediatric specific pads and/or adapters, if available. Otherwise use adult pads with **anterior/posterior placement**.

TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care.

2. Airway Management.

3. If the child is **without respirations or pulse**

   a. Begin chest compressions at a rate of 100-120 per minute as soon as possible. Provide immediate compressions to all children in cardiac arrest.

b. Once the compressions have been initiated, CPR should be maintained continuously and without pause.

NOTE: The manufacturer does not recommend the AutoPulse device for use on pediatric patients, however, if the child fits the AutoPulse (chest circumference = 30 inches or more) the AutoPulse may be used for resuscitation.

c. Another provider should administer positive pressure ventilations with a pediatric BVM as soon as possible.

d. If able to achieve chest rise, continue with BVM ventilations. If unable to achieve adequate chest rise, consider placement of an **advanced airway**.

1) The placement of a supraglottic airway is preferred. Endotracheal intubation may be attempted if the supraglottic device is not available or placement is not successful. Do not interrupt compressions to establish the airway.

2) Ventilate once every 6-8 seconds (8-10 times per minute).

3) Attach the CO_2 sensor and monitor waveform capnography.

e. Attach the ECG monitor or AED pads **as soon as possible** to determine whether the rhythm is shockable. The emphasis is on compressions and early defibrillation if a shockable rhythm is present.

1) **Do not pause compressions and ventilations** while attaching pads and preparing defibrillator / AED.

2) Use Pediatric pads if available, **OR** if not available use Adult pads **anterior/posterior placement**.

3) If a shockable rhythm is present, **immediately DEFIBRILATE**. Continue with Ventricular Fibrillation / Pulseless Ventricular Tachycardia below.

4) If a shockable rhythm is **NOT** present, continue with PEA / Asystole below.

5) If at any time there is a return of spontaneous circulation (ROSC) initiate Post Resuscitation care.

f. In Cardiac Arrest, IO access is preferred; however if IV access can be established within 30-60 seconds, then IV access is acceptable but should only be attempted once

g. After the initial defibrillation and during the 2 minutes of CPR that immediately follows, establish vascular access.

INITIAL RECORDED RHYTHM

Ventricular Fibrillation (V-Fib) / Pulseless Ventricular Tachycardia (V-Tach)

1. If the ECG indicates **VF/ Pulseless V-Tach, DEFIBRILATE (#1)** at **2 joules/kg** and immediately resume CPR for 2 minutes without checking for a pulse or rhythm change.

2. Establish vascular access during this 2-minute cycle of CPR.

3. After completing the 2 minutes of CPR, check the rhythm for no longer than 10 seconds.

    a. If the rhythm is **not** shockable, check for pulse (no longer than 10 seconds) and if absent, resume CPR and treat as PEA/Asystole

    b. If the monitor indicates **VF/Pulseless V-Tach**, **DEFIBRILATE (#2)** at **4 joules/kg** and immediately resume CPR for 2 minutes without checking for a pulse or rhythm change.

4. Within the first minute after resuming CPR, administer epinephrine 1:10,000, **0.01 mg/kg (0.1 mL/kg) IO/IV** (or epinephrine 1:1,000, **0.1 mg/kg (0.1 mL/kg)** diluted with normal saline to a total of 5 mL via Advanced Airway if IO/IV access cannot be established. After the drug has been administered, provide 5 rapid ventilations to enhance the drug delivery into the lungs). Epinephrine may be repeated every 3-5 minutes while the rhythm persists. Complete the 2 minutes of CPR without checking for a rhythm change or pulse.

5. After completing the 2 minutes of CPR, check the rhythm.

    a. If the rhythm is **not** shockable, check for pulse (no longer than 10 seconds) and if absent, resume CPR and treat as PEA/Asystole

    b. If the monitor indicates **VF/Pulseless V-Tach**, **DEFIBRILATE (#3)** at **4 joules/kg** and immediately resume CPR for 2 minutes without checking for a pulse or rhythm change.

6. Within the first minute after resuming CPR, administer amiodarone, **5 mg/kg IO/IVP** (amiodarone may be given up to 3 times for a total of 15 mg/kg throughout arrest). Complete the 2 minutes of CPR without checking for a rhythm change or pulse.

7. After completing the 2 minutes of CPR, check the rhythm.

   a. If the rhythm is **not** shockable, check for pulse (no longer than 10 seconds) and if absent, resume CPR and treat as PEA/Asystole

   b. If the monitor indicates **VF/Pulseless V-Tach**, **DEFIBRILATE (#4)** at **4 joules/kg** and immediately resume CPR for 2 minutes without checking for a pulse or rhythm change.

8. Within the first minute after resuming CPR, administer epinephrine 1:10,000, **0.01 mg/kg (0.1 mL/kg) IO/IV** (or epinephrine 1:1,000, **0.1 mg/kg (0.1 mL/kg)** diluted with normal saline to a total of 5 mL via Advanced Airway if IO/IV access cannot be established. After the drug has been administered, provide 5 rapid ventilations to enhance the drug delivery into the lungs). Epinephrine may be repeated every 3-5 minutes while the rhythm persists. Complete the 2 minutes of CPR without checking for a rhythm change or pulse.

9. After completing the 2 minutes of CPR, check the rhythm.

   a. If the rhythm is **not** shockable, check for pulse (no longer than 10 seconds) and if absent, resume CPR and treat as PEA/Asystole

   b. If the monitor indicates **VF/Pulseless V-Tach**, **DEFIBRILATE (#5)** at **4 joules/kg** and immediately resume CPR for 2 minutes without checking for a pulse or rhythm change.

10. Within the first minute after resuming CPR, administer amiodarone, **5 mg/kg IO/IVP** (amiodarone may be given up to 3 times for a total of 15 mg/kg throughout arrest). Complete the 2 minutes of CPR without checking for a rhythm change or pulse.

11. After 10 minutes of cardiac arrest, consider sodium bicarbonate 8.4%, **1 mEq/kg IV/IO.** May repeat after an additional 10 minutes with **0.5 mEq/kg**. Under 1 year old administer 4.2% concentration, dilute 1:1 with normal saline.

12. Sodium Bicarbonate may be administered earlier in the arrest if a preexisting metabolic acidosis is suspected such as
    a. Near Drowning
    b. Insulin dependent patients, e.g., Diabetic Ketoacidosis
    c. Renal dialysis
    d. Psychiatric medication OD
    e. Cocaine intoxications
    f. Patients with Excited Delirium

9. If at any time during the resuscitation, the patient develops an organized rhythm that is **NOT** shockable and the patient has no pulse, treat the patient under the Asystole/PEA protocol.

10. If at any time there is a return of spontaneous circulation (ROSC) initiate Post Resuscitation care.

Pulseless Electrical Activity (PEA) and Asystole

PEA is a clinical situation and not a specific rhythm on the monitor/defibrillator. It is defined as a clinical situation where there is an organized rhythm other than ventricular tachycardia on the cardiac monitor in a patient without a palpable carotid pulse.

The treatment for a patient with **PEA** will depend on the rhythm that presents on the monitor.

Patients with a pacemaker may present with **asystole** and the rhythm strip will demonstrate pacer spikes without capture.

Asystole was once thought to be the "Death" rhythm. Now we understand that it frequently follows **PEA**. Therefore the approach to Asystole, as in PEA, is CPR, epinephrine, and to evaluate for and treat the underlying cause(s) (**Hs** and **Ts**). The best indicator of a viable asystole is a CO_2 reading of 20, with good CPR, on waveform capnography.

All of these patients need oxygen. Listen to the lungs bilaterally, as patients with a Tension Pneumothorax can present with a PEA situation.

FAST and NARROW Rhythm with PEA

1. Immediately resume CPR for 2 minutes.

2. During compressions, administer epinephrine 1:10,000, **0.01 mg/kg IO/IV (0.1 mL/kg)** (or epinephrine 1:1,000, **0.1 mg/kg (0.1 mL/kg)** diluted with normal saline to a total of 5 mL via Advanced Airway if IO/IV access cannot be established. After the drug has been administered, provide 5 rapid ventilations to enhance the drug delivery into the lungs). Epinephrine may be repeated every 3-5 minutes while the rhythm persists. Complete the 2 minutes of CPR without checking for a rhythm change or pulse.

3. Is this child hypovolemic? Is there a recent history of fluid loss?

    a. Administer a normal saline, **20 mL/kg IO/IV bolus**. May repeat once as needed.

SLOW and WIDE Rhythm with PEA

1. Immediately resume CPR for 2 minutes.

2. During compressions, administer epinephrine 1:10,000, **0.01 mg/kg IO/IV (0.1 mL/kg)** (or epinephrine 1:1,000, **0.1 mg/kg (0.1 mL/kg)** diluted with normal saline to a total of 5 mL via Advanced Airway if IO/IV access cannot be established. After the drug has been administered, provide 5 rapid ventilations to enhance the drug delivery into the lungs). Epinephrine may be repeated every 3-5 minutes while the rhythm persists. Complete the 2 minutes of CPR without checking for a rhythm change or pulse.

3. Consider External Pacing.

SLOW and NARROW Rhythm with PEA

1. Immediately resume CPR for 2 minutes.

2. During compressions, administer epinephrine 1:10,000, **0.01 mg/kg IO/IV (0.1 mL/kg)** (or epinephrine 1:1,000, **0.1 mg/kg (0.1 mL/kg)** diluted with normal saline to a total of 5 mL via Advanced Airway if IO/IV access cannot be established. After the drug has been administered, provide 5 rapid ventilations to enhance the drug delivery into the lungs). Epinephrine may be repeated every 3-5 minutes while the rhythm persists. Complete the 2 minutes of CPR without checking for a rhythm change or pulse.

3. Is this child hypovolemic? Is there a recent history of fluid loss?

   a. Administer a normal saline, **20 mL/kg IO/IV bolus**. May repeat once as needed.

4. Consider External Pacing.

ASYSTOLE

1. Confirm Asystole in at least two leads. You must attach limb leads to perform this procedure.

2. Immediately resume CPR for 2 minutes.

3. During compressions, administer epinephrine 1:10,000, **0.01 mg/kg IO/IV (0.1 mL/kg** (or epinephrine 1:1,000, **0.1 mg/kg (0.1 mL/kg)** diluted with normal saline to a total of 5 mL via Advanced Airway if IO/IV access cannot be established. After the drug has been administered, provide 5 rapid ventilations to enhance the drug delivery into the lungs). Epinephrine may be repeated every 3-5 minutes while the rhythm persists. Complete the 2 minutes of CPR without checking for a rhythm change or pulse.

4. **Pacing is NOT recommended for Asystole**.

5. **PEA** if not treated, will progress to **Asystole**. Therefore determining and correcting the underlying causes of PEA, also applies to Asystole.

With all PEA rhythms consider other causes of PEA / Asystole rhythms (Hs and Ts) and manage as indicated in the parentheses:

The **6Hs**

- **Hypovolemia**: (20 mL/kg normal saline / dopamine / rapid transport)
- **Hypoxemia:** (Confirm adequacy of oxygenation)
- **Hydrogen Ion Acidosis**: (Administer sodium bicarbonate)
- **Hypothermia**: (Warm the patient)
- **HyperKalemia**: (sodium bicarbonate, calcium chloride)
- **Hypoglycemia**: (dextrose, D25W or D50W)

The **5Ts**

- **Tension Pneumothorax**: Perform a needle decompression. (Do not perform needle decompression on an infant, contact medical control for advice.)
- **Toxins / OD** (Contact Poison Control for antidote, 1-800-222-1222 (e.g., Calcium channel blocker overdose-administer calcium chloride)
- **Thrombus:** (Coronary or Pulmonary) (Clot Buster in the ER)
- **Tamponade**: (20 mL/kg normal saline bolus)
- **Trauma:** (20 mL/kg normal saline bolus)

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Reporting ABUSE, NEGLECT, or EXPLOITATION of Children

As defined by **Florida Statute 415**, any Fire-Rescue employee who knows or has reasonable cause to suspect abuse, neglect, or exploitation of a child (or vulnerable adult) will immediately report such knowledge or suspicion to the Florida Abuse Hotline.

1. Notify Police.
2. Notify the Rescue Division Supervisor prior to the end of your shift.
3. These incidents should be reported by calling the Florida Abuse Hotline

   1-800-96ABUSE (1-800-962-2873).
4. Obtain the following information:
   a. The child's name
   b. The full address (including zip code, apartment, building, or lot number)
   c. Telephone number
   d. Date of birth, age, race, and sex
   e. Social Security number if available
   f. Brief description of physical, mental, or behavioral indications demonstrating that the child is infirm or disabled
   g. Signs or indications of harm or injury, including a physical description if possible
   h. A brief history including any medical conditions and the situation found in the home
   i. Incident number and police case number if applicable
5. Complete the Florida Abuse Hotline Fax Transmittal Form and if contact was made with the FL Abuse Hotline, document the counselor's name and identification number above the Incident Number on the form.
6. Deliver or Fax the completed form to the EMS Division for follow up with the local office of the Florida Department of Children and Family Services.

   NOTE: DO NOT fax forms to the Florida Abuse Hotline, as there is no guaranteed process to confirm that the forms have been received.

7. Document the referral and method of referral in the narrative section of the Patient Care Record.

Clinical findings suggestive of child abuse include:

1. Fractures in children less than 2 years old
2. Frequent injuries
3. Wounds in various stages of healing
4. Bruises or unusual burn patterns
5. Widespread injuries over the body
6. Obvious physical neglect
7. Consider child abuse with suspicious burns like dipping burns of the arms, legs, buttocks, cigarette and appliance (iron) burns in areas typically covered by diapers or clothing, especially when history is not consistent with the injury.

Additional Information

Response by a police agency to the incident scene, or transportation of the neglected or exploited person to a hospital, does not release the Unit from the responsibility of reporting the incident to the Florida Abuse Hotline.

Introduction

Children who become ill or are being evaluated for a possible Carbon Monoxide (CO) exposure will be monitored on a **CO Monitor (i.e., Rad 57)** as close to the time of exposure as possible. The CO level is used to determine transport and treatment options.

There is no pre-hospital test for CN and treatment is based on a high clinical index of suspicion for CN poisoning. In the setting of a building fire, consider possible Cyanide (CN) exposure, particularly in children who develop an altered level of consciousness and/or hemodynamic instability.

Signs and Symptoms for CO/CN Poisoning

1. The signs and symptoms for Carbon Monoxide poisoning are non-specific:

    a. Dyspnea
    b. Headache
    c. Chest pain
    d. Muscle weakness
    e. Nausea
    f. Vomiting
    g. Dizziness
    h. Altered mental status
    i. Death

2. Cyanide poisoning may result from inhalation, ingestion, or dermal exposure. Prior to administration of Cyanokit, smoke inhalation victims should be assessed for:

    a. Exposure to fire or smoke in an enclosed area
    b. Presence of soot around the mouth, nose, or oropharynx
    c. Altered mental status

3. In addition to Cyanokit, treatment of cyanide poisoning must include:

    a. Immediate attention to airway patency
    b. Adequacy of oxygenation
    c. Adequacy of hydration
    d. Cardiovascular support
    e. Management of any seizure activity

High Risk Situations

1. Your best asset will be a high index of suspicion in high risk situations (especially in fire scene)

2. The following are to be considered as high risk:

   a. **Building fires**
   b. **Areas where generators are used or misused**
   c. The report of symptomatic or unconscious patient(s) in a car where the garage door is closed
   d. Areas where paint or varnish is stripped from furniture
   e. Areas where gasoline engines, gas powered heaters or water heaters are run with poor ventilation
   f. In some cases with symptomatic divers from contaminated air in their SCUBA tanks
   g. Indoor grills
   h. Hookah Bars

High Risk Patients

Children are at higher risk, particularly children with pre-existing lung disease (cystic fibrosis, asthma), and/or pre-existing heart disease (congenital heart disease).

Special Circumstances for Consideration

1. An individual who is exposed to a high risk situation and experiences hemodynamic instability and/or a cardiac arrest may also have cyanide (CN) toxicity.

2. During the management of the arrest situation consider administration of Cyanokit **(dosing per Pediatric Medication Guide)**.

Indications for obtaining a CO level.

1. Apply to patients when CO poisoning is suspected.

2. Apply to patients being treated for Smoke Inhalation.

Caution

Poor perfusion states where circulation to the fingers is severely compromised may make readings inaccurate or unattainable.

Procedure

1. Apply finger probe to finger with capillary refill less than 5 seconds.
2. SpCO less than 3% – No further evaluation for SpCO needed.
3. SpCO less than 12% with NO symptoms – No further evaluation for SpCO needed.
4. SpCO less than 12% with symptoms – transport on 100% O_2 to nearest ER.
5. SpCO 12% or greater, but less than 25%, with symptoms or pregnant –transport on 100% O_2 to a hyperbaric oxygen facility.
6. SpCO 25% or greater - transport on 100% O_2 to a hyperbaric oxygen facility.

TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care
2. All patients should receive 100% Oxygen via NRB.
3. Document the CO reading in your Patient Care Record.
4. If condition does not improve or gets worse after treatment with100% O_2, consider treating for Cyanide Poisoning with Cyanokit **(dosing per Pediatric Medication Guide)**.

SpCO%	Signs & Symptoms
5	Mild headache
10	Mild headache and SOB (with heavy exertion)
10-20	Moderate headache and SOB (with mild exertion)
20-30	Worsening headache, fatigue, nausea, dizziness
30-40	Severe headache, vomiting, vertigo, altered mental status
40-50	Altered mental status, syncope
50-60	Seizures, shock, respiratory arrest, coma
60-70	Seizures, shock, coma, cardiac arrhythmia

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Cardiopulmonary resuscitation will be initiated on all children who have sustained a cardiopulmonary arrest, UNLESS:

Natural Death In Field:

1. Do Not Resuscitate Order (DNRO) – those terminally ill children whose parent(s) or guardian(s) have properly documented their desire not to be resuscitated through a valid Do Not Resuscitate Order (DNRO). CPR may be terminated if the DNRO is presented after CPR was begun.

2. Children with **obvious death**. Children with these conditions will be pronounced dead in the field. No ECG or attempts at resuscitation are necessary in these patients. These criteria are applicable to all ages.

   These conditions include:

   a. **Decapitation**
   b. **Massive crush** injury to head or torso
   c. **Incineration** with black charring of the whole body
   d. **Evisceration/Expulsion** from the body of vital organ(s): brain, heart, liver, or both lungs
   e. **Hemicorpectomy** (body cut in half through the torso)
   f. **General body decomposition.**

3. Children with **apparently irreversible death**. The following conditions require asystole recorded on a cardiac monitor and confirmed in at least 2 leads

   a. **Rigor mortis** - hardening of the body muscles, which makes the joints rigid. This sign is not reliable for true death if the child is a victim of hypothermia.

   b. **Livor mortis** - large areas of dark red or purple discoloration that do not blanch with pressure and that are seen in the dependent body parts - where the venous blood pools after death due to gravity. This sign must not be confused with birthmarks, traumatic contusion, skin rashes, or the milder discoloration seen in children with shock who have been lying in one position for an extended period of time.

Livor Mortis

Further Recommendations

1. **WHEN IN DOUBT – RESUSCITATE AND TRANSPORT**

2. **Pediatric cardiac arrests are excluded from termination in the field**, unless the child meets the criteria for obvious death or apparently irreversible death (see above), or has a valid DNRO.

3. Consider the possibility of the child being an Organ Donor. However, this should not be the sole reason for resuscitation and transport.

When Resuscitation is Withheld or Terminated at the Scene.

1. The local law enforcement agency with jurisdiction will be responsible for the body once death has been determined.

2. The body is to be left at the scene until a disposition has been made by the Medical Examiner's Office.

3. When releasing the scene/body, document officer/person/on scene assuming responsibility.

Additional Information

1. Refer to VALID DNRO for further information and DH Form 1896
2. ePCR documentation must include the following:
   a. Reason(s) for terminating or not initiating resuscitation.
   b. All resuscitative measures, if applicable, including the location(s) of unsuccessful vascular access attempts.

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HYPOthermia

Hypothermia can be seen even in South Florida. Children are particularly susceptible to hypothermia because of their large body surface area when they are exposed to cooler environments.

HYPOthermia TREATMENT

- Consider hypothermia in near drowning victims and others exposed to cool conditions.
- If you believe that your patient may be hypothermic; their skin may be pale, cool, and/ or mottled, make sure to cover the child with blankets.
- If the child is wet, be sure to dry the body, especially the head.

HYPERthermia / Heat-Related Illness

1. Heat-related illnesses occur when either one or both of two conditions exists:
   a. Overproduction of heat, OR
   b. Problems with heat loss, OR
   c. Inability to cool down

2. Overproduction of heat can occur as a result of several circumstances:
   a. Strenuous exertion
   b. Metabolic conditions such as hyperthyroidism
   c. Drug ingestions such as ecstasy, phencyclidine (PCP), cocaine, and other sympathomimetics (e.g., amphetamines, MDMA, FLAKKA, bath salts, GHB, etc.)
   d. Hot environmental conditions

3. Situations that can create problems with heat loss are:
   a. Some medications interfere with cooling down mechanisms (e.g., antihistamines, diuretics, beta-blockers, tricyclic antidepressants, phenothiazines, MAO inhibitors).
   b. Hot environmental conditions.
   c. Dehydration

4. Children are frequently at increased risk for developing heat-related illnesses because:
   a. Children have a greater body surface area to mass ratio
   b. Children adjust more slowly than adults to changes in environment.
   c. Children produce more heat during activity than adults, and sweat less.
   d. Children often do not think to rest and hydrate when playing/exercising.

5. Alcohol use increases fluid losses and makes heat-loss more difficult.

6. Tight-fitting clothing retains heat and reduces heat-loss.

7. There are three stages of heat-related illnesses
   a. Mild form with heat cramps
   b. Moderate form with heat exhaustion
   c. Life-threatening situation with heat stroke

8. It is not important to determine which stage describes the patient's condition. The important clinical finding to recognize is a change in the patient's mental status or the development of seizures.

HYPERthermia TREATMENT

1. All patients with heat-related illnesses should be treated with the following:

   a. Universal Initial Pediatric Patient Assessment / Care

   b. Move patient to cooler environment and/or fan blowing on patient. Consider the use of a cool-mist fan, if available.

   c. Oral electrolyte solutions, not plain water.

   d. Establish vascular access and administer normal saline, **20 mL/kg IV bolus** if unable to take oral fluids. May repeat once as needed. Consider IO access if there are mental status changes and/or the child is actively seizing.

   e. Remove as much clothing as possible.

2. Children with temperatures of 104°F (40°C) or higher (OR if unable to obtain a temperature and the child feels hot to the touch), who usually exhibit hot and dry skin with changes in their mental status and/or develop seizures should also have the following rapid cooling treatments:

   a. If available, apply ice packs to the patient's neck, axillae and groin areas.

   b. If available, take and document a baseline temperature before administering cold normal saline. Also take and document a temperature at the time of patient transfer in the ED.

   c. **Bolus cold** (34°F) normal saline, **20 mL/kg IV/IO.**

3. To reduce muscle shivering, if indicated

a. If vascular access is available, administer midazolam (Versed), **0.1 mg/kg IVP**

b. If vascular access is **NOT** available, administer midazolam (Versed), **5 mg IM / IntraNasal or Buccal** (5 years and older) OR **2.5 mg IM / IntraNasal / Buccal** (less than 5 years old) OR dosing as found in the Pediatric Medication Guide. **Buccal** (part the child's lips and without opening the jaws, place the medication laterally between the teeth and cheek with half of the dose on each side of the mouth).

c. If the child is agitated and/or in pain after midazolam (Versed) and the child is NOT hypotensive. Administer morphine sulfate, **0.1 mg/kg IV** (max single dose is 5 mg).

d. Anticipate combativeness and seizures. Manage according to appropriate protocols for seizures, poisonings/overdose, febrile seizures, etc.

Neuroleptic Malignant Syndrome

All patients who develop neuroleptic malignant syndrome are taking anti-psychotic medications, e.g., haloperidol (Haldol).

Some or all of the following signs/symptoms can be found in this syndrome. The most common findings are the elevated body temperature and the severe muscle rigidity (lead pipe).

- Severe muscle rigidity
- Elevated body temperature, frequently more than 104°F (40°C).
- Tachycardia,
- Shortness of breath
- Hypotension
- Extrapyramidal symptoms (EPS)
- Agitation
- Drooling
- Urinary incontinence

The pre-hospital TREATMENT is limited to the following:

1. Universal Initial Pediatric Patient Assessment / Care

2. Move patient to cooler environment and/or fan blowing on patient.

3. Remove as much clothing as possible.

4. If patient's temperature is 104°F (40°C) or higher (OR if unable to obtain a temperature and the patient feels hot to the touch) and symptomatic, establish vascular access and initiate therapeutic hypothermia / rapid cooling.

   a. Place ice packs in the neck, axillae and groin areas.

   b. If available, take and document a baseline temperature before administering **cold** normal saline. Also take and document a temperature at the time of patient transfer in the ED.

   c. **Bolus cold** (34°F) normal saline, **20 mL/kg IV/IO.**

5. To reduce muscle shivering, if indicated

   a. If vascular access is available, administer midazolam (Versed), **0.1 mg/kg IVP**

   b. If vascular access is **NOT** available, administer midazolam (Versed), **5 mg IM / IntraNasal or Buccal** (5 years and older) OR **2.5 mg IM / IntraNasal / Buccal** (less than 5 years old) OR dosing as found in the Pediatric Medication Guide. **Buccal** (part the child's lips and without opening the jaws, place the medication laterally between the teeth and cheek with half of the dose on each side of the mouth).

   d. If the child is agitated and/or in pain after midazolam (Versed) and the child is **NOT** hypotensive, administer morphine sulfate, **0.1 mg/kg IV (max single dose is 5mg)**

5. Constant cardiac monitoring.

Electrical Injuries

Electrical burns can be either through direct contact or indirect contact such as with an arc or a flash burn.

Cardiac arrest can occur with electrical accidents. After cardiac arrests the worst effects of an electrical burn is through the damage that is done to the entrance and exit sites.

Secure the area and ensure patient and EMS provider safety.

TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care
2. Cervical immobilization is indicated when spinal trauma is suspected.

3. Patients who have experienced electrical injuries should have a 12-Lead ECG and constant cardiac monitoring.

4. Children with any significant signs/symptoms should have vascular access established preferably in a non-involved extremity.

5. Administer normal saline, **20 mL/kg IV bolus** for children with any evidence of burn injury with greater than 10% Total Body Surface Area burns **OR** with any evidence of explosive exit injuries. (The child's palm without including their fingers is about 1%.)

6. Splint all obvious fractures.

7. Consider Pain Management.

8. **Transport Decision** - patients who remain in cardiac arrest following an electrical injury despite resuscitative efforts should be transported to the closest facility.

Lightning Injuries

1. Care of a victim of a lightning strike is the same as for other electrical injuries. The major difference is that victims of a lightning strike that are in cardiac arrest and appear dead should receive full resuscitation efforts.

2. Lightning strikes can cause ventricular fibrillation and/or asystole. An otherwise healthy heart will be stunned for a few minutes, but cardiac electrical activity will return. (This is similar to the long asystolic pause that is sometimes seen after a cardiac defibrillation.)

3. At the same time, the respiratory center of the spinal cord is stunned and so the patient also stops breathing. When the heart electrical activity begins again, if the patient is not breathing, the patient will then develop another cardiac arrest this time secondary to a respiratory arrest from the temporary paralysis of the spinal cords respiratory center.

4. Thus it is important in these patients to provide a full resuscitation effort including early ventilations.

5. Should include the same treatment as for the Electrical Injuries above.

6. In an MCI resulting from a lightning strike, **TREAT** respiratory and cardiac arrest victims first, even those patients that display asystole on their cardiac monitors. Treat asystole with atropine.

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FEBRILE CHILD

A child is considered to have a fever if the temperature is at least 38^0C (100.4^0F). All children less than 3 months of age with a temperature of 38^0C (100.4^0F) or greater should be considered to be ill.

Many older children with high fevers may have a viral illness, but a significant number will have bacterial infections. Younger children have immature immune systems and cannot compartmentalize infections. A simple bladder infection may cause fever, vomiting, and diarrhea.

All immuno-compromised children (HIV positive, undergoing cancer treatment, on steroid treatments) who present with fever should be considered to be seriously ill.

Assessment

1. Universal Initial Pediatric Patient Assessment / Care

2. If the skin is warm, take and record the child's temperature.

3. The child's appearance is most important. Evaluate the child's appearance:

4. Is the child in distress? Is the child posturing or in the Tripod position and drooling.

5. Evaluate the child's mental alertness:
   a. Can you make eye contact with the child?
   b. Is the child responding to the parents and the environment?
   c. Is the child lethargic?

6. Evaluate the child's breathing:
   a. Are breath sounds audible bilaterally and equal?
   b. Is there any wheezing, rhonchi or stridor?
   c. Does the child have retractions?
   d. Is there a cough? If so, is it productive (with sputum)? Is the sputum colored or bloody?
   e. Continuously monitor pulse oximetry and cardiac rhythm.

7. Evaluate the child's skin:
   a. Is it pink, mottled, pale, or cyanotic?
   b. Is there a rash?

8. Evaluate the child's state of hydration (especially with history of vomiting and/or diarrhea.):
   a. Are the eyes moist?
   b. Is the mouth moist?

9. Evaluate circulation:
   a. Peripheral pulses present?
   b. Capillary refill?

10. Is there neck stiffness? This is typically difficult to evaluate in a child less than 2 years of age.

GENERAL TREATMENT

1. Take appropriate proper barrier precautions if contagious disease is suspected.

2. The child should be kept comfortable. The child should only wear as much clothing as necessary. Remove all excess clothing and blankets without causing the child to shiver.

3. Do not delay transport attempting to gain vascular access.

4. Children with fever greater than 104°F (40°C) may be misted with lukewarm/tepid water over their bodies to reduce body temperature.

Febrile Seizures

Febrile seizures typically occur in children ages 6 months to 5 years. It is thought that it is not the height of the temperature but rather how quickly the temperature rises in a child that determines the at-risk period for seizures.

Febrile seizures are classified as either simple or complex.

- **Simple febrile seizures** last less than 15 minutes and are generalized tonic-clonic seizures without any focal seizing noted. Simple febrile seizures will frequently have ended by the time that Rescue personnel arrive to see the child.

- **Complex febrile seizures** are frequently focal seizures and lasts more than 15 minutes.

TREATMENT

1. Maintain Airway

2. For persistent or recurrent seizures:

   a. If vascular access is available, administer lorazepam (Ativan), **0.1 mg/kg IV** (max 2 mg) OR dosing as found in the Pediatric Medication Guide.

b. If **NOT** able to establish vascular access, administer midazolam (Versed), **5 mg IM / IntraNasal or Buccal** (5 years and older) OR **2.5 mg IM / IntraNasal or Buccal** (less than 5 years old) OR dosing as found in the Pediatric Medication Guide. May be repeated once in 5 minutes if the child's seizures persist. **Buccal** (part the child's lips and without opening the jaws, place the medication laterally between the teeth and cheek with half of the dose on each side of the mouth).

3. Do not confuse combativeness and/or posturing with seizures.

4. Consider a fluid challenge with normal saline, **20 mL/kg IV/IO** if the child is severely dehydrated or in Shock. May repeat once as needed.

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Single Impaired Patient at scene

General Assessment / TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care

2. Obtain and document a blood glucose level using a glucometer. If hypoglycemic, follow Hypoglycemia below.

3. Obtain and document a pulse oximeter reading. Maintain SpO_2 of at least 94%. Administer Oxygen, if indicated.

4. Assess non-intubated $ETCO_2$ (if available) and treat appropriately. (Normal range 35 to 45 mmHg)

5. Establish vascular access.

6. Children with temperatures of 104°F (40°C) or higher (**OR** if unable to obtain a temperature and the child feels hot to the touch), who usually exhibit hot and dry skin with changes in their mental status and/or develop seizures should also have the following rapid cooling treatments:

   a. Move the child to a cooler environment and/or fan blowing on child.

   b. Remove as much clothing as possible.

   c. If available, apply ice packs to the patient's neck, axillae and groin areas.

   d. If available, take and document a baseline temperature before administering cold normal saline. Also take and document a temperature at the time of the child's transfer in the ED.

   e. **Bolus cold** (34°F) normal saline, **20 mL/kg IV/IO.**

7. To reduce muscle shivering, if indicated

   a. If vascular access is available, administer midazolam (Versed), **0.1 mg/kg IVP**

   b. If vascular access is **NOT** available, administer midazolam (Versed), **5 mg IM / IntraNasal or Buccal** (5 years and older) OR **2.5 mg IM / IntraNasal / Buccal** (less than 5 years old) OR dosing as found in the Pediatric Medication Guide. **Buccal** (part the child's lips and without opening the jaws, place the medication laterally between the teeth and cheek with half of the dose on each side of the mouth).

f. If the child is agitated and/or in pain after midazolam (Versed) and the child is **NOT** hypotensive, administer morphine sulfate, **0.1 mg/kg IV/IO (maximum single dose is 5 mg).**

8. Obtain a 12-Lead ECG and monitor the rhythm.

9. Evaluate and document pupil size and reactivity.

10. Obtain and document a CO reading. Treat for CO poisoning for abnormally high CO readings.

11. If an overdose or poisoning is suspected or is identified, treat per protocol and/or contact **Poison Control at 1-800-222-1222**.

12. In some children, their altered mental status or difficulty in interaction with their surroundings is chronic (e.g. autism, mentally challenged). This is best determined by obtaining an accurate medical history from the caretaker or person who made the call.

Multiple Impaired Children at scene:

General Assessment / TREATMENT

1. Ensure scene safety.

2. Universal Initial Pediatric Patient Assessment / Care

3. Obtain and document a blood glucose level using a glucometer. If hypoglycemic, follow Hypoglycemia protocol below.

4. Obtain and document a pulse oximeter reading. Maintain SpO_2 of at least 94%, and administer oxygen if indicated.

5. Obtain and document a CO reading. Treat for CO Poisoning for abnormally high CO readings.

6. Assess non-intubated $ETCO_2$ (if available) and treat appropriately (normal range is 35 to 45 mmHg)

7. Establish vascular access.

8. Children with a temperature reading of 104°F (40°C) or higher (**OR** if unable to obtain

a temperature and the patient feels hot to the touch), who usually exhibit hot and dry skin with changes in their mental status and/or develop seizures should also have the following rapid cooling treatments:

a. Move the child to a cooler environment and/or fan blowing on child.

b. Remove as much clothing as possible.

c. If available, apply ice packs to the patient's neck, axillae and groin areas.

d. If available, take and document a baseline temperature before administering cold normal saline. Also take and document a temperature at the time of the child's transfer in the ED.

e. **Bolus cold** (34°F) normal saline, **20 mL/kg IV/IO.**

9. To reduce muscle shivering, if indicated

   a. If vascular access is available, administer midazolam (Versed), **0.1 mg/kg IVP**

   b. If vascular access is **NOT** available, administer midazolam (Versed), **5 mg IM / IntraNasal or Buccal** (5 years and older) OR **2.5 mg IM / IntraNasal / Buccal** (less than 5 years old) OR dosing as found in the Pediatric Medication Guide. **Buccal** (part the child's lips and without opening the jaws, place the medication laterally between the teeth and cheek with half of the dose on each side of the mouth).

   c. If the child is agitated and/or in pain after midazolam (Versed) and the child is **NOT** hypotensive, administer morphine sulfate, **0.1 mg/kg IV/IO (maximum single dose is 5 mg).**

10. Obtain 12-Lead ECG and monitor the rhythm. Stabilize abnormal rhythms per protocol.

11. Evaluate and document pupil size and reactivity.

12. If an overdose or poisoning is suspected or is identified, treat per protocol and/or contact **Poison Control at 1-800-222-1222.**

13. In some children, their altered mental status or difficulty in interaction with their surroundings is chronic (e.g. autism, mentally challenged). This is best determined by obtaining an accurate medical history from the caretaker or person who made the call.

14. If the child is **combative**, refer to Agitated Patient/Excited Delirium protocol.

15. Consider the possibility of poison or toxic gas.

Hypoglycemia / Insulin Shock:

TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care

2. If the blood glucose is less than or equal to 60 mg/dL,

   a. If the child is conscious and able to swallow, administer one single-dose tube of oral glucose (Glutose) or Dextrose 50% (D50W), **(50 mL) PO (orally)**.

   b. If the child is unable to take glucose orally, administer dextrose 25% (D25W), **2-4 mL/kg slow IV.**

   c. If the child remains unresponsive or symptomatic repeat the blood glucose check.

   d. If a repeat blood glucose is still equal to or less than 60 mg/dL, administer a repeat bolus of Dextrose 25% (D25W).

   e. If unable to establish IV, administer glucagon, **IM.**

      1) If the child's weight is equal to or less than 20 kg (approximately 44 lbs) administer ½ the adult dose or **0.5 mg (0.5 unit)**

      2) If the child's weight is greater than 20 kg administer the regular dose or **1 mg (1 unit).**

      3) Repeat blood glucose check in 15 minutes and may repeat glucagon once if needed.

NOTE: Pediatric Medication Guide is also appropriate as a dose guide.

Hyperglycemia / Diabetic Ketoacidosis (DKA):

(Glucose is "high" or greater than 300)

TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care

2. Administer normal saline, **20 mL/kg IV/IO**.

Suspected Opiate-Type Overdose or Unconsciousness of Unknown Origin

TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care

2. If there are signs of narcotic OD (e.g., pinpoint pupils, track marks) with respiratory depression (including morphine/fentanyl OD), **or unconsciousness of unknown origin:**

   a. Administer naloxone (Narcan), **0.1 mg/kg *slowly* IV/IO or IM / IntraNasal (or 0.2 mg/kg** diluted with normal saline to a total of 5 mL through an Advanced Airway if IV access cannot be established. After the drug has been administered, provide 5 rapid ventilations to enhance the drug delivery into the lungs). May repeat once in 2-3 minutes.

Head Injury or Signs of Increased Intracranial Pressure (ICP) (Cushing's Triad: HTN, bradycardia, irregular respirations) Without Hypotension

TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care

2. Keep the head elevated approximately 30 degrees (12-18"). The patient can either be placed in a semi-fowlers position, or in the case of the suspected C-spine injury, apply cervical collar as indicated.

3. Avoid excess administration of dextrose solutions (D50W, D25W, D5W) unless hypoglycemia (glucose less than 60) is identified. Dextrose may increase cerebral edema.

4. With an advanced airway, hyperventilate (ventilate at a rate adequate enough to maintain an $ETCO_2$ of 30-34 mmHg) only with signs of brainstem herniation (e.g. dilated pupil, a blown pupil, or decorticate/decerebrate posturing).

5. **Start a saline lock, but restrict fluid administration, or run IVs at TKO.**

6. If the child is hypotensive, administer a **bolus** of normal saline, **20 mL/kg IV/IO**.

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PAIN MANAGEMENT

Introduction

Pain is a symptom commonly encountered in the pre-hospital setting. It represents not only a psychological stressor to the patient, but is also a source of physiologic stress that might impact negatively on both the assessment and management of many chronic or acute illnesses or injuries. Pain management, therefore, may provide both physiologic and psychological support to our patients. Pain management must be instituted with sound judgment considering both the risks, as well as the benefits of these treatment options.

Children should be asked about the intensity of their pain on a 1 to 10 scale, with 1 being minimal pain and 10 being the most intense pain if they are old enough to understand. If necessary, for patients between the ages of 4-12 years old, should refer to the Wong-Baker FACES Pain Rating Scale. Patients under the age of 4 years old should refer to the FLACC scale. Five minutes after administration of nitrous oxide or morphine sulfate the child should be asked whether their pain has changed on the same scale used. If the pain remains 6 to 10 after administration of nitrous oxide to appropriate patients, then consider administration of morphine sulfate.

If available and unless contraindicated, nitrous oxide is a good choice in managing a patient's pain. However, we use a mixture of nitrous oxide that is 50% nitrous oxide and 50% oxygen. At this concentration, only about 50% of patients will receive significant pain relief.

It is paramedic judgment as to whether the first choice in pain management is nitrous oxide or fentanyl/morphine. A patient with an obviously painful injury might be a good situation where it would be more appropriate to use morphine as the first choice for pain control.

If there are obvious contraindications to the use of nitrous oxide in a particular patient, or if it is not available, then use morphine sulfate as the first choice for managing the patient's pain.

TREATMENT

1. Some pain can be managed with the following:

    a. Whenever it is safe and practical, allow the patient to maintain his/her own position of comfort.

    b. Cover wounds to limit air circulation (especially with burns)

c. Treat Burns as indicated

d. Treat Sickle Cell Patients as indicated

e. Elevate, apply cold pack(s), and apply pressure dressing(s) to musculoskeletal extremity injuries. Controlling edema is an important part of pain management.

f. Splint or immobilize extremity injuries to limit movement.

2. Administer nitrous oxide (Nitronox), if available

a. Prepare the equipment. Nitronox units consist of a nitrous oxide cylinder, a blending regulator, an oxygen cylinder, and a mask.

b. **Contraindications include:**

1) Altered level of consciousness
2) Pneumothorax
3) Abdominal pain with distension or suspicion of obstruction
4) Inability to self-administer the medication.

c. Turn the oxygen and nitrous oxide (Nitronox) cylinder valves to the "on" position. Make sure the device shows appropriate blending of the gases.

d. Attach a mask to the Nitronox unit regulator and provide it to the child for self-administration. The child must be able to self-administer the medication. If he/she cannot self-administer the nitrous oxide (Nitronox), it should not be used.

e. Monitor the child's vital signs and pulse oximeter. If the child's vital signs become unstable or the child becomes symptomatic from the side effects, discontinue the nitrous oxide (Nitronox).

3. As long as the child is **NOT** hypotensive, administer morphine sulfate, **0.1 mg/kg IV/IO. (Maximum single dose is 5 mg.)** This may be repeated once in 5-10 minutes with a dose of **0.05 mg/Kg IV/IO** if there is not adequate pain relief.

4. If unable to establish vascular access administer fentanyl, **1 microgram/kg IntraNasal (maximum single dose 50 micrograms)**. This may be repeated once in 5 minutes, if there is not adequate pain relief.

5. If vascular access is obtained after giving one dose of IntraNasal fentanyl, one dose of morphine, **0.05 mg/kg IV** may be given to the child if the child has not had significant pain relief.

6. If indicated for pain control and vascular access **IS NOT** available, nitrous oxide and fentanyl may be given to the same patient.

7. If indicated for pain control and vascular access **IS** available, nitrous oxide and morphine may be given to the same patient.

8. If morphine sulfate or Fentanyl causes respiratory depression and/or a SpO_2 of less than 94%, administer naloxone (Narcan), **0.1 mL/kg IV/IM/IntraNasal** to reverse this action. May repeat Narcan once in 2-3 minutes.

NOTE: Caution should always be taken when mixing different pain medications. The patient should have their SpO_2, $ETCO_2$, and cardiac rhythm monitored.

NAUSEA / VOMITING

The effects of uncontrolled nausea and vomiting can be significant. Patients may develop dehydration, electrolyte imbalances, aspiration pneumonia, and/or malnutrition.

TREATMENT

1. Children **12 years or older** with severe nausea and/or repeated vomiting may be given ondansetron (Zofran), **8 mg ODT (Oral Dissolving Tablet).**

2. Children **ages 4-11** with severe nausea and/or repeated vomiting may be given ondansetron (Zofran), **4 mg ODT (Oral Dissolving Tablet).**

3. Some patients who have been given morphine or fentanyl for pain may develop nausea and/or vomiting. These patients may be given ondansetron (Zofran), **8 mg ODT 12 y/o or older** OR **4 mg ODT 4-11 y/o.**

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Young children have a tendency to place anything they see on the floor in their mouths. This may include adult recreational or prescribed medications, cleaning compounds, or other harmful substances dropped or left where the child may find them. Pediatric medications are frequently candy or fruit flavored to enhance compliance in taking the medication. Infants can consume any substances/pills that have been left in their cribs by older siblings.

In suspected pediatric poisonings, suicide attempts/gestures should be considered in the older school age children where bullying, social pressure, and depression may overwhelm the child. Overdoses are most commonly seen with prescription medications, either belonging to the child, or to other individuals in the household. A particularly vulnerable time is the first month after a child has been started on anti-depressant medication(s).

Alcohol can cause significant hypoglycemia in children. There have been situations where alcoholic drinks left over from house parties are consumed by the children after the party.

Older children can also use various substances to create an altered state.

Ingestion of button batteries can cause serious burns to the esophagus and children who have ingested them should be transported.

GENERAL ASSESSMENT and TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care.
2. Evaluate and be alert for the development of any altered mental status and treat according to the Impaired Consciousness Protocol.
3. Be alert for changes in respiratory and circulatory status. Monitor and record pulse oximetry and other vital signs.
4. A 12-Lead ECG should be obtained on children with suspected poisonings.
5. Obtain a blood glucose check and treat if indicated.
6. Manage active seizures.
7. Treat any Systemic / Anaphylactic Reactions
8. Treat per any appropriate protocols and procedures as needed.
9. Determine if you have an antidote.

Morphine / Fentanyl / Opiates excess / OD:
(pinpoint pupils, respiratory depression)

a. Administer naloxone (Narcan), **0.1 mg/kg *slow* IV or IM / IntraNasal** (or **0.2 mg/kg diluted with normal saline to a total of 5 mL via Advanced Airway** if IV access cannot be established. After the drug has been administered, provide 5 rapid ventilations to enhance the drug delivery into the lungs). This may be repeated once in 2-3 minutes.

b. Additional doses may be given after consultation with **Poison Control (1-800-222-1222)**.

Beta Blocker or Calcium Channel Blocker excess / OD:
(typically bradycardia)

a. Administer atropine sulfate, **0.02 mg/kg IV.** This may be repeated every 3-5 minutes until a **maximum of 0.04 mg/kg**. The **minimum** dose is 0.1 mg (1 mL = 0.1 mg) and the maximum single dose is 0.5 mg (10 mL).

b. If child is bradycardic and hypotensive, administer calcium chloride, **20 mg/kg IV slowly *over 1 minute* (max dose: 200 mg)**. Flush with at least **10 mL** of normal saline. This may be repeated once in 2-3 minutes if indicated.

c. If the child remains hypotensive after the administration of calcium chloride, administer normal saline, **20 mL/kg IV bolus.** May repeat once if child remains hypotensive.

Antipsychotic Meds excess / OD (for example: haloperidol (Haldol):
(signs and symptoms of EPS / Dystonic Reactions).

a. Administer diphenhydramine (Benadryl), **1 mg/kg IV/IM (Max dose 25 mg).**

Tricyclic Antidepressant excess / OD:

a. Sodium bicarbonate 8.4%, **1 mEq/kg IVP** for wide QRS 0.12 sec or greater (3 small boxes) AND/OR Ventricular Fibrillation/Ventricular Tachycardia. Under 1 year old administer sodium bicarbonate 4.2% concentration (dilute with normal saline 1:1).

b. If the child is hypotensive, administer normal saline, **20 mL/kg IV bolus**. May be repeated once if indicated.

c. If the child is actively seizing,

1) If vascular access is available, administer lorazepam (Ativan), **0.1 mg/kg IV,** OR midazolam (Versed), **0.1 mg/kg IV**.

2) If vascular access is NOT available, administer lorazepam (Ativan), **0.1 mg/kg IM** OR midazolam (Versed), **5 mg IM / IntraNasal or Buccal** (5 years and older) **or 2.5 mg IM / IntraNasal or Buccal** (less than 5 years old*)* OR dosing as found in the Pediatric Medication Guide*.* **Buccal** (part the child's lips and without opening the jaws, place the medication laterally between the teeth and the cheek with half of the dose on each side of the mouth).

3) Either medication may each be repeated once in 3-5 minutes if indicated.

Cocaine excess / OD

For acute agitation,

a. If vascular access is available, administer lorazepam (Ativan), **0.1 mg/kg IV,** OR midazolam (Versed), **0.1 mg/kg IV**.

b. If vascular access is NOT available, administer lorazepam (Ativan), **0.1 mg/kg IM** OR midazolam (Versed), **5 mg IM / IntraNasal or Buccal** (5 years and older) **or 2.5 mg IM / IntraNasal or Buccal** (less than 5 years old*)* OR dosing as found in the Pediatric Medication Guide*.* **Buccal** (part the child's lips and without opening the jaws, place the medication laterally between the teeth and the cheek with half of the dose on each side of the mouth).

c. Both medications may each be repeated once in 3-5 minutes if indicated.

10. **Contact Poison Control, 1-800-222-1222** for assistance in managing specific overdoses. If a telephone is not available, have dispatch contact Poison Control or call the ED of the receiving facility.

NOTE: Spell out the name of the medication(s) so that it will not be confused with other similar sounding medication(s). Example: Zantac, Xanax.

a. When contacting the Poison Control Center the following information should be provided and documented in the Patient Care Record:

- Child's age
- Child's weight
- Vital signs
- Medication(s) name (Trade, Generic, Chemical). Spell it out.

- Strength of medication
- Dose or amount of product taken
- Number of each type of pills/liquid consumed
- Active ingredients
- Time taken
- Does the medication belong to the child?
- Any history of medication allergies

b. If Poison Control recommends the child be seen at an Emergency Department, transport per department guidelines. If a child is to be transported to the hospital, take all suspected ingestions including: medications, pill bottles, and containers of harmful compounds.

c. Document and follow all recommendations from the Poison Control Center as to possible antidotes, mode of transport (if any), and follow-up care.

11. If the overdose/poisoning is related to a known or suspected suicide attempt, police should be requested. All of these children should be transported to the closest appropriate facility.

12. Consider rapid cooling if the child is **HYPER**thermic (more than 104°F (40°C) or if unable to obtain a temperature and the child feels hot to the touch). Consider Environmental Emergencies protocol.

13. Alcohol, acetaminophen (Tylenol), and aspirin are common co-ingested agents. Ask about them.

"BATH SALTS"

"Bath salts" is the name given to a family of man-made synthetic drugs, for example FLAKKA. There are multiple "bath salt" products readily available in the marketplace and on the Internet. All of them are synthetic cathinones that are chemically related to, and share properties with, Ecstasy (MDMA), cocaine and methamphetamines. These bath salt products can be ingested, smoked, or injected.

These patients can present with some or all of the following symptoms:

- Agitation
- Sweating
- Tachycardia
- Dilated pupils
- Seizures
- Hallucinations

- Delusional behaviors including self-mutilation
- Hyperpyrexia (elevated body temperature)
- Psychosis

The acute psychosis and delusional behaviors have been reported to last weeks after a single exposure. Of all of the symptoms, the hyperpyrexia [elevated body temperatures greater than 104^0F (40^0C)] is the most life threatening and can lead to multiple organ failures. This phenomenon can also be seen in patients who have taken Ecstasy (MDMA).

TREATMENT

1. **Have enough personnel on the scene to handle the situation, and if necessary, to physically manage the child.**

2. **Secure the scene and use universal precautions.**

3. Attempt to calm the child down. Speak softly and non-threateningly. Avoid loud noises and sudden movements.

4. Use the least restrictive method of restraint. **Providers should ensure their own safety.** If possible, allow the child to correct inappropriate behavior. Use restraints if unable to calm the patient down, and the child remains a threat to himself/herself or others. If restraint is necessary, **DO NOT put the child prone (face down)**. Use a supine or recovery position. Use as many providers/police present to safely restrain the child.

5. If chemical restraint is indicated and available, administer ketamine, **4 mg/kg IM (maximum dose 400 mg).** Ketamine may be given in the mid shaft anteriolateral aspect of the thigh OR the lateral deltoid muscle of the shoulder. It may be given through clothing.

6. If the child becomes agitated or aggressive as the effects of the ketamine are starting to wear off, **OR IF KETAMINE IS NOT AVAILABLE.**

    a. If vascular access is available, administer lorazepam (Ativan), **0.1 mg/kg IV,** OR midazolam (Versed), **0.1 mg/kg IV**.

    b. If vascular access is **NOT** available, administer lorazepam (Ativan), **0.1 mg/kg IM** OR midazolam (Versed), **5 mg IM / IntraNasal / Buccal** (5 years and older) **or 2.5 mg IM / IntraNasal or Buccal** (less than 5 years old*)* OR dosing as found in the Pediatric Medication Guide*.* **Buccal** (part the child's lips and without opening the jaws, place the medication laterally between the teeth and the cheek with half of the dose on each side of the mouth).

c. Either medication may each be repeated once in 3-5 minutes if indicated.

7. Universal Initial Pediatric Patient Assessment/Care.

8. Ensure a maintainable airway.

9. Obtain a blood glucose level and treat with Dextrose if indicated.

10. Monitor cardiac rhythm, $ETCO_2$ and SpO_2. Give supplemental O_2, if indicated.

11. Treat any medical complaint per the appropriate protocol.

12. IF THE AGITATED CHILD IS EXHIBITING SIGNS OF EXCITED DELIRIUM **AND** PATIENT IS FEBRILE OR HOT TO THE TOUCH – Temperature reading of 104°F (40°C) or higher **OR** if unable to obtain a temperature and the patient feels hot to the touch, attempt to cool the child down.

    a. Remove as much clothing as possible.

    b. If possible, move the child to a cooler environment and have a fan blowing on them.

    c. Ensure a maintainable airway.

    d. Establish vascular access.

    e. If available, apply ice packs to the neck, axillae, and groin areas.
    f. If available, take and document a baseline temperature before administering cold normal saline. Also take and document a temperature at the time of the child's transfer in the ED.

    g. **Bolus cold** (34°F) normal saline, **20 mL/kg IV/IO**.

13. To reduce muscle shivering, if indicated

    a. If vascular access is available, administer midazolam (Versed), **0.1 mg/kg IVP**

    b. If vascular access is **NOT** available, administer midazolam (Versed), **5 mg IM / IntraNasal or Buccal** (5 years and older) OR **2.5 mg IM / IntraNasal / Buccal** (less than 5 years old) OR dosing as found in the Pediatric Medication Guide. **Buccal** (part the child's lips and without opening the jaws, place the medication laterally between the teeth and cheek with half of the dose on each side of the mouth).

    c. If the child is still agitated and/or in pain after midazolam (Versed) and the child is **NOT** hypotensive, administer morphine sulfate, **0.1 mg/kg mg IV/IO (maximum single dose is 5 mg).**

This protocol **applies to a child older than 1 month of age**.

TREATMENT

1. Following a successful resuscitation (ROSC), the child will be evaluated for adequate end organ perfusion by assessing:

   a. Presence of a carotid pulse (rate, rhythm, and quality).
   b. Return of spontaneous respirations (rate, rhythm, and quality).
   c. Level of consciousness.

2. Maintain airway and oxygenation as indicated. Monitor SpO_2 and $ETCO_2$ levels. After ROSC, following cardiac arrest, adjust supplemental O_2 concentration to achieve a SpO_2 of equal to or greater than 94%.

3. If the child has a SpO_2 of less than 94%, while receiving 100% O_2, if not already placed, consider an Advanced Airway.

4. After ROSC, and there is an arrhythmia, treat per the appropriate protocol.

5. If the child is HYPOtensive:

   a. Administer a **fluid bolus** of normal saline, **20 mL/kg**. May be repeated once.

   b. If BP remains unchanged, administer premixed dopamine, **400 mg in 250 mL D5W** (1,600 micrograms/mL), start at **2-20 mcg/kg/min OR dosing as found in the Pediatric Medication Guide** and titrate until the child is no longer hypotensive.

   c. If blood glucose is less than 60 mg/dL, administer dextrose 25% (D25W), **2-4 mL/kg slow IV.**

6. Attempt to determine and then treat the underlying causes of the cardiac arrest.

7. **If the child's condition initially improves with one of the above treatments, but the child's condition later deteriorates, repeat the treatment that caused the initial improvement.**

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While there are many different types of seizures seen in children, a type of seizure activity that is commonly seen in the pre-hospital setting is the tonic-clonic generalized seizure. Tonic posturing may be the first sign of a seizure. It is characterized by a generalized spasm of the body and is short-lived. Clonic activity is the generalized shaking of the body that is commonly associated with having a seizure.

The important points in the management of a child with seizures is protecting the airway and considering the possible cause of the seizure. Remember that when a child is seizing, the diaphragm is also seizing, and as a result there is no active breathing by the child.

Simple febrile seizures are the most common seizures in childhood. They last less than 15 minutes and are generalized and non-focal. Simple febrile seizures will frequently have ended by the time Fire Rescue personnel arrive to see the child.

Meningitis should be considered as a possible cause of seizures in any child with seizures and fever. A petechial rash, or pinpoint purplish spots, is suggestive of meningococcemia. A child that has a normal mental status before and after the seizure is unlikely to have meningitis.

Examples of meningococcemia rashes

All children with seizures should have their blood glucose checked.

Seizures may occur after trauma, medication ingestions, drug withdrawal, and metabolic blood chemistry changes.

TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care

2. Protect the patient from injury. Place in the recovery position if no C-spine injury is suspected.

3. If the child is combative rather than seizing, assess for **hypoxemia** and/or **hypoglycemia**. Treat per protocol if present.

4. Evaluate child and determine whether IV access can be easily established. If so, establish an IV or saline lock device

5. If child is actively seizing and

   a. If vascular access is already established, administer lorazepam (Ativan) **0.1 mg/kg IV** (maximum dose is 2 mg), OR midazolam (Versed), **0.1 mg/kg IV**.

   b. If IV access has **NOT** been established, administer lorazepam (Ativan), **0.1 mg/kg IM** OR midazolam (Versed), **5 mg IM / IntraNasal or Buccal** (5 years and older) **or 2.5 mg IM / IntraNasal or Buccal** (less than 5 years old) OR dosing as found in the Pediatric Medication Guide. **Buccal** (part the child's lips and without opening the jaws, place the medication laterally between the teeth and the cheek with half of the dose on each side of the mouth).

   c. If after 5 minutes, the child continues to actively seize after the administration of either of the above medications, the medication may be repeated once.

6. Obtain a blood glucose level.

   a. If the glucose is less than or equal to 60 mg/dL, administer dextrose 25% (D25W), **2-4 mL/kg slowly IV** (refer to Impaired Consciousness Protocol) **OR**

   b. If unable to establish IV, administer glucagon **IM**.

      1) If child's weight is equal to or less than 20 kg (approximately 44 lbs) administer ½ the adult dose or **0.5 mg (0.5 unit)**

      2) If child's weight is greater than 20 kg administer the regular dose or **1 mg (1 unit).**

Introduction

Shock is a state where the body's vital organs are not being adequately perfused. Perfusion of vital organs is dependent on the integrity of the three parts of the vascular system: the **heart**, the **blood**, and the **vascular tree,** i.e., arteries and veins. Any significant damage or loss of function to any of the 3 parts will initially cause a response from the other two parts attempting to restore normal perfusion. If the responses are not adequate, then the body's vital organs will not be adequately perfused.

In children, the differential diagnosis of shock includes:

- Trauma
- Volume loss (vomiting, diarrhea)
- Medications
- Sepsis (Severe infections)
- Anaphylactic shock, Severe allergic reactions, Systemic reactions.

The signs/symptoms of shock in children include:

- Mental status changes, restlessness, confusion, coma
- Tachycardia, tachypnea
- Pale or mottled skin, cool, moist, delayed capillary filling
- Low blood pressure

Hypotension in a child is defined as:

- **Newborn/neonate (0-28 days) - Less than 60 mmHg**
- **Infants (1 month to 12 months) - Less than 70 mmHg**
- **Children (1 year-10 year) - Less than (70 mmHg plus 2 times the age in years)**
- **Children (10 or older) - Less than 90 mmHg**

A child's compensatory mechanisms work well until the child's circulatory system collapses. Hence, early signs of shock may be subtle.

TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care

2. If the shock appears to be a result of Anaphylactic Shock OR a Severe Allergic Reaction OR a Systemic Reaction refer to the appropriate protocol for management.

3. All children with signs/symptoms of shock should receive supplemental O_2 to maintain a SpO_2 of 94% or greater.

4. All children with signs/symptoms of shock should have a blood glucose obtained and results documented. Blood glucose levels less than 60 mg/dL should be treated with dextrose 25% (D25W), **2-4 mL/kg slowly IV** [For newborn – draw up 1 mL/kg of D25 and dilute 1:1 with Normal Saline and give slow IV].

5. Administer a fluid bolus of normal saline, **20 mL/kg IVP**. Fluid bolus may be repeated in 5 minutes if signs/symptoms of shock continue.

6. If hypotension persists, administer premix dopamine, **400 mg in 250 mL D5W** (1,600 micrograms/mL), start at **2-20 mcg/kg/min OR dosing as found in the Pediatric Medication Guide** and titrate until the child is no longer hypotensive.

SICKLE CELL PATIENTS

Sickle cell patients can present with painful crises. This occurs when the blood of the patient with sickle cell disease is unable to pass through the smaller blood vessels and the local tissue becomes ischemic. These areas can be extremely painful. All of these patients will be able to provide their history of sickle cell disease and can tell you whether their symptoms are typical for a pain crisis episode.

TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care.
2. Apply oxygen with a non-rebreather mask.
3. If vascular access can be established, administer normal saline, **20 mL/kg IV/IO**.
4. Refer to Pain Management as needed.

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SUDDEN INFANT DEATH SYNDROME (SIDS)

The National Institute of Child Health and Human Development defines Sudden Infant Death Syndrome (SIDS) as "the sudden death of an infant under one year of age, which remains unexplained after a thorough case investigation including performance of a complete autopsy, examination of the death scene, and review of the clinical history."

The following factors are associated with but not necessarily causative of SIDS:

- Maternal smoking during pregnancy
- Low birth weight
- Preterm delivery
- Infant using a prone sleeping position (sleeping face down)
- Overheating

TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care.

2. Verify absence of a pulse and unresponsiveness. Check ECG rhythm.

3. Pediatric cardiac arrests are excluded from termination in the field, **UNLESS** the child meets the criteria for obvious or apparently irreversible death. In the case of infants under one year of age who appear to have died without any apparent cause **ALL** of the following conditions must be met to withhold resuscitation efforts in the field:

   a. Child is unresponsive, apneic and pulseless.
   b. Obvious Rigor Mortis
   c. Obvious Livor Mortis
   d. Asystole in 2 leads

4. If resuscitation is started, check blood glucose, and treat if less than 60 mg/dL.

5. Identify and document the location and position of the infant and other possible environmental factors.

6. Document infant's appearance and clinical exam.

7. Do **NOT** make accusations or blame the parent(s)/caregiver(s).

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TACHYCARDIA

Tachycardia is defined as a symptomatic patient with a ventricular rate of:

- Greater than 220 per minute in an **infant** or
- Greater than 180 per minute in a **child**

Pediatric patients should not be treated solely by the numbers. In addition to looking at the heart rate, the entire patient should be evaluated. Determine if the patient is stable.

Children with a tachycardia who are **UNSTABLE** **may have a pulse** and may present with any or all of the following symptoms:

- Hypotension
- Altered mental status
- Cool and pale distal extremities
- Prolonged capillary refill greater than 2 seconds
- Weak peripheral pulses compared with central pulses
- Mottling, sweating, cyanosis

GENERAL TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care.

2. Airway Management. Maintain a patent airway. Assist breathing as necessary.

3. Hypoxemia is a common cause of tachycardia. Obtain a pulse oximetry on these patients, and administer Oxygen if indicated to maintain SpO_2 of at least 94%.

4. Monitor ECG, blood pressure and pulse oximetry.

5. Obtain 12-Lead ECG, but do not delay therapy.

6. A team approach shall be used with all patients. The following actions should occur concurrently: while one individual is starting the IV, another evaluates the patient and rhythm, another should be preparing for possible synchronized cardioversion.

7. **Evaluate QRS duration**:

   - **NARROW** (equal to or less than 0.09 sec.)
   - **WIDE** (greater than 0.09 sec.)

NARROW

Probable Sinus Tachycardia

- Compatible history consistent with known cause (fever, dehydration, pain).
- P waves present/normal.
- R-R is variable; but PR is constant.
- Infants: Rate usually less than 220/minute.
- Children: Rate usually less than 180/minute.

TREATMENT

1. Search for and treat the cause.

2. Do **NOT** attempt to decrease the heart rate with pharmacological or electrical interventions.

Probable Supraventricular Tachycardia

- Sudden onset history of vague or nonspecific symptoms or palpitations.
- **NO** history compatible with Sinus Tachycardia.
- P waves are absent or abnormal.
- Heart rate does **NOT** vary with activity or stimulation.
- Infants: Heart rate is equal to or greater than 220/minute.
- Children: Heart rate is equal to or greater than 180/minute.

TREATMENT

1. Consider Vagal maneuvers:

   a. Place a bag with ice water over the upper half of the infant's face without obstructing the airway.

   b. Ask an older child to try to blow through an obstructed straw.

   c. Perform carotid sinus massage in older children.

2. If IV/IO is available, administer adenosine:

   a. FIRST DOSE: **0.1 mg/kg rapid bolus** (maximum 6 mg.)

   b. SECOND DOSE: **0.2 mg/kg rapid bolus** (maximum 12 mg.)

3. If IV/IO **NOT** available **OR** if adenosine is ineffective perform **Synchronized Cardioversion**.

   a. Begin with **1 Joule/kg**
   b. If **NOT** effective increase to **2 Joules/kg**.
   c. Consider pain management in the conscious child before cardioversion, but do not delay treatment.

4. If at any time the child becomes UNSTABLE, or if IV access is delayed and/or the child's condition deteriorates, perform **Synchronized Cardioversion Immediately.**

WIDE

Possible Ventricular Tachycardia

Cardiopulmonary Compromise? (Hypotension, Acutely altered mental status, Signs of shock)

TREATMENT

1. If signs of Cardiopulmonary Compromise are present: perform **Synchronized Cardioversion**.

   a. Begin with **1 Joule/kg**
   b. If **NOT** effective increase to **2 Joules/kg**.
   c. Consider pain management in the conscious child before cardioversion, but do not delay treatment.

2. If signs of Cardiopulmonary Compromise are **NOT** present, and rhythm is REGULAR and QRS is **monomorphic**, administer adenosine, **0.1 mg/kg *rapid* bolus** (maximum 6 mg.)
   If no response, administer amiodarone, **5 mg/kg in 50 mL D5W/NS at 30 drops per min**.

3. If heart rate is 150 BPM or greater and rhythm is IRREGULAR and QRS is **polymorphic**, but the child is hemodynamically stable, administer amiodarone, **5 mg/kg in 50 mL D5W / NS at 30 drops per minute.**

4. If at any time the child becomes UNSTABLE, or if IV access is delayed and/or the child's condition deteriorates, perform **Synchronized Cardioversion Immediately.**

5. Consider pain management in the conscious child before cardioversion, but do not delay treatment.

6. If at any time the patient loses their pulse, **and has a shockable rhythm, Defibrillate.**

DEFIBRILLATION
2 Joules/kg
4 Joules/kg

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UNIVERSAL INITIAL PATIENT ASSESSMENT / CARE

This protocol is the foundation for all patient care and is designed to provide personnel with a systematic approach to the evaluation and treatment of the ill or injured pediatric patient.

Additional protocols should be instituted as necessary. Judgement must be used in determining the appropriate level of care. This protocol is frequently a bridge to other protocols and procedures that may override it in recommending more specific therapy.

For the purpose of these protocols the following definitions will apply:

- Newborn/neonate: Birth to approximately one month
- Infant: Birth to approximately one year of age.
- Child: Approximately one year of age until puberty.

NOTE: Puberty is defined as:

- Females = Breast development present.
- Males = Axillary hair present.
- Adult: Puberty and older
  - Body size suggests patient 13 years of age and older
  - Patient is longer than the pediatric kit tape

Initiate treatment as soon as the need is determined.
This may include, but is not limited to:

- Ventilation
- Oxygen
- Vascular / Intraosseous Access
- Cardiac / SpO_2 / $ETCO_2$ Monitoring
- CPR / Hemorrhage Control / Chest Decompression

Every patient encounter requires a timely, completed, individual Patient Care Report (ePCR). Documentation must be complete, accurate, and appropriate to the patient encounter. Documentation should be completed, no later than, the end of shift.

A patient is anyone who:

1. Has either requested EMS; and/or
2. Has had EMS requested on his/her behalf; and/or
3. Presents, in any way, to any on-duty Fire-Rescue personnel, and has voiced (by self, family member, or bystander) symptoms of an illness or injury; and/or
4. Has obvious signs of an illness or injury (with or without voicing a complaint); and/or
5. Has a mechanism of injury suggesting a potential injury.

Fire-Rescue personnel should at least seek further care for the individual, even if not personally rendering aid.

A patient encounter is dependent on neither treatment, nor transport, nor cooperation from the patient.

It is important to note that a Patient Care Report is still required even though there is no patient, but a request for services was made and personnel responded.

Never hesitate to contact medical control for a patient who refuses transport.

The following apply to all patient encounters:

1. Universal (blood, body fluids, and/or respiratory as appropriate) precautions shall be used for all patients. Personnel are to follow their Departmental policies concerning Blood and Body Fluid Precautions.

2. The highest medical authority on scene (usually the Paramedic) is responsible for assuring the completion of the initial assessment/overall care of all patients.

3. After making patient contact, the paramedic is responsible for the patient until there is an appropriate transfer of care, the patient is deemed non-viable, or a release is signed.

4. EMT/Paramedics may only perform the skills and therapies as outlined in the patient care protocols and within their own Scope of Practice.

5. If you suspect CHILD or ADULT abuse or neglect, you shall follow appropriate protocol(s) and also report it to the receiving nurse and/or physician. You shall also contact the Florida Abuse Hotline at 1-800-96-ABUSE.

6. **ALL PATIENT INFORMATION IS CONFIDENTIAL and protected under HIPPA Law!**

Scene Assessment

1. Perform a Scene Assessment and determine:

   a. Scene safety
   b. Mechanism of injury
   c. Number of patients and need to call an MCI.
   d. Severity of the patients' injury
   e. If patient(s) meet Pediatric Trauma Transport Criteria
   f. If 2 or more patients with the same signs and symptoms, consider Environmental Emergency, Impaired or Altered, or HAZ-MAT emergency.

2. For **ALL** calls, be prepared to administer **immediate life-saving interventions** (CPR, defibrillation, airway management, emergency meds, etc.) upon INITIAL patient contact.

3. **Before patient contact: What Personal Protective Equipment is indicated?** Don PPE before patient and environmental contact.

Treatment Priority:

1. Most children can be readily assessed by evaluating the following: **(RPM)**

   - **R**espiratory status
   - **P**ulse: present strong or weak or absent
   - **M**ental Status or Alertness

1. **Critical** (*Priority 1*) – (life-threatening) conditions that must be treated immediately.

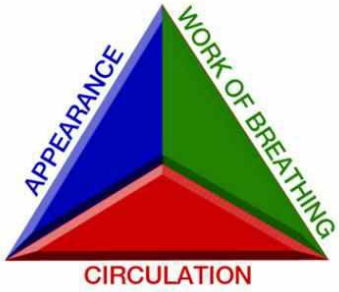
2. **Serious** *(Priority 2)* – (potentially life-threatening or disabling) conditions must be managed as soon as critical conditions are stabilized.

3. **Stable** (*Priority 3*) – (not potentially life-threatening) any other illness or injury not specified above.

Pediatric Patient Assessment

Pediatric Assessment Triangle (PAT)

The goal of this approach is to help the EMS provider quickly recognize a child at risk for deterioration and prioritize actions and interventions.



1. **Appearance:** tone, responsiveness, gaze, cry.
2. **Work of Breathing:** breath sounds, positioning, retractions, nasal flaring.
3. **Circulation:** pallor, mottling, cyanosis.

PRIMARY ASSESSMENT

This evaluation will be completed on every pediatric patient attended to by a responder. The purpose of the primary assessment is to identify and rapidly treat problems that are life threatening. Moving thru the Primary Assessment, immediately treat critical conditions found on each step before moving to the next step.

Airway

1. Ensure a patent airway.
2. If trauma is the suspected cause of the patient's condition, care must be taken not to move the head or neck, but to maintain them in a neutral, in-line position.

Breathing

1. Respirations should be observed for absence or evidence of difficulty breathing. Also, any unusual noises accompanying respirations. Check for nasal flaring or labor breathing.
2. Record the rate of respirations

3. Note the effort of breathing:

    a. Shallow or full
    b. Use of accessory muscles
    c. Symmetrical chest movements

4. If breathing is abnormal, ensure the patency of the airway.

    a. Listen for abnormal sounds: wheezing, rhonchi, rales (crackles), absence of breath sounds, stridor, etc.

    b. Evaluate for trauma (penetrating wounds, bruises, rib fractures, etc.)

Circulation

1. Assess for obvious external blood loss. Control obvious hemorrhage.

2. Record patient's pulse including:

    a. Rate
        - Child: normal less than 60 bpm or more than 180 bpm
        - Infant: normal less than 100 bpm or more than 220 bpm

    b. Rhythm
        - Regular
        - Irregular

    c. Quality (strength)
        - Thin
        - Thready
        - Normal
        - Bounding
        - Compare peripheral pulses with carotid or femoral pulse. Note any differences.

    d. A rapid assessment for systolic blood pressure can be obtained by palpating pulses at:

        - Carotid – approx. 40 mmHg
        - Brachial – approx. 60 mmHg
        - Femoral – approx. 60 mmHg
        - Radial – approx. 80 mmHg

e. Evaluate the patient's skin perfusion

- Peripheral pulses present (radial, pedal)
- Capillary refill time less than or greater than 2 seconds (capillary refill alone is a weak indicator of circulatory status. It is influenced by ambient temperature and lighting. It is also dependent on whether the finger/toe being measured is at the level of the heart).
- Skin appearance (pink, pale, cyanotic, cherry red, jaundiced)
- Skin temperature (cool, warm or hot)
- Skin condition (dry, wet)

Disability / Neurological Exam

1. Mental Status **AVPU**
   - **A** – **Alert** (eyes open/able to make eye contact)
   - **V** – responds to **verbal** stimuli
   - **P** – responds to **painful** stimuli
   - **U - Unresponsive**

2. Determine the Pediatric Glasgow Coma Score

3. Assess the child's pupils for size and their reaction to light

4. If the child is conscious, do all extremities move equally?

SECONDARY ASSESSMENT

This assessment is a more thorough evaluation of the patient. These procedures can be carried out simultaneously along with the primary assessment and treatment.

1. Identify a chief complaint (what the patient or witness tells you)

2. Document at least **two** sets of vital signs.

3. Document a pertinent medical history: (**SAMPLE**)
   - **S** - Signs and Symptoms
   - **A** - Allergies
   - **M** - Medications the patient takes currently
   - **P** - Past medical history
   - **L** - Last oral Intake (medications, food, drink)
   - **E** - Events that led up to this situation or complaint

4. **Often the SAMPLE history may be obtained from the parent or other adult.**

5. Complete a head-to-toe survey. Utilize the child's complaint to guide your assessment. Small children should be assessed in a **toe-to-head** order to decrease fear and anxiety.

6. Reassess as appropriate. Record response to treatments.

Patient Care / Treatment

MEDICAL

1. Airway Management

2. Administer Oxygen if indicated. Obtain and document a pulse oximetry reading.

3. Assist with patient's prescribed medication administration such as:

   - Inhalers (Ventolin, Proventil, etc.) for difficulty breathing.
   - Oral glucose for conscious diabetics.
   - EpiPen for acute anaphylaxis.

4. Perform a blood glucose check via finger stick as indicated.

5. Perform advanced airway management, if indicated.

6. If an advanced airway is established.

   a. Secure the advanced airway device.

   b. Maintain the patient's head and neck in the neutral position. Flexion and/or hyperextension may dislodge the device.

   c. If the patient's condition deteriorates and/or the SpO_2 drops to less than 94%, consider the following possibilities (**DOPE**):
      - **D**isplacement of the device. Check for neutral head/neck position
      - **O**bstruction of the device.
      - **P**neumothorax. Check for bilateral breath sounds.
      - **E**quipment failure. Check pop-off valve

7. ECG monitoring with documentation if indicated.

8. Establish vascular access as indicated.

9. When treating the pediatric patient, refer to the pediatric medication guide for correct dosing and equipment information.

TRAUMA

1. Airway Management with C-spine control if cervical injury is suspected.

2. Administer Oxygen if indicated. Obtain and document a pulse oximetry reading.

3. Control obvious hemorrhage.

4. If the patient is in shock and without airway compromise, place the patient in a supine position.

5. The most common type of shock in children is **hypovolemic shock** and may be due to blood loss or fluid loss (as with vomiting and diarrhea). Children initially tend to compensate well for this fluid volume loss until the last moment and may decompensate quickly.

   a. **Hypotension in a child is defined as:**
      - **Newborn/neonate (0-28 days) - Less than 60 mmHg**
      - **Infants (1 month to 12 months) - Less than 70 mmHg**
      - **Children (1 year-10 year) - Less than (70 mmHg plus 2 times the age in years)**
      - **Children (10 or older) - Less than 90 mmHg**

   b. While these numbers are given to define hypotension in children, the child's blood pressure may be normal until the child's condition deteriorates.

   c. More important than Blood Pressure is the overall appearance of the child as described above in the Primary Assessment.

6. If the patient meets pediatric trauma criteria, call a **Trauma Alert immediately** and directly contact the most appropriate trauma center.

7. Bandage & splint as indicated.

8. Advanced airway management, as indicated.

10. If an advanced airway is established.

    a. Secure the advanced airway device.

    b. Maintain the child's head and neck in the neutral position. Flexion and/or hyperextension may dislodge the device.

c. If the patient's condition deteriorates and/or the SpO_2 drops to less than 94%, consider the following possibilities (**DOPE**):

- **D**isplacement of the device. Check for neutral head/neck position
- **O**bstruction of the device.
- **P**neumothorax. Check for bilateral breath sounds.
- **E**quipment failure. Check pop-off valve

d. Establish vascular access, if indicated.

e. ECG monitoring, if indicated.

f. The mode of transportation to a Trauma Center will be decided as soon as possible if the patient meets the Trauma Transport Criteria. In these cases, emphasis in pre-hospital care will be on rapid packaging and initiating transport to a Trauma Center; therefore, on-scene delays should be minimal. In cases where Air Rescue is being utilized, advise Air Rescue as soon as possible of the number of patients.

Transport Guidelines

1. Scene times should not be unnecessarily prolonged. Non-urgent interventions and a secondary assessment may be performed during transport.

2. The initial care of life threatening medical conditions should be started at the scene and the patient's airway, breathing, and circulation stabilized as much as possible prior to transport.

3. EMS personnel should attempt to keep the total patient contact time from initial contact to turnover to appropriate hospital personnel at less than 30 minutes in children with STROKE ALERT and TRAUMA ALERT.

4. Refer to Patient Treatment and Transport Protocol

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Upper airway is defined as everything from the nose to the trachea.

Stridor is the noisy breathing classically associated with a partial upper airway obstruction. Stridor maybe present during inspiration (early sign) or expiration (late sign) or both. In addition to the noisy breathing, the child may exhibit changes in the quality of their voice or crying.

Partial upper airway obstructions **ABOVE the vocal cords** present with a muffled, "hot-potato" in the back of the throat quality.

Partial upper airway obstructions **BELOW the vocal cords** have a high-pitched, almost musical quality.

The most frequent acute upper airway pediatric emergencies are croup, epiglottitis, and foreign bodies. See the Airway Management Protocol for the management of foreign bodies in the upper airway.

Obtain and document a pulse oximetry reading, and if available, a waveform capnography reading (non-intubated End-tidal CO2) during assessment and after treatment on all patients with respiratory emergencies. Treat any problems as per protocol(s).

CROUP

Croup or laryngotracheobronchitis is a viral infection of the upper airway that is a frequent cause of a partial upper airway obstruction. Parents become alarmed when the child starts with a barking cough and difficulty breathing.

Croup is seen in children 6 months to 6 years of age with the peak at 2 years of age. The usual history is that of an upper respiratory infection for several days. The child may or may not have a fever. The child may have a barking cough, high-pitched stridor, and a hoarse voice. Croup can be categorized as mild, moderate, or severe depending on worsening stridor, mental status changes, increasing retractions, agitation, and cyanosis.

TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care.
2. Airway Management.
3. Pulse oximetry should be measured in these children, preferably with continuous monitoring.

4. Non-intubated EtCO2 (capnography reading) patients should be continuously monitored.

5. The child should be kept calm, and held by the parent if appropriate.

6. If a child is too young to tolerate a nasal cannula or face mask, deliver oxygen with a blow-by with a nebulizer set-up to humidify the oxygen.

7. For **MILD** (occasional barking cough, little or no stridor at rest, absent or mild retractions) cases of **croup**:

   a. Administer humidified oxygen by nebulizer. Best accomplished with normal saline, **3-5 mL by nebulizer mask** at 6 LPM.

8. For **MODERATE** (frequent barking cough, easily audible stridor test at rest, little to no agitation) **AND SEVERE** (frequent barking cough, prominent inspiratory and occasional expiratory stridor, marked retractions, significant agitation) cases of **croup**:

   a. If available, administer racemic epinephrine, **0.5 mL mixed with 3 mL** of normal saline in a nebulizer at 6 LPM. Do **NOT** administer this treatment more than one time.

   b. If racemic epinephrine is not available, administer epinephrine 1:1,000, **0.5 mL mixed with 3 mL** normal saline **in a nebulizer** at 6 LPM.

9. Observe the child for loss of mental alertness, cyanosis, decreasing respiratory effort. Assist ventilations as needed. Consider PPV with BVM.

10. Transport to the closest appropriate pediatric facility.

EPIGLOTTITIS

Acute Epiglottitis is bacterial infection of the epiglottis that causes a rapid progressive obstruction of the upper airway. It occurs in the older child 2-7 years old. It uncommon since the introduction of the H. influenza vaccination (Hib).

The classic history is in a child about 6 years of age who presents with an acute onset, usually within 24 hours. The child has a high fever and a severely sore throat. The child has difficulty swallowing and does not want to eat. The child's voice and cry change. There may be retractions and stridor. The breathing is labored, with retractions. Typically the child is drooling (unable to swallow secretions) and leaning forward (tripod). This is the optimal position for the child to breathe.

TREATMENT

1. Initial Assessment and care.

2. Airway Management.

3. **FIRST DO NO HARM.**

   a. Do **NOT** re-position the child or try to make them lie down.
   b. Do **NOT** attempt to visualize or disturb the area.
   c. Do **NOT** make the child speak or verbally respond to your questions.
   d. Do **NOT** agitate the child.
   e. Do **NOT** attempt vascular access.
   f. Do **NOT** attempt to suction the child.

4. If possible while the parent/caregiver is holding the child in their lap, administer blow-by O_2 in the position of comfort (tripod).

5. Pulse oximetry and ECG should be continuously monitored in these children.

6. Non-intubated $ETCO_2$ (capnography reading) patients should be continuously monitored.

7. **DO NOT** administer racemic epinephrine OR nebulized epinephrine to a child with suspected epiglottitis.

8. Observe the child for loss of mental alertness, cyanosis, **decreasing respiratory effort**. Assist ventilations as needed.

9. **If child becomes unconscious**, attempt positive pressure ventilation.

10. Transport to the closest appropriate pediatric facility.

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Near Drowning Conscious

1. Universal Initial Pediatric Patient Assessment / Care

2. Administer oxygen, monitor SpO_2 levels, and manage appropriately. Avoid laying the child completely flat. Maintain in a semi-fowlers position.

3. Remove wet clothing, dry and cover the child as quickly as feasible to maintain normal body temperature to protect against hypothermia. Consider turning off air conditioning in vehicle while transporting.

4. Near drowning victims frequently vomit and caregivers need to be prepared for this situation by appropriately positioning the child and clearing the airway.

5. Evaluate for concurrent trauma (C-spine injury, marine bites and stings and watercraft injuries) and manage accordingly.

6. Determine important history from the child, family, or bystanders, which includes:

    a. Duration of submersion.
    b. Water temperature.
    c. History of seizure activity.
    d. Any associated drug or alcohol use.
    e. How did the child enter the water?
    f. Was it a fresh or saltwater submersion?
    g. Is there a medical problem that caused the near-drowning, e.g. diabetes, seizures, strokes?

7. Establish vascular access.

Near Drowning Unresponsive

1. If the child is pulseless, begin CPR and refer to Cardiac Arrest Protocol.

    a. ACLS in children who have had a near drowning or drowning episode should be managed in the order of:

        1) Airway
        2) Breathing
        3) Circulation

2. If the child has a pulse, is apneic, unresponsive, and without a gag reflex, intubate with an Advanced Airway.

3. If the child appears to have gastric distention, consider decompressing/suctioning the stomach with an orogastric tube in children who have an advanced airway.

4. Treat dysrhythmias per specific protocols. Consider hypoxia as a primary cause of the dysrhythmias. Monitor and document pulse oximetry readings.

5. Drowning children in cardiac arrest develop lactic acidosis and early administration of sodium bicarbonate, **1 mEq/kg IV/IO** is indicated.

6. Atropine, **0.02 mg/kg IV/IO** is indicated in those drowning children who have bradycardia PEA or asystole.

7. **All near-drowning children should be transported** to the appropriate hospital for evaluation, regardless of how well they may seem to have recovered. Delayed death and/or complications due to pulmonary edema or aspiration pneumonia are common in the 12 to 24 hour period after an apparent recovery during the initial contact.

Decompression Sickness/Air Embolism (Barotrauma)

1. Evaluate for specific signs and symptoms:

   a. Pain (primarily joint pain)
   b. Altered level of consciousness
   c. Generalized numbness or confusion
   d. Weakness or paralysis
   e. External or diagnosed internal bleeding
   f. Extreme vertigo

2. The child should be transported in a supine position or recovery position if indicated**.** **The child should not be placed in a Trendelenburg position.**

   NOTE: This was once thought to reduce the degree of cerebral embolization, but it has been found to increase intracranial pressure and facilitate gas embolization to the coronary circulation.)

3. If this is a SCUBA diving accident, obtain a history from the patient or bystanders to include:

   a. Was the child breathing compressed air (Includes an air pocket in a submerged car) or other gas mixtures (Heliox, Nitrox, etc.)?
   b. Elapsed time (bottom time) of the dive.
   c. Maximum depth of the dive.
   d. Were multiple (repetitive) dives made? Note depths and times.
   e. Time since ascent.

h. Has the child been at a high altitude, 1,000 feet or greater (depressurized aircraft) since the dive?

4. If possible, obtain the tanks used or air (gas) for analysis and determine patient's CO level with a CO monitor.

5. Ask the child, family, or bystanders; "Were any dangerous marine life noted by the child or other divers?"

6. Establish vascular access.

7. Manage the child according to the appropriate protocol(s).

8. Transport to an approved hyperbaric chamber per the hospital capability chart. Make the arrangements through Fire Rescue dispatch.

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PEDIATRIC TRAUMA MENU

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2. BURNS ..... pg. 317
3. CRUSH INJURIES ..... pg. 321
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When treating the pediatric patient, refer to the pediatric medication guide for correct dosing and equipment information.

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Amputated Body Parts

GENERAL TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care
2. Control bleeding and refer to appropriate trauma protocol as indicated.
3. Consider Pain Management.

Preservation of an Amputated Part

1. A patient with an amputation of the following may be a candidate for re-implantation.
   - Scalp
   - Extremities
   - Hands
   - Fingers
   - Feet
   - Toes
   - Nose
   - Ears
   - Penis
2. If in doubt, bring all parts, including teeth (Avulsed Tooth Salvage).
3. Considerations for re-implantation therapy may include:
   - **Any amputation in a child**.
   - Any clean guillotine amputation.
   - Bilateral hand injuries.
   - Amputation of multiple digits.
   - Amputation of the hand.
   - Amputation of the thumb, even in cases of moderate to severe crush injuries.
   - Occupational/Recreational value of the digits.
   - Associated disability, such as paralysis on the opposite side.

4. The amputated part should be gently washed in a normal saline solution and heavily wrapped in moist sterile gauze.

5. The body part should be placed in a plastic bag, cooled and transported with the patient. The plastic bag should be labeled with the patient's name and run report number.

6. The following information should be documented on the rescue report:

   a. Receiving facility name.

   b. Receiving healthcare provider's name and ID number who is receiving the patient and patient's body part.

   c. Signature of the receiving healthcare provider along with the date and time of the transfer(s).

Burn Injuries

GEMERAL TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care
2. Determine the type of burn (thermal, chemical, etc.)
3. Evaluate for inhalation injury. Assess and secure the airway in the presence of any swelling/edema that may compromise and/or obstruct the child's airway.
4. For children with chemical or radiation exposures/burns perform gross decontamination and/or wrap patient in a sheet or blanket (thermal blanket) prior to placing the child in the vehicle for transport
5. Call a Trauma Alert and establish vascular access on all pediatric patients with second or third degree burns greater than 10% BSA
6. Consider pain management.

Thermal

1. Cover burned areas with burn gel (Water Jel®) dressings. If not available, cover the burned areas with sterile sheets.
2. Determine the depth of burn
   a. Superficial (1st degree)
   b. Partial Thickness (2nd degree)
   c. Full Thickness (3rd degree)
3. Determine the extent with the Rule of Nines
4. Determine if Trauma Criteria is met based on the depth and extent of the burn and call a Trauma Alert on children with second or third degree burns to greater than 10% BSA. Understand that the full extent of a child's burns may not be evident for 24 hours.
5. Establish IV or IO access on all victims meeting Trauma Alert Criteria. Avoid using extremities that are damaged by burns.

6. Partial Thickness and Full Thickness burns of the **hands** or **feet** or **face** or **genital area** are Burn Center transports.

7. Partial Thickness and Full Thickness circumferential burns of the chest or any extremity are also Burn Center transports.

8. Avoid aggressive cooling of large burn surface areas.

9. Do not break blisters.

10. Determine if the child was in an enclosed space.

11. On Fire scenes, determine CO level.

12. On Fire scenes treat for CN poisoning when patients with elevated CO levels do not respond to oxygen therapy or deteriorate after oxygen administration.

13. Consider child abuse with suspicious burns like dipping burns of the arms, legs, or buttocks, and cigarette and/or appliance (iron) burns in areas typically covered by diapers or clothing, especially when history is not consistent with the injury.

Chemical

1. **Liquid**

   a. Liquid chemicals burns are acidic or alkaline.

   b. Do not attempt to neutralize, because mixing acids and bases can cause a thermal burn

   c. Irrigate with copious amounts of water and remove contaminated clothing.

2. **Solid (powder)**

   a. Brush off product (powder) and/or remove contaminated clothing before irrigating.

   b. Do not use water on powders (e.g., Sodium) that react violently with water.

Electrical

1. Scene safety is critical. Make sure power is off or that the child is not still in contact with the electrical power.
2. Assess the child and treat per appropriate protocol (refer to electrical injuries).
3. Obtain a 12-Lead ECG to determine the presence of cardiac dysrhythmias and if in cardiac arrest to determine the presence of a shockable rhythm. Treat per protocol.
4. Be sure to assess for entry and exit injury.
5. High voltage and lightning burns are considered to be **full thickness burns**.
6. Refer to Environmental Emergencies for electrical and lightning

Radiation

1. **Alpha** and **Beta** products are low energy with minimal ability to penetrate.
   a. Wear proper PPE.
   b. Remove contaminated clothing and as much product as possible. Do **NOT** dispose of the product.
   c. Determine and report if product has been inhaled and/or ingested.
2. **Gamma radiation** is highly energetic and penetrating.
   a. Avoid exposure to the source.
   b. The exposed child is not a source of radiation.
   c. Treat Pain and Nausea/Vomiting per protocol.

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CRUSH INJURY

TREATMENT

1. If the child's extremity /extremities has / have been trapped by a heavy object and there has been a loss of peripheral perfusion of the entrapped extremity / extremities, the child must be treated to prevent reperfusion injury.

2. The lower extremities (74%) are the most commonly affected areas associated with crush injuries with upper extremities (10%) and torso (9%) the next most common.

3. Crush injury is to be distinguished from a simple entrapment.

4. Do **NOT** treat children with tourniquets, fluids, or medications if the crush injury / entrapment is less than one-hour duration.

5. There are three main issues of concern when dealing with the reperfusion following a crush injury:

   a. Potassium being released from the damaged cells flooding the circulation has the potential to cause cardiac dysrhythmias, and

   b. Release of myoglobin from the damaged muscle cells can cause acute renal failure.

   c. Elevation of the serum lactic acid levels

6. This treatment must be administered **PRIOR TO** the object being lifted from the child.

7. Consider the possibility of muscle damage in children with altered mental status who are found in any position for an extended period of time.

8. Universal Initial Pediatric Patient Assessment / Care.

9. Continuous ECG monitoring.

10. Establish vascular access before extrication and then administer a bolus of normal saline, **20 mL/kg IV/IO**. This may be repeated every hour during a prolonged extrication.

11. Simultaneously administer sodium bicarbonate 8.4%, **1 mEq/kg IV/IO**. May repeat with 0.5 mEq/kg in 10 minutes.

12. If a child develops any cardiac dysrhythmias, specifically widening of the QRS complex (more than 3 small boxes) or loss of the "P" waves, administer calcium chloride, **20 mg/kg *slow* IVP** (maximum dose per pediatric medication guide).

    NOTE: If the child has already been given sodium bicarbonate, you must flush the IV/IO line with **10 mL** of normal saline prior to administering calcium chloride.
13. With the above ECG changes, in addition to the calcium chloride administer ipratropium/albuterol (DuoNeb). This will drive the potassium out of the circulation and into the cells, reducing the serum potassium

    a. If the child's weight is equal to or less than 10 kg, administer a **half** vial of ipratropium/albuterol (DuoNeb), **1.5 mL (0.25 mg/1.25 mg) mixed with 2 mL of** normal saline.

    b. If the child's weight is greater than 10 kg, administer adult dose, 1 vial of ipatropium/albuterol (DuoNeb), **3 mL (0.5 mg/2.5 mg).**

    c. May repeat once if needed.

14. Consider Pain Management

Entrapment

With entrapment, the emphasis is on rapid initial assessment and packaging and transport of the child to achieve definitive care. If transportation of the child is delayed due to entrapment (motor vehicle collision, structural collapse, confined space environments, or trench collapse), the child must be treated appropriately while technical rescue operations are under way to free the patient.

TREATMENT

1. Assess the scene. Consider the need for mutual aid for specialized equipment and tactical rescue personnel.
2. Don the appropriate protective gear for the environment.
3. Stabilize the scene.
4. Gain access to the child.
5. Protect the child from further harm.
6. Universal Initial Pediatric Patient Assessment / Care.
7. Airway management.
8. In cases where spinal injury is suspected, provide immobilization by manual means initially. The environment may require special patient packaging equipment e.g. Stokes Basket, KED, or a Back Board. Patient packaging and extrication should be coordinated with the Extrication Sector.
9. Establish vascular access.
10. Refer to appropriate protocols as indicated.
11. Consider Pain Management.

NOTE: In children with entrapment and prolonged extrication, consider contacting the trauma center to have a trauma surgeon on scene. If, during the extrication, the child remains hypotensive after fluid administration discuss with the trauma center the possibility of pre-hospital of blood products. Refer back to Field Blood Transfusion Adult protocol.

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Eye Injuries

TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care.

2. Obtain a brief injury history including the mechanism of injury, possible chemical exposure, and allergies.

3. Examine the eye(s) for signs of penetrating injury, foreign body, irritation, hemorrhage, prosthesis, or contact lenses.

4. If possible, remove or ask the child to remove contact lenses if still in the affected eye(s).

5. Determine gross visual acuity in both eyes. Have the child read the largest letters on the patient report at arm length.

6. If penetrating injury is known or suspected:

   a. Stabilize obvious penetrating objects.

   b. Avoid direct pressure on the eye(s) or any maneuvers that might increase intraocular pressure.

   c. Apply ocular shield or similar rigid device over affected eye(s). Cover both eyes.

7. If an enucleation (eyeball has been forced out of the socket) has occurred, cover the entire eye area with a rigid container, such as a disposable drinking cup. Avoid direct contact with the exposed globe. If bleeding, control by direct pressure with a sterile moist dressing.

8. If there is a history of, or signs/symptoms of an ocular exposure to chemicals or foreign body, without any obvious or suspected penetrating injury or laceration of cornea or globe, irrigate the eye(s) with normal saline IV solution.

   a. Administer tetracaine HCL eye drops, **2 drops to the affected eye(s)** as an anesthetic and may be repeated once, after 15 minutes, if needed.

   b. Plug an IV tube into a nasal cannula, and hang it over the nasal bridge to irrigate the eyes with 1 Liter normal saline IV solution, or if available use a Morgan Lens.

9. Consider Pain Management.

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Suspected Fractures

TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care
2. Refer to appropriate trauma protocol(s) as indicated.
3. Call a Trauma Alert if the child meets Trauma Criteria factors.
4. Any fracture or suspected fracture will be immobilized, as found, to reduce the possibility of further injury. Be sure to immobilize and transport children where symptoms and/or Mechanism of Injury suggest a fracture(s). Growth plate fractures and greenstick (buckle) fractures often present with no deformity.
5. Severely angulated fractures may be aligned if there is an absence of distal pulses or loss of neurological function. Distal pulse(s), skin color, and temperature will be documented prior to and after splinting the angulated fracture.
6. Proximal and distal manual traction may be applied to the injured extremity, as necessary, when applying the splint. When immobilizing a bone, splint from joint to joint. When immobilizing a joint, splint from bone to bone.
7. The use of elevation and cold packs is recommended to help reduce swelling. Avoid direct application to exposed skin.
8. Primary care of open fractures involves removal of gross contamination. If protruding contaminated bone end(s) has/have retracted back into the wound, it should be noted in the report. Wash open fractures with 2 Liters of sterile saline before dressing the injury.
9. Because of the severe muscle spasm associated with femoral fractures, traction splints are to be used to adequately stabilize isolated fractures of the femur. **DO NOT** utilize the traction splint if a pelvic, hip, knee, tibia-fibula, ankle, and/or foot fracture is **ALSO** suspected.
10. Establish vascular access if fluids or medications are indicated.
11. Consider Pain Management.
12. Unstable pelvic fractures may be managed with a pelvic girdle/splint such as the T-Pod, if available, or modified application of the KED.

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Suspected Head and/or Spinal Injuries

Use of the Hard Cervical Collar

The use of cervical collars is unchanged from previous protocols. Any child that is suspected of possible cervical spine injury should have a hard cervical collar applied and worn until the possibility of a cervical injury has been disproven.

1. Universal Initial Pediatric Patient Assessment / Care.

2. Not all children who have experienced physical trauma require a cervical collar / head block.

    a. GCS 15 children with penetrating trauma to the neck without obvious neurological deficits can have their injuries managed without cervical immobilization.

    b. Children with blunt trauma to the head, neck, or torso who may have experienced possible neck injury should be evaluated to determine whether a cervical collar/head block is indicated.

3. A child that meets **ALL** of the following conditions does **NOT** require the use of a cervical collar / head block.

    a. Child is alert and **NOT** under the influence of drugs or alcohol.

    b. Child denies neck pain and tenderness.

    c. There is an absence of posterior midline cervical tenderness when palpated.

    d. There is an absence of sensory or motor neurological deficits on the patient exam. Child has feeling and voluntary movement in all extremities.

    e. There are no painful distracting injuries.

4. The cervical collar should NOT cause the child such discomfort that they cannot remain still.

5. If an appropriately sized cervical collar is not available or if application of the collar is so uncomfortable for the child that they are unable to remain still; REMOVE the collar and stabilize/immobilize the head and neck by placing rolled towels on the sides of the child's head and neck. Secure them with tape or other similar devices to allow for comfortable cervical stabilization/immobilization.

6. Stabilization during care and transport is best performed by placing the child on the stretcher cushion supine and as flat as possible. If the child is unable to tolerate this position; place the child in a position of comfort that also respects normal anatomical alignment while maintaining the safety of the child and the crew.

7. **Children are not always the best historians. If there is any doubt about possible cervical spine injury; apply a hard cervical collar.**

Use of the Backboard

1. **Long boards should be used for extrication and not transport.**

2. **Air transport children will be secured to a backboard to facilitate safe movement, during loading and unloading from the aircraft.**

3. There is no evidence that the use of a backboard reduces spinal injury or effectively provides anatomically appropriate spinal immobilization or protection.

4. There is evidence that backboards result in harm by causing pain, changing the normal anatomic curvature of the spine, inducing patient agitation, causing pressure ulcers, and compromising respiratory function.

5. The only practical value of backboards is for extrication to a transport vehicle. Once extricated, children should be taken off the backboard.

6. Backboards should not be used for spinal immobilization. Placing ambulatory children on backboards is unacceptable.

7. In general, children should not be transported or otherwise kept on backboards for any length of time.

8. Lifting or movement of patient(s):

    a. Manual cervical and spinal stabilization/immobilization must be performed for all children movement as appropriate.

    b. A scoop-type stretcher may be employed to facilitate the lifting or movement of a child to or from a stretcher.

    c. Once the child has been placed on the stretcher, the scoop-type stretcher is to be removed.

9. All children with altered mental status should be considered to have a spinal injury. Position the child in the most anatomically neutral position while providing emergency medical care.

10. Placing children in the prone position (face down) is contraindicated due to the risks of compromising the child's breathing. However, impalement and other situations may mandate the prone position. In these instances, clear documentation of the reasons for the prone position is necessary. Continuous monitoring of the child's airway, oxygenation, and ventilatory status is essential for any child placed in a prone position for transport.

Management of patients with Head Trauma

1. Universal Initial Pediatric Patient Assessment / Care.

2. In the absence of hypotension in children with head injury, consider elevating the head of the stretcher 30 degrees (12-18 inches).

3. **Avoid nasal airway devices and nasogastric tubes in children with head injury**.

4. Assisted Ventilations

   a. Most children can be effectively managed with the use of a BVM. Maintain a SpO_2 of at least 94%.

   b. An Advanced Airway should be used with signs of brainstem herniation (pupils fixed and dilated, blown pupil, or decorticate / decerebrate posturing).

   c. Consider an Advanced Airway in a child with a GCS of 8 or less and an absent gag reflex.

   d. An Advanced Airway, if indicated, will be attempted while maintaining in-line stabilization with no hyperextension of the head and neck.

   e. Ventilate patients with an Advanced Airway at a rate adequate enough to maintain an $ETCO_2$ of **30-34 mmHg.**

5. If trying to establish an Advance Airway in a child with suspected intracranial trauma is combative, **and/or** has trismus (clenched jaw)

   a. If you are **ABLE** to establish vascular access, administer amidate (Etomidate), **0.3 mg/kg IV *slowly over 15 to 60 seconds*** – **OR** if amidate (Etomidate) is NOT available, administer midazolam (Versed),**0.1 mg/kg IV (maximum dose is 5 mg)** or as per pediatric medication guidelines**.**

   b. If you are **UNABLE** to establish vascular access, administer midazolam (Versed), **5mg IM / IntraNasal or Buccal** (5 years and older) or **2.5 mg IM / IntraNasal or Buccal** (less than 5 years old) OR dosing as found in the Pediatric Medication Guide. **Buccal** - part the child's lips and without opening the jaws, place the medication laterally between the teeth and cheek with half of the dose on each side of the mouth

      a. This may be repeated once in 5 minutes if additional sedation is needed. Assess / document GCS prior to and following administration of Versed.

6. Avoid administration of dextrose solutions (D50W, D25W, D5W) unless hypoglycemia equal to or less than 60 mg/dl is identified.

7. Restrict fluid administration. Keep IVs at a TKO rate unless the child is hypotensive.

8. If the child is hypotensive, administer normal saline, **20 mL/kg IV bolus**. This may be repeated once.

HYPOvolemic Shock

TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care.

2. The mode of transportation to a Trauma Center will be decided as soon as possible, if the child meets the Pediatric Trauma Transport Protocol. In these cases, emphasis in pre-hospital care will be on rapid packaging and initiating transport to a Trauma Center; therefore, on-scene delays should be minimal. In cases where Air Rescue is being utilized, advise Air Rescue as soon as possible of the number of patients.

3. Control active hemorrhage with appropriate sterile pressure dressings and, if indicated, consider use of a hemostatic sponge/gauze (QuikClot-type product). Note exact nature and location of blood/fluid loss (e.g. ear canals, nostrils, face, or scalp wounds). Continue with direct pressure for at least 5 minutes.

4. Tourniquets are used to **control major extremity bleeds** due to **amputation** or due to **bleeds not adequately controlled with direct pressure and elevation.** A tourniquet should be applied while maintaining pressure to and elevation of the bleeding extremity (or exposed stump in amputation).

5. In large open wounds with multiple bleeding sites and significant blood loss, the use of a hemostatic sponge / gauze may be attempted while applying direct pressure. Pack wound tightly with roll gauze or hemostatic gauze roll.

6. Maintain thermal regulation. Keep the child warm. Cover with blankets and consider turning off air conditioning during transport.

7. Attempt to establish vascular access with at least 2 large bore IVs or one IO.

   a. Upon vascular access in children **without penetrating trauma to the torso**, administer normal saline, **20 mL/kg IV/IO run wide open** and reassess the child. If there is no improvement in the cardiovascular status, an additional normal saline, **20 mL/kg IV/IO** may be given.

   b. **Permissive HYPOtension (Controlled HYPOtension)**: in patients **with penetrating trunk trauma** maintain a blood pressure of at least 70 mmHg. Do **NOT** give IV fluids to these children if their systolic blood pressure is at least 70 mmHg. Caution should be exercised in elevating pressure in penetrating trunk trauma as the pressure can dislodge clots and cause the patient to bleed out.

   c. The goal is to generate or maintain a systolic blood pressure above the level of hypotension for that age group.

8. Do **NOT** delay transport to obtain intravenous access in the Trauma Alert patient.

9. **Hemostatic gauze is ineffective in penetrating trauma with small entrance and/or exit wounds. They are most effective in patients with large areas of avulsed tissue and oozing wounds.**

10. **For gaping wounds, apply direct pressure on top of the hemostatic gauze.**

Major Soft Tissue Injuries

Types

1. **Closed**
   a. Contusions
   b. Hematomas
   c. Sprains
   d. Strains
   e. Swelling

2. **Open**
   a. Abrasions
   b. Lacerations
   c. Penetrations / Punctures
   d. Avulsions

Assessment

1. Locate and document injuries

2. Assess motor and sensory function distal to injury

3. Assess circulation (pulses and cap refill) distal to injury

4. Repeated assessments of circulation, and motor/sensory are needed

   a. In children with circumferential edema of an extremity; to evaluate for compartment syndrome.

   b. After application of compression dressings and/or splints

TREATMENT

1. Universal Initial Pediatric Patient Assessment / Care

2. Control bleeding with direct pressure and/or tourniquet

3. Cover open wounds with sterile dressing.

4. Immobilize if fracture or significant sprain is suspected. Use I.C.E. (Ice, Compression, Elevation)

5. Consider Pain Management, if indicated

6. Refer to appropriate trauma protocol as indicated.

7. Treat Crush Injuries as per protocol.

8. **DO NOT** remove penetrating objects. Such objects **may be cut down to 6 inches** from the point of entry to minimize movement.

9. Any apparent penetrating injuries to the chest OR upper back will be covered quickly with a 3-sided occlusive-type dressing, such as foil or petroleum gauze. Consider chest decompression, if indicated.

10. Dress open wounds of the cranial vault carefully with a sterile dressing. Do **NOT** use providone-iodine topical antiseptics like Betadine.

11. Use sterile normal saline to irrigate wounds. Do **NOT** use hydrogen peroxide or alcohol.

12. Penetrating, open injuries of the abdominal cavity and/or eviscerated bowel will be dressed rapidly and carefully with a sterile gauze dressing with care not to injure any exposed intra-abdominal organs.

    a. Exposed bowel (evisceration) will be dressed with a dressing previously moistened with sterile normal saline. This will then be covered by a dry, occlusive dressing such as a trauma dressing or foil.

    b. **Do NOT** attempt to put eviscerated organs back into the abdomen.

13. Amputations and open fractures will be dressed with a sterile dressing.

14. If an injury to the globe or periorbital tissues of the eye is present, apply moist, sterile dressings to both the injured and uninjured eye. Do **NOT** apply pressure dressings to ocular injuries. Refer to Eye Injuries

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ADENOSINE (Adenocard)

Action

Conversion of Regular Narrow Complex Paroxysmal Supraventricular Tachycardia (PSVT) and/or Regular (Monomorphic) Wide Complex Tachycardia to sinus rhythm.

Slows conduction through the AV node, interrupts AV nodal reentry pathways, and can convert PSVT.

Adenocard breaks down rapidly (in 10 to 12 seconds) and may cause a transient Asystole.

Indications

Symptomatic Stable PSVT defined as:

- Regular, narrow complex QRS, heart rate greater than 150 in adults.
- Regular, narrow complex QRS, heart rate greater than 180 in children more than one year of age.
- Regular, narrow complex QRS, heart rate greater than 220 in infants less than one year of age.

Contraindications

1. Persons taking Carbamazepine (Tegretol). It may cause a high degree AV block.
2. Known hypersensitivity to Adenosine.
3. Persons demonstrating active wheezing.
4. 2nd or 3rd Degree AV Blocks.
5. Do **NOT** give after Amiodarone.

Precautions

1. Persons taking Dipyridamole (Persantine) should be given an initial 3mg dose.
2. Persons taking Aminophylline, Theophylline, or Slo-Bid should be given an initial 12 mg dose.

Side Effects

Flushing, lightheadedness, dizziness, palpitations, near syncope, headache, chest pain, and shortness of breath are transient and will abate in 1-2 minutes after administration. Transient periods of sinus bradycardia, asystole, and ventricular ectopy are common after the termination of PSVT. Not uncommonly patients who have just received adenosine will report a feeling that they are going to die. Tell the patient that they may experience that sensation, **BEFORE** you give the medication. Tell the patient that the sensation will pass in 20 seconds.

Dosage

Adult

1. Using the two-syringe technique, give **12 mg rapid IV bolus** through a large catheter (preferred location is antecubital/AC with the arm raised during medication administration) followed by a 20 mL rapid Normal Saline flush.

    a. If the rhythm slows and is actually **A-Fib or A-Flutter**, treat with Cardizem (diltiazem).

2. A second dose of **12 mg rapid IV bolus** may be administered after 1-2 minutes followed by a 20 mL rapid NS flush if the PSVT or is not eliminated.

NOTE: Never administer doses greater than 6 mg via external jugular vein.

Pediatric

The Pediatric Medication Guide is also appropriate as a dose guide.

1. Using the two-syringe technique give **0.1 mg/kg rapid IV bolus (maximum 6 mg)** through a large catheter (preferred location is antecubital/AC with the arm raised during medication administration) followed by a 10 mL rapid normal saline flush.

2. A second dose of **0.2 mg/kg rapid IV bolus** (maximum 12 mg) may be administered after 1-2 minutes followed by a 10 mL rapid NS flush if the PSVT is not eliminated.

AMIDATE (Etomidate)

Action

Etomidate is used for rapid induction of deep sedation. Etomidate is an ultra-short-acting non-barbiturate hypnotic.

Etomidate has a:
1. Shorter duration of action than the short-acting barbiturates.
2. Rapid recovery time.
3. Wide safety margin.

Indication

1. To provide deep sedation for Rapid Sequence Intubation (RSI).

2. When ET intubation is complicated by the patient's condition such as combativeness or trismus.

Onset and Duration

1. Onset after intravenous injection within 10-20 seconds. Peak response within one minute.

2. The duration of a single intravenous injection is 4-10 minutes.

Systemic Effects

Etomidate produces minimal effects on the Respiratory and Cardiovascular Systems, primarily due to its short duration of action.

Adverse Reactions

Nausea and vomiting with hypotension are the most common side effects.

Dosage

Adult
- **0.3 mg/kg IV *over 15 to 60 seconds*.**

Pediatric
The Pediatric Medication Guide is also appropriate as a dose guide.
- **0.3 mg/kg IV *over 15 to 60 seconds***

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AMIODARONE HYDROCHLORIDE

Action

Amiodarone slows intraventricular conduction velocity by blocking sodium channels and prolongs atrial and ventricular repolarization by inhibiting potassium channels.

Blocks alpha and beta-adrenergic receptors as well as sodium and calcium channels slowing atrioventricular node conduction, thus decreasing heart rate.
Also controls rapid ventricular rates by blocking accessory pathway conduction.

Indications

1. Stable Polymorphic Wide Complex Tachycardia (**NOT** for Torsades).
2. Ventricular Fibrillation (V-Fib) or Ventricular Tachycardia (V-Tach) without a pulse.

Contraindications

1. Known hypersensitivity to the drug.
2. Avoid in patients with 2° Type II or 3° heart blocks.
3. Avoid in pregnant patients.

Adverse Reactions

1. May cause hypotension and/or bradycardia.

2. Treat complications as follows:

   a. Hypotension:
      1) Normal saline fluid challenge bolus.
      2) If no response use dopamine drip.

   b. Symptomatic Bradycardia:
      1) External Pacing.

      2) Adult - atropine sulfate, **0.5 mg IV**

      3) Pediatric **–**
         a) If due to increased vagal tone or AV block, administer atropine sulfate, **0.02 mg/kg IV/IO**. This may be repeated every 3-5 minutes until a **maximum of 0.04 mg/kg**. The **minimum** dose is 0.1 mg (1 mL = 0.1 mg) and the maximum single dose is 0.5 mg (10 mL).
         b) If bradycardia persists or Atropine not indicated, administer epinephrine 1:10,000, **0.01 mg/kg IV/IO (0.1 mL/kg)**. May repeat every 3 to 5 minutes.

Dosage

Adult

1. **V-Fib or Pulseless V-Tach:**

   a. Administer amiodarone, **300 mg IV/IO**.

   b. If rhythm persists after defibrillations and additional vasopressor dose (epinephrine): administer a second dose of amiodarone, **150 mg IV/IO**.

2. **Wide Complex Tachycardia–Irregular (Polymorphic)**

   a. Administer amiodarone, **150 mg in 50 mL D5W/NS** and run a regular drip (macro drip set) **IV/IO at 50 drops per minute over 10 minutes.**

Pediatric

The Pediatric Medication Guide is also appropriate as a dose guide.

1. **VF or pulseless VT:**

   a. Administer amiodarone, **5 mg/kg IV/IO**.

   b. If this rhythm persists after defibrillations and an additional vasopressor dose (epinephrine): administer a second dose of amiodarone, **5 mg/kg IV/IO**.

   c. Amiodarone may be given up to 3 times for a total of 15 mg/kg throughout arrest.

2. **VT with a pulse:**

   a. Administer amiodarone, **5 mg/kg in 50 mL D5W / NS at 30 drops per minute.**

ASPIRIN (ASA)

Action

Aspirin inhibits platelet aggregation, thus preventing the formation of blood clots in the coronary arteries before and during a STEMI.

Indication

To prevent further clotting in the coronary arteries of patients having a STEMI.

Contraindications

1. Allergy or hypersensitivity to salicylates or known aspirin induced asthma.
2. History of recent GI ulceration or active GI bleeding.
3. Hemophilia or other bleeding disorders.
4. During the third trimester of pregnancy.

Side Effects

1. Nausea, vomiting, heartburn, and stomach pain.
2. Tinnitus (ringing in the ears) has been reported in large doses
3. Bronchospasm, tightness in chest, angioedema, urticaria, and anaphylaxis may occur if the patient is allergic.

Dosage

Adults Only

1. For Chest Pain/STEMI, administer Aspirin, **324 mg** given as 4 chewable baby aspirin tablets (baby aspirin is 81 mg per tablet).

2. Instruct the patient to chew and swallow if tolerable.

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ATROPINE SULFATE

Action

Atropine is a potent parasympatholytic and an anticholinergic drug that reduces vagal tone and thus increases automaticity of the SA node and increases AV conduction and heart rate. Anticholinergics also have a drying effect on bodily secretions.

Indications

- Symptomatic sinus bradycardia.
- Bradycardia with Second-Degree AV Blocks and Narrow QRS Complex Third-Degree AV Blocks.
- Bradycardia from Beta Blocker or Calcium Channel Blocker excess / OD.
- Secretions from Organophosphate poisoning, carbamates, or similar acting nerve gas poisonings.

Contraindications

- New onset **Wide** QRS Complex Second Degree Mobitz II and
- Third Degree AV Blocks.

Precautions

Patients allergic to "Sulfa drugs" are **NOT** allergic to Atropine Sulfate.

Side Effects

1. **CNS:** Restlessness, agitation, confusion, psychotic reaction, pupil dilation, blurred vision, headache.
2. **Cardiac:** Increase heart rate, may worsen ischemia or increase area of infarction, ventricular fibrillation, ventricular tachycardia, angina, flushing of skin.
3. **GI:** Dry mouth, difficulty swallowing.
4. **GU:** Urinary retention.
5. May exacerbate pre-existing glaucoma.

Warnings

1. Administering less than 0.5 mg to an adult patient, OR less than 0.1 mg to a child, OR if the IV dose is pushed too slowly it may initially cause the heart rate to decrease.
2. Atropine is potentiated by antihistamines and antidepressants.
3. In the cardiac setting, the maximum dose of atropine should not exceed 3 mg in an adult or 0.04 mg/kg in children.

Dosage

Adult

1. **Bradycardia:**

   a. **0.5 mg IV/IO** or 1 mg Advanced Airway for symptomatic Bradycardic patients with a pulse less than 60 bpm.

   b. This may be repeated every 2-3 minutes until a maximum dose of 0.04 mg/kg, or 3 mg for the average adult is reached.

2. **Bradicardia from Beta Blocker or Calcium Channel Blocker excess / OD:**

   a. **1 mg IV** every 2-3 minutes to a maximum of 3mg.

3. **Organophosphate Poisonings or Chemical Nerve Agents:**

   a. **2 mg IVP/IM every 5 minutes** until drying of the secretions (atropinization) occurs, or **2 mg IM** with Atropen Auto Injector if available.

Pediatric

The Pediatric Medication Guide is also appropriate as a dose guide.

1. If **bradycardia** is due to increased vagal tone or AV conduction block (not secondary to factors such as hypoxia) OR as a result of a **Beta Blocker or Calcium Channel Blocker excess / OD**:

   a. **0.02 mg/kg IV/IO**. The minimum dose is 0.1 mg (1 mL = 0.1 mg) and the maximum single dose is 1 mg (10mL).

   b. This may be repeated every 3-5 minutes until a maximum IV dose of 0.04 mg/kg or 1 mg for the pediatric patient is reached.

2. **Organophosphate Poisonings or Chemical Nerve Agents**

   a. Body weight 18-41kg, 1 mg IVP/IM every 20-30 minutes until drying of the secretions (atropinization) occurs, or **1 mg IM** with Atropen Auto Injector if available.

   b. Body weight less than 18kg, 0.5 mg IVP every 20-30 minutes until drying of the secretions (atropinization) occurs, or **0.5 mg IM** with Atropen Auto Injector if available.

CALCIUM CHLORIDE

Action

Calcium Chloride increases the force of myocardial contraction. Calcium Chloride may either increase or decrease systemic vascular resistance. In normal hearts, calcium's positive inotropic and vasoconstricting effects produce a rise in systemic arterial pressure.

Indication

1. Suspected **Beta Blocker or Calcium Channel Blocker Overdose** [e.g., diltiazem (Cardizem), nicardipine (Cardene)] OR **Digoxin Overdose** with bradycardia and hypotension.
2. PEA in renal dialysis patients.
3. Suspected hyperkalemia (high potassium) in renal dialysis patients with wide QRS complexes.
4. Prolonged crush injuries.

Contraindications

None

Side Effects

If the heart is beating, rapid administration of calcium chloride can produce slowing of the heart rate.

Warnings

1. After calcium chloride, flush with at least 20 mL normal saline.
2. Calcium chloride should not be administered in the same infusion with sodium bicarbonate. Calcium chloride will combine with sodium bicarbonate to form an insoluble precipitate (calcium carbonate). Flush with at least 20 mL normal saline before administering calcium chloride.
3. Calcium chloride should be given with extreme caution and in reduced dosage to patients taking digitalis because it increases ventricular irritability and may precipitate digitalis toxicity.

Dosage

Adult

- **1 gram slow IVP.** May be repeated once in 2-3 minutes.

Pediatric

The Pediatric Medication Guide is also appropriate as a dose guide.

- **20 mg/kg *slow* IVP.** Maximum dose of 200 mg.

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CYANOKIT®

Indication

Cyanokit® (hydroxocobalamin) is indicated for the treatment of known or suspected acute Cyanide poisoning. If clinical suspicion of Cyanide poisoning is high, Cyanokit should be administered without delay.

Side Effects

1. Common side effects are skin redness and red urine.
2. Because of the intense red color, lab tests relying on colormetric readings may be altered.
3. Anaphylaxis (severe allergic reactions) and/or angioneurotic edema (severe swelling of lips, tongue, soft palate) have occurred during administration of this medication, treat as appropriate.
4. Transient severe hypertension 180/110 mmHg or greater can occur. This is usually short lived and does not require additional treatment.

Dosage

ADULT

1. The starting dose of CYANOKIT® (hydroxocobalamin for injection) antidote for adults is **5 grams, administered by IV infusion *over 15 minutes***.

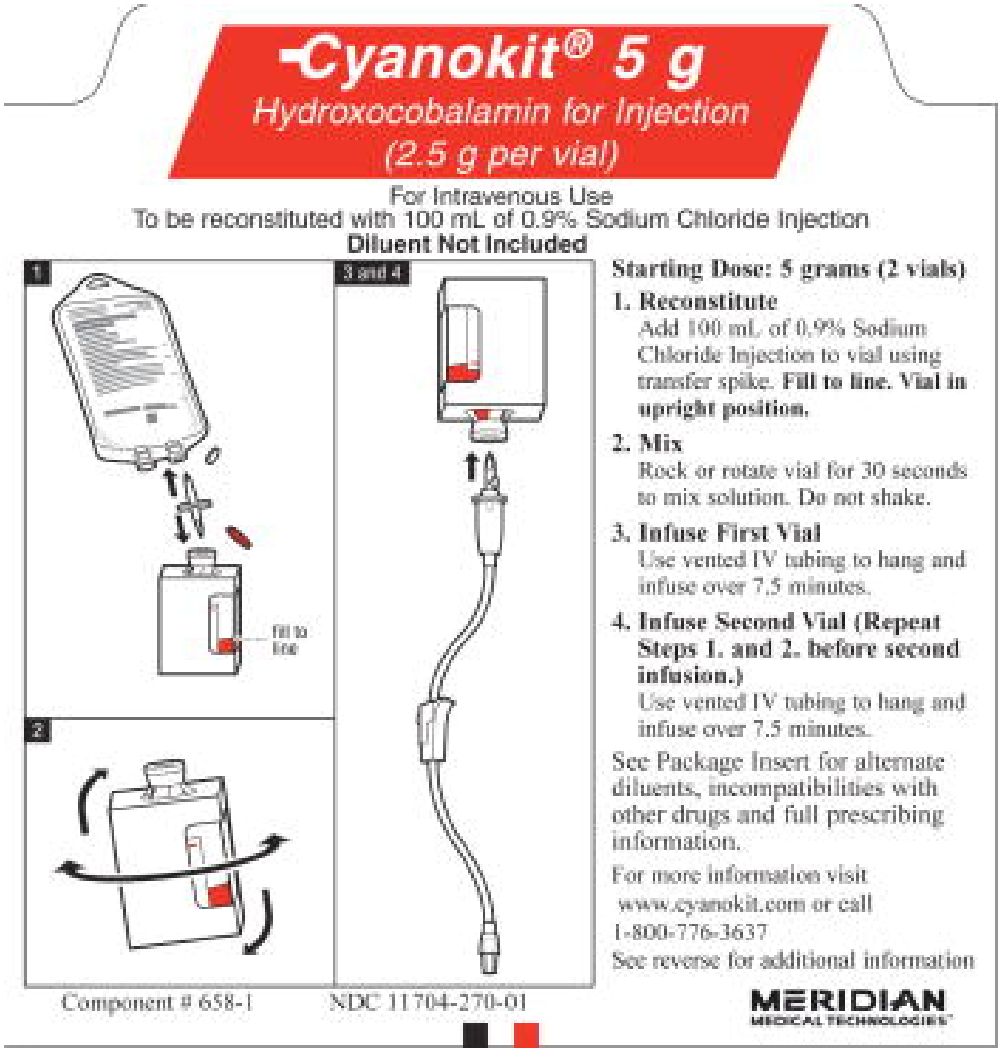
2. Depending on the severity of the poisoning and the clinical response, a second dose of 5 grams may be administered by IV infusion up to a total dose of 10 grams.

3. The rate of infusion for a potential second dose may range from 15 minutes (for patients in extremis) to 2 hours, as clinically indicated.

PEDIATRIC

The safety and efficacy of the use of Cyanokits in children has not been established. In a child with a known acute Cyanide poisoning, **administer dosing according to the back of the Pediatric Medication Guide**.

Click on picture for Full Cyanokit® information.



DEXTROSE 50% (D50W), 25% (D25W), 10% (D10W)

Action

A monosaccharide, hypertonic solution, which provides calories for metabolic needs, and spares body proteins and loss of electrolytes.

Indication

Hypoglycemia as documented with rapid blood glucose level check.

Cautions

1. Avoid giving Dextrose IO due to high risk of infection in the lower extremities of diabetics. If vascular access **CANNOT** be established, it is better to give glucagon **IM.**

2. **Thrombosis** and **tissue sclerosis** if given in a small peripheral vein.

3. Tissue irritation occurs if small amounts infiltrate through the IV catheter.

4. **Select a large vein** for IV access. **Ensure patency** of the IV line before administering Dextrose.

Dosage

If the patient is alert and cooperative, a sugar solution and/or Glutose Gel may be orally administered to the patient. You may also give dextrose 50% (D50) 25 grams (50 mL) PO (orally).

If the patient remains symptomatic after the first dose of Dextrose, and the repeat blood glucose check is equal to or less than 60mg/dL, repeat the blood glucose.

Adult

- Dextrose 50% (D50), **25 grams (50 mL) IV**.

- Repeat blood glucose determination in 5 minutes if there is no change in patient's mental status. If blood glucose remains below 60 mg/dL administer second dose

Pediatric

The Pediatric Medication Guide is also appropriate as a dose guide.

- Dextrose 25% (D25W), **2-4 mL/kg slow IV**.
- Repeat blood glucose determination in 5 minutes if there is no change in patient's mental status. If blood glucose remains below 60 mg/dL administer second dose.
- Dextrose 25% can be used for children 8 years old or younger. For children 9 years or older use Dextrose 50%.

Newborn

- Dextrose 10% (D10W), Waste 40 mL of the total 50 mL in the D50W syringe and draw up 40 mL of Normal Saline. The dose is **0.5 grams/kg IV**. The average dose for a newborn is 20 mL of this mixture.

DILTIAZEM (Cardizem)

Action

Cardizem inhibits the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle. The therapeutic benefits of Cardizem in Supraventricular Tachycardia (SVT) are related to its ability to slow AV nodal conduction time and prolong AV nodal refractoriness. Cardizem slows ventricular rate and interrupts the reentry circuit in AV nodal re-entrant tachycardia. Cardizem also prolongs the sinus cycle length and decreases peripheral vascular resistance.

Indications

1. Atrial Fibrillation (Stable Narrow Complex Tachycardia Irregular) or
2. Atrial Flutter (Stable Narrow Complex Tachycardia Regular) with rapid ventricular response (greater than 150 bpm).

Contraindications

1. Wide complex tachycardia.
2. Rapid A-fib or A flutter associated with WPW syndrome (consider this syndrome if the ventricular rate is greater than 200bpm.)
3. Patients taking oral beta-blockers.

Side Effects

1. Bradycardia: If the patient develops significant bradycardia less than 60 bpm during or after giving Cardizem, treat the Bradycardia with Calcium Chloride, **500 mg IV**, **DO NOT treat this situation with Atropine**.
2. Hypotension, itching or burning at injection site, flushing of skin, or junctional rhythm.

Dosage

Adult

- **0.25 mg/kg IVP *over 2 minutes*** (usual adult dose 20 mg).

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DIPHENHYDRAMINE HCL (BENADRYL)

Action

Benadryl is an antihistamine with anticholinergic (drying) and sedative side effects. Antihistamines appear to compete with histamine for cell receptor sites on effector cells.

Indications

1. Acute **mild** allergic reactions.
2. Given **AFTER** epinephrine in Anaphylaxis (**severe allergic reaction with hypotension**)
3. Extrapyramidal reactions related to medication use (e.g., Haldol, Thorazine, Stelazine, Compazine).

Contraindications

1. Known hypersensitivity to Benadryl.
2. Nursing mothers.
3. Newborns or infants.

Side Effects

1. **CNS**: Drowsiness, confusion, insomnia, headache, vertigo (especially in the elderly).
2. **Cardiac**: Palpitations, tachycardia, PVCs, hypotension.
3. **GI:** Nausea, vomiting, diarrhea, dry mouth, constipation.
4. **GU**: Dysuria, urinary retention.
5. **Respiratory:** Thickening of bronchial secretions, tightness of the chest, wheezing, nasal congestion.

Dosage

Adult

1. **50 mg IM or *slow* IVP**

Pediatric

The Pediatric Medication Guide is also appropriate as a dose guide.

1. **1 mg/kg IM or *slow* IVP**, maximum dose 25 mg

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DOPAMINE

Action

Dopamine stimulates dopaminergic **beta-adrenergic** and **alpha-adrenergic** receptors of the sympathetic nervous system. It exerts an inotropic effect on the myocardium resulting in an increased cardiac output. Therapeutic doses have predominant **beta-adrenergic** receptor stimulating actions that result in increases in cardiac output. At high doses, dopamine has **alpha-adrenergic** stimulating actions that result in peripheral vasoconstriction. Dopamine is used to **treat shock** and correct hemodynamic imbalances, **improve perfusion** to vital organs, and to **increase cardiac output** in the absence of hypovolemia.

Indications

1. Hypotension in the absence of hypovolemia.
2. In hypotension with a heart rate of 150 bpm or greater, the heart rate should be slowed before treatment with dopamine.
3. In Hypotension with a heart rate less than 60 bpm, the heart rate should be increased with atropine sulfate or External Pacing before treatment with Dopamine.
4. Hypotension associated with acute pulmonary edema.

Side Effects

Severe tissue necrosis and sloughing can occur with extravasation from an infiltrating IV.

Warning

1. Dopamine is inactivated by alkaline solutions such as sodium bicarbonate.
2. Patients who have been treated with **m**ono**a**mine **o**xidase **i**nhibitors (MAOIs) will require substantially reduced dosages ($1/10^{th}$ of the regular dose). Three common MAOI agents are: phenelzine (Nardil), tranylcypromine (Parnate), and isocarboxazid (Marplan).

Dosage

Adult

- Premix of **400 mg in 250 mL D5W** (1,600 mIcrograms/mL), start at **30 drops per minute** and titrate until BP is equal to or greater than 90 mmHg systolic.

Pediatric

The Pediatric Medication Guide is also appropriate as a dose guide.

- Premix of **400 mg in 250 mL D5W** (1,600 micrograms/mL), start at **2-20 mcg/kg/min OR dosing as found in the Pediatric Medication Guide** and titrate until the child is no longer HYPOtensive for their age.

DUO-NEB (IPRATROPIUM / ALBUTEROL)

Action

Ipratropium Bromide is an **anti-cholinergic** agent that appears to inhibit vagally-mediated reflexes by antagonizing the action of acetylcholine. The bronchodilation following the inhalation of ipatropium bromide is primarily local, site-specific, and not a systemic action.

Albuterol is a potent **beta 2-adrenergic stimulator** that produces rapid bronchodilation.

Indications

- Bronchial asthma
- Acute Bronchospasm (chemical or allergy induced)
- Acute and chronic Bronchitis
- COPD and Emphysema

Contraindications

- Allergy to Albuterol or ipatropium bromide (Atrovent)
- Known history of narrow-angle glaucoma.

Precautions

- Hypertension
- Coronary artery disease

Side Effects

- Increased heart rate
- “Jittery” feeling

Dosage

Adult

1. Administer **1 premixed single unit dose vial** of Duo-Neb (0.5 mg ipratropium / 3 mg albuterol) via a nebulizer at 6 LPM.

2. May repeat once if needed.

Pediatric

The Pediatric Medication Guide is also appropriate as a dose guide.

1. **Equal to or less than 10 kg**

    a. Administer a **half vial** of Duo-Neb (0.5 mg ipatropium / 3 mg albuterol), 1.5 mL (0.25 mg/1.25 mg) **mixed with 2 mL of Normal Saline**.

2. **Greater than 10 kg**

    a. Administer adult dose.

3. May Repeat once in 20 minutes if needed

EPINEPHRINE 1:1,000

Action

Epinephrine is a **sympathomimetic** which stimulates both alpha and beta adrenergic receptors causing immediate **bronchodilation**, **increased heart rate** and an **increased force of cardiac contraction**. Epinephrine is a potent **antihistamine**. Subcutaneous doses last 5-15 minutes.

Indication

1. Asthma
2. Anaphylaxis
3. Croup
4. Cardiac Arrest via ETT when epinephrine 1:10,000 and/or IV access is not available

Contraindications

1. In anaphylaxis or cardiac arrest there are no contraindications.
2. Children less than one month of age (use epinephrine 1:10,000 instead).
3. Cocaine-induced Ventricular Tachycardia.

Precautions

Use with caution in patients older than 45 years of age with a known history of coronary artery disease (angina and/or MI history).

Dosage

Adult

1. **0.3 mL 1:1,000 IM** for allergic reactions. May be repeated once in 3 minutes if needed.
2. **2 mL (2 mg) ETT** in cardiac arrest every 3 minutes as needed.

Pediatric

The Pediatric Medication Guide is also appropriate as a dose guide.

1. **0.01 mL/kg up to 0.3 mL IM** for asthma or allergic reactions.
2. **0.1 mL/kg ETT** in cardiac arrest every 3 minutes as needed.
3. **0.5 mL/kg (max 5 mL) in 3 mL Normal Saline** via nebulizer for croup.

Newborn

The Pediatric Medication Guide is also appropriate as a dose guide.

- 1:1,000 solution **contraindicated** in children less than 1 month of age.
- If needed for Newborn Resuscitation use epinephrine 1:10,000 solution.

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EPINEPHRINE 1:10,000

Actions

Epinephrine is a **sympathomimetic** which stimulates both **Alpha** and **Beta** receptors. Epinephrine increases coronary artery and cerebral artery blood flow during ventilation and chest compressions.

Indications

1. Pulseless patients in cardiopulmonary arrest.
2. Severe anaphylactic reactions.
3. Drug of choice in pediatric patients with symptomatic bradycardias.

Side Effects

Tachycardia, increased myocardial oxygen consumption, ventricular dysrhythmias, hypertension, angina, and palpitations.

Cautions

1. Epinephrine is inactivated by alkaline solutions - never mix with sodium bicarbonate.
2. Tricyclic antidepressants potentiate the effects of epinephrine (e.g., Elavil, asendin, anafranil, flexeril, norpramin, adapin, sinequan, tofranil, pamelor).

Dosage

Adult

1. **1 mg (10 mL) IV/IO** push every 3 to 5 minutes during cardiac arrest.

2. In anaphylactic shock, administer **0.1 mg (1 mL) IV.** May repeat every 3 to 5 minutes as needed to a maximum dose of 0.5 mg (5 mL).

Pediatric

The Pediatric Medication Guide is also appropriate as a dose guide.

1. Cardiac arrest: **0.01 mg/kg (0.1 mL/kg) IV/IO**, repeat every 3 to 5 minutes as necessary.
2. Severe allergic reaction: **0.01 mg/kg (0.1 mL/kg)**. May be repeated every 3 to 5 minutes.
3. Bradycardia: **0.01 mg/kg (0.1 mL/kg)**. May repeat every 3 to 5 minutes (if bradycardia is due to increased vagal tone or AV block, then administer atropine sulfate not Epinephrine).

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FENTANYL

Fentanyl is a strong opioid medication that is 80 to 100 times more potent by weight than morphine. Like other narcotics it may cause mood alterations, drowsiness and either euphoria (up feeling) or dysphoria (down feeling). Also like other opioids, Fentanyl can cause respiratory depression and will stimulate the chemoreceptor trigger zone which may lead to nausea and vomiting. It's main advantage in the pre-hospital situation is that it may be given intra-nasally and therefore can be useful in managing pain in those patients in whom vascular access is not immediately available.

Once vascular access is established and if the patient continues with significant pain (Pain score of 6 or more on a 1 to 10 scale), Morphine may be given to a patient who has received IntraNasal Fentanyl.

Indications

- Relief of moderate to severe pain in those patients in whom vascular access in not readily available.

Onset and Duration

- Rapid onset following IntraNasal administration.
- Duration 30-60 minutes.

Precautions/Contraindications

- As with any opioid medication, the patient's respiratory status, SpO2, blood pressure, and mental status should be regularly monitored after administration for pain control.
- Should **NOT** be given if the patient is hypotensive for their age.
- Should **NOT** be given if the patient appears to be under the influence of other drugs or alcohol.
- Should **NOT** be given to patients whose respiratory status is already compromised for example, patients with CHF, asthma, or COPD.
- Should **NOT** be given to patients who have experienced head trauma and have altered mental status.
- Patients whose blood pressure drops after receiving Fentanyl should be given a normal saline fluid bolus:
  - Adult Dose: **500 mL IV**. This may be repeated once.
  - Pediatric Dose: **20 mL/kg IV**. This may be repeated once.

- Patients whose respiratory status significantly decreases, **OR** the SpO^2 falls below 94%, **OR** the ETCO2 increases above 40 mmHg should be given naloxone (Narcan)
  - Adult Dose: **2 mg IV/IO/IM/IntraNasal** to reverse the respiratory depressant effects of Fentanyl.
  - Pediatric Dose: **0.1 mg/kg IV/IO/IM/IntraNasal** (maximum dose of 2 mg).

Dosage

Adult

- **100 micrograms IntraNasal.** This may be repeated once in 5 minutes if there is not adequate pain relief and the pain score remains 6 or more on a scale of 1 to 10.

Pediatric

The Pediatric Medication Guide is also appropriate as a dose guide.

- **1 micrograms/kg (maximum 100 micrograms) IntraNasal.** This may be repeated once in 5 minutes if there is not adequate pain relief and the pain score remains 6 or more on a scale of 1 to 10.

FUROSEMIDE (LASIX)

Action

Lasix is a sulfonamide derivative and potent diuretic, which inhibits the reabsorption of sodium and chloride. With IV administration the vasodilating effect is seen within 10 minutes; peaks in 30 minutes; and has a duration of 2 hours. The diuretic effect takes about 30 minutes to occur. Lasix also has a direct vasodilating effect in acute pulmonary edema.

Indication

Acute pulmonary edema/Acute Congestive Heart Failure

- **If patient is relieved with CPAP & NTG,** Do **NOT** give Lasix.

Contraindications

1. Lasix is contraindicated in patients who are **allergic to sulfa medications**.
2. Hypotension for the patient's age.

Side Effects

1. Dizziness, tinnitus, and hearing loss if administered too fast.
2. Hypotension, pruritus, urticaria, muscle cramping.

Dosage

Adults Only

1. **20 mg IV** if patient **IS NOT** currently taking Lasix or other diuretics regularly.
2. **40 mg IV** if patient **IS** currently taking Lasix or other diuretics regularly.

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GLUCAGON (GLUCAGEN)

Action

Glucagon causes an increase in blood glucose by releasing stored glycogen from the liver. Glucagon is helpful in hypoglycemia only if liver glycogen is available. Glucagon is of little or no help in states of starvation, adrenal insufficiency, or chronic hypoglycemia. The half-life of Glucagon is 3 to 6 minutes.

Indication

- Glucagon is indicated for **acute hypoglycemia** in patients when **vascular access cannot be established**.

Side Effects

Nausea and vomiting.

Dosage

Reconstitute with 1 mL sterile water (included in package)

Adult

1. **1 mg (1 Unit) IM/IV slowly over 1 minute**
2. Repeat blood glucose check in 15 minutes and may repeat Glucagon once if needed.

Pediatric

The Pediatric Medication Guide is also appropriate as a dose guide.

1. **Equal to or less than 20 kg**, administer **0.5 mg (0.5 units) IM/IV**
2. **Greater than 20 kg**, administer **1 mg (1 unit) IM/IV**
3. Repeat blood glucose check in 15 minutes and may repeat Glucagon once if needed.

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GLUTOSE ORAL GLUCOSE GEL

Action

Oral glucose gel is an over-the-counter medication, consisting primarily of dextrose and water, along with small amounts of other compounds, used to raise blood sugar levels.

Indication

Oral glucose gel is used to raise dangerously low blood glucose concentration or blood glucose that has dropped too low for the person's adaptive compensatory mechanisms to cope with.

Contraindications

1. The patient must be alert, cooperative, and able to swallow.
2. Use with caution in children under 2 years of age.

Side Effects

No common side effects have been reported

Dosage

Adult and Pediatric

1. **One (1) tube**.
2. Instruct the patient to either swallow or allow the gel to stay in the mouth momentarily to facilitate rapid absorption via various areas of the mouth cavity and then swallow to allow absorption into the blood via the small intestine.
3. If blood glucose remains below 60 mg/dL, administer second dose.

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KETAMINE

Ketamine is a controlled substance medication that is a rapid-acting general anesthetic that creates a state of dissociation from the patient's environment. There is a release of epinephrine and norepinephrine

Action

- Ketamine has a rapid onset of 3-4 minutes when given IM.
- The effects last 15-25 minutes.

Indications

- The agitated patient presenting with physically threatening behavior that cannot be calmed down with other means.
- Patients who exhibited signs/symptoms of the Excited Delirium Syndrome.

Contraindications

- Pregnancy

Precautions/Side Effects

- Laryngospasm can occur, treat with positive pressure ventilation. Try to avoid intubation as the laryngeal reflexes are hypersensitive and stimulation of the pharynx can cause laryngospasm. Monitor the patient's airway, SpO_2, $ETCO_2$, and cardiac rhythm when the EMS providers can approach and care for the patient.
- Nausea and vomiting.
- Increased salivation.
- The patient's blood pressure will be elevated from their baseline. This starts shortly after the injection and will return to baseline within 15 minutes.
- Emergence reactions can occur.
- Random muscle movements that can mimic tonic and clonic activity. These are not true seizures.
- Random, roving eye movements not related to the environment (nystagmus may be present).
- Vivid dreams and hallucinations may occur as the effects of the Ketamine start to wear off. Consider Ativan or Versed in this situation.

Dosage

Adult

- **4 mg/kg IM** into midshaft anteriolateral aspect of thigh or lateral deltoid of the shoulder. (Maximum dose 400 mg)

Pediatric

- Children 12 years of age and older only.

  4 mg/kg IM into midshaft anteriolateral aspect of thigh or lateral deltoid of the shoulder. (Maximum dose 400 mg)

LIDOCAINE

Action

1. Decreases ventricular automaticity and raises the ventricular fibrillation threshold.
2. Anesthetic action by blocking the fast-gated sodium channels in the cell membrane.

Indications

1. As an IO anesthetic when fluids or medications are given IO (Intraosseous) in the awake patient.
2. Stable ventricular tachycardia with a pulse.
3. Following successful ROSC, if the patient's cardiac monitor demonstrates frequent PVCs (more than 6/minute) or multifocal PVCs.
4. In the chest pain patient who demonstrates frequent PVCs (more than 6/minute) or multifocal PVCs that do not resolve following the use of NTG and oxygen.

Contraindications

1. Complete or third degree AV block;
2. Bradycardia rhythms with ventricular ectopy. If ventricular ectopy occurs in conjunction with Bradycardia, the Bradycardia should be treated first.

Side Effects

1. Drowsiness, numbness, dizziness, blurred vision, tinnitus, muscle twitching and seizures.

Dosage

Adult

1. **IO Anesthesia** for the Awake Patient**: 10 mg IO and local infiltration** for the awake patient receiving IO medication or fluids.

2. Stable ventricular tachycardia with a pulse **1 mg/kg IV/IO**. If indicated, may repeat a half dose in 10 minutes.

3. Following successful ROSC, if the patient's cardiac monitor demonstrates frequent PVCs (more than 6/minute) or multifocal PVCs, administer **1 mg/kg IV/IO**. If indicated, may repeat a half dose in10 minutes.

4. In the chest pain patient who demonstrates frequent PVCs (more than 6/minute) or multifocal PVCs that do not resolve following the use of NTG and oxygen, administer **1 mg/kg IV/IO**. If indicated, may repeat a half dose in 10 minutes.

Pediatric

The Pediatric Medication Guide is also appropriate as a dose guide.

1. **IO Anesthesia** for the Awake Patient: **5 mg IO** for the awake patient receiving IO medication or fluids.

LORAZEPAM (Ativan)

Action

Ativan is a long acting benzodiazepine that depresses the limbic system, the thalamus, and the hypothalamus resulting in calming effects. Ativan produces an amnesic effect meaning that it causes short term memory loss. Patients do not gather new memories when sedated with Ativan. It is also a muscle relaxant.

Indications

1. Seizure control in the actively seizing adult patient.
2. Management of the Agitated patient.

Contraindications

Hypersensitivity to benzodiazepines (versed, valium)

Side Effects

The most common side effect to watch out for is respiratory depression. This is particularly common with a rapid infusion of the medication. Patients may also exhibit confusion, muscular weakness, blurred vision, drowsiness, depression, slurred speech, bradycardia and hypotension.

Dosage

Adult

1. **2 mg slow IVP/IM *over one minute***. May repeat once in five minutes.

2. **1 mg *slow* IVP/IM** to patients 70 years of age or older.

Pediatric

The Pediatric Medication Guide is also appropriate as a dose guide.

1. **0.1 mg/kg slow IVP**, maximum dose 2 mg.

2. **0.1 mg/kg slow IVP** may be given after IntraNasal Versed if IV access not initially available AND the patient is still actively seizing.

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MAGNESIUM SULFATE

Actions

Magnesium is an important cofactor for enzymatic reactions and plays an important role in neurochemical transmissions and muscular excitability. Magnesium prevents or controls convulsions by blocking neuromuscular transmission and decreasing the amount of acetylcholine liberated at the end-plate by the motor nerve impulse. Magnesium has a depressant effect on the central nervous system, but it does not affect the mother, fetus, or neonate when used as directed in eclampsia and pre-eclampsia. Magnesium acts peripherally to produce vasodilation.

Indications

1. Parenteral anticonvulsant for the prevention and control of Eclamptic Seizures.
2. Torsades de Pointes
3. Hypomagnesemia in cardiac arrest
4. Refractory ventricular fibrillation.
5. Hypertension in Pregnancy (Pre-eclampsia/Eclampsia) should be treated **IF**:
    a. Systolic BP equal to or greater than 140 mmHg **AND/OR** diastolic BP equal to or greater than 90 mmHg on **TWO (2)** readings at least 5 minutes apart in the pregnant patient during the second half of her pregnancy **AND** the patient is complaining of headache, recent visual changes, or other neurological symptoms.
    OR
    b. Systolic BP equal to or greater than 160 mmHg **AND/OR** diastolic BP equal to or greater than 110 mmHg on **TWO (2)** readings at least 5 minutes apart in the pregnant patient during the second half of her pregnancy **AND** the patient is otherwise asymptomatic.

    c. Women who have delivered with the previous six (6) weeks may also have pre-eclampsia/eclampsia and should be treated with magnesium sulfate if the blood pressure is elevated as above.

    d. Eclampsia (pre-eclampsia findings **AND** the patient seizes)
6. Asthma not responding to nebulizer treatments

Adverse Reactions

1. Adverse effects of IV Magnesium Sulfate are usually the result of magnesium intoxication.

2. Signs of hypermagnesemia include:

   - flushing
   - sweating
   - hypotension
   - depression of reflexes
   - flaccid paralysis
   - hypothermia
   - circulatory collapse
   - depression of cardiac function
   - central nervous system depression

Dosage

Adult

1. Persistent or recurrent V-Fib or Pulseless V-Tach
   - **4 grams IV/IO slow over 2 minutes**

2. Torsades de Pointes
   - **4 grams IV/IO slow over 2 minutes**

3. Pre-Eclampsia / Eclampsia
   - **4 grams IV/IO slow over 2 minutes**

4. Asthma, not responsive to nebulizers
   - **2 grams IV/IO slow over 2 minutes**

Pediatrics

The Pediatric Medication Guide is also appropriate as a dose guide.

1. Asthma, not responsive to nebulizers
   - **50 mg/kg IV/IO over 5 minutes** (Maximum dose 2 grams)

MIDAZOLAM (VERSED)

Action

Midazolam (Versed) is a short-acting benzodiazepine and central nervous system depressant that produces sedation and lack of recall (amnesia). The anticonvulsant effect of intranasal Versed is rapid and is comparable to IV Valium.

Indication

For use in patients in whom vascular access is not immediately available and in these circumstances:

- Seizures
- Sedation for chemical restraint of the potentially harmful agitated patient to him/herself or to others.
- Sedation following intubation.
- If no vascular access available prior to the placement of an advanced airway.
- To reduce shivering after the patient has been given cold saline for therapeutic hypothermia.

Contraindications

Known hypersensitivity.

Precautions

Caution should be taken when administering Versed to elderly patients as it may cause respiratory insufficiency.

Side Effects

1. Nausea and vomiting with hypotension are the most common.

2. Oversedation may lead to marked diminished respirations, hypoxia, apnea and bradycardia.

Dosage

Adult

1. For seizures, sedation, shivering, **5 mg IV/IO.** May repeat once in 5 minutes as needed.

2. For intubation, if amidate (Etomidate) is not available, **10 mg IV/IO**

3. **If UNABLE to establish vascular access:**

   - **10 mg IntraNasal** OR **10 mg IM.**

   - Versed may also be given via **Buccal following** the placement of an advanced airway. (Part the patient's lips and without opening the jaws, place the medication laterally between the teeth and cheek with **half of the dose on each side of the mouth**).

   - May repeat once in 5 minutes, if indicated.

Pediatric

The Pediatric Medication Guide is also appropriate as a dose guide.

1. If IV/IO access has been established, administer **0.1 mg/kg IV/IO**. May repeat once in 5 minutes, if indicated.

2. **If UNABLE to establish vascular access:**

   - **5 mg IM / IntraNasal or Buccal** (5 years of age or older).

   - **2.5 mg IM / IntraNasal or Buccal** (less than 5 years of age).

   - Versed may also be given **Buccal (**Part the child's lips and without opening the jaws, place the medication laterally between the teeth and the cheek with half of the dose on each side of the mouth).

   - If after 5 minutes, the child continues to actively seize after the administration of either of the above medications, the medication may be repeated once.

MORPHINE SULFATE

Action

Morphine is a **narcotic analgesic** that **depresses the central nervous system and sensitivity to pain**. It increases venous capacitance, **decreases venous return,** and produces mild peripheral vasodilatation. Morphine also decreases myocardial oxygen demand.

Patients allergic to "Sulfa drugs" are **not** allergic to Morphine Sulfate.

Indications

1. Pain from acute MI.
2. Burn and Trauma patients without significant head injury.
3. Any acute severe pain.

Contraindications

1. Patients who are hypotensive for their age.
2. SpO2 less than 94%
3. Significant head injuries
4. Volume depletion and/or hypotension
5. Acute alcohol intoxication
6. Acute asthma
7. Severe COPD
8. Allergic to opiates

Use with caution in patients with Inferior Wall MI with Right Ventricular Infarction (ST segment elevation in V4R). If an adult patient becomes hypotensive, lay patient flat, if tolerated, and give IV bolus of normal saline, 500 mL.

Side Effects

- Euphoria
- Drowsiness
- Pupillary constriction
- Respiratory depression / arrest
- Bradycardia
- Hypotension
- Nausea and vomiting

Dosage

Adult

1. As long as the systolic BP remains above 90 mmHg, morphine sulfate, **5 mg IV** may be given for pain relief. If after 5 minutes there is not adequate pain relief and the pain score remains 6 or more on a scale of 1 to 10 an additional **5 mg IV** may be given. This may be repeated as needed for continued pain until the total of the multiple doses given does not exceed 20 mg.

2. The calculation for the **initial dose of morphine is 0.1 mg/kg**. Therefore, a larger individual weighing **more than 100 kg (220 lbs) may need a larger starting dose of morphine**. Again, this may be repeated as needed for continued pain until the total of the multiple doses given does not exceed 20 mg.

3. Individuals **70 years of age or older** may be started at **lower doses** of morphine, **for example 2.5 mg IV**.

4. If vascular access is obtained after giving one dose of fentanyl, ONE dose of morphine, **5 mg IV** may be given to the patient if additional pain relief is indicated.

5. In patients who have been given cold Normal Saline for a high fever 104°F (40°C) associated with agitated delirium, OR firefighter rehab, OR hyperthermia due to environmental reasons, OR poisonings and drug overdoses AND have already been given Versed or Ativan to reduce shivering, the maximum dose of morphine is 10 mg.

Pediatrics

The Pediatric Medication Guide is also appropriate as a dose guide.

1. As long as the child is **NOT** hypotensive, administer morphine sulfate, **0.1 mg/kg IV/IO.** (Maximum single dose is 5 mg). This may be repeated once in 5-10 minutes with a dose of **0.05 mg/kg IV/IO** if there is not adequate pain relief.

NALOXONE (Narcan)

Action

Narcan antagonizes the effect of opiates by competing at the same receptor sites. When given IV, the action is apparent within 2 minutes. When given intranasal administration, the action is rapid.

Indication

1. Narcan is indicated for the complete or partial reversal of narcotic depression and respiratory depression secondary to narcotics or related drugs.

2. Narcan can also be used for suspected acute opiate overdose. When patients with suspected opioid overdose have respiratory insufficiency plus a detectable pulse, give Narcan before placing an advanced airway.

3. Consider Narcan administration to newborns with a slow heart rate and depressed respirations if the mother has used narcotics within 4 hours of the delivery.

Contraindication

Known hypersensitivity to Narcan (naloxone).

Additional Information

1. IV narcotic users frequently have sclerotic veins that can be very difficult to access. It may be prudent to try **IntraNasal** Narcan early to prevent Respiratory Arrest. If the patient has a Respiratory Arrest, Narcan can be given via Advanced Airway at twice the IV dose.

2. Narcan should only be administered to IV drug abuse patients, including newborns of mothers suspected of IV narcotic drug abuse, when the patient's breathing is so depressed that an advanced airway may be needed, because it may precipitate an acute withdrawal. The patient may become violent and combative as level of consciousness increases.

3. If adult patient is unresponsive and believed to be an opiate overdose, and patient's ventilations are slow **AND/OR** SpO_2 is less than 94% give Narcan.

4. **If patient is believed to be opiate dependent, give lower dose of Narcan, 0.4 mg IV, in increments, in order to achieve SpO2 greater than 94%.**

Dosage

Adult

1. **2 mg *slow* IV/IO or IM or IntraNasal**. May repeat once in 2-3 minutes.
2. **4 mg ETT**.

Pediatric

The Pediatric Medication Guide is also appropriate as a dose guide.

1. **0.1 mL/kg *slow* IV/IO or IM or IntraNasal**. May repeat once in 2-3 minutes.
2. **0.2 mL/kg ETT**.

NICARDIPINE HCL (CARDENE)

Action

Nicardipine (Cardene) is a calcium channel blocker. It relaxes coronary and smooth muscle. It lowers blood pressure by reducing systemic resistance (afterload) without reducing heart rate or force of myocardial contraction.

Indications

1. Nicardipine (Cardene) is indicated for the short-term treatment of Severe Hypertension

   a. Elevated systolic blood pressure equal to or greater than **220 mmHg** on **TWO (2)** readings at least 5 minutes apart **AND** the patient is symptomatic

   AND/OR

   b. Elevated diastolic blood pressure equal to or greater than **120 mmHg** on **TWO (2)** readings at least 5 minutes apart **AND** the patient is symptomatic.

   c. When using nicardipine (Cardene), check the patient's blood pressure every five (5) minutes after starting the drip infusion. If the systolic blood pressure reaches 180 mmHg or less **AND/OR** the diastolic blood pressure reaches 110 mmHg or less, **STOP** the drip.

2. Nicardipine (Cardene) is also indicated for the treatment of Hypertension in Pregnancy (Pre-eclampsia and Eclampsia) after administration of magnesium sulfate and the patient's pressure remains elevated.

Contraindications

1. Patients suspected of having an acute ischemic stroke.
2. Trauma patients, including patients with isolated head injury.
3. Hypersensitivity to the drug.
4. Breast feeding mothers.
5. Do not mix with Sodium Bicarbonate.
6. Avoid use in patients with known severe aortic stenosis.

Side Effects

1. Dizziness
2. Headache
3. May increase heart rate

Dosage

Adults Only

Severe Hypertension

1. Administer nicardipine (Cardene), (0.1 mg/mL) pre-filled IV infusion at **50 drops per minute (5 mg/hour)**.

2. After 2 additional BP readings 5 minutes apart, if the BP remains elevated, increase the rate to **75 drops per minute (7.5 mg/hour).**

Pre-eclampsia / Eclampsia

If the systolic blood pressure remains at 160mmHg or greater **AND/OR** the diastolic blood pressure remains at 110 mmHg or greater 5 minutes after the complete administration of magnesium sulfate, consider giving nicardipine (Cardene). With the use of nicardipine (Cardene) the goal should be to achieve a systolic of approximately 140 mmHg and a diastolic of 90 mmHg.

1. Administer nicardipine (Cardene), (0.1 mg/mL) pre-filled IV infusion at **50 drops per minute (5 mg/hour)**.

2. After 2 additional BP readings 5 minutes apart, if the BP remains elevated, increase the rate to **75 drops per minute (7.5 mg/hour).**

NITROGLYCERIN (NTG, Nitro)

Action

Nitroglycerin is a direct **vasodilator** that acts principally on the **venous** system and the **coronary arteries**. There is a decrease in venous return, which **decreases the workload on the heart,** thus **decreasing myocardial oxygen demand**. Sublingual nitroglycerin is readily absorbed. Ischemic chest pain relief usually occurs within one to two minutes, but may take up to 10 minutes.

Indications

1. Chest pain associated with angina pectoris or suspected acute MI.
2. Symptomatic hypertensive crisis.
3. Acute pulmonary edema with hypertension.

Additional Information

1. Patients with a systolic BP less than 90mmHg should not receive nitroglycerin.
2. Patients with a systolic BP between 90 and 100 mmHg should have IV access established before administering the nitroglycerin.
3. Patients taking Viagra/Revatio (sildenafil) or Levitra (vardenafil) should not receive Nitroglycerin for at least 24 hours. (Revatio is prescribed for pulmonary hypertension.)
4. Patients taking Cialis/Adcirca (taldalafil) should not receive Nitroglycerin for at least 72 hours.
5. There may be other erectile dysfunction/sexual enhancement medications that apply.

Side Effects

Headache, dizziness, flushing, nausea & vomiting, hypotension and reflex tachycardia. Have the patient sit down or lay down in the recovery position during administration to avoid postural hypotension.

1/3 of patients with an inferior wall MI may also have a right ventricular infarction. These patients have a stiff right ventricle and may be sensitive to NTG and may become hypotensive. If an adult patient becomes hypotensive, lay patient flat, if tolerated, and give normal saline, 500 mL IV bolus.

Dosage

Adult

Chest Pain

- **One 0.4 mg sublingual tablet or a single spray (if available)**. May repeat NTG every 3-5 minutes until complete relief of C/P as long as systolic BP remains above 90 mmHg.

CHF/Pulmonary Edema

- If the systolic BP is **between 90 mmHg and 160mmHg** administer nitroglycerin, **0.4 mg SL**. Repeat every 3 to 5 minutes if needed as long as the systolic BP remains greater than 90 mmHg **OR** until relief of signs or symptoms.

- If the systolic BP is **greater than 160 mmHg** administer nitroglycerin, **0.8 mg SL (two tabs)**. Repeat every 3 to 5 minutes if needed as long as the systolic BP remains greater than 160 mmHg **OR** until relief of signs or symptoms.

Pediatric

Not indicated.

NITROUS OXIDE 50% (NITRONOX) (if available)

Actions

Nitrous oxide is a colorless gas that acts on the central nervous system. When mixed with 50% oxygen and inhaled, it produces an effect similar to a mild intoxicant. The patient laughs and talks, but does not go to sleep. When inhaled, nitrous oxide has potent analgesic effects, which dissipate within 2 to 5 minutes after stopping its administration.

Indications

Moderate to severe pain, as in trauma, burns, renal colic, and labor.

Contraindications

1. Nitrous Oxide is contraindicated in any altered state of consciousness (e.g., head injury, alcohol ingestion, drug overdose).
2. It is also contraindicated in patients with COPD, acute pulmonary edema, pneumothorax, decompression sickness, air embolus, abdominal pain with distention or suspicion of obstruction, and pregnancy (except during labor).
3. It should not be used in adult patients or children who are unable to self-administer Nitronox.

Adverse Reactions and Side Effects

Light-headedness, confusion, drowsiness, nausea, vomiting.

Warnings

1. Because nitrous oxide is heavier than air, it may accumulate on the floor of the ambulance.

2. During transits lasting more than 15 minutes, nitrous oxide may affect ambulance personnel.

Dosage

1. Blended mixture of **50% nitrous oxide and 50% oxygen**, which is **self-administered** through inhalation.

2. Also apply nasal cannula with O_2 at 4-6 LPM to maintain oxygen therapy when nitrous oxide is not being administered.

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ONDANSETRON (ZOFRAN) ODT (Oral Dissolving Tablet)

Action

Zofran (ondansetron) is a selective 5-hydroxytryptamine-3 (5-HT3)-receptor antagonist used for the prevention of chemotherapy-induced nausea and vomiting. Ondansetron may work by blocking 5-HT3 receptors peripherally on vagal nerve terminals and centrally in the chemoreceptor trigger zone

Indications

Nausea and/or vomiting

Contraindications

Hypersensitivity to ondansetron

Precautions

Phenylketonurics; Zofran ODT® contains phenylalanine

Side Effects

1. **Immunologic:** Anaphylaxis
2. **Respiratory:** Bronchospasm

Dosage

Adult

1. ODT – **8 mg PO** (orally) to dissolve on tongue

Pediatric

1. 12 years of age or older
    a. ODT – **8 mg PO** (orally) to dissolve on tongue
2. Ages 4 to 11
    a. ODT – **4 mg PO** (orally) to dissolve on tongue

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RACEMIC EPINEPHRINE (2.25%)

Action

Racemic Epinephrine is a sympathomimetic bronchodilator that is delivered by aerosol commonly used for the management of croup.

Indication

Severe cases of Croup

Contraindications

1. Should not be used in cases of suspected Epiglottitis.
2. Hypersensitivity to the drug

Side Effects

Increased heart rate, nausea, anxiety, heart palpitations, and headache

Dosage

- 1 single dose vial **0.5 mL mixed with 3 mL of normal saline** in a nebulizer at 6 LPM. **DO NOT repeat**.

- **NOTE**: For **milder** cases of Croup administer humidified Oxygen by nebulizer (best accomplished with Normal Saline, 3-5 mL by nebulizer mask at 6 LPM).

- If Racemic Epinephrine is not available for **severe** cases of Croup, administer epinephrine 1:1,000, **0.5 mL/kg** (max 5 mL) **mixed with 3 mL of normal saline** in a nebulizer at 6 LPM.

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SODIUM BICARBONATE 8.4%

Action

An alkalizing agent used to buffer acids present in the body during and after severe hypoxia. Bicarbonate combines with excess acids (usually lactic acid) present in the body to form a weak, volatile acid. This acid is broken down into CO_2 and H_2O. Sodium Bicarbonate is effective only when administered with adequate ventilation and oxygenation.

Indications

Suspected **metabolic acidosis** due to:

- Prolonged cardiac arrest, greater than 10 minutes.
- Ketoacidosis associated with hyperglycemia.
- Hyperkalemia.
- Tricyclic antidepressant overdose.
- Prolonged crush injuries.

Warnings

1. Excessive bicarbonate therapy inhibits the release of oxygen.
2. Bicarbonate does not improve the ability to defibrillate.
3. May inactivate catecholamines (epinephrine) if administered simultaneously.
4. Will form a precipitate if mixed with calcium chloride. Should not be given in the same IV tubing as Calcium Chloride until the IV tubing has been flushed clear of the calcium chloride.

Dosage

Adult

1 mEq/kg IV/IO. May repeat with 0.5 mEq/kg in 10 minutes.

Pediatric

The Pediatric Medication Guide is also appropriate as a dose guide.

1. For **One Year of age or older**, give **1 mEq/kg IV/IO**. May repeat with 0.5 mEq/kg in 10 minutes.

2. **Under 1 year of age** administer 4.2% concentration (dilute one to one with normal saline).

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TETRACAINE HCL EYE DROPS

Action

Tetracaine is an ophthalmic solution that anesthetizes the eyes. The onset of anesthesia usually begins within 20 seconds and lasts up to 15 minutes.

Indication

In the field, Tetracaine is intended for use in the patient who is unable to cooperate with you in adequately flushing the eye(s) due to discomfort or pain. If flushing can be accomplished easily, Tetracaine may not be needed.

Contraindication

Allergy to any topical anesthetic.

Precautions

1. Advise patient to expect burning sensation for the initial 5-10 seconds after application.

2. For topical ophthalmic use only. Not for injection.

3. The patient should be advised not to touch or rub the eye(s) until the effect of the anesthesia has worn off.

Dosage

Adult

1. **Two drops** in the affected eye as a topical anesthetic, and may be repeated once after 15 minutes, if needed.

Pediatric

1. **Two drops** in the affected eye as a topical anesthetic, and may be repeated once after 15 minutes, if needed.

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DRUG	ADULT	PEDIATRIC	HELPFUL INFORMATION
ADENOCARD (ADENOSINE)	**Indication:** • **PSVT** ● 12mg IVP followed by 20 mL NS flush. ● If no change may repeat once 12 mg IVP dose in 1-2 minutes followed by 20 mL NS flush.	**Indication:** • **PSVT** ●0.1 mg/kg IVP followed by 10 mL NS flush. ● If no change give 0.2 mg/kg IVP dose in 1-2 minutes followed by 10 mL NS flush. Note: **The Pediatric Medication Guide is also appropriate as a dose guide.**	• Do not give after Amiodarone. • Patients may experience a brief feeling that they are going to die after the administration of adenosine. Advise patients that they may feel bad for a few seconds. The half life is approximately 10 seconds. • Patients may experience flushing headache, chest pain and/or SOB for a brief period of time. • Transient periods of bradycardia, Asystole and ventricular ectopy are common after the termination of PSVT.
AMIODARONE (CORDARONE)	**Indications:** **V-FIB or Pulseless V-TACH** ●300 mg IV/IO push. ●Repeat dose of 150 mg IV/IO if Rhythm persists. **Stable Polymorphic wide complex tachycardia with a pulse.** ●150 mg in 50 ml D5W/NS in a Regular drip at 50 drops/minute over 10 minutes.	**Indications:** • VFIB or Pulseless VTACH • V-TACH with a pulse **VFIB or Pulseless V-TACH** ● 5 mg/kg IVP or IO. ●If rhythm persists may give another 5 mg/kg IVP/IO. This may be repeated x 2 for total dose of 15 mg/kg. **V-TACH with a pulse** ●5 mg /kg in 50 mL D5W/NS at 30 drops/minute. Note: **The Pediatric Medication Guide is also appropriate as a dose guide.**	• May cause hypotension - give 500 mL NS fluid bolus. - If no response give Dopamine drip, titrate to effect. • May cause bradycardia - External pacer - Atropine 0.5 mg IVP •Avoid in patients with second or third degree heart block. • Avoid in pregnant patients.
ASPIRIN (ASA)	**Indications:** • **STEMI patients** ●324 mg chewed. (4 baby aspirins)	No Pediatric pre-hospital indications.	• An antiplatelet agent for use in cardiac chest pain. • Avoid in patients with known allergy to aspirin. • Avoid in patients with active bleeding. • Avoid during the third trimester of pregnancy.

DRUG	ADULT	PEDIATRIC	HELPFUL INFORMATION
ATIVAN (LORAZEPAM)	**Indications:** • **Actively seizing patient** • **Agitated patient exhibiting verbally or physically threatening behavior to self or others.** • 2 mg IM or slow IV over one minute. May repeat once in 5 minutes. • 1 mg IM or slow IV over one minute to patients 70 years of age or older.	**Indications:** • **Actively seizing child.** • 0.1 mg/kg IM or slow IV, maximum dose 2 mg. • 0.1 mg/kg slow IV may be given after IN Versed if IV access is not initially available. Note: The Pediatric Medication Guide is also appropriate as a dose guide.	• The most common side effect is respiratory depression. This may happen with rapid infusion of the medication.
ATROPINE	**Indications:** **Symptomatic sinus bradycardia OR Bradycardia with 2^0 AV blocks OR narrow QRS complex 3^0 AV blocks OR asystole.** • 0.5 mg IV/IO if patient with a pulse. • 1 mg IV/IO in bradycardic patient without a pulse. • May be repeated every 2-3 minutes until a maximum of 0.04 mg/kg or 3 mg for the average adult **Organophosphate poisoning** • 2 mg IM from Atropen auto injector or 2 mg IVP every 5 minutes until drying of secretions.	**Indications:** **Symptomatic sinus bradycardias not responsive to adequate oxygenation of the child.** • 0.02 mg/kg IV/IO. The minimum dose is 0.1 mg and the maximum single dose is 1 mg. **Organophosphate poisoning** • Body weight 18-41 kg give 1 mg via atropen auto injector or 1mg IV if available. • Body weight less than 18 kg give 0.5 mg IM via atropen auto injector or 0.5mg IV if available. The Pediatric Medication Guide is also appropriate as dose guide.	• Avoid in presumed new onset wide complex QRS 3^0 AV blocks. • Patients allergic to sulfa are **NOT** allergic to atropine. • Administering less than 0.5 mg in an adult or 0.1 mg in a child may initially cause the heart rate to decrease.
BENADRYL (DIPHENHYDRAMINE)	**Indications:** **Acute mild allergic reactions** **After epinephrine in anaphylaxis (severe allergic reactions with hypotension).** **Extrapyramidal reactions related to medication use.** • 50 mg slow IV • 50 mg IM.	**Indications:** **Acute mild allergic reactions** **After epinephrine in anaphylaxis (severe allergic reactions with hypotension).** **Extrapyramidal reactions related to medication use.** • 1 mg/kg slow IV or IM, maximum dose 25 mg. The Pediatric Medication Guide is also appropriate as a dose guide.	**Contraindications** • Known hypersensitivity to Benadryl. • Nursing mothers. • Newborns or infants

DRUG	ADULT	PEDIATRIC	HELPFUL INFORMATION
CALCIUM CHLORIDE 10%	**Indications:** **Suspected beta blocker OR calcium channel blocker overdoses OR Digoxin overdose with bradycardia and hypotension.** **Prolonged crush injuries.** **PEA in renal dialysis patients.** • 1 gram (10 mL) slow IV. • May be repeated once in 2-3 minutes.	**Indications:** • 20 mg/kg slow IV. Maximum dose 200 mg. Note: The Pediatric Medication Guide is also appropriate as a dose guide.	• Do not infuse with sodium bicarbonate in the same IV.
CARDENE (NICARDIPINE)	**Indications:** **Severe Hypertension** Elevated systolic BP equal to or greater than 220 mmHg on 2 readings at least 5 minutes apart. **AND** the patient is symptomatic. **AND/OR** Elevated diastolic BP equal to or greater than 120 mmHg on 2 readings at least 5 minutes apart **AND** the patient is symptomatic. **Pre-eclampsia/Eclampsia** If systolic BP remains at 160 mmHg or greater AND/OR the diastolic BP remains at 100 mmHg or greater 5 minutes **AFTER** administration of Mangesium Sulfate. • Administer Nicardipine (0.1 mg/mL) pre-filled IV infusion at 50 drops per minute (5 mg/hour). After 2 additional BP readings 5 minutes apart, if the BP remains elevated, increase the rate to 75 drops per minute (7.5 mg/hour).	• No pediatric indications.	• Avoid use in patients suspected of having an acute ischemic stroke. • Do **NOT** treat trauma patients with isolated head injury who are having severe high blood pressure. • Avoid in patient with known hypersensitivity to the drug. • Avoid use in patients with known severe aortic stenosis. • Do **NOT** mix with sodium bicarbonate.
CARDIZEM (DILTIAZEM)	**Indications:** **Atrial Fibrillation OR Atrial Flutter with rapid ventricular response, heart rate greater than 150 bpm.** • 0.25 mg/kg IV slow over 2 minutes, average adult dose is 20 mg.	• No pediatric indications.	• Avoid in patients with wide complex tachycardias. • Avoid in Atrial Fib/Atrial flutter associated with WPW syndrome. (Consider this syndrome if the ventricular rate is greater than 200 bpm.).

DRUG	ADULT	PEDIATRIC	HELPFUL INFORMATION
CYANOKIT (HAZMAT)	**Indications:** • **Known or suspected acute Cyanide poisoning.** • 5 grams administered by IV infusion over 15 minutes. Depending on the severity of the poisoning and the clinical response, a second dose of 5 g may be administered by IV infusion up to a total dose of 10 g.	**Safety and efficacy not established in pediatric age group.** **However:** During the management of a child who has arrested as a result of possible CN exposure during a fire situation consider administration of Cyanokit according to the back of the Pediatric Medication Guide.	• There are no contraindications to treatment for suspected or known cyanide poisoning. • Anaphylaxis (severe allergic reactions) and/or angioneurotic edema (severe swelling of lips, tongue, soft palate) have occurred during administration of this medications, treat as appropriate. • Transient severe hypertension 180/110 mmHg or greater can occur. This is usually short lived and does not require additional treatment.
DEXTROSE 50% AND 25%	**Indications:** **Hypoglycemia as documented with rapid blood glucose determination.** • D50W, 50 mL IV. Repeat blood glucose determination in 5 minutes if there is no change in patient's mental status. If blood glucose remains below 60 mg/dL administer second dose.	**Indications:** Hypoglycemia as documented with rapid blood glucose determination. The Pediatric Medication Guide is also appropriate as a dose guide. **Pediatric** • D25W, 2-4 mL/kg IV. **Newborn** Dextrose 10% (D10W), Waste 40 mL of the total 50 mL in the D50W syringe and draw up 40 mL of Normal Saline. The dose is 0.5 grams/kg IV. The average dose for a newborn is 20 mL of this mixture.	• Avoid giving D50W IO due to high risk of infection in the lower extremities of diabetics. Better to give Glucagon IM. .
DOPAMINE	**Indications:** **Hypotension without hypovolemia.** **Hypotension with pulmonary edema.** • Dopamine premix of **400 mg in 250 mL D5W** yields 1,600 mg/L. Start at **30 drops per minute** and titrate to a **BP of 90** mmHg systolic.	**Indications:** **Hypotension without hypovolemia.** • Start at **2-20 mcg/kg/min OR dosing as found in the Pediatric Medication Guide** and titrate to a systolic **BP appropriate to age.** Note: The Pediatric Medication Guide is also appropriate as a dose guide.	• Hypotension with a heart rate of 150 bpm or greater, the heart rate should be slowed before treatment with Dopamine. • Hypotension with a heart rate less than 60 bpm, should have the heart rate increased with Atropine or pacing before treatment with Dopamine. • Dopamine is inactivated by alkaline solutions such as Sodium Bicarbonate. • Patients who have been treated with **m**ono**a**mine **o**xidase **i**nhibitors (MAOI) will require substantially reduced dosages ($1/10^{th}$ of the regular dose). Three common MAOI agents are: phenelzine (Nardil), tranylcypromine (Parnate), and isocarboxazid (Marplan).

DRUG	ADULT	PEDIATRIC	HELPFUL INFORMATION
DUONEB (ALBUTEROL AND ATROVENT)	**Indications:** • **Bronchial asthma** • **Acute Bronchospasm (chemical or Allergy induced)** • **Acute and chronic Bronchitis** • **COPD and Emphysema** • Administer 1 vial Duo-Neb (3 mg Albuterol/0.5 mg Atrovent) of premixed single unit dose via a nebulizer at 6 L/minute.	**Indications:** **Bronchial Asthma** The Pediatric Medication Guide is also appropriate as a dose guide. • Equal to or less than 10 kg, administer 1.5 mL of Duo-Neb (1.25 mg) to 2 mL of Normal Saline. • Greater than 10 kg, administer adult dose.	**Contraindications:** **AVOID** in patients with: • Allergy to Albuterol or Atrovent. • Known history of narrow-angle glaucoma.
EPINEPHRINE 1:1,000	**Indications:** • **Asthma** • **Anaphylaxis** • **Cardiac arrest** • **Allergic Reactions**: 0.3 mL 1:1,000 IM May be repeated once in 3 minutes if needed. • **Cardiac Arrest:** 2 ml (2 mg) ETT every 3 minutes as needed.	**Indications:** **Asthma /Croup** **Anaphylaxis Cardiac arrest** • **Allergic Reactions-Asthma**: 0.01 mL/kg up to 0.3 mL IM. • **Cardiac Arrest:** 0.1 mL/kg via ETT every 3 minutes as needed. • **Croup:** 0.5mL in 3mL NS for nebulizer • **Newborn:** If needed use 1:10,000 solution. Note: The Pediatric Medication Guide is also appropriate as a dose guide.	**Contraindications:** • **1:1,000 solution** contraindicated in children less than 1 month of age. • No contraindications in anaphylaxis or cardiac arrest.

DRUG	ADULT	PEDIATRIC	HELPFUL INFORMATION
EPINEPHRINE 1:10,000	**Indications:** • **Pulseless patients in cardiopulmonary arrest.** • **Severe anaphylactic reactions.** • **Bradycardia and/or hypotension not responsive to Atropine or TCP.** • 1 mg (10mL) IV/IO push every 3 to 5 minutes during cardiac arrest. When given via the ET route, administer 2 mg. • In anaphylactic shock, administer 1 mL (0.1mg) IV. May repeat every 3 to 5 minutes as needed to a maximum dose of 5 mL (0.5 mg)	**Indications:** • **Pulseless patients in cardiopulmonary arrest.** • **Severe anaphylactic reactions.** • **Drug of choice in pediatric patients with symptomatic bradycardias.** • 0.1 mL/kg IV, repeat every 3 to 5 minutes as necessary. Note: The Pediatric Medication Guide is also appropriate as a dose guide.	• Epinephrine is inactivated by alkaline solutions. • Never mix with Sodium Bicarbonate. • Tricyclic antidepressants potentiate the effects of epinephrine. (Elavil, asendin, anafranil, flexeril, norpramin, adapin, sinequan, tofranil, pamelor)
ETOMIDATE (AMIDATE)	**Indications:** • **To provide deep sedation for Rapid Sequence Intubation.** • **When ET intubation is complicated by the patient's condition such as combativeness or trismus.** • 0.3 mg/kg IV over 15 to 60 seconds. Average adult dose is 20 mg.	**Indications:** • To provide deep sedation for Rapid Sequence Intubation. • When ET intubation is complicated by the patient's condition such as combativeness or trismus. • 0.3 mg/kg IV over 15 to 60 seconds Note: The Pediatric Medication Guide is also appropriate as a dose guide.	• Onset after intravenous injection within 10-20 seconds. Peak response within one minute. • The duration of a single intravenous injection is 4-10 minutes. • Nausea and vomiting with hypotension are the most common side effects.
FENTANYL	**Indications:** • Relief of moderate to severe pain in those patients in whom vascular access is not readily available. • **100 micrograms IntraNasal** • This may be repeated once in 5 minutes if there is not adequate pain relief and the pain score remains 6 or more on a scale of 1 to 10.	**Indications:** • Relief of moderate to severe pain in those patients in whom vascular access is not readily available. • 1 microgram/kg (maximum dose 100 micrograms) IntraNasal. • This may be repeated once in 5 minutes if there is not adequate pain relief and the pain score remains 6 or more on a scale of 1 to 10. • Note: The Pediatric Medication Guide is also appropriate as a dose guide.	**Contraindications:** • Patients who are hypotensive for their age. • Patients with **SpO_2 less than 94**. • Patients with **significant head injuries**. • Patient with **volume depletion and/or hypotension**. • Patients with **acute alcoholism**, **acute asthma**, **severe COPD**. • Patients **allergic to opiates**. • Fentanyl is given in micrograms. Patients who respiratory status significantly decreases **OR** the SpO2 falls below 94% **OR** the EtCO2 increases above 40 mmHg should be given Narcan to reverse the respiratory depressant

DRUG	ADULT	PEDIATRIC	HELPFUL INFORMATION
GLUCAGON (GLUCAGEN)	**Indications:** **Acute hypoglycemia** in patients when **IV access is not obtainable**. • 1 mg (1 Unit) IM. • 1 mg slowly over 1 minute IV May repeat dose once.	**Indications:** A**cute hypoglycemia** in patients when **IV access is not obtainable**. • Equal to or less than 20 kg, give **0.5 mg** (0.5 units) • Greater than 20 kg give **1 mg** (1 unit) Administered IM • May repeat dose once. Note: The Pediatric Medication Guide is also appropriate as a dose guide.	•Side effects include nausea and vomiting.
KETAMINE	**Indications:** • To control severely agitated patients OR patient exhibiting signs/symptoms of an excited delirium syndrome who are not responding verbal calming and are physically aggressive towards self or others. • 4 mg/kg IM (maximum dose 400 mg)	**Not recommended for the pediatric age group.**	• Laryngospasm can occur, treat with positive pressure ventilation. Try to avoid intubation as the laryngeal reflexes are hypersensitive and stimulation of the pharynx can cause laryngospasm. Monitor the patient's airway, SpO2, EtCO2, and cardiac rhythm when the EMS providers can approach and care for the patient. • Nausea and vomiting. • Increased salivation. The patient's blood pressure will be elevated from their baseline. This starts shortly after the injection and will return to baseline within 15 minutes. • Emergence reactions can occur.
LASIX (FUROSEMIDE)	• Indications: • **Acute pulmonary edema** • **Acute CHF** • **(If patient is relieved with CPAP & NTG, Do Not Give Lasix.)** • 20 mg IVP if patient **IS NOT** currently taking lasix or other diuretics regularly. • 40 mg IVP if patient **IS** currently taking	There are no indications for pediatric use.	Lasix is contraindicated in patients who are allergic to sulfa.

DRUG	ADULT	PEDIATRIC	HELPFUL INFORMATION
LIDOCAINE	**Indications:** • **Stable Monomorphic Tachycardia-regular.** • **In chest pain patient who demonstrates frequent PVCs (>6/min.) that do not resolve following the use of NTG and oxygen.** • **After ROSC and there are frequent PVCs or multifocal PVCs.** • **As an IO anesthetic when fluids or medications are given IO (Intraosseous) in the awake patient.** • For stable monomorphic tachycardias, in chest pain patients with frequent PVCs or in ROSC with frequent PVCs or multifocal PVCs give 1 mg/kg IV/IO. **IO Anesthesia for the Awake Patient:** 10 mg IO for the awake patient receiving IO medication or fluids.	**Indications:** • **IO Anesthesia for the Awake Patient:** 5 mg IO for the awake patient receiving IO medication or fluids. Note: The Pediatric Medication Guide is also appropriate as a dose guide.	**Contraindications** Lidocaine is contraindicated in: • Complete or third degree AV block; • Bradycardia rhythms with ventricular ectopy. If ventricular ectopy occurs in conjunction with Bradycardia, the Bradycardia should be treated first. **Side Effects** Drowsiness, numbness, dizziness, blurred vision, tinnitus, muscle twitching and seizures.
MAGNESIUM SULFATE	**Indications:** • Parenteral anticonvulsant for the control of Eclamptic seizures. • Torsades de Pointes • Refractory ventricular fibrillation that has not responded to other medications. • Pre-Eclamptic hypertension, BP greater than 140/90 on two readings at least 5 minutes apart in pregnant patient during the second half of her pregnancy AND patient complaining of headache, recent visual changes, or other neurological symptoms **OR** • BP equal to or greater than 160/110 on two readings at least 5 minutes apart in pregnant patient during the second half of her pregnancy WITH OR WITHOUT any associated symptoms. • 4 grams IV/IO slowly over 2 minutes. • Asthma if no improvement after nebulizers. 2 grams IV/IO slowly over 2 minutes.	**Indications:** • Asthma if no improvement after nebulizers. 2 grams IV/IO slowly over 2 minutes. Note: The Pediatric Medication Guide is also appropriate as a dose guide.	Because magnesium is removed from the body solely by the kidneys, the drug should be used with caution in patients with renal impairment. Clinical indications that it is safe to give magnesium include the presence of the knee jerk reflex and absence of respiratory depression. Calcium chloride should be immediately available to counteract the potential hazards of magnesium intoxication when administered for eclampsia. Adverse effects of IV Magnesium Sulfate are usually the result of magnesium intoxication. Signs of hypermagnesemia include: flushing, sweating, hypotension, depression of reflexes, flaccid paralysis, hypothermia, circulatory collapse, depression of cardiac function, and central nervous system depression. These symptoms can precede fatal paralysis.

DRUG	ADULT	PEDIATRIC	HELPFUL INFORMATION
MORPHINE SULFATE	**Indications:** • **Pain from acute MI if unrelieved with NTG.** • **Any acute severe pain.** • 5 mg SLOW IV. May repeat in 5 minutes if pain remains 6 or more on a pain scale of 1 to 10. Maximum of 20 mg.	**Indications:** • Any acute severe pain. • 0.1 mg/kg slow IVP. Note: The Pediatric Medication Guide is also appropriate as a dose guide.	**Contraindications:** • Patients hypotensive for their age. • Patients with **SpO_2 less than 94**. • Patients with **significant head injuries.** • Patient with **volume depletion and/or hypotension**. • Patients with **acute alcoholism**, **acute asthma**, **severe COPD**. • Patients **allergic to opiates**. Use with caution in patients with inferior wall MI with right ventricular infarction (ST segment elevation in V4R)
NARCAN (NALOXONE)	**Indications:** • The complete or partial reversal of narcotic depression and respiratory depression secondary to narcotics or related drugs. • Suspected acute opiate overdoses. • 2 mg IV/IO/IM/IntraNasal. May repeat once in 2-3 minutes. • 4 mg ET.	**Indications:** • The complete or partial reversal of narcotic depression and respiratory depression secondary to narcotics or related drugs. • Suspected acute opiate overdoses. • 1 mg/kg IV/IO/IM/IntraNasal. May repeat once in 2-3 minutes. • 0.2 mg/kg ETT. Note: The Pediatric Medication Guide is also appropriate as a dose guide.	• Consider Narcan administration to newborns with a slow heart rate and depressed respirations if the mother has used narcotics within 3 hours of the delivery. • When patients with suspected opioid overdose have respiratory insufficiency plus a detectable pulse, give Narcan before tracheal intubation. • If adult patient is unresponsive and believed to be an opiate overdose and patient's ventilations are slow and/or SpO2 is less than 94% give Narcan. If patient is believed to be opiate dependent, give lower dose of 0.4 mg Narcan IV.
NITROGLYCERIN	**Indications:** • **Chest pain associated with angina pectoris or suspected acute MI.** • **Symptomatic hypertensive crisis.** • **Acute pulmonary edema/CHF with hypertension.** **Chest Pain/Hypertensive Crisis:** One tablet 0.4 mg sublingual. May repeat every 3-5 minutes until complete relief of chest pain as long as systolic BP remains above 90 mmHg. **Pulmonary Edema/CHF with hypertension.** If systolic BP between 90 and 160 mmHg: give 0.4 mg SL. If systolic BP greater than 160 give 0.8 mg SL. May repeat every 3-5 minutes	There are no indications for use in the pediatric age group.	**Contraindications and Precautions:** • Patients with a systolic BP less than 90 mmHg. • Patients taking erectile dysfunction agents including Viagra or Levitra should not receive Nitroglycerin for at least 24 hours. Patients taking Cialis should not receive NTG for at least 48 hours. • 1/3 of patients with an inferior wall MI may also have a right ventricular infarction. These patients have a stiff right ventricle and may be sensitive to nitroglycerin and may become hypotensive. If patient becomes Hypotensive, lay patient flat if tolerated and give IV bolus of NS 500 mL.

DRUG	ADULT	PEDIATRIC	HELPFUL INFORMATION
NITROUS OXIDE (NITRONOX)	**Indications:** • Moderate to severe pain, as in trauma, burns, renal colic, and labor. • Blended mixture of 50% nitrous oxide and 50% oxygen, which is self-administered through inhalation. Also apply O2 cannula at 4-6 L to maintain oxygen therapy when nitrous oxide is not being administered.	**Indications:** • Moderate to severe pain as in trauma or burns. • Blended mixture of 50% nitrous oxide and 50% oxygen, which is self-administered through inhalation. Also apply O2 cannula at 4-6 L to maintain oxygen therapy when nitrous oxide is not being administered.	**Contraindications** Nitrous Oxide is contraindicated in any altered state of consciousness, e.g. head injury, alcohol ingestion, drug overdose. It is also contraindicated in patients with COPD, acute pulmonary edema, pneumothorax, decompression sickness, air embolus, abdominal pain with distention or suspicion of obstruction, and pregnancy (except during labor). It should not be used in adult patients or children who are unable to self-administer Nitronox.
RACEMIC EPINEPHRINE (2.25%)	**NOT INDICATED FOR ADULT USE.**	**Indications:** • Croup • One single dose vial 0.5 mL mixed with 3 mL of Normal Saline in a nebulizer at 6 LPM. **DO NOT REPEAT.** • Epinephrine may be used if Racemic Epinephrine not available. Note:The Pediatric Medication Guide is also appropriate as a dose guide.	**Contraindications** Should **NOT** be used in cases of suspected epiglottitis and in patients with a known previous hypersensitivity to the drug. **Side Effects** Increased heart rate, nausea, anxiety, heart palpitations and headache.
SODIUM BICARBONATE	**Indications** • Suspected **metabolic acidosis** due to Prolonged cardiac arrest, > 10 minutes. • Hyperkalemia. (Consider this when patient is a dialysis patient and rhythm is slow and wide.) • Tricyclic antidepressant overdose with Wide QRS or significant tachycardia. • Prolonged crush injuries. • 1 mEq/kg IV/IO. May repeat with 0.5 mEq/kg in 10 minutes.	**Indications:** • Suspected **metabolic acidosis** due to Prolonged cardiac arrest, > 10 minutes. • Hyperkalemia. (Consider this when patient is a dialysis patient and rhythm is slow and wide.) • Tricyclic antidepressant overdose with Wide QRS or significant tachycardia. • Prolonged crush injuries. • 1 mEq/kg IV/IO. May repeat with 0.5 mEq/kg in 10 minutes Note: The Pediatric Medication Guide is also appropriate as a dose guide.	An alkalizing agent used to buffer acids present in the body during and after severe hypoxia. Bicarbonate combines with excess acids (usually lactic acid) present in the body to form a weak, volatile acid. This acid is broken down into CO_2 and H_2O. Sodium bicarbonate is effective only when administered with adequate ventilation and oxygenation. Excessive bicarbonate therapy inhibits the release of oxygen. Bicarbonate does not improve the ability to defibrillate. May inactivate catecholamines if administered simultaneously. Will form a precipitate if mixed with calcium chloride. Should not be given at the same time as calcium chloride in the same IV tubing.

DRUG	ADULT	PEDIATRIC	HELPFUL INFORMATION
TETRACAINE HCL EYE DROPS	**Indications:** In the field, tetracaine is intended for use in the patient who is unable to cooperate with you in adequately flushing the eye/s due to discomfort or pain. If flushing can be accomplished easily, tetracaine may not be needed. • Two drops in the affected eye as a topical anesthetic.	• Two drops in the affected eye as a topical anesthetic.	**Contraindication** Allergy to any topical anesthetic. **Precautions** Advise patient to expect burning sensation for the initial 5-10 seconds after application. For topical ophthalmic use only. Not for injection. The patient should be advised not to touch or rub the eye(s) until the effect of the anesthesia has worn off. Tetracaine is an ophthalmic solution that anesthetizes the eyes. The onset of anesthesia usually begins within 20 seconds and lasts up to 15 minutes.
VERSED (MIDAZOLAM)	**Indication** • **Seizures** when IV access NOT available. (Ativan used when IV access is available) • **Sedation** for **chemical restraint** of the potentially harmful agitated patient to him/herself or to others. • **Sedation** for **cardioversion** and cardiac pacing. • **RESTRAINT**, or **SEDATION** (prior to cardioversion or cardiac pacing): administer 5 mg SLOW IV/IO or 10 mg IM or IN. • **SEIZURES**: administer 10 mg IM or IN when IV access not available. If patient continues to seize, may repeat once in 5 minutes. • For intubation, if etomidate not available may use Versed 10 mg IV Versed may be given buccal	**SEIZURES** • 5 mg IM or IntraNasal (5 years and older) or • 2.5 mg IM or IntraNasal (less than 5 years old). • This may be repeated once in 5 minutes if the seizure continues. **SEDATION** • 5 mg IM or IntraNasal (5 years and older) or • 2.5 mg IM or IntraNasal (less than 5 years old). • This may be repeated once in 5 minutes if the seizure continues. Versed may be given Buccal Note: The Pediatric Medication Guide is also appropriate as a dose guide.	**Precautions** Versed (Midazolam) does not prevent bradycardia and increased intracranial pressure associated with intubation attempts. Caution should be taken when administering Versed to elderly patients as it may cause respiratory insufficiency. **Side Effects** Nausea and vomiting with hypotension are the most common. Oversedation may lead to marked diminished respirations, hypoxia, apnea and bradycardia.
ZOFRAN (ONDANSETRON) ODT ORAL DISSOLVING TABLETS	**Indications:** Nausea and/or vomiting • ODT 8 mg to dissolve on tongue	**Indications:** Nausea and/or vomiting. • 12 years of age or older ODT 8 mg to dissolve on tongue. • Ages 4 to 11, ODT 4 mg to dissolve on tongue. Note: The Pediatric Medication Guide is also appropriate as a dose guide.	**Contraindications/Precautions** • Phenylketonurics; Zofran ODT® contain phenylalanine • hypersensitivity to ondansetron **Side Effects** • **Immunologic:** Anaphylaxis • **Respiratory:** Bronchospasm

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INTRODUCTION

Pre-hospital 12-lead ECG determination is a significant step forward in the ability of the paramedic to help identify patients with an Acute Myocardial Infarction (AMI). This procedure outlines the minimum criteria for obtaining a 12-lead ECG.

PRECAUTIONS

1. Treatment of life-threatening problems such as: dysrhythmias, acute pulmonary edema, and shock should take priority before obtaining a 12-lead ECG.

2. Obtaining a 12-lead ECG should not delay transport of critically ill patients.

ALS

1. The key to the early recognition and management of the AMI patient is identification of the signs and symptoms of patients at risk for coronary artery/heart disease.

2. Obtaining and interpreting a 12-lead ECG will allow the paramedic to provide definitive diagnostic information to the Medical Control Physician which can greatly reduce delays in care.

3. Patients meeting any of the below criteria should also have **continuous cardiac monitoring** of the ECG for any changes in the rhythm until transfer of care is completed.

4. Patients who demonstrate an inferior wall MI on their 12-lead ECG should have a V4R lead performed to evaluate for a right ventricular infarction. A 0.5 mm ST-segment elevation of V4R signifies a right ventricular infarction. In these patients, the use of nitroglycerin, morphine sulfate and/or furosemide (Lasix) may cause hypotension. If hypotension develops lay patient flat if tolerated, and administer normal saline, **500mL IV bolus**.

5. If available, transmit the 12-Lead ECG to the appropriate receiving facility.

INDICATIONS FOR OBTAINING A 12 LEAD ECG

1. All chest pain or chest discomfort consistent with myocardial ischemia, unless due to penetrating injury.

2. After treatment of a cardiac dysrhythmia in an adult.

3. Epigastric pain unless evidence of G.I. bleeding in patients older than 35 years of age. Epigastric pain is defined as pain in the area above the umbilicus and below the sternum.

4. Diaphoresis, not explained by environment. May be associated with nausea and/or vomiting.

5. Sudden onset of shortness of breath. Onset of CHF / Pulmonary Edema.

6. Syncope or dizziness, including children.

7. All overdoses.

8. PVCs unchanged by oxygen and greater than 6 per minute.

9. Post cardiac arrest

10. Acute Stroke patients

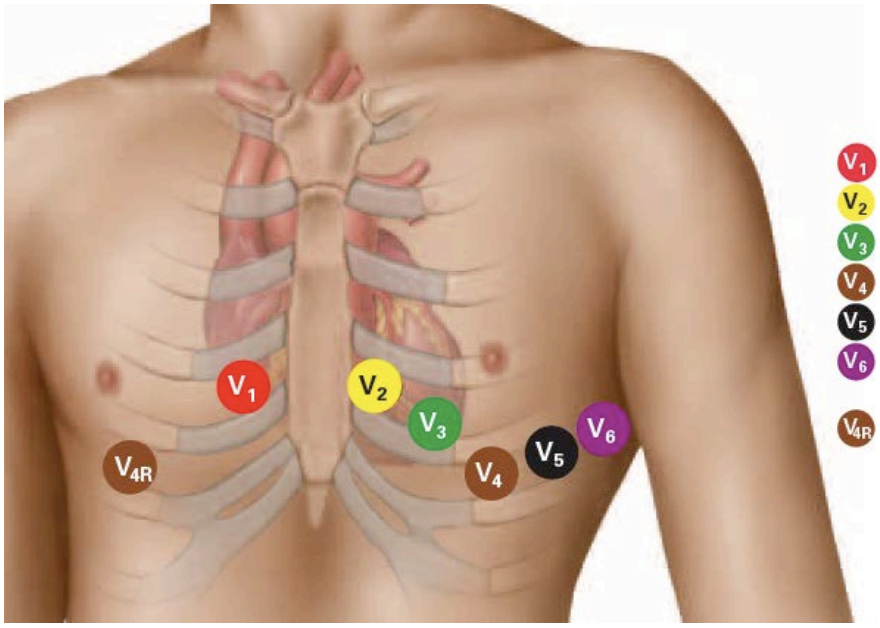
11. Electrical/lightning injuries.

12. Non-traumatic jaw or arm pain

13. Unexplained (non-traumatic) back pain

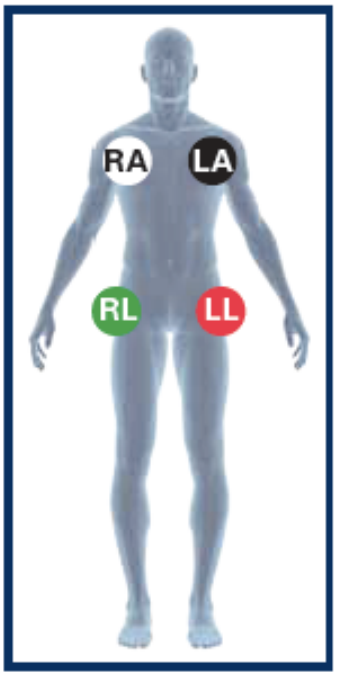
14. Known or suspected Carbon Monoxide poisoning

NOTE: Women, the elderly, and diabetics with ACS / STEMI may present with atypical signs and symptoms of general malaise, sweating, nausea, and/or shortness of breath with no acute chest pain.



- V_1 4th intercostal space to the right of the sternum
- V_2 4th intercostal space to the left of the sternum
- V_3 directly between the leads V_2 & V_4
- V_4 5th intercostal space at midclavicular line
- V_5 level with V_4 at left anterior axillary line
- V_6 level with V_5 at left midaxillary line *(directly under the midpoint of the armpit)*
- V_{4R} 5th intercostal space, right midclavicular line

Lead Placement



- RA Right Arm
- LA Left Arm
- LL Left Leg
- RL Right Leg

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Animal Oxygen Recovery Masks, if available, are indicated whenever there is a need to deliver supplemental oxygen therapy to an animal such as dog or cats rescued from fires/smoke.

Procedure

1. Animal Care

   Prepare equipment:
   a. Oxygen Recovery Mask, if available (select appropriate size)
   b. Oxygen tubing
   c. Connect the oxygen supply line to the Oxygen Recovery Mask.
   d. Oxygen fitting maybe removed to allow connection of a BVM.

2. Seal mask over animal's mouth and nose.

3. Set appropriate oxygen flow rate to at least 10 LPM.

4. Monitor animal to ensure animal does not run off with mask attached.

Special Considerations

1. Masks come in three sizes: small, large, and feline.

2. Masks are reusable. Wash masks with soap and water. Air dry.

3. If the animal is combative do not force the mask on the animal

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Carevent Handheld Resuscitator (Miami Beach)

DESCRIPTION

The CAREvent ALS Handheld Resuscitator is a ***pneumatically powered, time/volume cycled*** ventilatory resuscitator with the added feature of a ***manually actuated, automatic ventilation override button*** to allow the operators to control the ventilations manually at a rate and volume they desire. The ventilator allows the breathing patient to "Demand Breathe" on 100% oxygen when the patient's inspiratory effort causes the automatic cycling to cease. Should the patient stop breathing; the ventilator will automatically restart automatic cycling. The "pneumatic logic circuit" can be run on compressed breathing air or medical oxygen. For our purposes we will only use this device with medical oxygen. The unit is self contained and only requires its attachment to a regulated oxygen supply for immediate use.

INDICATIONS

The ***CAREvent ALS Handheld Resuscitator*** is designed for emergency resuscitation and pre-hospital care and transport in both children and adults. It is designed to provide ventilatory assistance in the pre-hospital setting to patients in respiratory distress or respiratory arrest due to drowning, cardiac arrest, trauma or other causes. It is indicated for use in adults and in children 1 year of age or older and/or weighing at least 13 kgs.

FEATURES

1. Delivers 100% O2 during resuscitation, when attached to an O2 source.
2. Meets American Heart Association/JAMA recommendations for CPR.
3. Provides physiologically normal respiratory rates and volumes.
4. Has an ***Audible Airway Pressure Limiting System*** set in accordance with American Heart Association recommendations.
5. Lightweight and durable.
6. Has ***A Manually Actuated, Automatic Ventilation Override Button***, i.e. manual button.
7. Has a seven position selector, providing one ***off***, and six ***preset automatic settings*** *(will not use the three presets with ventilatory volumes greater than 400 ml)* for a

range of patient sizes from children to adults with tidal volumes and frequencies of ventilation in line with established guidelines for the range of patient sizes indicated.

8. Provides "Demand Breathing" with the ***automatic cycle*** shutting off and restarting in the ***demand*** mode.

OPERATING PROCEDURE

Connecting the supply hose:

1. The supply hose provided is attached to the oxygen inlet on the rear of resuscitator and is tightened "finger tight."

2. The facemask is attached to the patient connection port by simply pushing the mask onto the 22mm adapter.

Manual Ventilation and Cardiac Compressions

1. Manual ventilation allows the rescuer to ventilate with an advanced airway in place. Ventilate once without a pause in compressions on every 10th compression or when the ResQPOD light flashes.

2. Depress the manual button and observe the rise of the patient's chest. Release the button when chest rise is adequate.

3. If the ***patient's chest does not rise*** or ***gas escapes around the mask or the blow off valve operates***, reposition the patients head and adjust your hand position to obtain an effective mask seal and an open airway.

4. If there is still no chest rise evaluate and treat for obstructed airway or adjust the automatic selector control to establish the correct tidal volume.

5. Monitor the patient's skin, nail bed and lip color. Consider pulse oximetry.

6. If vomitus is seen through the mask, remove the mask immediately and clear the airway using a suction device. Restart ventilation immediately after clearing the airway.

7. Continue ventilation at an appropriate rate and volume or until spontaneous breathing returns.

Automatic Ventilation (Not recommended during CPR)

1. If you have been ventilating manually simply release the manual button and after a short pause (4-7 seconds) the ventilator will commence ***automatic cycling*** at the rate and volume selected.

2. If you want to commence automatic cycling immediately, rotate the setting selector to the setting appropriate for the size of patient being ventilated and the ventilator will commence ***automatic cycling*** immediately.

3. Closely observe the patient's chest movements. If there is any leak from around the mask or any obstruction in the patients airway, the (blow off valve will operate). Reposition patients head and adjust the mask and your hand position to ensure a good airway and mask-to-face seal.

4. Should repositioning the mask and adjusting hand and neck position not resolve the situation adjust the automatic selector control to establish the correct tidal volume This is accomplished by moving the control toward the child setting if the blow off valve operates or towards the adult setting if chest rise is insufficient. This can be done by simple using your thumb to slide the control without removing your hand from the mask.

CAREvent Automatic Adjustable Settings

Control Position	**1**	**2**	**3**	**4**
Tidal Volume Vt (mL)	**OFF**	**200**	**300**	**400**
Frequency (BPM)	**OFF**	**20**	**15**	**15**
Automatic flow rate (LPM)	**OFF**	**12**	**13.5**	**18**
Body Weight (kg) (6 mL/kg)		**13-20**	**20-30**	**>26**

Note: Ventilation volumes in Adults should not exceed 400ml

If patient vomits during resuscitation

Should the patient vomit into the mask during resuscitation the following steps should be followed:

1. Remove the mask from the patient's face and clear any foreign material from the patient's airway.

2. Depress the manual button or allow the resuscitator to cycle automatically for a few breaths to clear the mask and valve of foreign material.

3. Shake out any foreign material from the resuscitator, diaphragm, face mask and patient valve swivel housing.

4. Resume resuscitation as previously indicated.

Use with ET tube or Supraglottic Airway

1. Ventilate during Respiratory Arrest, but not Cardiac Arrest, with CAREvent mask while preparing ET tube or **Supraglottic Airway.**

2. Remove mask from resuscitator unit and attach the ***Transport Ventilation Circuit*** hose to the 22 mm adapter on the resuscitator unit. This hose expands to 36 inches when pulled from both ends.

3. Intubate with ET tube or place the **Supraglottic Airway** and attach the ***Transport Ventilation Circuit*** hose to the ET tube or **Supraglottic Airway**.

4. Confirm placement with breath sounds and chest rise. Attach your CO2 monitor to verify placement. Run CO2 strip on Mon-Def each time you want to confirm and document placement.

5. If pt. is in Cardiac Arrest, attach the ResQPOD directly to the Airway and ventilate the pt. with 100% O2.

6. Be sure to secure the ET tube or **Supraglottic Airway** with a tube holding device.

Demand breathing and automatic circuit shut off

1. If the patient **starts breathing spontaneously** for more than 1 second the CAREvent ALS Handheld Resuscitator will sense the patient's inspiratory effort and will **stop *automatic cycling,*** allowing the patient to "Demand Breathe" at his own rate and volume. If attached, remove the ResQPOD.

2. If the patient **stops breathing spontaneously** the CAREvent ALS Handheld Resuscitator will **restart *automatic cycling*** after a 4-7 second delay in breathing, without intervention by the paramedic.

Cleaning the *CAREvent ALS Handheld Resuscitator* and Accessories

1. Routine cleaning of the equipment should be undertaken to maintain the equipment in a clean and working condition.

2. The patient valve **swivel housing** and **diaphragm** are ***reusable*** and can be cleaned using a mild soap solution and a disinfectant such as thymo-cide.

3. The Single use **patient valves** and **masks** are ***disposable*** and should be discarded after each patient use and replaced with a new unit.

4. If the ***CAREvent ALS Handheld Resuscitator*** malfunctions or a diaphragm or swivel housing is broken, contact Lt-5 or an EMS supervisor for replacement or servicing.

5. All other components should be wiped clean with a mild soap solution.

6. **DO NOT SOAK** or **IMMERSE** the complete resuscitator unit in the cleaning solution.

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AUTOMATIC VENTILATOR – PARAPAC MEDIC 200D

DESCRIPTIONS AND INDICATIONS

1. The paraPAC "medic" 200D ventilator is an oxygen powered pneumatic device designed to provide ventilatory assistance in the pre-hospital setting to persons in respiratory distress or arrest due to cardiac arrest, drowning, trauma and other causes.

2. The paraPAC is timed-cycled and offers ventilatory rates from 8-40 Breaths per Minute (BPM).

3. The patient valve will allow between 6 LPM (min. setting) to 60 LPM (max. setting) by spontaneous effort by the patient.

4. The unit is also designed to deliver between 65 and 1570 ml of Tidal Volume (to within +/- 15%).

5. The paraPAC meets and or exceeds the American Heart Association criteria for ventilatory assistance devices.

6. The paraPAC is equipped with an automatic alarm that will alert the attendant should ventilatory pressures exceed 40 $\pm$ 5 cm HO or if the ventilator is not cycling correctly and does not rise through the pre-set level of 10cmH_2O.

7. The system operates exclusively on the source gas (O_2) allowing specific concentrations of Oxygen to be maintained.

8. The paraPAC 200D ventilator has been type tested and has been assessed to be MRI compatible in accordance with the FDA Good Guidance Practice.

9. The paraPAC 200D ventilator is especially suited for treatment of victims in rescues from toxic or non-respirable atmospheres as it offers the choice of 100% oxygen demand or ventilatory back-up to the patient while normal breathing is being restored.

CONTRAINDICATIONS

The paraPAC has no contraindications, but is NOT recommended for use on patients that weigh less than 5kg. Prior to use, check patients throat and mouth for obstructions (vomitus, foreign matter, broken teeth or dentures, etc.) **CAUTION: Close monitoring and caution should be used if patient has history of C.O.P.D. (e.g. Emphysema, Asthma), Chest or Barometric Trauma.**

CONTROL MODULE

1. The control module is enclosed in an impact resistant carrying case with rubber covered brackets to hang on stretchers and/or strap that can be placed over the shoulder.

2. The controls are well marked and easy to read.

3. The controls are
   a. The Relief/Alarm Pressure
   b. Ventilation on/off
   c. Frequency (8-40 b/min)
   d. Tidal Volume
   e. and Air Mix (= 50%) / 100%

4. There is a picture card which contains a quick reference for assembly of the O_2 supply hose and the patient circuit (patient hose).

5. **WARNING: To avoid harm to the patient, ensure that ventilation can be maintained without interruption. Keep constant check on the adequacy of O_2 supply by observing the O_2 cylinder contents indicator and the O_2 failure visual alarm.**

RELIEF/ALARM PRESSURE CONTROL

1. This rotary knob gives continuous adjustment of the maximum patient inflation pressure by setting the relief valve spring loading.

2. It is calibrated to facilitate initial setting, but as the peak pressure will also have some dependence upon the other parameters the inflation pressure monitor should always be used as the final reference.

3. This alarm will sound whenever the pressure exceeds the pre-determined setting. ($40cmH_2O$ is recommended as an initial setting)

FREQUENCY CONTROL

1. This calibrated rotary control knob gives simultaneous continuous adjustment of the frequency of ventilation over the range 8 to 40 breaths per minute.

2. It does this by varying both inspiration and expiration time in such a way that the inspiration time is limited to within the range 1.0 to 1.5 seconds when the frequency is between 12 and 20 breaths per minute; so as to give the correct ventilation patterns for CPR and rescue breathing in accordance with American Heart Association's (JAMA) "Standards and Guidelines for Cardiopulmonary Resuscitation".

3. There is a heart symbol at 12bpm to aid in the recommended setting for adult (CPR).

TIDAL VOLUME

1. This rotary control knob gives continuous adjustment of the flow to the patient over the range 6 – 65 liters per minute.

2. For ease of use in the emergency situation, it is calibrated in terms of tidal volume.

AIR MIX CONTROL

1. This knob operates a rotary two-position switch to select the "Air Mix" or "No Air Mix" mode. In the "No Air Mix" position the gas supplied to the ventilator is passed undiluted to the patient whether this is 100% oxygen or compressed air**. Example: with a 2.7 L"D" size cylinder will last 52 minutes with a setting of 800mL of Tidal volume at 12 bpm delivering 100% O2.**

2. In the "Air Mix" mode the ventilator uses a high efficiency entrainment device to mix ambient air with the supply gas in the ratio of approximately 2:1. When supplying oxygen, this means that a mixture containing 45% oxygen is generated and supplied to the patient. **Example: with a 2.7 L"D" size cylinder will last 150 minutes with a setting of 800mL of Tidal volume at 12 bpm delivering 100% O2 in "Air Mix" mode.**

PATIENT VALVE ASSEMBLY

1. The patient valve assembly (PVA) directs the flow from the ventilator into the lungs during the inspiratory phase and allows expiration to the atmosphere.

2. The connection to the patient is by means of standard ports of 15/22 mm I/O diameter adapters for use with ventilatory adjuncts.

3. The patient valve will allow for spontaneous ventilation by a patient with an inspiratory effort of –2 cmH_2O.

4. The yellow rubber disc covering the port serves as a non-return valve to ensure the patient always inspires from the ventilator and not directly from the atmosphere through this port.

CHECK OUT PROCEDURE

1. Check ventilator controls as follows:

   a. Main Pneumatic Switch set: OFF (Demand")
   b. Frequency: 12b/min (detent position)
   c. Tidal Volume: 900mL (less for Asthma, COPD, Emphysema, Chest or Barometric Trauma)
   d. Air Mix Switch: "No Air Mix"
   e. Relief Pressure: 40cmH_2O

2. Connect the probe on the input hose to the appropriate O_2 outlet.

3. If connected to an O_2 cylinder, turn on cylinder valve **slowly**.

   NOTE: Gas source must be capable of maintaining a pressure of at least 44.2 psig while delivering a flow of 65L/min

4. Check that the visual alarm for supply O_2 has changed from red to white. If the electronic audible alarms persist, these alarms can be silenced for as long as required by depressing the silencing button each time the silencing indicator switches off.

5. Switch the main pneumatic switch to "On". The ventilator should commence cycling and all the alarm lights flash in turn. A single burst of the high priority audible alarm is given at the same time. The orange silencing indicator should flash for 60 seconds. Check that the flow is coming from the patient connection port by feeling the flow when placed close to the back of the hand or to the face.

6. Occlude the output port on the patient valve and check that the manometer gives a reading of between 30 and 50 cmH_2O during each inspiratory phase. The pneumatic audible alarm should also sound, accompanied by the high inflation pressure visual alarm. Check that the unit cycles regularly about every 5 seconds.

7. Switch over to "Air Mix" and repeat step 6. The change in the manometer reading should not exceed 5 cmH_2O.

8. Set the "Tidal Volume" control to its minimum setting. Occlude the outlet port and check that at least 20 cmH_2O pressure is attained on the manometer. Gradually increase the flow setting and observe how pressure rises – then set at appropriate flow setting.

9. Reset the Tidal Volume to its minimum setting and select No Air Mix. Occlusion of the outport should now cause the manometer to rise sharply between 30 and 50 cmH_2O and the alarms should operate.

10. Allow the ventilator to cycle with no obstructions at the output port and check that the low inflation pressure (disconnect) alarm operates after 10 seconds.

11. Set the Frequency and Tidal Volume control knobs to their extremes of their range. By listening to the gas flow, check the ventilator is responding to the controls and that no irregularities of performance can be discerned.

12. Finally, set the controls as specified below, so the ventilator is set for emergency use.
    a. Main Pneumatic Switch set: OFF (Demand")
    b. Frequency: 12b/min (detent position)
    c. Tidal Volume: 900mL
    d. Air Mix Switch: "No Air Mix"
    e. Relief Pressure: 40cmH_2O

PATIENT USE

1. Connect supply hose probe to O_2 source.

2. Turn O2 supply on.

3. Check that the visual alarm for supply gas failure has changed from red to white.

4. Turn main pneumatic switch to "On".

5. Check that the alarm indicators flash in sequence, to indicate correct function.

6. Set ventilation parameters to suit the patient.

7. Apply face mask to patient, ensuring that the airway is free – or connect patient valve to endotracheal tube or other airway adjunct.

8. Check chest movement and Inflation Pressure Manometer to ensure correct ventilation.

9. Check that the green cycle indicator light flashes during each inflation as pressure rises.

10. Observe the patient for adequate chest rise and fall. Chest excursion should be normal and equal bilaterally. If chest does not rise or is inadequate check airway and evaluate for thoracic injuries. Re-check Tidal Volume setting and re-set to appropriate setting if necessary.

11. Monitor patient End Tidal CO_2 during usage.

12. Monitor Lung sounds every 5 minutes.

CLEANING

1. The Control Module may only be cleaned by a damp cloth. For obstinate marks a mild soap or non-abrasive cleaner may be used. Wipe dry immediately with a soft clean cloth.

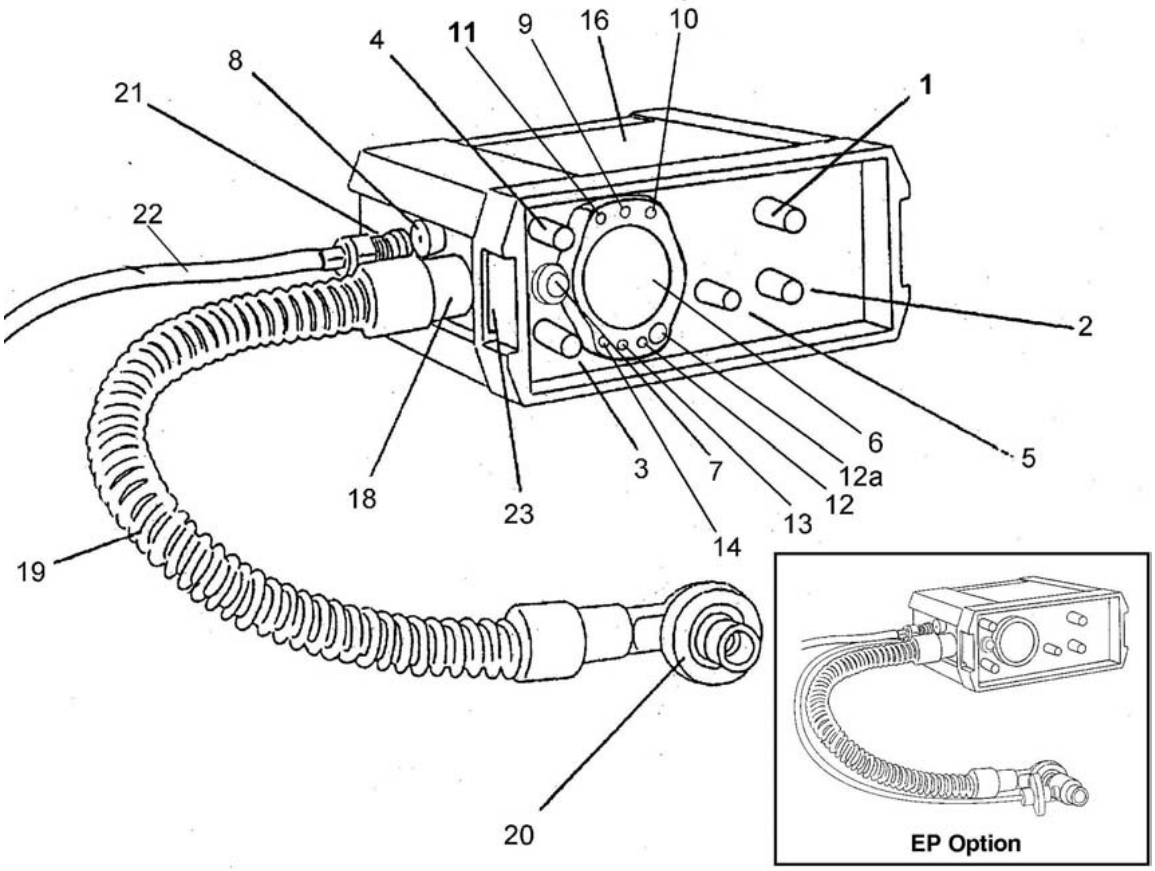
2. Do not attempt to sterilize the control module or to clean it by immersion in any fluid.

3. Disassemble the patient valve by unscrewing the two parts of the body and carefully the yellow valve element. Also remove the yellow annular disc surrounding the patient connector. Thoroughly clean each of the parts by running hot water or in detergent solution followed by thorough rinsing under running water.

4. Dry all the parts thoroughly and check them for damage before assembly. Ensure the yellow valve element is inserted the correct way and it is not distorted when the valve halves are re-screwed together.

NOTE: If pressure alarm sounds and adequate chest rise does not occur, an increase in airway resistance, blocked airway or stiff lung is indicated. Increase the Tidal Volume and observe for adequate chest rise, if this does not occur remove the unit from the patient and reevaluate the airway.

WARNING: Failure to constantly monitor the patient while using this equipment may lead to death or serious injury.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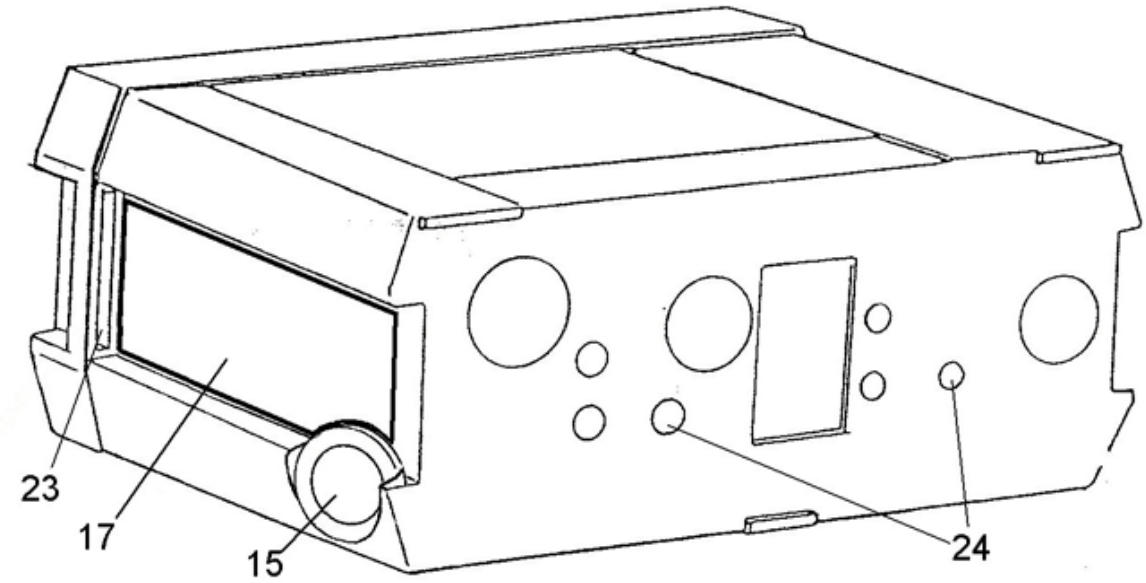
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Controls and Features (pictures/diagrams)

1. Frequency Control
2. Tidal Volume Control
3. Main Pneumatic Switch
4. Relief Pressure Control
5. Air Mix Control
6. Inflation Pressure Monitor
7. Supply Gas Failure Alarm
8. High Inflation Pressure Alarm
9. Cycle Indicator
10. Low Inflation Pressure (Disconnect) Alarm
11. Constant Positive Inflation Pressure Alarm
12. Silencing and Muting of Electronic Audible Alarms
13. Breathing Detect Indicator
14. Low Battery Alarm
15. Battery
16. Basic Operating Instructions
17. Alarm Information Label
18. Patient Outlet Connection
19. Patient Hose
20. Patient Valve
21. Inlet Connection
22. Input Hose
23. Carrying Sling Attachment Slots
24. Mounting Attachment Points

AUTOPULSE OPERATION

Introduction

The AutoPulse is an automated, portable, battery-powered cardiopulmonary resuscitation device composed of a constricting band and half backboard that is intended to be used as an adjunct to CPR during advanced cardiac life support. The AutoPulse uses a distributing band, also known as LDB-CPR (Load Distributing Band-CPR) to deliver the chest compressions.

The AutoPulse measures chest size and resistance before it delivers a combination of thoracic and cardiac chest compressions. The compression depth and force varies per patient. The chest displacement equals a 20% reduction in the anteriorposterior chest depth. The physiological duty cycle is 50%, and it runs in a 30:2 or continuous compression mode, which is user-selectable.

Procedure

AutoPulse Operation

1. Operating Parameters
   a. Non-traumatic cardiac arrests over 18 years old
   b. Between 29 - 52 inch chest and <300 lbs.

2. Power Button
   a. Located at the head of the AutoPulse- set away from User Display

3. Patient alignment on the yellow line
   a. Sit patient up to Fowler's- place a hand on the back of the patient's neck to hold them in place
   b. Make midline cut with shears down patent's clothing in the back
   c. Slide in AutoPulse into position
   d. Lower patient down on platform
   e. Remove clothing by pulling from the wrists
   f. Adjust patient position to armpits on the yellow line

4. Proper closure/alignment of the LifeBand
   a. Velcro properly mated/closed
   b. Pull up LifeBand **COMPLETELY** and place back on the patient's chest
   c. LifeBand should be maintained at 90º to the Platform

5. **Press Green START button** for take up: **STAY CLEAR** during take up

6. Confirm patient and LifeBand alignment

7. **Press Green START button AGAIN to begin compressions**

8. Press orange stop button as needed

9. Operates in either 15:2 or Continuous modes (press the center gray button twice to switch modes)

Battery

1. Fresh battery every day and after any use

2. LED's on battery (green=good, yellow=charge, red=bad)

3. 30 minutes continuous compressions per battery on the largest chest

4. Not much force is needed to slide battery into the AutoPulse

LifeBand

1. Disposable, but **DO NOT CUT!**

2. Removing the LifeBand

    a. **Fully** extend LifeBand
    b. Open cover plate
    c. Bands are **COMPLETELY UNWOUND** from the driveshaft: seam is showing
    d. Push in locking plate and remove band clip
    e. Dispose of LifeBand in garbage or biohazard container

3. Installing new LifeBand

    a. Place head end of band clip into drive shaft and push down on the tail end, snapping the band clip into place
    b. Ensure that the driveshaft rotates freely
    c. Lock cover plate into place
    d. Turn on the AutoPulse, making sure no User Advisory exists

Cleaning

1. Normal cleaning solution/procedure as other electronic medical equipment such as a monitor/defibrillator

2. Do not direct a hose or stream of water at the AutoPulse

Introduction

Occasionally, patients suffering from an injury may sustain a complete avulsion of a tooth or teeth (tooth/teeth knocked out). Salvage of an avulsed permanent tooth is of low priority when other injuries are present; however, when it exists as an isolated injury, the timely salvage of a permanent tooth/teeth should be considered.

To maximize tooth survival, re-implantation (replacement of tooth in socket) of an intact permanent tooth should take place within 30 minutes of the injury, although re-implantation may be successful up to three hours after the injury.

Procedure

1. Identify intact avulsed permanent tooth/teeth.
2. Handle tooth only by crown (biting surface). Avoid contact with root of tooth.
3. Remove gross contamination by irrigation with normal saline.
4. DO NOT rub tooth with gauze or any materials.
5. Place the tooth in a sterile container, if available, with the patient's saliva, normal saline, or milk. A 20mL normal saline flush can be used as a container.
6. If not transporting the patient for another reason, inform the patient of the three hour salvageability window. Encourage the patient to call their dentist (if they have one) or seek further medical attention.

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Evidentiary Blood Sampling

1. Paramedics will cooperate with law enforcement agencies by withdrawing blood for test purposes under the specific conditions set forth in Florida Statute 316.1932 and 316.1933 while abiding by all applicable federal, state, and local law requirements.

2. Priority must be given to the examination and treatment of all injured persons, including the suspect driver before effort is made to withdraw blood for test purposes.

3. If injured, the suspect driver is to be treated and transported according to Department Protocols.

4. If treatment priorities prevent the withdrawing of blood on scene, it will be the responsibility of police officer to request the procedure at the receiving hospital.

5. If the suspect driver resists the taking of a blood sample, it is the police officer's responsibility to inform the driver of the provision in Florida Statute 316.1933 which permits the use of reasonable force in withdrawing blood from a person who does not consent. If the driver continues to physically resist, the paramedic shall determine if the degree of physical resistance is such as to make withdrawing of blood unsafe.

6. **If unsafe, blood shall not be withdrawn and the police officer should abide by that decision**.

7. The suspect driver's Patient Care Record shall be carefully documented as to the reason and procedures for withdrawing of blood (or the reason blood was not drawn), including the name and department of the requesting officer.

8. Per Florida Statute 316.1933 4(c) and 316.1932 5. Certified paramedics shall not incur any civil or criminal liability as a result of the withdrawal of a blood specimen pursuant to the request of a law enforcement officer as long as the withdrawal was done according to accepted medical standards. This is true whether the person resisted the withdrawal or not.

9. The OIC will ensure that the investigating police officer observes every action of the Paramedic withdrawing the blood during these procedures.

10. The blood specimen kits will be provided by the Police Department.

    a. Each kit contains everything needed for the evidentiary blood draw, including an instruction sheet and 1 request for blood test form HSMV 72054 to be given to the investigating officer for completion. Do not use any supplies not included in the kit.

b. Hand the HSMV 72054 form to the investigating officer. He/she will need the name, title, and seniority/badge number of the Paramedic withdrawing the blood sample to complete this form.

c. The Fire Department personnel who obtains the blood samples shall initial and place his/her seniority or badge number on both blood tube identification labels provided inside the kit.

d. Using only the Betadine Solution swab in the kit, cleanse both the venipuncture site and the vacutainer top. Do not use alcohol or any other supplies not included in the kit.

e. Draw the blood using the vacutainer needle or a 12cc syringe and 18 or 19 gauge needle. Blood can be drawn from the IV site or the antecubital fossae. Both tubes must be filled.

f. Place the used swab in the zip lock bag and return the bag to the blood sampling kit. Properly discard the needle in the sharps box.

g. The investigating police officer is responsible for properly reassembling and sealing the DUI blood draw kit and filling out the paperwork.

Follow individual fire department policies and procedures.

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ET TUBE INTRODUCER – BOUGIE STYLETTE

Indications for use

- When the laryngeal opening is not fully visible
- To control, assist and facilitate the direction of the endotracheal tube during intubation

Precautions

- Soft tissue damage or bronchial rupture may occur

Technique

- May be used for endotracheal tubes 6.0 and larger
- May be used through supraglottic airway devices, such as an i-gel, to hold place for an endotracheal tube
- Introducer may be lubricated with sterile water or KY jelly

Procedure

1. At a minimum, the tip of the epiglottis must be visible in order to direct the introducer into the glottic inlet

2. Tactile confirmation of tracheal clicking will be felt as the distal tip of the introducer bumps against the tracheal rings. If tracheal clicking cannot be felt, continue to gently advance the introducer until "hold up" is felt. Tracheal "clicking" and "hold-up" are positive signs that the introducer has entered the trachea. No tracheal clicking or hold-up is indicative of esophageal placement

3. Advance the introducer to a depth of approximately 25 cm so that the distal tip lies at least 2 to 3 cm beyond the glottic opening

4. While holding the introducer securely and without removing the laryngoscope, advance the endotracheal tube over the proximal tip of the introducer. Once the endotracheal tube tip passes beyond the teeth, rotate the endotracheal tube 90° counter clockwise (1/4 turn to the left) so that the endotracheal tube bevel does not catch on the arytenoid cartilage

5. Advance the endotracheal tube to the proper depth so that the tip of the endotracheal tube lies mid-trachea

6. Holding the endotracheal tube securely; remove the introducer

7. Confirm endotracheal intubation

8. Do not clean or sterilize this disposable introducer, or use it on another patient

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Introduction

Signs and symptoms of tension pneumothorax should be assessed prior to initiating chest decompression. Signs and/or symptoms that indicate tension pneumothorax generally point to cardiopulmonary compromise and may include any combination of the following:

1. Marked dyspnea
2. Absent unilateral breath sounds
3. Hypotension
4. Pale/cyanotic skin
5. Jugular vein distention (JVD)
6. Increased airway resistance
7. Tracheal deviation (usually a late sign)
8. Subcutaneous (SQ) emphysema
9. PEA (**P**ulseless **E**lectrical **A**ctivity)

Procedure

1. **ALS-Adults**

   a. Identify the second intercostal space along the mid-clavicular line.

   b. Prep the area with an antiseptic prep.

   c. Insert a 14-gauge, 3-inch IV catheter over the top of the third rib. You should note the presence or absence of evacuating air through the catheter following insertion. This information must be relayed to Medical Control and documented on the Rescue Patient Care Record.

   d. Make sure the catheter is inserted completely to the hub and remove the needle.

   e. Secure the catheter in place with tape.

   f. Attach commercial chest valve device.

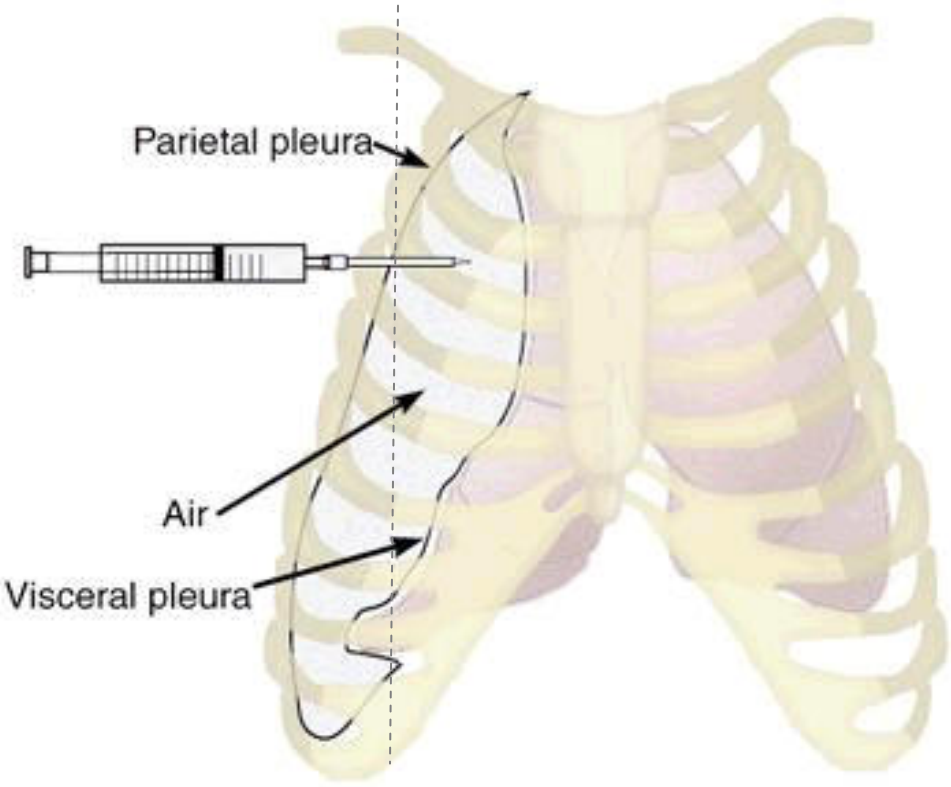
2. **ALS-Pediatrics**

   a. The procedure is the same as for an adult; however, you should insert an 18-gauge 1-1/4 inch IV catheter.

   b. For infants less than one year of age, use a 20-gauge catheter.

Landmark:

Second intercostal space, midclavicular, above the third rib.



Examples:

Cook Needle Decompression Kit

ARS needle

CPAP (CONTINUOUS POSITIVE AIRWAY PRESSURE)

Introduction

The CPAP system provides continuous positive airway pressure throughout the breathing cycle. It maintains CPAP at present levels during inspiration and exhalation, independent of the patients flow rate.

Indications

1. Best treatment for acute pulmonary edema.
2. It is intended for use on spontaneously breathing patients in respiratory distress, who are alert and can cooperate with this procedure.

Contraindications

1. Pneumothorax.
2. Questionable ability to protect airway.
3. Severe facial injury.
4. Laryngeal trauma.
5. Penetration chest trauma.
6. Uncontrolled vomiting.
7. Hypotension.
8. Recent gastric surgery.
9. GI bleeding.
10. Emphysematous Bulla – brittle lungs / risk of bursting

CPAP Considerations:

1. Patient must be greater than 30 kg (Pulmodyne recommendations).
2. CPAP may be applied to any adult patient with acute respiratory distress and a low SpO_2 even if the lung sounds are clear.
3. Patient must be awake, spontaneously breathing, and able to follow directions.
4. BP must be at least 90mmHg systolic.
5. Patient not actively vomiting.
6. Do not use if patient is anxious with or unable to tolerate mask. However, work with the patient on this.
7. CPAP may be considered with children who are alert and able to follow instructions, assuming the CPAP mask forms an adequate seal, **AND** the child is cooperative.

Pulmodyne O_2 Max Procedure

1. The Pulmodyne O_2-Max System is made for use in a wide range of respiratory distress conditions. It is for **SINGLE PATIENT USE ONLY** and plugs directly into the DISS Port to generate flows up to 140 LPM, with consistent and unrestricted flow throughout your patient's treatment.

2. Prior to use, be sure the device is free of obstructions and verify proper valve function.

3. Connect directly to a 50psi gas source. This may be the power take-off of a regulator on an oxygen cylinder or quick connects to a wall outlet.

4. Do not attach the generator to a flow meter or it will not function properly. It must be a 50psi source.

5. Place mask over patient's face. Utilize the head strap to secure the mask firmly in place.

6. If you are using a portable tank, it is important to monitor your oxygen.

   At 30% FiO_2, a ***full tank will last***:

   "**D**" cylinder = **20** minutes
   "**E**" cylinder = **50** minutes
   "**M**" cylinder = **253** minutes

7. Remember to coach the patient through the treatment process! This is critical, as most patients with difficulty breathing do not want their face covered. You must encourage them to bear with their initial apprehension. They will feel relief within minutes if you can work with them during this initial difficulty.

8. Many Paramedics have found that starting with BVM assisted ventilations greatly facilitates the patient accepting the CPAP mask. Consider this technique on patients that are unwilling or uncooperative.

9. If available and needed, a nebulizer treatment may be given while the O_2 Max CPAP is in use.

10. During operation, be sure to check the following on a regular basis:

    a. Ensure that there are no leaks at the patient connection.

    b. Ensure that there is flow from the O_2-CPAP valve during inspiration (which means that the generator is supplying adequate flow to meet patient demand).

    c. Optionally, monitor the in-line pressure gauge or manometer during inspiration. If the pressure drops then the flow is inadequate.

    d. Monitor the patient's oxygen saturation (SpO_2).

    e. Monitor the patient for signs of dehydration and discomfort in the upper airways.

Pulmodyne O_2 Max CPAP system

Available Inline Nebulizer

Available Oxygen Adapters

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Variable FiO_2 CPAP w/ nebulizer (City)

Overview:

The CPAP device is an **adjunct** used in treatment of impending ventilatory failure in a select group of patients. The noninvasive pressure support (PEEP) via the CPAP splints the airways open with positive pressure, thus increasing the surface area for gas exchange at the alveolar/capillary membrane and reducing atelectasis from the "wash-out" affect of surfactant. The outcome should be to increase lung volume, improve oxygenation and reduce the work of breathing, therefore decreasing the incidence of intubation. CPAP may also decrease the need for repeated doses of the drugs used in cardiogenic pulmonary edema patients. The use of CPAP should not preclude the use of other treatments, when indicated based on the patient's presentation, according to Protocol. Consult with the Radio Physician, as needed.

Respiratory Status:

CPAP does not take the place of bag-valve-mask ventilation for the patient who is no longer able to breathe on their own or has minimally effective breathing. If the patient's breathing status improves after positive ventilation assistance with BVM so that the ability to breathe on their own is regained, CPAP can then be added as a treatment,

Mental Status:

The patient must be awake and aware and be able to cooperate and follow directions. They may be presenting with major respiratory distress, but if able to follow commands, CPAP may be used.

Patient Cooperation:

To increase success, be sure to communicate with the patient that the mask may be uncomfortable but will assist their breathing and prevent them from being intubated. You must get the patient's cooperation and acceptance through communication.

Monitor the patient (i.e. respiratory rate and effort, breath sounds, pulse ox)! A patient that is not responding, worsening, or cannot tolerate the device should have the CPAP mask removed and appropriate treatment initiated.

Indications:

- Pulmonary Edema of any type (rales, alone or with other sounds)
- Severe Respiratory Distress with known probable cause (i.e. hx. COPD, asthma or other acute identifiable cause)
- Near Drowning
- Smoke inhalation, with respiratory distress, after 5 minute trial of O_2 by non-rebreather, and no improvement
- Respiratory distress with history of COPD and/or rhonchi
- Can be used on Adults and pediatrics, if mask fits appropriately to face.

Contraindications:

- Inability to maintain a good mask seal (face too small)
- Inability to maintain own airway or in need of BVM assistance
- Altered Mental Status
- Suspected pneumothorax
- Hypotension (< 90 systolic)
- Actively vomiting
- Penetrating chest trauma
- Severe facial injuries

Precautions:

Once CPAP is functioning on the patient it is extremely important that it not be interrupted. Therefore, every effort must be made to provide continuous CPAP therapy which requires the availability of a supply of O_2 and alert the receiving hospital. You may connect CPAP to hospital wall O_2 via quick disconnect adapter, by disconnecting O_2 flowmeter.

Note: CPAP device depletes the portable "D" cylinder filled @ 2200 psi in 28 minutes with 30% FiO_2

Unit Description:

The adjustable O_2 flow generator device delivers three (3) percentages of FiO_2 (fraction of inspired oxygen) of 30% O_2, FiO_2 of 60% O_2 and FiO_2 90% O_2. It utilizes oxygen to power the unit, along with ambient air, to achieve the desired effect. This unit comes with a quick connecter that is connected to the high pressure side of the O_2 regulator via the O_2 coupler. I can also be connected to wall O_2 by disconnecting the O_2 flowmeter and connecting with quick disconnect. To disconnect just twist the quick connector.

The disposable Adult CPAP set includes:

- Connective tubing and generator with quick connect adapter
- A latex-free mask with 10cm PEEP threshold resistance already attached and a nebulizer port
- Adjustable head strap.
- Nebulizer medicine cup and tubing

Directions for application:

1. Determine need for CPAP based on patient presentation and Protocol.
2. Explain the procedure and reassure the patient that this will help their respiratory distress encourage the patient to cooperate during this procedure.
3. Connect the mask with corrugated tubing and extend the corrugated tubing fully.
4. Connect to O_2 cylinder via quick connector

   Note: Remember that when you turn the O_2 on, your time is limited. Allow enough time to transport the patient to the truck and be able to attach to onboard O_2 system.
5. Place the mask on patient's face with the O_2 flowing, the mask should fit snugly to patient's face.
6. Recheck the mask seal, making sure it is leak free.
7. Ensure the flow within the CPAP system is adequate
8. Closely monitor the patient's respiratory status, $ETCO_2$, pulse ox, breath sounds and GCS.
9. Reassess if SaO_2 < 95% and respiratory status has not improved after 5 min, increase FiO_2 to 60%
10. Reassess if SaO_2 < 95% and respiratory status has not improved after 5 min, increase FiO_2 to 90%
11. Give CPAP Alert to receiving ED

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Introduction

If available, cricothyrotomy is indicated as a last resort to secure an otherwise unmanageable or completely obstructed airway. Prior to utilizing this procedure, all other less invasive methods of airway management should be attempted.

There are several acceptable methods of performing an emergency cricothyrotomy, such as the **Pertrach®** and **Quick Trach®**:

Pertrach® Adult Cricothyrotomy

The Pertrach® Cricothyrotomy Kit is a pre-manufactured and specialized kit, which may ease the ability to perform this procedure, and be more effective than either a needle or surgical Cricothyrotomy as outlined in previous procedures.

The Pertrach® Kit comes with all the instruments necessary to perform this procedure, contained within a rigid plastic container. (4x4s not supplied, will be needed to control hemorrhage)

Procedure

1. Place the patient in a supine position.
2. Stabilize the head and neck.
3. Test the cuff on the PERTRACH® tube with the syringe provided, then deflate the cuff.
4. Make a 1-2 centimeter incision in the skin over the Cricothyroid Membrane.
5. Insert the needle through the incision into airway perpendicular to it. Aspirate for air to establish position in the airway.
6. Advance the needle at an acute angle in the airway, toward the carina.
7. Remove the syringe and insert the Teflon guide of the dilator into the needle, guiding the tubing through it.
8. Squeeze the wings to split the needle, then open the wings out. Advance the dilator to skin level and remove the needle completely.
9. Exert pressure and force the dilator into the airway placing the tube in a functional position, with faceplate against the skin.
10. Remove the dilator and secure the tube to the patient. Inflate the cuff with 1-8 cc's of air, and attach the appropriate respiratory adjunct.

Quick Trach®

General Care

1. Place the patient supine and hyperextend the neck.

2. Assemble equipment:

   a. Quick Trach® kit
      Adult: 4 mm Quick Trach
      Pediatric: 2 mm Quick Trach
   b. Automatic ventilator or BVM with 100% O_2.
   c. Antiseptic prep

3. Manually stabilize the head and neck.

4. Identify the cricothyroid membrane.

5. Prep the area with an antiseptic swab.

6. Stabilize the thyroid cartilage.

7. Puncture the skin midline directly over the cricothyroid membrane on a 90 degree angle and enter the trachea.

8. Advance until you aspirate air to confirm placement in the trachea.

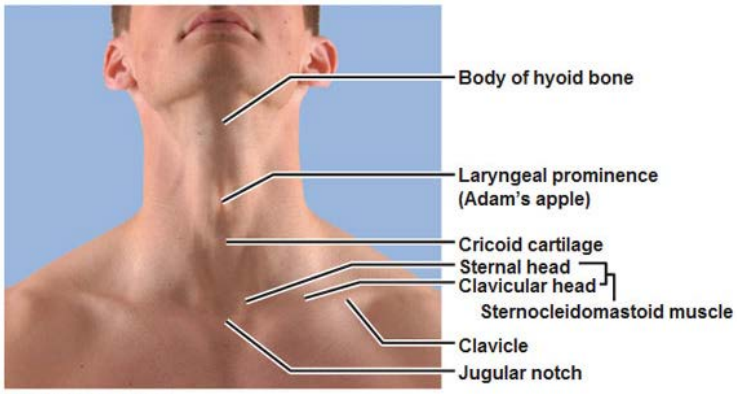
9. Prior to further advancement, direct the needle 60 degrees towards the feet. Withdraw the needle as you advance the stopper until the stopper contacts the skin.

10. Remove the stopper and secure the plastic cannula to the patient with the velcro neck tape.

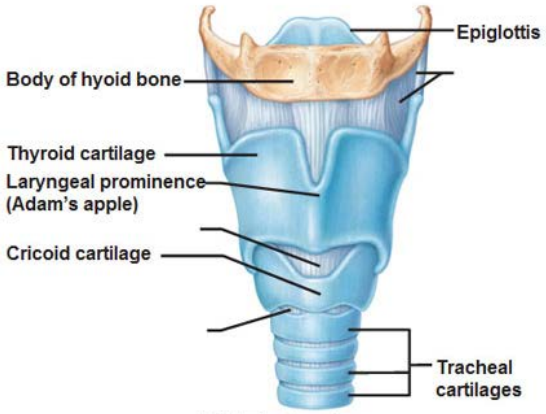
11. Apply the Quick Trach connecting tube to the 15mm adapter on the plastic cannula.

12. Attach the automatic ventilator or BVM to the Quick Trach® connecting tube and ventilate with 100% O_2.

13. Monitor and record pulse oximetry readings and frequently reassess the patient.



(a) Surface view



(b) Anterior view

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Introduction

The capnometer measures expired carbon dioxide expressed as end-tidal CO_2 ($ETCO_2$). Inline or mainstream capnography is used in the patient with an Advanced Airway, and sidestream capnography is used in the non-intubated patient, such as with a nasal cannula.

Indications for Use

1. To confirm initial placement of an Advanced Airway.
2. For continuous monitoring of tube placement throughout patient care and transport.
3. To identify the proper $ETCO_2$ values when providing treatment to patients exhibiting signs of brainstem herniation.
4. To confirm the placement of an Advanced Airway upon release of a patient at the Emergency Department or other transport unit.
5. To assess the effectiveness of CPR.
6. To assess ventilation status.

Normal Values

NOTE: The capnometer will require approximately six breaths to display a change of $ETCO_2$.

1. The following guidelines will be used for patients with a pulse and/or blood pressure:

35-45mmHg	Normal $ETCO_2$ values
46-50mmHg	Mild hypercarbia (increase the frequency of ventilations)
Greater than 50mmHg	Severe hypercarbia (increase the frequency of ventilations)
30-34mmHg	Maintain for increased intracranial pressure management (ICP).

2. A return of spontaneous circulation (ROSC) will be indicated during resuscitation, following a rhythm change and a corresponding increase of greater than 15mmHg $ETCO_2$ value.

Procedure

(For Zoll Capnography)

1. Select the correct CO_2 sampling line for the patient.
2. Attach the sampling line to the unit's CO_2 inlet port.
3. Apply the Filterline airway adaptor or Smart CapnoLine Nasal or Nasal/Oral cannula to the patient.
4. Check that the X Series unit is set up for the correct patient type -- Adult, Pediatric, or Neonate.
5. Configure alarms (if the current alarm settings are not appropriate) and other CO2 features.
6. Press the CO_2 quick access key to initiate CO_2 monitoring.
7. As a minimum, an initial $ETCO_2$ reading upon placement of an Advanced Airway, or and $ETCO_2$ reading upon receipt of a patient, and an $ETCO_2$ reading upon release of a patient in the Emergency Department must be documented in the Patient Care Record.

(For LifePack 15 Capnography)

1. Select the appropriate $ETCO_2$ accessory for the patient.
2. Open CO_2 port door and insert the FilterLine connector; turn connector clockwise until tight.
3. Verify CO_2 area is displayed. The $ETCO_2$ monitor performs the autozero routine as part of the initialization self-test.

   NOTE: If using ventilation system, do not connect the FilterLine set to the patient/ventilation system until the $ETCO_2$ monitor has completed its self-test and warm-up.
4. Display CO_2 waveform in Channel 2 or 3.
5. Connect the CO_2 FilterLine set to patient.
6. Confirm that the $ETCO_2$ value and waveform are displayed. The monitor automatically sets the best visualization of the waveform.

(For MRX Capnography)

1. Select the appropriate Microstream accessories based on the type and airway status of the patient.

2. Set up the Microstream accessories.

3. Attach the FilterLine tubing to the CO_2 Inlet port.

4. The measurement is automatically turned on when the FilterLine is connected to the CO2 Inlet port.

5. Connect the CO_2 FilterLine set to patient.

6. The CO_2 waveform displays in the configured Wave Sector, if available; otherwise, the wave fills the first available empty Wave Sector.

Precautions

1. In a patient with spontaneous circulation, if the $ETCO_2$ value is below 15mmHg, proper ET tube placement must be verified, preferably by direct visualization.

2. Decreasing $ETCO_2$ values during CPR may indicate:

   a. An excessive ventilation rate (hyperventilation)
   b. Poor CPR
   c. Circulation of high-dose epinephrine (causing profound vasoconstriction)

Colorimetric $ETCO_2$ Sensor

1. Colorimetric CO_2 detectors, if available, can be used to confirm proper endotracheal tube (ETT) placement by assessing exhaled CO_2.

2. The detector attaches directly to the endotracheal tube and responds quickly to exhaled CO_2 by changing from purple to yellow.

"Good as Gold"
"Yellow is sunshine"
"Yellow is Yes"
"Purple is Poor"

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ENDOTRACHEAL MEDICATION ADMINISTRATION

Introduction

1. Endotracheal medication administration is indicated only as an absolute last resort when IV,IO, or Intranasal access is delayed or unavailable.

2. The only medications that can be administered via the ET tube for these protocols include epinephrine, atropine sulfate, and naloxone (Narcan).

Procedure

1. Medications to be administered via the ET tube should be administered at a dose **two times** the usual IV dosage unless otherwise specified.

2. Medications will be mixed with normal saline to achieve a 10mL solution for placing into the ET tube.

3. If CPR is in progress, stop chest compressions (no longer than 10 seconds) and deliver the medication into the ET tube.

4. Use the BVM to deliver 5 rapid ventilations to aerosolize the medication and enhance the drug delivery to the lungs.

5. Resume CPR if indicated.

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Procedure

1. Apply the limb leads to the patient.

2. Consider Pain Management if patient is conscious and not tolerating the pain from pacing:

3. **DO NOT delay** pacing to establish an IV or obtain the medications.

4. Apply the pacing pads.

5. Document the patient's heart rate prior to turning on the pacer.

6. Turn on the pacer.

7. Note on the monitor screen whether the patient's intrinsic rate is being sensed. This is detected by an indicator on each R-wave. If the light is not noted, adjust the QRS size.

8. Set the desired pacer rate:

    a. A **minimum** of **70 bpm** in **adults** for the profound bradycardias.
    b. A **minimum** of **100 bpm** in **pediatric** patients.

9. Start the pacer by selecting the desired milliamps (mA).

10. Begin to increase the milliamps (mA) in increments of 5-20 mA until electrical capture is achieved.

a. Complete electrical capture will be achieved when each pacer spike is associated with a paced beat (usually a widened QRS and broad T-wave).

b. If any spikes are seen not associated with a beat, complete capture is not obtained, continue to increase the mA.

11. Once complete electrical capture is obtained, assess the patient's pulse and blood pressure.

    a. If **no** pulse is felt, treat the patient as PEA.

    b. If a pulse is palpable and the patient is hypotensive, increase the pacer rate 10-20 bpm. If the patient remains hypotensive, treat with fluids and/or dopamine per appropriate protocols.

Other Notes

1. It must be stressed that External Pacing only affects the electrical stimulus of the myocardium and does little if anything for the mechanical (pumping) force of the heart. Just because **electrical capture** is achieved, does not mean effective **myocardial contractions** are present. Supportive treatments such as CPR, epinephrine, fluids and dopamine may still be required.

2. When **assessing the pulse during pacing**, use the **femoral** or **radial** site, as muscle twitching at the neck may be falsely interpreted as a carotid pulse during pacing.

The following are points to consider when caring for the helmeted patient with a suspected spinal injury. Suspected spinal injury should be based upon physical assessment and/or mechanism of injury.

Helmet Types and Indications for Removal

1. **Football Helmets**

   When the helmet and shoulder pads are on, the spine is kept in a neutral alignment. If either piece of equipment is missing, you must either remove the other piece or place padding for the missing piece.

2. **Indications for football helmet removal:**

   a. When the patient is wearing a helmet and no shoulder pads.

   b. The patient has head and/or facial trauma.

   c. The helmet is loose fitting upon the patient's head and the stability is compromised.

   d. Patients requiring advanced airway management when removal of the face mask is insufficient.

   e. Patients in cardiopulmonary arrest (the shoulder pads must also be removed).

      NOTE: The face mask can be removed from the football helmet using either a screw driver or commercially available cutting device.

3. **Other Helmets**

   In the absence of off-setting padding such as football shoulder pads, all other helmets should be removed. Failure to do so will result in compromising the neutral alignment of the spine. Helmets that should be removed include:

   - Motorcycle helmets
   - Bicycle helmets
   - Skateboard / Ski helmets
   - Roller blading helmets

4. **Steps for Helmet Removal**

   a. Stabilize the helmet in a neutral in-line position and have a second individual remove the chin strap

   b. The individual that removed the chin strap will then support the occiput and mandible while the helmet is gently slipped up and forward.

   c. Once the helmet is removed, standard c-spine control will take place and an appropriate sized cervical collar applied

   NOTE: If the helmet is too snug or you encounter significant resistance during removal attempt, then leave the helmet in place and pad the body. Make sure you can access the airway.

Special Notes

1. Always check the helmet for damage to help assess mechanism of injury.

2. Transport the helmet with the patient whenever possible.

HEMOSTATIC GAUZE / SPONGE

Hemostatic gauze dressings, such as Quick Clot, if available, are used to ***control moderate to severe venous or arterial bleeds*** that **cannot be adequately controlled with direct pressure and elevation.**

This treatment is indicated in patients with **large open** bleeding wounds.

It is not indicated in penetrating trauma to the torso.

In cases of moderate to severe extremity bleeds, consider the application of a tourniquet.

Procedure

1. Don the appropriate PPE for a patient with a major bleed.
2. Hold the packet away from your face and tear off or cut off the top the packet.
3. Remove the pressure dressing from the wound site, and wipe away excess blood.
4. Pack the hemostatic gauze into the wound until the wound area is covered.
5. Place a clean and dry sterile dressing on the wound and apply pressure for 3 minutes.
6. Apply a pressure wrap to hold the dressing in place.
7. Reassess for bleeding control.

Note

Bring the hemostatic gauze package/wrapper with the patient to the hospital.

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Adult Procedure

1. Prepare equipment:

   a. 5 ml syringe with 22 gauge, 1½" needle
   b. Desired medication and dosage
   c. Antiseptic prep

2. Draw the desired dose of medication into the syringe.

3. Chose the appropriate site:

   a. Deltoid muscle (upper arm).
   b. Gluteus muscle (upper/outer quarter of buttocks area).
   c. Vastus lateralis* (upper/outer thigh).

   *Preferred site in children

4. Cleanse site.

5. Stretch the skin overlying the muscle taut with two fingers.

6. Insert the needle at a 90° angle to the skin.

7. Aspirate the syringe checking for blood return. If blood is noted withdraw the needle and begin again at Step 5.

8. If no blood is noted, inject the medication.

9. Remove the needle and dispose of properly.

10. Hold light pressure over injection sight with a 4x4.

Pediatric Care

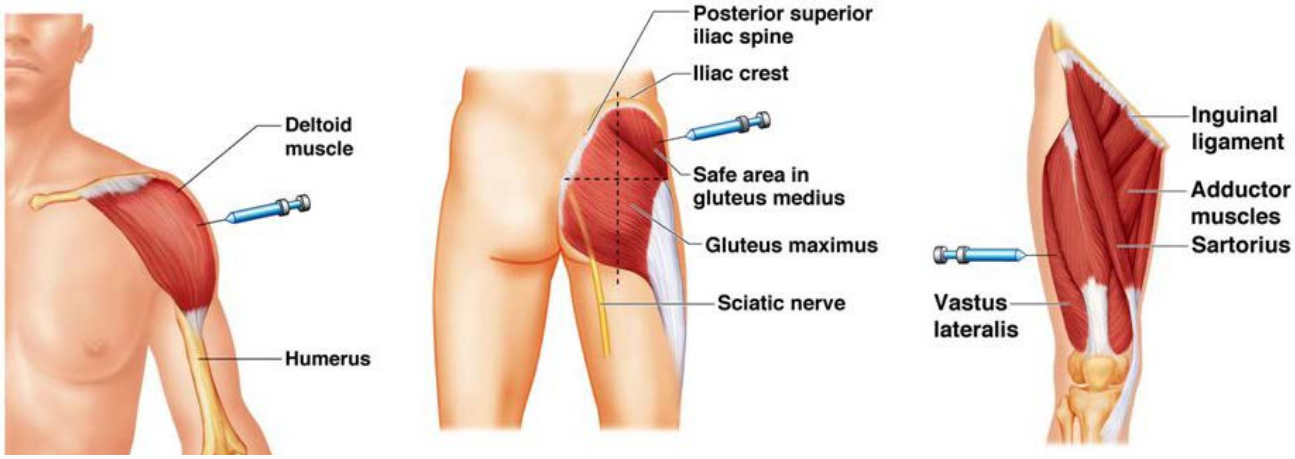
1. Determine the following

   a. Appropriate site.
      1) This should be the Vastus lateralis (upper/outer thigh) unless otherwise specified by the ED receiving physician.

   b. Appropriate gauge and length needle.

   c. Appropriate dose per protocol(s) and/or Pediatric Medication Guide.

Intramuscular Injection Sites



INTRANASAL - MUCOSAL ATOMIZING DEVICE® (MAD)

Procedure

1. Prepare Equipment:
   a. 1cc syringe w/removable needle
   b. MAD® (Mucosal Atomization Device)
   c. Desired medication

2. Calculate the appropriate dose.
   a. Place the proper dose of selected medication in the syringe.
   b. Expel any air within the syringe.

3. Attach the MAD® to the syringe making sure it is secured firmly to the syringe.
4. Insert the MAD® into the selected nostril until it seals against the edges of the nostril.
5. Deliver medication by briskly compressing syringe, **deliver during inhalation if possible**.
6. If second dose is required, administer the medication in the opposite nostril.

NOTES:

- No more than 1 mL of medication should be administered per nostril for adults.
- No more than 0.5 mL of medication should be administered per nostril for children 10 years of age or under.
- If being used for seizures, once seizure activity has stopped or lessened, IV access MUST be established or at least attempted in case future medication maybe required.

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Bone Injection Gun (B.I.G.) Intraosseous Infusion – ADULT and PEDI

The B.I.G. is a small automatic plastic disposable injector designed to provide safe, rapid, and very easy vascular access within seconds for the delivery of fluids and medications directly into the bone marrow. It is not recommended that large boluses of hypertonic solutions be infused through the IO cannula.

Adult Bone Injection Gun (B.I.G.)

1. **Adult B.I.G. Indications:**

   The B.I.G. system should be used on pulseless or critical unconscious patients (e.g., cardiac arrest or uncompensated shock).

2. **Adult B.I.G. Contraindications:**
   (On the extremity selected for IO access)

   a. Skin infection.
   b. Tumor.
   c. Fracture proximal to or on the bone used as an insertion site.
   d. Osgood Schlatter disease.
   e. Burns
   f. Compromised circulation.

3. **Adult B.I.G. procedure**

   a. Prepare equipment
      1) Adult B.I.G.
      2) 50mL luer lock syringe filled with Normal Saline
      3) Tape or veni-gard
      4) Antiseptic swab

   b. Prepare insertion site using aseptic technique.

      1) Insertion site is located 1-2 cm medial and 1 cm distal to the tibial tuberosity.
      2) For the elderly, the recommended site is 1-2 cm medial and 1-2 cm distal to the tibial tuberosity.

   c. Position the B.I.G. with one hand, and pull out the safety latch by squeezing its two sides together with the other hand.

   d. Trigger the B.I.G. at 90 degrees to the surface of the bone.

e. Trigger the gun by pressing the rear part against the two handles of the housing or by pushing the rear part firmly against the injection site.

f. Remove the B.I.G. and separate the trocar/needle from its housing.

g. Pull out the stylet trocar to separate it from the needle. Only the needle cannula will remain in the bone.

h. Secure the cannula with the safety latch and secure in place with tape or veni-gard.

i. Connect infusion set to the needle.

Pediatric Bone Injection Gun (B.I.G.)

1. **Pediatric B.I.G. Indications**:

   B.I.G. for pediatrics is intended for children from **0-12 years old**. The B.I.G. system should be used on pulseless or critical unconscious patients (e.g., cardiac arrest or uncompensated shock).

2. **Pediatric B.I.G. Contraindications**:
   (On the extremity selected for IO access)

   a. Skin infection
   b. Tumor
   c. Fracture proximal to or on the bone used as an insertion site
   d. Osgood Schlatter disease
   e. Burns
   f. Compromised circulation

3. **Pediatric B.I.G. Procedure**

   a. Prepare equipment
      1) Pediatric B.I.G.
      2) 50mL luer lock syringe filled with Normal Saline
      3) Tape or veni-gard
      4) Antiseptic swab

   b. Choose the desired depth of penetration by unscrewing the sleeve from the cylindrical housing.

Recommended **Penetration Depth**:

1) Infants/Children **0-3 yrs old** 0.5-0.7 cm
2) Children **3-6 yrs old** 1-1.5 cm
3) Children **6-12 yrs old** 1.5 cm

c. Prepare insertion site using aseptic technique.

1) Infants and children **0-6 years** old:
1 cm distal to the tibial tuberosity.

2) Children **6-12 years** old:
1-2cm medially and 1-2 cm distal to the tibial tuberosity.

d. Position the B.I.G. with one hand, and pull out the safety latch by squeezing its two sides together with the other hand.

e. Trigger the B.I.G. at 90 degrees to the surface of the bone.

f. Trigger the gun by pressing the rear part against the two handles of the housing or by pushing the rear part firmly against the injection site.

g. Remove the B.I.G. and separate the trocar/needle from its housing.

h. Pull out the stylet trocar to separate it from the needle. Only the needle cannula will remain in the bone.

i. Secure the cannula with the safety latch and secure in place with tape or veni-gard.

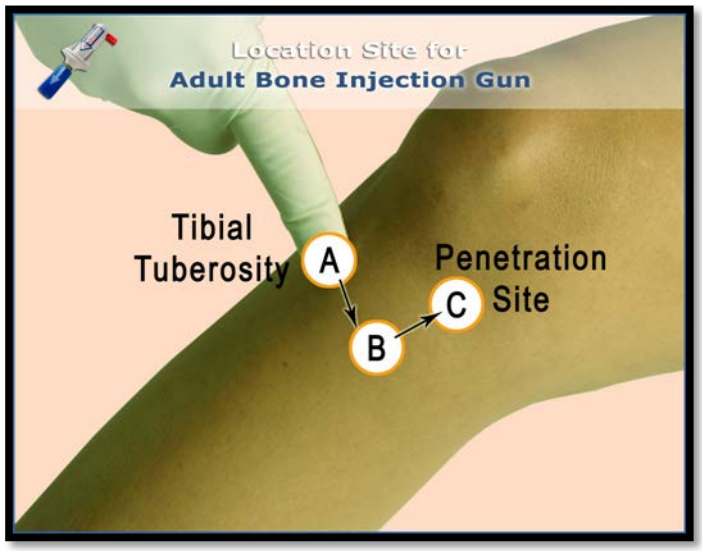
j. Connect infusion set to the needle.

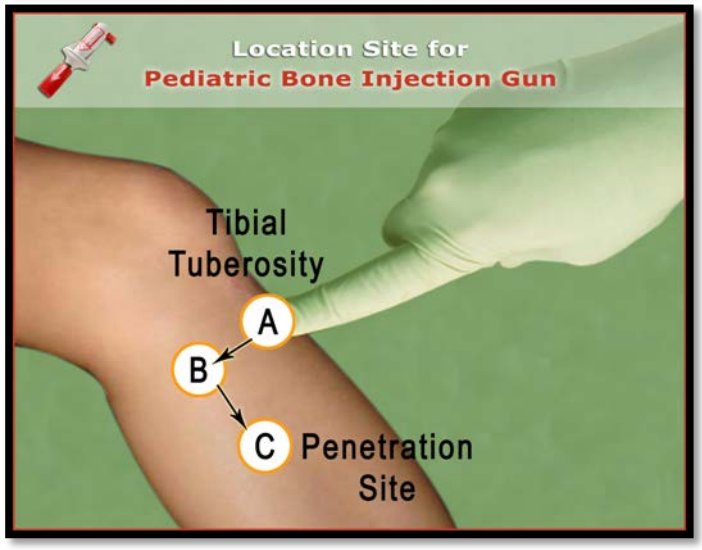
IO Fluid and/or Medication Administration in the Awake Patient

IO infusion can cause severe discomfort and pain in the conscious patient. Lidocaine can be administered as an IO anesthetic prior to administering fluids or medications.

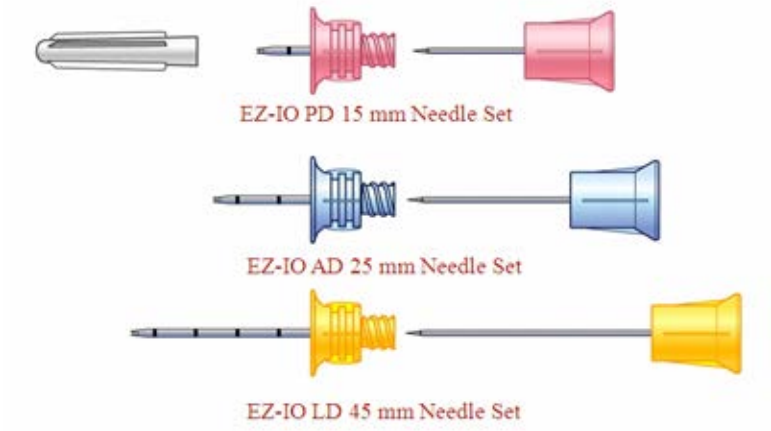
1. **Adults**
Administer Lidocaine, **10mg IO** prior to administering fluids or medications.

2. **Pediatric**
Administer Lidocaine, **5mg IO** prior to administering fluids or medications.


Location Site for
Adult Bone Injection Gun
Tibial
Tuberosity
A
B
C
Penetration
Site


Location Site for
Pediatric Bone Injection Gun
Tibial
Tuberosity
A
B
C
Penetration
Site

Intraosseous (IO) is the vascular access route of choice for a patient in Cardiac Arrest. IO is also indicated when an IV cannot be established after 2 attempts in an unstable patient. All the Medications and fluids we carry may be given IO and at the same dose as IV. Blood may also be given IO. Hypertonic solutions (which we do not carry) should not be given IO.



EZ-IO™ Adult Needle is: **blue 15G 25 mm long**

yellow 15G 45 mm long (obese pt. or proximal humerus)

Pediatric Needle is: **pink 15G 15 mm long**

The **EZ-IO™**. is a device designed to provide safe, rapid and easy vascular access within seconds. Fluids and medications are delivered directly into the bone marrow.

Indications

The **EZ-IO™** should be used on ***pulseless patients*** or on ***unstable and critical patients*** (e.g. in uncompensated shock) after an attempt to establish IV access has failed.

Contraindications

On the extremity selected for IO access

1. Skin infection.
2. Tumor.
3. Fractured tibia or femur on the same side of the insertion site.
4. Burns.
5. Compromised circulation.
6. Presence of significant edema or layers of fatty tissue
7. Hardware in the tibial marrow from total knee replacement

Preparation

Prepare equipment

1. EZ-IO™
2. 10 mL luer lock syringe filled with normal saline
3. 3 way stopcock
4. Betadine swab
5. 2 site IV extension set. Attach to syringe and flush the line
6. Proper PPE (gloves and eye protection)

7. **Locate and Prepare insertion site using aseptic technique**.

   a. *Adults*
   1-2 cm medial and **1 cm PROXIMAL to the tibial tuberosity**

   b. Adults
   Proximal Humerus - Palpate deeply as you climb up the humerus to the surgical neck. It will feel like a golf ball on a tee – the spot where the "ball" meets the "tee" is the surgical neck. The insertion site is on the most prominent aspect of the greater tubercle, **1-2 cm above the surgical neck.** Aim the needle tip downward at a 45-degree angle to the horizontal plane.

   c. *Elderly*
   1-2 cm medial and **1-2 cm PROXIMAL to the tibial tuberosity**

   d. *Pediatric*
   1 cm medial and 1cm DISTAL to the tibial tuberosity

8. Position the **EZ-IO™** at 90 degrees to the surface of the bone (45 degrees for humeral)

9. Remove the **EZ-IO™** and **unscrew** the needle stylet (trocar) from the hollow cannula, which remains fixed in the bone.

10. Attach the extension set, 3 way stopcock and the syringe filled with Normal Saline and flush air out of set up. Attach to plastic hub of IO.

11. **First push** 5-10 ml of normal saline, **then aspirate** to see blood to confirm placement.

12. If blood is not visualized, attempt to infuse 5-10 ml of normal saline from the syringe. If it flows freely with no leakage or swelling, the line is considered to be patent. (This in effect is a large saline lock. IV drips, unless pressure infused, will not work with IO lines.) Attach pink EZ-IO wristband to patient wrist to alert future caregivers that IO is in place.

13. All fluids and drugs must be bolused by syringe and all medications should be flushed with 10 mL of normal saline.

14. Consider replacing the 10 mL syringe with a 60 mL luer lock syringe and 1000 mL bag of normal saline with macro drip tubing to the 3 way stopcock and filling the 60 mL syringe from the 1000 mL bag of NS.

15. When pushing IO fluids or IO medication in the conscious patient, first slowly IO infuse lidocaine, **10 mg in the adult** patient and **5 mg in the pediatric** patient to act as a local anesthetic.

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INTRAVENOUS ACCESS (IV)

Intravenous (IV) access shall be established anytime a patient requires fluid / medication therapy or in the event that the need for fluid/medication therapy may arise during care of the patient.

In the event peripheral IV access cannot be established in the hemodynamically unstable critically ill or injured patient, intraosseous (IO) access is indicated. In certain situations, and as specified in individual protocols, other routes of administration may also be indicated if IV access cannot be established (e.g., SubQ, intramuscular, intranasal, ETT)

1. Choice of sites:

    a. For a Saline-Lock, attempt to use peripheral sites such as the hand, wrist, and forearm.
    b. For administration of medications or fluids, use the largest applicable vein.
    c. For patients with reduced cardiac output (shock, cardiac arrest, etc.) every attempt should be made to establish access in a large vein above the diaphragm (e.g., antecubital or external jugular).

2. Precautions – Avoid using veins in extremities affected by:

    a. Burns
    b. Rashes or skin infections
    c. Fractures or dislocations
    d. Mastectomy
    e. Dialysis shunts and fistulas

3. Use aseptic technique.

4. Use a regular drip set (10 drops/mL) infusion set for all primary IV lines

5. Use a micro/mini-drip set (60 drops/mL) for all IV infusions of medication, unless otherwise specified.

6. For patients requiring volume replacement of more than 1 liter of Normal Saline, use 2 IV sites (for ADULTS ONLY).

7. Saline Lock

    a. An IV may be maintained by using a Saline Lock instead of using IV drip solutions to keep the vein ope (TKO), when the administration of medications and/or fluids are not expected (e.g., stable chest pain, stroke).

    b. Prepare the Saline Lock by flushing with Normal Saline prior to connecting it to push the air out.

c. Initiate an IV using the appropriate size catheter. Remove needle and dispose in sharps container.

d. Attach the Saline Lock to the catheter.

e. Flush with Normal Saline.

f. If medications are pushed through the Saline Lock, be sure to flush with at least 3mL of Normal Saline after administering the medication to push forward the residual medication left in the Saline Lock.

g. At any time the Saline Lock may be converted to a regular IV with fluid by:

1) Removing the Saline Lock access adapter from the catheter and replacing it with IV tubing, OR

2) Attaching a needle to the end of the IV tubing and inserting the needle into the injection port on the Saline Lock.

Purpose

To efficiently triage, treat, and transport victims of Mass Casualty Incidents (MCIs). The following procedure is applicable to all mass victim situations. This MCI procedure is intended for situations when the number of injured exceeds the capabilities of the first arriving units. This procedure applies when the MCI can be handled by Fire-Rescue resources, as well as larger MCIs requiring mutual aid and/or the use of Emergency Support Functions (ESFs) provided through the Miami-Dade County Office of Emergency Management (OEM).

Procedure

1. **First arriving unit:**

   a. Establishes INCIDENT COMMAND.
   b. Performs a scene size up:

      1) Estimate an approximate number of victims and identify the level of the incident:

         - Level 1 MCI for 5 to 10 victims.
         - Level 2 MCI for 11 to 20 victims.
         - Level 3 MCI for over 20 victims.
         - Level 4 MCI for over 100 victims.
         - Level 5 MCI for over 1,000 victims.

      2) Request standard MCI response from dispatch.

   c. Identify a staging area that will permit an orderly flow in and out without creating congestion.

   d. Assume control of Triage and decide if the priority is to triage or to extricate. If you decide to Triage first:

      1) Direct remaining crew members to initiate triage (see G.).
      2) Direct the walking wounded to a place away from the incident. These persons shall be triaged as soon as manpower permits.

   e. As additional units arrive, Command will designate GROUP officers and assign personnel to the following areas:

      1) Triage GROUP
      2) Treatment GROUP
      3) Transport GROUP

f. Additional GROUPS may be required depending on the complexity of the incident. These GROUPS may include but are not limited to;

1) Staging
2) Landing Zone
3) Extrication (may be a priority e.g., Hazmat or Submerged bus)
4) Hazmat
5) Rehabilitation
6) Manpower
7) PIO

Incident Management Responsibilities

1. **INCIDENT COMMANDER**

a. Use the radio designation COMMAND.
b. Follow the appropriate field guide from the MCI bag.
c. Don the appropriate vest.
d. Perform the initial size-up as well as an ongoing evaluation of changing conditions.
e. Request the appropriate level of response and augment as necessary.
f. Maintain a visible presence with a green flashing light, staying in a fixed location.
g. Control resources through staging and grouping.
h. Encourage GROUP officers to provide frequent updates reflecting manpower needs, equipment requirements, and total numbers of patients.

2. **TRIAGE OFFICER**

a. Use the radio designation, TRIAGE.
b. Follow the appropriate field guide from the MCI bag.
c. Don the appropriate vest.
d. Organize the Triage Team to begin the initial triaging of victims using the MCI TRIAGE TAGS.
e. Use the START / jumpSTART method of Triage (R.P.M.)
f. Advise COMMAND and MEDICAL CONTROL as soon as possible as to the total number of victims and the number of victims in each category.
g. Coordinate with TREATMENT to ensure that the RED victims are moved to the treatment area first, then move the YELLOW victims.
h. Ensure that all areas around the scene have been checked for potential victims, walking wounded, ejected victims, etc., and that all victims have been triaged.
i. Report to COMMAND upon completion of duties for further assignments.

3. **TREATMENT OFFICER**

a. Use the radio designation, TREATMENT.
b. Follow the appropriate field guide from the MCI bag.
c. Don the appropriate vest.
d. Complete a "Treatment GROUP Log".
e. Consider requesting or designating a "Documentation Aide" to assist with the log.
f. Direct personnel to either begin treatment on the victims, were they lie, when there are only a few victims involved, OR establish a Treatment Area in a safe location that is readily accessible to victims from the scene, as well as to units transporting victims to the hospitals.
g. Ensure that all victims are re-assessed and re-triaged, and the assessment is documented on the Disaster tag, reflecting the appropriate Disaster tag color.
h. Personnel assigned to the Treatment Area that physically assess and/or treat a patient will document pertinent information on the Disaster tag, affix the Disaster tag on the patient in a visible location, and scan the bar code or retain the portion of the disaster tag for future documentation.
i. Ensure that adequate equipment and personnel are available to effectively treat the victims.

NOTE: The goal of MCI management is to rapidly triage and transport victims. If transport is available consideration must be made to coordinate transport of the critical patient (s), bypassing a formal treatment area.

j. Considerations for a Treatment Area:

1) Capable of accommodating the number of victims and equipment.
2) Consider weather, safety and the possibility of hazardous materials (decon runoff, wind direction, etc.).
3) Designate entrance and exit areas that are readily accessible.
4) On large-scale incidents, divide the treatment area into three distinct areas based on triage priority (red, yellow, green).

k. Communicate with TRANSPORT to coordinate proper transport of the appropriate patients.

4. **TRANSPORT OFFICER**

a. Use the radio designation, TRANSPORT.
b. Follow the appropriate field guide from the MCI bag.
c. Don the appropriate vest.
d. Maintain a "Transport GROUP Log".
e. Consider requesting or designating a "Documentation Aide" with a second radio to assist with the log and communications.

f. Establish continuous contact with MEDICAL CONTROL and advise to begin a "Tally" of hospitals close to the affected area.

g. Coordinate the transport of all victims from the treatment area(s).

NOTE:Ground transported patients should be assigned to hospitals on an alternating and a rotating basis.

h. Communicate with the LZ Group the number of patients to be transported by air.

NOTE: Air transported patients should be assigned to distant hospitals, unless patient needs dictate otherwise (Trauma Center, Burn unit, etc.).

i. When units are prepared to transport, TRANSPORT will contact MEDICAL CONTROL and report the following information:

1) The transporting unit number.
2) The number of patients going to a specific facility and,
3) Their priority, RED, YELLOW, or GREEN.

j. Once receiving the information from TRANSPORT, MEDICAL CONTROL will notify the appropriate hospital and then update the "Hospital Capability Sheet".

k. Transporting fire rescue units will not contact the receiving facility on their own unless there is a change in condition OR further treatment is required.

5. **MEDICAL CONTROL OFFICER**

a. Use the radio designation MEDICAL CONTROL

b. Follow the appropriate field guide from the MCI bag.

c. Don the appropriate vest.

d. Once notified of an MCI begin a "Tally" to determine hospital capabilities and capacities. The following guidelines will be followed unless otherwise directed by COMMAND or TRANSPORT:

1) If a Level 1 MCI is declared, notify the 2 closest hospitals geographically to the incident AND the Trauma Center.

2) If a Level 2 MCI is declared, notify the 3 closest hospitals geographically to the incident AND the Trauma Center.

3) If a Level 3 MCI is declared, notify the 4 closest hospitals geographically to the incident AND the Trauma Center.

4) If a Level 4 MCI is declared, notify the 10 closest hospitals geographically to the incident AND the closest 5 Trauma Centers.

5) If a Level 5 MCI is declared, notify the 20 closest hospitals geographically to the incident AND the closest 10 Trauma Centers

e. During the Tally the hospital will be advised of the total potential victims involved based on the level and of the generic nature of the incident, e.g., traffic accident, chemical exposure, etc.

f. In the event a hospital is unable to provide a tally, Medical Control will advise them of our “Standard Tally” that they may expect:

1) 2 REDS
2) 5 YELLOWS
3) 10 GREEN

g. MEDICAL CONTROL will indicate the tallies on a "Hospital Capability Sheet". This information will be maintained and updated for the duration of the incident.

h. Once a TRANSPORT Group has been established, the tally will be passed on to TRANSPORT.

i. Once a patient is ready for transport, TRANSPORT will notify MEDICAL CONTROL

1) The transporting unit number.
2) The number of patients going to a specific facility and,
3) Their priority, RED YELLOW, or GREEN.

j. MEDICAL CONTROL will relay this information to the receiving facility. There will be no specific patient information available and no direct communication between the transporting unit and the receiving facility.

k. MEDICAL CONTROL will also advise the receiving facility to keep the Disaster tag with the patient(s) for our future documentation.

l. MEDICAL CONTROL advises the Medical Examiner (ME) of fatalities and complies with the requests of the ME.

6. **STAGING OFFICER**

   a. Use the radio designation, STAGING.

   b. Follow the appropriate field guide from the MCI bag.

   c. Don the appropriate vest.

   d. Maintain a "Unit Staging Log".

   e. Ensure that all personnel stay with their vehicles unless otherwise directed.

   f. If personnel are directed to assist in another function ensure that the keys to the vehicles stay with each vehicle.

   g. Determine from TRANSPORT a location for loading BLS and ALS patients.

   h. Maintain a reserve of at least 1 BLS and 1 ALS transport vehicles. When the reserve is depleted advise COMMAND.

Levels of Response

The following levels of response are considered the minimum amount required to manage a specific number of patients.

1. **MCI Level 1 Response (5-10 victims):**
   1) 4 ALS Transport Rescue
   2) 2 Suppression units
   3) Command Staff
   4) The Incident Commander should consider requesting:
      1) BLS transport units
      2) Haz-Mat or Ladder Trucks for lighting and equipment.
      3) Air-Rescue units as needed

2. **MCI Level 2 Response (11-20 victims):**
   a. 6 ALS Transport Rescues
   b. 3 Suppression units
   c. Command Staff
   d. The Incident Commander should consider requesting:
      1) BLS transport units
      2) Haz-Mat or Ladder Trucks for lighting and equipment.
      3) Air-Rescue units as needed

3. **MCI Level 3 Response (Over 20 victims):**
   a. 8 ALS Transport Rescues
   b. 3 Suppression units
   c. Command Staff
   d. The Incident Commander should consider requesting:
      1) BLS transport units
      2) Haz-Mat or Ladder Trucks for lighting and equipment.
      3) Air-Rescue units as needed

4. **MCI Level 4 Response (Over 100 victims):**
   a. 25 Units to be assigned into 5 MCI Task Forces
   b. 10 ALS units assigned as 2 ALS Transport Strike Teams.
   c. 5 Engine Companies to be assigned as 2 Suppression Strike Teams.
   d. 10 BLS transport units assigned as 2 BLS Transport Strike Teams.
   e. 2 Mass Transit Buses
   f. A Communication / Command Trailer
   g. Command Staff
   h. Notify the closest 10 area hospitals
   i. Notify the closest 5 Trauma Centers.

5. **MCI Level 5 Response (Over 1,000 victims):**
   a. 50 Units to be assigned into 10 MCI Task Forces
   b. 20 ALS units assigned as 4 ALS Transport Strike Teams.
   c. 10 Engine Companies to be assigned as 2 Suppression Strike Teams.
   d. 20 BLS transport units assigned as 4 BLS Transport Strike Teams.
   e. 4 Mass Transit Buses
   f. A Communication / Command Trailer
   g. A Supply Trailer
   h. Command Staff
   i. Notify the closest 10 area hospitals
   j. Notify the closest 5 Trauma Centers.
   k. Activate DMAT
   l. Active MMRS

6. Dispatch will send the appropriate units for a declared Level 1 thru 5 MCI to bring to a total the number of units required as outlined above.

7. All units will respond to the staging area unless otherwise directed by COMMAND.

Documentation

1. The Incident Commander will, at the completion of the incident, coordinate the gathering of all pertinent documentation. This can be facilitated with the assistance of an District Supervisor and the Medical Control Officer.

2. The Incident Commander and the Medical Control Officer will conduct a Post Incident Analysis on any MCI Level 2 or greater.

MCI Supplies

MCI bags contain information and equipment to assist each sector officer.

1. An MCI bag is issued to each ALS response unit and contains:

   a. 1 each COMMAND, TRIAGE, EXTRICATION, TREATMENT, MEDICAL CONTROL, and STAGING Sector Field Guides.
   b. 1 each COMMAND, TRIAGE, EXTRICATION, TREATMENT, MEDICAL CONTROL, and STAGING Sector Logs.
   c. 1 each COMMAND, TRIAGE, EXTRICATION, TREATMENT, MEDICAL CONTROL, and STAGING identification vests.
   d. 1 Clipboard.
   e. 2 Rings of triage ribbons.
   f. 50 DISASTER TAGS

2. An EMS Tactical Command Worksheet is issued to each Suppression Chief

START / JumpSTART Triage

This procedure is based on the Simple Triage And Rapid Treatment or START method. The START method of triage is designed to assess a large number of victims rapidly and can be used by all EMTs and Paramedics. JumpSTART is the method to triage a large number of pediatric victims while considering the differences in children. If the victim appears to be a child use jumpSTART – if not, use START.

Procedure

1. **Initial Triage*:***
   a. Use the START/jumpSTART Method [Section 3)]:
   b. Use Triage Tags.
      1) RED – IMMEDIATE – First priority – critical
      2) YELLOW – DELAYED – Second priority – non-ambulatory & non-critical
      3) GREEN – MINOR – Ambulatory – "Walking wounded"
      4) BLACK – DECEASED / EXPECTED

2. **Secondary Triage:**
   a. Performed on all patients during the treatment phase.
   b. Use the Disaster Tag found in the MCI bag to document a more thorough assessment. Once the tag is completed, affix the tag to the patient and remove the ribbon.

c. The Triage priority determined in the Treatment phase should be the priority used for transport.
d. Using jumpSTART, evaluate **first** all children/infants who did not walk under their own power (carried by ambulatory victims).

START / jumpSTART Method

1. Corral all of the "walking wounded" into one supervised location, away from the incident if possible. DO NOT forget to triage these patients – tag as MINOR

2. Begin assessing all non-ambulatory victims where they lay if possible. Each victim should be triaged in 60 seconds or less.

3. START Algorithm **(assess R.P.M.)**
   a. **Respirations**
   b. **Perfusion/Pulse**
   c. **Mental status**

4. If all 3 RPM assessments are normal, but the patient is non-ambulatory, tag YELLOW=DELAYED

5. **Assess Respirations**

   a. If respiratory rate is 29/min or less for adult or 15-45 for pediatric, go on to PERFUSION assessment.

   b. If respiratory rate is 30/min or greater for adult or for pediatric less than 15 or greater than 45, tag RED=IMMEDIATE

   c. If victim is not breathing, open the airway, remove obstructions if seen and assess for respiratory rate (a) or (b) and tag accordingly.

   d. If adult victim is still not breathing, tag BLACK=DECEASED. If the pediatric patient is still not breathing check for a pulse. If there is a pulse, give 5 rescue breaths. If the child starts breathing tag RED=IMMEDIATE. If the child is still not breathing, tag BLACK=DECEASED

6. **Assess Perfusion**
   (Can be performed by palpating a peripheral pulse in the least injured limb or assessing capillary refill time in adults.)

   a. If peripheral pulse is present in the child or cap refill is 2 seconds or less in the adult, go on to MENTAL assessment.

b. If there is no peripheral pulse in the child or cap refill is greater than 2 seconds, tag RED = IMMEDIATE.

7. **Assess Mental Status:**

a. Assess the adult victim's ability to follow simple commands and their orientation to time, place, and person (Oriented X3). For the child, use the AVPU method.

b. If the adult victim is following commands (Oriented X3), or the pediatric victim is alert, responsive to verbal, or appropriately responds to pain, tag YELLOW=DELAYED.

c. If the adult victim does not follow commands, the child is inappropriately responsive to pain, or either is unconscious, or disoriented, tag RED=IMMEDIATE.

8. **Special Considerations**

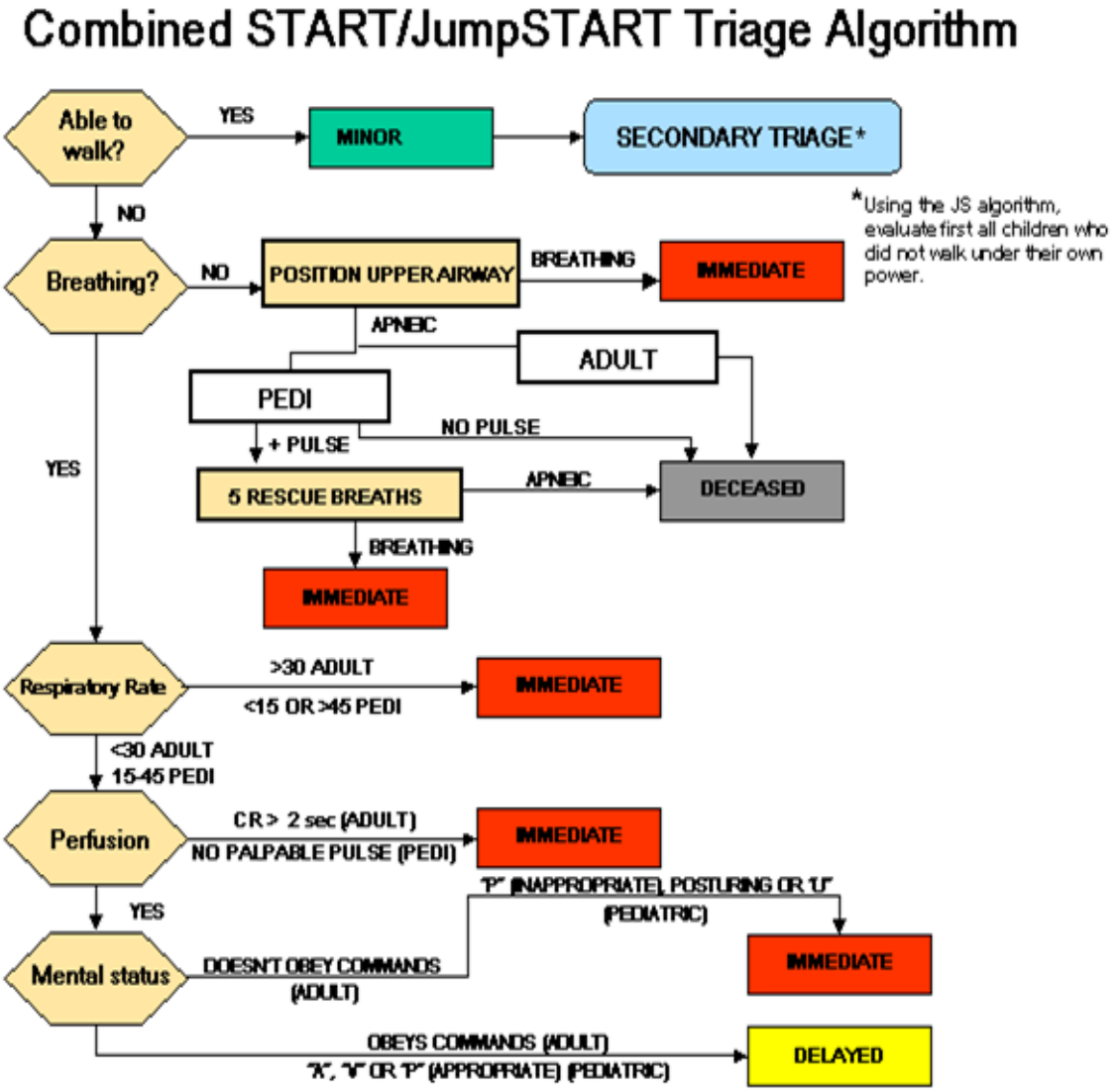
a. The first assessment that produces a RED Tag stops further assessment. Tag the patient and move on to the next patient.

b. Only correction of life-threatening problems, such as airway obstruction or severe hemorrhage should be managed during the triage process.

c. Triage personnel should carry only minimal equipment limited to ribbons, bandages, and possibly airway adjuncts (oropharyngeal airways).

d. Modify treatment of non-ambulatory victims who may have not been able to walk prior to the MCI such as: infants, victims with disabilities, and/or developmental delays.

e. Unless clearly suffering from injuries incompatible with life, victims tagged in BLACK=DECEASED should be reassessed once critical interventions have been completed for the RED=IMMEDIATE and YELLOW=DELAYED patients.



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Twelve percent of newborn babies present with meconium-stained amniotic fluid. Intubation and tracheal suctioning with a meconium aspirator is indicated if the newborn has depressed respirations, depressed muscle tone, or a heart rate below 100bpm (low APGAR score). If the newborn has a good APGAR score, aggressive suctioning is not necessary.

Procedure

1. Prepare equipment

    a. Size 0 or 1 Miller blade
    b. Uncuffed smallest ET tube available (2-3 tubes total if possible)
    c. Suction Unit with tubing
    d. Meconium Aspirator

2. Intubate child with appropriate sized ET Tube (should take less than 20 seconds).

3. Attach Meconium Aspirator to suction device with tubing on one end and insert the other end into the ET Tube.

4. Occlude the suction control port on the Meconium Aspirator to apply suction (Suction device should supply continuous pressure of about 80mmHg).

5. While applying suction, withdraw the ET Tube over a period of 2 seconds. Remove as much meconium as possible in the first suction.

6. Intubation and suction with a new, clean ET Tube should be repeated until the aspirated material is cleared or the newborn's heart rate falls below 100bpm.

7. **DO NOT ventilate between attempts to suction.**

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OG (OROGASTRIC) TUBE PLACEMENT

General Information

Patients with an endotracheal tube or Supraglottic Airway (with special side ports) in place may benefit from the insertion of an orogastric tube (OG Tube). Orogastric tubes may be placed, when available, by EMT-P providers trained in its use according to the following procedure.

Indications

Relief of gastric distention if

1. Patient is 12 years of age or greater
2. Patient is orotracheally intubated or a King Airway is in place

Contraindications

1. Caustic ingestion
2. Known esophageal disease (varices, esophageal cancer, etc)

Procedure

1. Size and measure patient for desired orogastric tube.
2. Adequately lubricate with water-based lubricant.
3. Insert into oropharynx and advance to appropriate measured depth.
4. If a Supraglottic Airway is in place, the appropriately sized OG tube may be advanced to the appropriate measured depth through the decompression port of the Supraglottic Airway. Under no circumstances should the OG tube be placed around or outside the Supraglottic Airway device.
5. Confirm placement by auscultation following expulsion of a large volume syringe filled with air attached to the orogastric tube.
6. Secure the orogastric tube.
7. Manually provide intermittent suction. Under no circumstances should the orogastric tube be left on continuous suction.
8. Insertion of an orogastric tube should not delay transport.
9. No medications or fluids may be administered via the OG tube without direct, on-line medical control.
10. Once placed, the tube should remain until removed by hospital personnel unless the patient self-extubates prior to hospital arrival.

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Introduction

Any injury to the thorax, neck, back, or upper abdomen that has a break to the integrity of the skin should be considered penetrating until proven otherwise.

Procedure

1. Cover the injury with an appropriate chest seal such as an occlusive dressing, Asherman, or HyFin.

2. Constantly reassess the patient for development of a tension pneumothorax.

3. If a tension pneumothorax develops refer to Chest Decompression.

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Introduction

Patient restraint is a means of modifying a patient's physical activities to protect the patient or others from injury. Restraints should only be used when less restrictive means of controlling a patient's behavior have been exhausted.

Indications

When facing a violent person, scene safety is the first priority. Verbal measures to control the patient's behavior should be attempted, if possible. This should include the use of family members, friends, or law enforcement. The goal is to stop the person from detrimental behavior. At no time should the patient be verbally abused or humiliated. Law enforcement should be requested on a "3" signal with a reference as soon as possible. Physical restraint may be necessary under the following conditions:

1. A patient exhibiting violent behavior towards themselves or others.

2. Incapacitated patients who require emergency medical intervention as defined under FS 401.445.

3. A person who is in immediate danger, such as walking into the path of oncoming traffic or trying to move downed electrical wire.

Types of Restraints

1. *Acceptable Restraints*
   a. Verbal restraint - as defined above.
   b. Soft-type restraint:
      1) Must be greater than 1" wide and non-binding.
      2) Towels, sheets, and blankets.
      3) Commercially available extremity restraints such as Posey Restraints.
   c. Manual restraint.
   d. Chemical restraint such as Versed, Ativan, and/or Ketamine.

2. *Unacceptable Restraints*
   a. Handcuffs, "flexcuffs", or any restraint less than 1" wide.

      NOTE: If an *unacceptable* restraint has been applied prior to arrival by Fire Rescue and the patient is in need of medical care, an *acceptable* restraint should be utilized and the *unacceptable* one removed. Coordination with law enforcement is important and any discrepancies should be noted on the ePCR.

Procedure

1. Patient Positioning:

    a. Immobilize patients who meet spinal immobilization criteria.

    b. If the patient is to be restrained in the sitting position, secure restraints by tying or taping around the sidebars of the main stretcher frame. DO NOT secure to the fold-down side rails.

    c. For patients who need to be placed supine, first place them on a backboard, and secure the restraints to the board. If the patient vomits, the patient can be turned as a unit.

2. Applying Soft Restraints:

    a. Place the restraint around the wrist or ankle and form a bight holding the running pieces together and close to the patient.

    b. Secure the running pieces together with tape. DO NOT tie a knot unless the device is specifically made as an extremity restraint.

    c. If needed, additional restraints such as a rolled sheet or blanket may be used around the chest and under the armpits, over the hips, or over the legs.

    d. After restraints are applied, assess distal circulation via capillary refill and document its presence a minimum of once after the restraints are applied and upon release at the hospital.

    e. Continually monitor the patient's circulatory and respiratory status. Always keep scissors on hand to release restraints in the event the patient experiences any respiratory or circulatory compromise.

3. Manual Restraint

    a. Physically restraining a patient or persons who are violent or in harm's way may be necessary at times.

    b. The use of as many fire rescue or law enforcement personnel as possible is preferred in order to reduce the chance of injury to personnel or the person being restrained.

    c. Care should be taken not to injure the person being restrained.

d. Continually reassess the patient's circulatory and respiratory status. Be prepared to modify or release physical restraint in the event the patient experiences any respiratory or circulatory compromise.

4. Chemical Restraint

a. In situations where the patient is extremely combative and in danger of harming themselves or others during transportation, chemical restraint may be indicated. In these situations, careful assessment and documentation should support the need.

1) Obtain and document a pre-sedation Glasgow Coma Score (GCS) as well as pupillary reaction. Note any significant neurological findings such as movement of extremities, posturing, or changes while under care.

2) Establish IV access. If unable to safely establish an IV, administration of **IM or intranasal** Versed, and/or **intramuscular** Ativan and Ketamine is indicated per protocol.

b. Monitor and record ECG. Monitoring should continue throughout the procedure. If the patient's heart rate decreases at any time more than 20 bpm, STOP chemical restraint therapy and oxygenate with 100% O_2 via BVM for a minimum of 2 minutes.

c. Monitor SpO_2 throughout procedure.

d. Document clearly on the ePCR the reason for restraint and the method used.

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Introduction

If available, the Pyng Medical T-Pod Responder Pelvic Stabilization Device is a single use, one-size-fits-all device for stabilizing pelvic fractures. It can be used with two devices put together for bariatric patients. It can be cut to size for small patients. It cannot be used for children under 50 lbs.

The T-Pod Responder reduces pelvic morbidity, mortality, and blood loss. It is fully radiolucent. The patient can have x-rays and all scans at the hospital without removing the device.

No contraindications.

Procedure

1. A single rescuer can apply the T-Pod Responder.
2. Rescuer positions as close as possible to patient's pelvis.
3. Separate the two parts of the device. Carefully place the band around the hips so that it is centered on the greater trochanters (top should be at iliac crest). Orange should be on the outside and grey on the inside.
4. The band should have a 6' to 8' gap between the two sides for the compression of the pulley system to work. If not, cut the band for small patients, and combine two devices for geriatric patients.
5. Place pulley system centered over 6" to 8" gap. The hook and loop fasteners should attach themselves.
6. Pull the tab on the pulley system to apply compression. Tighten until two sides of the band touch each other.
7. Secure the pulley system by locking the string on the four locking hooks and attaching the tab and loop fasteners.
8. Always check pulses, movement and sensation, distal of the device before and after application.

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General Information

The MASIMO RAD 57 is non-invasive, combination arterial oxygen saturation, carboxyhemoglobin saturation monitor. It can be used on pediatrics and adults by selecting the proper infrared probe.

SpO_2 measures oxygen saturation of hemoglobin and SpCO measures levels of carbon monoxide concentration in arterial blood. Measurements are read as a percentage of carboxyhemoglobin (SpCO).

Procedure

1. Select a finger with good perfusion (good color, warm and quick capillary refill). The preferred finger is the ring finger of the non-dominant hand. Use the middle finger or index finger as next alternative locations. Do not use thumbs or toes. If a blood pressure cuff is being used, place sensor on the ring finger of the hand opposite the arm with the BP cuff.

2. The top half of the sensor is identified by the cable. Orient the sensor so that the cable is on top of the patient's hand. Ensure that the patient's finger and the sensor are aligned, so that they are parallel. Shield the sensor from strobe and bright lights, including direct sunlight with "black" light shield provided with unit.

3. Press the **ON/OFF** button to power up the unit (see illustration on following page). Verify all front panel indicators momentarily illuminate and an audible tone is heard. Wait for the oxygen saturation and pulse rate to be displayed.

4. Press the **DISPLAY** button to toggle between **SpCO** and the **SpO_2** readings. The SpCO reading is displayed in **"orange"** with the indicator light illuminated in the top left corner of the unit.

5. Patients exhibiting signs and symptoms of respiratory distress will be treated per the appropriate protocol.

6. To turn power off, press and hold **ON/OFF** button for 2 seconds.

Maintenance

1. After each use

   a. Clean unit with a soft cloth moistened in water or mild soap solution.

   b. If disinfecting is necessary, wipe surfaces of the unit with isopropyl alcohol.

2. Batteries

   a. Battery charge level is indicated by four LED indicators at the bottom of the front panel.

   b. Use four “AA” Alkaline batteries ***only*** to provide up to eight hours of continuous use. Do not use any other type of batteries or power source to run device. Non-Alkaline batteries will affect the accuracy of the unit. Batteries with more than 1.5 volts may damage the meter.

   c. Remove the battery cover by depressing the small rectangular button at the bottom of the cover and sliding the cover down off the bottom of the device.

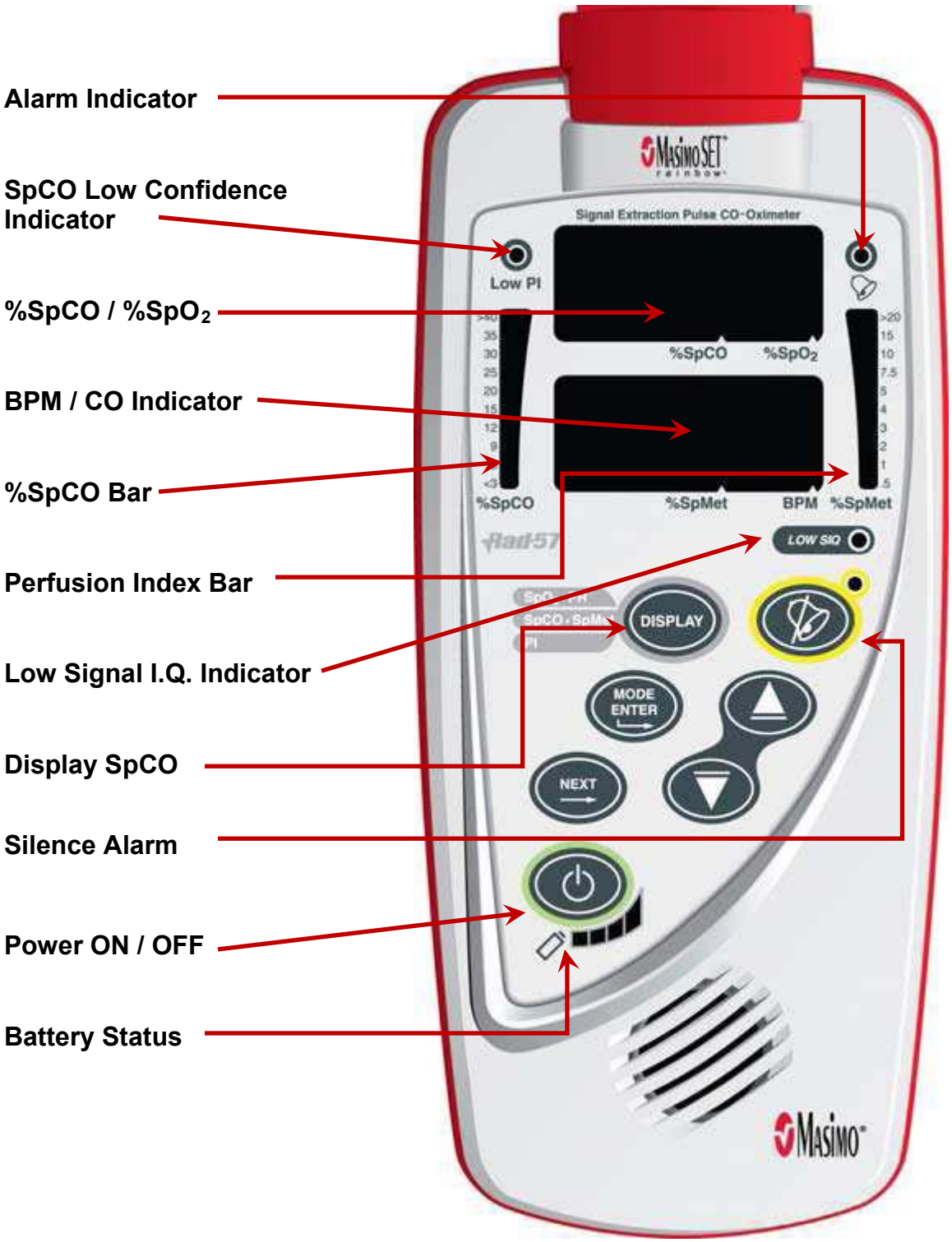
   d. Install batteries in the directions indicated by the battery icons inside the battery compartment.

   e. Replace the battery cover by sliding it back up from the bottom of the device until the rectangular locking button snaps back into position.

Special Considerations

1. Oxygen saturations values alone should not be used as the basis for assessing the clinical condition of the patient.

2. This device will not be used as a replacement or substitute for ECG based heart rate analysis and/or assessment of a pulse.


Alarm Indicator
SpCO Low Confidence Indicator
%SpCO / %SpO2
BPM / CO Indicator
%SpCO Bar
Perfusion Index Bar
Low Signal I.Q. Indicator
Display SpCO
Silence Alarm
Power ON / OFF
Battery Status
Masimo SET
Signal Extraction Pulse CO-Oximeter
Low PI
%SpCO
%SpO2
%SpMet
BPM
LOW SIQ
DISPLAY
MODE ENTER
NEXT
Masimo

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Rapid Cooling Procedure

Patients that are either **hyper**thermic, or in conditions which could lead to **hyper**thermia, should be cooled rapidly using the following methods:

1. Move patient out of any direct sunlight or excessively hot atmospheres.

2. Move patient to cooler environment (air conditioning) and/or fan blowing on patient (consider the use of cool-mist fans, if available)

3. Remove as much clothing as possible.

4. Establish vascular access and administer a normal saline fluid challenge if unable to take oral fluids

    a. **Adult - 500 mL IV**
    b. **Pediatric - 20 mL/kg IV**
    c. May repeat once as needed.
    d. Consider IO access if there are mental status changes and/or the patient is actively seizing.

5. Pour water over the patient's entire body surface.

6. Immersion of extremities in cold water.

7. Patients with temperatures of 104°F (40°C) or higher (OR if unable to obtain a temperature and the patient feels hot to the touch), who usually exhibit hot and dry skin with changes in their mental status and/or develop seizures should also have the following treatments.

    a. Apply ice packs to the patient's neck, groin and armpits.

    b. If available, take and document a baseline temperature before administering cold normal saline. Also take and document a temperature at the time of patient transfer in the ED

    c. **Adult**

        1) If indicated, administer **cold** (34°F) normal saline, **30 mL/kg IV or IO bolus (max 2 Liters)**.

        2) Administer midazolam (Versed), **5 mg *slow* IV/IO** or **10 mg IM / IntraNasal** to reduce shivering, if indicated.

3) If the patient is agitated and/or in pain after midazolam (Versed) and the systolic BP remains at 90 mmHg or greater, administer morphine sulfate, **5 mg IV/IO.** If the patient continues with agitation and/or pain, the morphine may be repeated once in 5 minutes. The total amount of morphine should not exceed 10 mg.

d. **Pediatric**

1) If indicated, administer **cold** (34°F) normal saline, **20 mL/kg IV or IO bolus**

2) To reduce muscle shivering, if indicated

a) If vascular access is available, administer midazolam (Versed), **0.1 mg/kg IVP**

b) If vascular access is **NOT** available, administer midazolam (Versed), **5 mg IM / IntraNasal or Buccal** (5 years and older) OR **2.5 mg IM / IntraNasal / Buccal** (less than 5 years old) OR dosing as found in the Pediatric Medication Guide. **Buccal** (part the child's lips and without opening the jaws, place the medication laterally between the teeth and cheek with half of the dose on each side of the mouth).

3) If the patient is agitated and/or in pain after midazolam (Versed) and the child is **NOT** hypotensive. Administer morphine sulfate, **0.1 mg/kg IV (maximum single dose is 5 mg).**

Introduction

Sepsis is a whole-body inflammatory, overwhelming, and life-threatening response to an infection that can lead to tissue damage, organ failure, and death. Sepsis ranks as the third leading cause of death in the United States, after heart disease and cancer.

Severe cases of sepsis can lead to septic shock, where systemic inflammation causes tiny blood clots to form, blocking oxygen from vital organs. This leads to organ failure and causes a life-threatening drop in blood pressure.

Severe sepsis often occurs in people who are very young, the elderly, those with recent surgeries, those that have had invasive procedures or illnesses, and those with weak immune systems.

It's been estimated that 28–50% of severe sepsis patients die – far more than the number of U.S. deaths from prostate cancer, breast cancer and AIDS combined.

In severe Sepsis, the body's balance between inflammatory and anti-inflammatory chemical responses gets out of whack. A massive release of pro-inflammatory mediators creates an uncontrolled inflammatory response. This inflammatory response is known as SIRS (system inflammatory response syndrome).

Sepsis Awareness Checklist

Crews should alert ED personnel to a **possible Sepsis patient** when **all 4** of the SIRS variables below are present in the prehospital setting:

1. Any adult patient over the age of 18 who is not pregnant,
   and
2. Has a documented or suspected infection (e.g., pneumonia, urinary tract infection, MRSA), or is at a high risk (e.g., nursing home, cancer patient, indwelling catheters, immune-compromised, etc.),
   and
3. Has **2 or more** of the following:
   a. Temperature of **greater than** 100.4°F (38°C) or **less than** 96.8°F (36°C).
   b. Heart rate **greater than** 90 beats per minute
   c. Respiratory rate **greater than** 20 breaths per minute
   and
4. Has **any 1** of the following signs of hypoperfusion
   a. Hypotension – systolic BP less than 90 mmHg
   b. Median Arterial Pressure (MAP) less than 65
   c. Altered Mental Status
   d. $ETCO_2$ less than 25

TREATMENT

1. Universal Initial Adult Patient Assessment / Care.
2. Administer high-flow oxygen via NRBM and maintain SpO_2 of at least 94%.
3. Establish vascular access and administer normal saline, **500 mL IV fluid bolus** regardless of blood pressure. May repeat once if needed.
4. Reassess vitals. If patient remains hypotensive, consider dopamine.
5. Monitor cardiac rhythm
6. Transport to the closest appropriate facility with ED notification of possible sepsis patient.

IMMOBILIZATION OF THE SUPINE/PRONE PATIENT

Assemble necessary equipment.

1. Long spine board.
2. Appropriate cervical collar.
3. Padding.
4. Head/Cervical spine immobilization device (CID).
5. Straps (minimum of 3).
6. Tape.

ADULT CARE

1. Begin with manual immobilization of the head in a neutral, in-line position. Manual immobilization should be provided without interruption until complete patient immobilization is accomplished.

2. Contraindications to placement in an in-line position include:

    a. Neck muscle spasm that prevents placing the patient in the in-line position.

    b. Increased pain with any movement of the head and neck.

    c. Onset of or an increase in a neurological symptom such as numbness, tingling, or loss of motor ability.

    d. Compromise of the airway or ventilation.

    e. If the patient's injuries are so severe that the head presents with such misalignment that it no longer appears to extend from the midline of the shoulders.

3. Use manufacturer's recommendation for sizing.

    a. In the rare instance an appropriately sized cervical collar is not available; maintain manual immobilization and complete the immobilization process without a cervical collar.

4. While maintaining manual stabilization with a collar in place, log roll the patient, position the backboard, and roll the patient onto the board in a supine position.

5. Place the blanket roll or head immobilizer in place.

6. Pad the space, as needed, between the back of the head and backboard to prevent hyperextension of the cervical vertebrae.

7. Secure the patient's body to the board with straps.

    a. Immobilize the upper torso to prevent upward sliding of the patient's body during movement and transportation. This is accomplished by using 3 point restraints: chest, hip, and legs.

    b. Arms should be placed at the patient's side to prevent movement of the shoulder girdle.

    c. Secure both feet together to prevent rotary movement of the legs.

    d. Apply tape directly across the forehead and secure the head while extending the tape under the backboard. **DO NOT** apply tape directly across the chin, as this may create an airway obstruction. Tape may be placed across the surface of the semi-rigid cervical collar. Consider using a Kling Bandage under wet conditions.

    NOTE: Illustrations below are examples/guidelines for immobilization.

PEDIATRIC CARE

1. Begin with manual immobilization of the head in a neutral in-line position. Manual immobilization should be provided without interruption until complete patient immobilization is accomplished.

2. Contraindications to placement in an in-line position include:

    a. Neck muscle spasm that prevents placing the patient in the in-line position.

    b. Increased pain with any movement of the head and neck.

    c. Onset of or an increase in a neurological symptom such as numbness, tingling, or loss of motor ability.

    d. Compromise of the airway or ventilation.

    e. If the patient's injuries are so severe that the head presents with such misalignment, that it no longer appears to extend from the midline of the shoulders.

3. Use manufacturer's recommendation for sizing.

    a. If an appropriately sized cervical collar is not available; maintain manual immobilization and complete the immobilization process without a cervical collar.

4. While maintaining manual stabilization with a collar in place, log roll the patient, position the backboard, and roll the patient onto the board in a supine position.

5. Place the blanket roll or head immobilizer in place.

6. Pad underneath the scapula and back, lifting the shoulders and preventing hyperflexion of the neck due to the prominent occiput of the pediatric patient.

7. Secure the patient's body to the board with straps.

    a. Immobilize the upper torso to prevent upward sliding of the patient's body during movement and transportation. This is accomplished by using 3 point restraints: chest, hip, and legs.

    b. Strap the patient to the board after filling lateral void spaces, making the body as wide as the board.

    c. Arms should be placed at the patient's side to prevent movement of the shoulder girdle.

    d. Secure both feet together to prevent rotary movement of the legs.

    e. Apply tape directly across the forehead and secure the head while extending the tape under the backboard. **DO NOT** apply tape directly across the chin as this may create an airway obstruction. Tape may be placed across the surface of the semi-rigid cervical collar. Consider using a Kling Bandage under wet conditions.

NOTE: Illustrations below are examples/guidelines for immobilization

IMMOBILIZATION OF THE STANDING PATIENT

1. Initiate manual immobilization of the head in a neutral in-line position. Approach the patient from the front to eliminate lateral movements.

2. Apply the appropriate cervical collar.

3. With one rescuer at each side of the board and the third holding the head, slowly lay the board down.

4. With the patient supine on the board now follow the above procedures.

Vest-Type Extrication Device (KED)

1. Initiate manual in-line stabilization of the head.
2. Apply the appropriate cervical collar.
3. Insert the device behind the patient. Try to limit movement while positioning the device.
4. Position the device so it fits securely under the axillae. Open the side flaps and place them around the patient's torso.
5. Position, connect, and adjust the torso straps. Leave the uppermost strap loose until the head is immobilized.
6. Position and fasten each groin loop. Adjust one side at a time to prevent excess movement of the patient.
7. To put the patient's head and neck in a neutral position, if appropriate, fill any void behind the patient's head and/or neck to prevent hyperextension.
8. Position the head flaps. Fasten the forehead strap, and apply the chin strap over the cervical collar.
9. **CAUTION**: The handles of the KED should not be used to lift, carry, or move the patient.

USE OF A PEDIATRIC IMMOBILIZER

Pediatric immobilizers, if available, can accommodate various ranges in age, size, and weight. The LSP Pediatric Immobilizer, for example, will accommodate children from ***infancy*** to approximately 10 years of age or 10 to 75 lbs and 25 to 54 inches in length. All of the straps are permanently affixed to the board, which secure with Velcro.

There are no metal parts within the immobilization board, allowing for complete radiological procedures with the patient secured.

The head portion of the immobilizer has a slide-out pad, which when removed will bring the head slightly lower than the thorax creating Neutral Alignment for Infants.

1. The head cradle has a forehead strap and a chinstrap, which can be formed to any size by manipulating the Velcro attachment points. The head cradle is itself attached to the board by Velcro, which can be manipulated to accommodate size.

2. The shoulder straps can be attached to the chest strap in a parallel fashion or crossed for a smaller patient.

3. The chest strap simply Velcros to itself and allows for attachment of the shoulder straps. ***In the Infant patient this strap may be used to secure the waist/thigh area***.

4. The next lower two black extremity straps are meant to secure the arms of the patient, or legs in the case of an infant patient.

5. The waist strap will secure an area ranging from the abdominal to thigh region of a patient, and has additional extremity straps to secure the wrists of a patient. ***(Note that this strap and the additional lower straps may not be utilized in the infant patient)***.

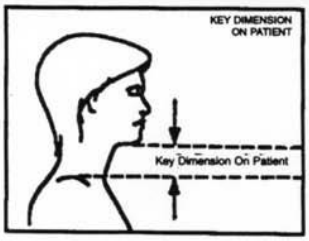
6. The thigh straps are self-attaching and allow for separate immobilization of each leg.

7. The lower leg straps are identical in function as the thigh straps.

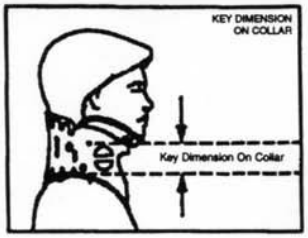
8. Located at the foot of the board are two black self attaching ankle straps for immobilization of patients in the upper weight and length capacity of the board.

ILLUSTRATION #1

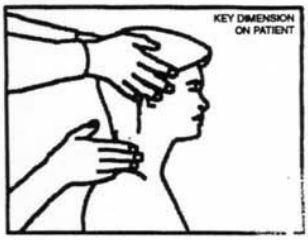
SIZING METHOD



1. Proper sizing is critical for good patient care. Too short a collar may not provide enough support, while too tall a collar may hyperextend. The ***key dimension*** on a patient is the distance between an imaginary line drawn across the top shoulders, where the collar will sit and the bottom plane of the patient's chin.



2. The **key dimension** on the collar is the distance between the ***sizing post*** (back fastener) and the lower edge of the rigid plastic encircling band (not the foam padding).



3. When the patient is being held in a **neutral** position, use your fingers to measure the distance from the shoulder to the chin **(key dimension).**

ILLUSTRATION #2

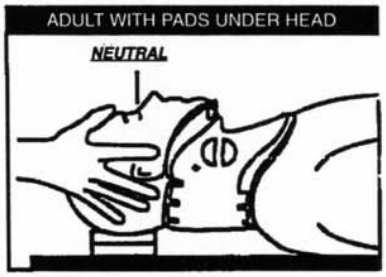
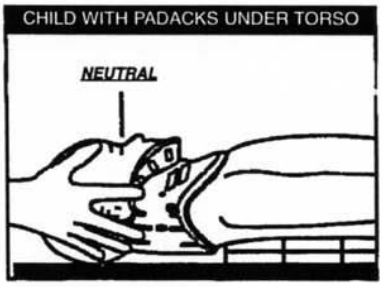


ILLUSTRATION #3



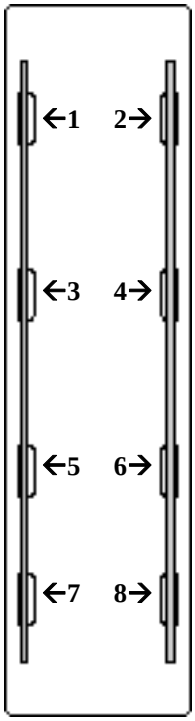


Fig. 1

- Stored in backboard compartment with straps on board.
- Leave straps on board while log rolling patient on the backboard.
- Keep cribbing available to place under board during strapping.

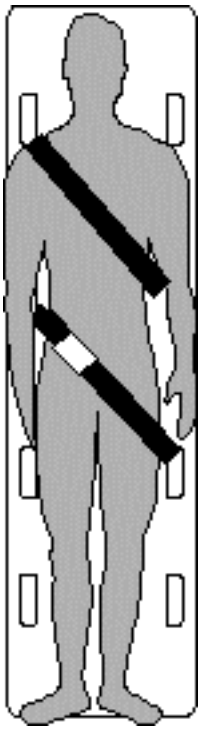


Fig. 2

1. Place top strap so it comes over shoulder and chest and is placed through hand hole at opposite axillary.
2. Bring strap back up through hand hole at trochanter level and connect to buckle on opposite iliac crest.

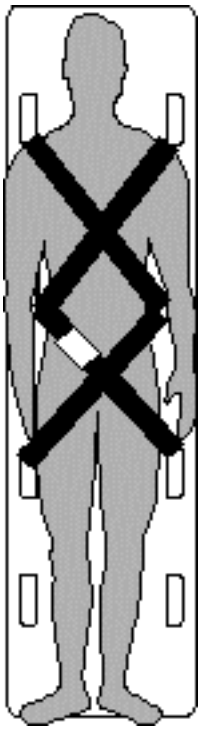


Fig. 3

3. Complete opposite side to create crossing x's across chest and pelvis.

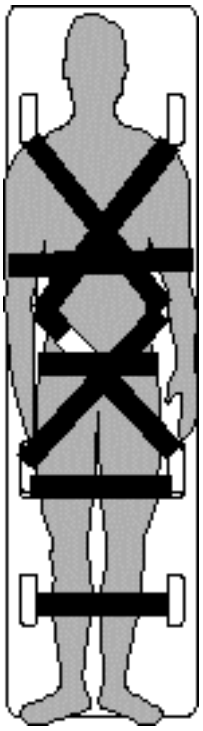


Fig. 4

4. Additional straps will be necessary to prevent side-to-side movement.

Poss. sites:

a) Over arms & across chest.
b) Across iliac crests.
c) Mid-thigh.

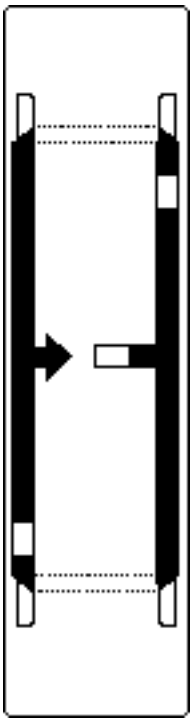


Fig. 1

1. Pre-strapped with two(2) 9' straps and one two-piece stretcher strap.
2. Open two-piece strap at waist prior to log-rolling patient onto backboard.
3. Leave one piece straps on board while log rolling patient onto backboard.

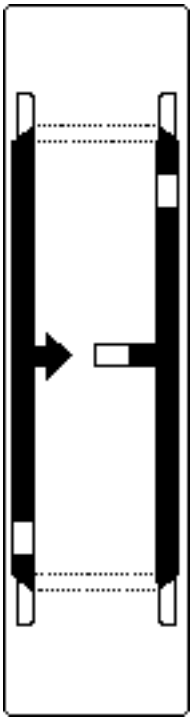
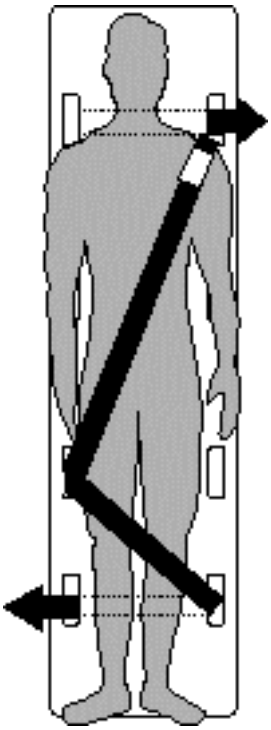


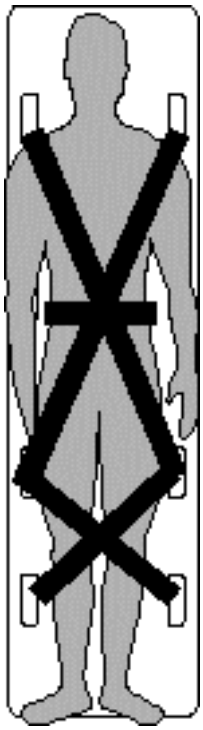
Fig. 2

4. Secure the two-piece waist straps on patient.
5. Uncouple the two one-piece straps.
6. Take female coupling on right side, pass strap over right shoulder and across Torso to hole #5.
7. Run strap through hole #5 and across legs to male buckle at hole #7.

Fig. 3

8. Take female coupling on left side, pass strap over lower legs, to hole #5.
9. Run strap through hole #5 and across torso to male coupling laying across left shoulder.





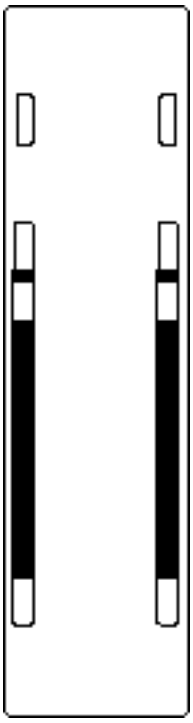


Fig. 1

- Stores in backboard compartment with straps on board.
- Leave straps on board while log rolling patient on the backboard.
- Keep cribbing available to place under board during strapping.

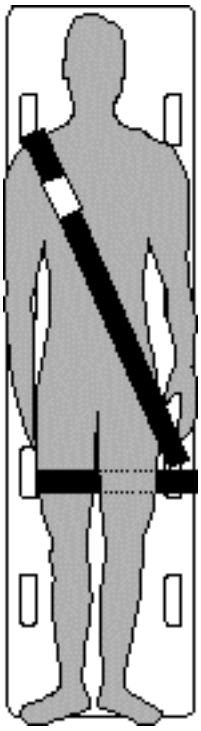


Fig. 2

1. Place strap with buckle across schoulder.
2. Run strap up through hand hole at trochanter level and over near thigh.
3. Continue by running strap under far thigh (dotted line).
4. Place strap through hand and continue across torso and connect with buckle at shoulder.

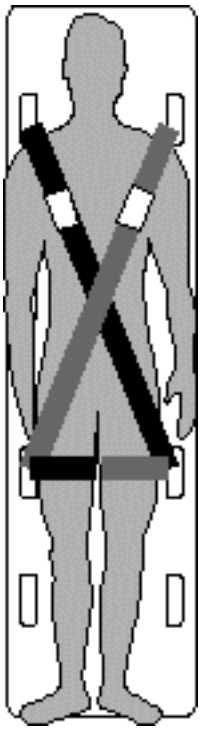


Fig. 3

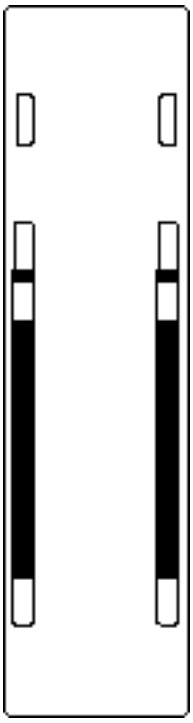
5. Complete opposite side to create crossing x across torso and groin loops over thighs.

Fig. 4

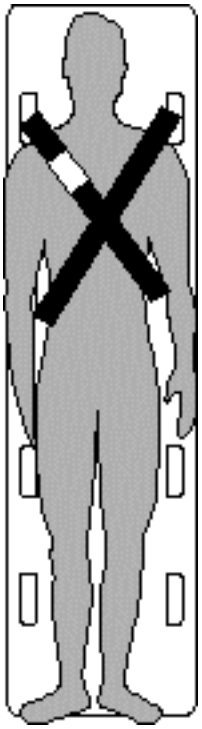
6. Additional straps will be necessary to prevent side-to-side movement.

Poss. Sites:

a) Over arms & across chest.
b) Across iliac crests.
c) Mid-thigh.

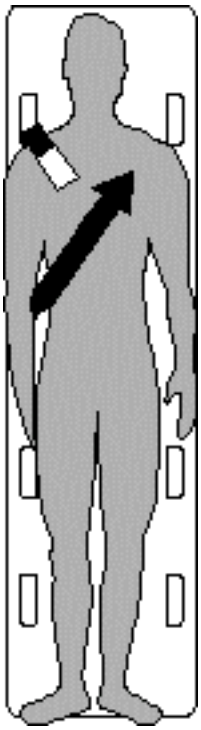


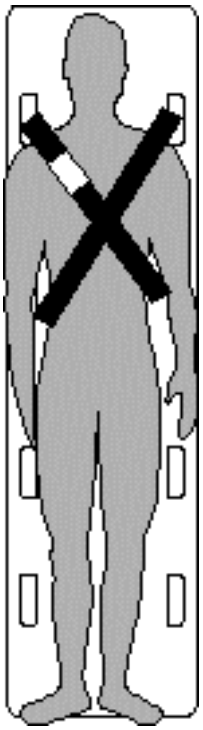
Pre-strapping



1. Place buckle up through hand hole and over shoulder.
2. Run free end under board, up through hand hole near waist and across chest toward opposite shoulder.
3. Take strap down through hand hole behind houlder. Run strap under board shoulder. Run strap under board and come back up through hand hole.

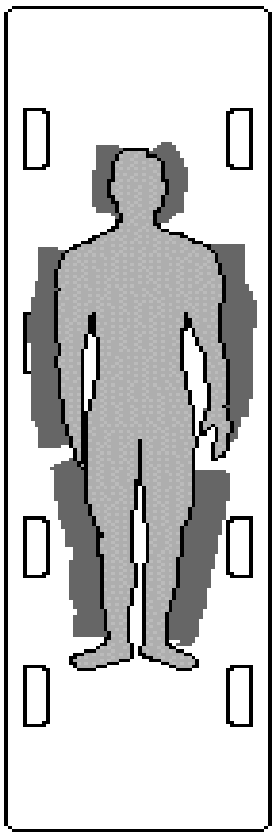
4. Pull strap through hand hole and across chest and connect with buckle at chest.





Pediatric-Filling

Void Spaces



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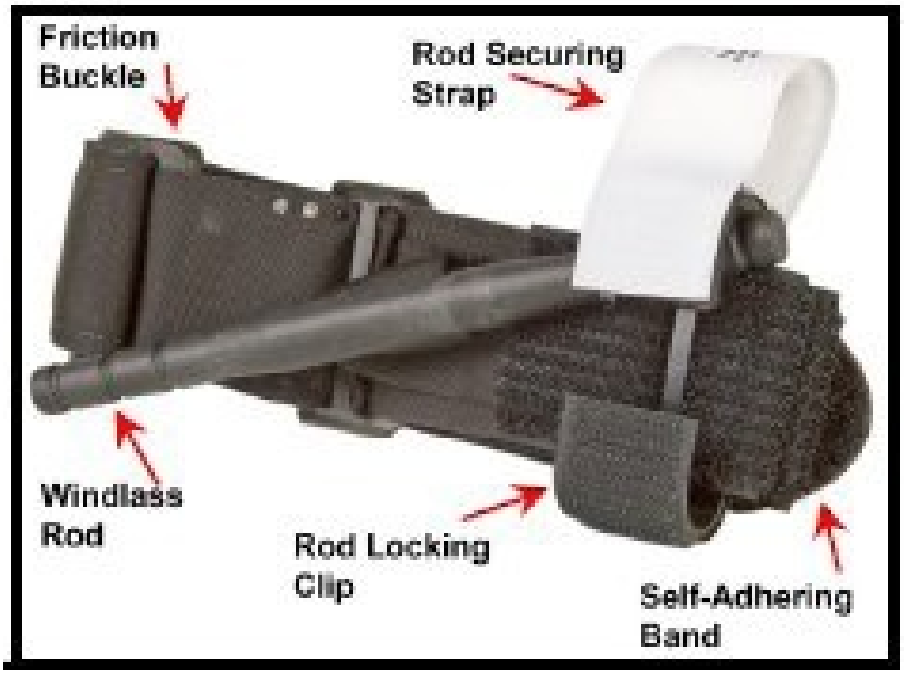
Introduction

Tourniquets are used to control major extremity bleeding due to amputation or due to bleeding not adequately controlled with direct pressure and elevation. In open major bleeding, the use of hemostatic granules (Quick Clot®) may be attempted with the application of direct pressure.

The Combat Application Tourniquet (CAT) should be applied while maintaining pressure to, and elevation of, the bleeding extremity (or exposed stump in amputation).



Procedure

1. Don the appropriate PPE for a patient with major bleeding.
2. Immobilize appropriately if C-spine injury is suspected.
3. Refer to appropriate protocols as necessary.
4. Apply the CAT directly over the skin (remove clothing) to the most proximal portion of the affected extremity adjacent to the torso “High and Tight.”
5. Apply the self-adhering Velcro band snuggly around the extremity.
6. Rotate the Windlass Rod until the bleeding is controlled.

7. Secure the Windlass Rod with the Windlass Strap.

8. Record the time of application in the PCR and on a piece of white tape applied to the band of the tourniquet.

9. Do not cover the area where a tourniquet has been applied.

10. Ensure the ED staff is informed of the site and time of application of any tourniquet that has been applied, and document in the PCR the name of the ED staff receiving this information.

11. The CAT may be used on more than one extremity if indicated.

12. A second tourniquet can be placed adjacent to the original tourniquet for additional bleeding control.

13. Splint or immobilize the extremity if a fracture is suspected.

14. Manage pain as necessary.

Caution

1. Ensure bloodborne pathogen precautions are taken.

2. Recheck for control of bleeding each time the patient is moved.

NEWBORN UMBILICAL CORD IV ACCESS

Newborn Resuscitation that does not respond to Positive Pressure Ventilation, and in some cases chest compressions, will require vascular access to continue effective resuscitation. The site of choice in the newborn is the unique and readily available Umbilical Vein.

Procedure

1. Assemble the following equipment

    a. 20 gauge IV catheter
    b. Scalpel
    c. 2 umbilical clamps
    d. One 50mL luer lock syringe
    e. Normal Saline
    f. Pediatric Medication Guide

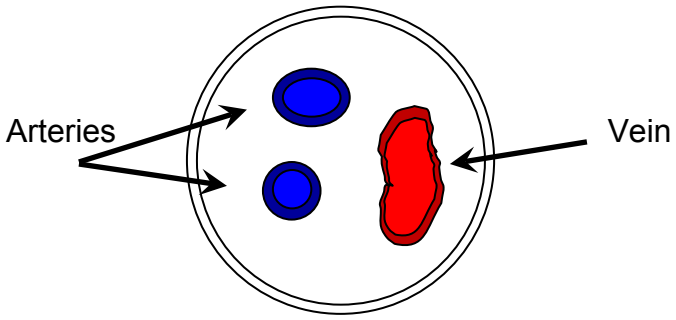
2. Place one clamp on the cord about 3 inches from the newborn and cut the cord proximal to the clamp with a scalpel while maintaining pressure on the proximal segment with two fingers.

3. Identify the vessels, 2 arteries and 1 vein (2 eyes and 1 mouth) and cannulate the vein (mouth) with the 20g catheter and withdraw the needle.

4. Attach the IV extension set and attempt to aspirate blood then push 3mL of Normal Saline.

5. Attach the second umbilical clamp with the hub of the clamp around the cord 1cm below where you made your cut.

6. Any medication administered through an Umbilical IV should be flushed with 3-5mL of normal saline.



Umbilical Cord Cross Section View

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A

$\overline{a}$	before
ABC	airway, breathing, circulation
abd.	abdomen
A/C	antecubital fossa
ACLS	advanced cardiac life support
ACS	Acute Coronary Syndrome
A.D.	right ear
A.S.	left ear
A.U.	both ears
AIDS	acquired immune deficiency syndrome
ALS	advanced life support
AMA	against medical advice
a.m.	morning
amb.	ambulance
AMI	acute myocardial infarction
amp.	ampule
amt.	amount
AP	anteroposterior
ASA	aspirin
ASAP	as soon as possible
ASHD	arteriosclerotic heart disease
ATV	all terrain vehicle
A/V	atrioventricular

B

bb	back board
bbb	bundle branch block
BBS	bilateral breath sounds
B/F	black female
B/M	black male
b.i.d.	twice a day
BLS	basic life support
BM	bowel movement
BP	blood pressure
BPM	beats per minute
BS	blood sugar
BSA	body surface area (burns)
BSI	body substance isolation
BVM	bag/valve/mask

C

$\overline{c}$	with
CA	cancer
CABG	coronary artery bypass grafting
CAD	coronary artery disease
CAOX3	conscious, alert, oriented X3 (person, place, time)
C/C	chief complaint
cc	cubic centimeter
CCU	coronary care unit
CHD	congenital heart disease
CHF	congestive heart failure
CID	cervical immobilization device
cm	centimeter
CMS	circulatory, motor, sensory
CNS	central nervous system
C/O	complains of
Co	carbon monoxide
CO_2	carbon dioxide
COPD	chronic obstructive pulmonary disease
CP	chest pain
CPR	cardiopulmonary resuscitation
CSF	cerebrospinal fluid
CSM	carotid sinus massage
C-spine	cervical spine
CTA	clear to auscultation
CVA	cerebrovascular accident

D

D/C	discontinue
D & C	dilation and curettage
diff.	differential
DM	diabetes mellitus
DNR	do not resuscitate
DNRO	do not resuscitate order
DOA	dead on arrival
DOS	dead on scene
dsg.	dressing
DUI	driving under the influence
Dx.	diagnosis
D5W	5% dextrose in water
D25W,D25	dextrose 25%
D50W, D50	dextrose 50%

E

EBL	estimated blood loss
ECG or EKG	electrocardiogram
ED	emergency department
EDC	estimated date of confinement
EENT	eyes, ears, nose and throat
EEG	electroencephalogram
e.g.	for example
EGTA	esophageal gastric tube airway
EMD	electromechanical dissociation
EMS	emergency medical services
EMT	emergency medical technician
ENT	ears, nose and throat
EOA	esophageal obturator airway
EOM	extraocular movement
epi	epinephrine
ER	emergency room
est.	estimate(d)
ET	endotracheal
ETT	endotracheal tube
ETA	estimated time of arrival
ETOH	ethyl alcohol

F

FBAO	foreign body airway obstruction
FMA	further medical attention
fl.	fluid
flex.	flexion
ft.	foot
FROM	full range of motion
fx	fracture

G

g	gauge (diameter), gravid
g	gram
GCS	Glasgow coma scale
GI	gastrointestinal
GOA	gone on arrival
gr.	grain
GSW	gunshot wound
gtt(s)	drop(s)
GU	genitourinary
GYN	gynecology

H

HF	hydrofluoric acid
H/F	Hispanic female
H/M	Hispanic male
HBP	high blood pressure
HBV	hepatitis B virus
hr	hour
HEENT	head, ears, eyes, nose and throat
HIV	human immune deficiency virus
hgb	hemoglobin
hosp.	hospital
HTN	hypertension
Hx	history
H2O	hydrogen sulfide

I

ICS	intercostal space
ICU	intensive care unit
I & D	incision and drainage
IM	intramuscular
I & O	intake and output
IO	intraosseous
IUD	intrauterine device
IV	intravenous
IVP	intravenous push

J

J	joules
JVD	jugular vein distention

K

K	potassium
kg.	kilogram
KCl	potassium chloride
KVO	keep vein open

L

L. l	liter
L/	left
lac.	laceration
lat	lateral
LBBB	left bundle branch block
lb(s)	pound(s)
L & D	labor and delivery
LEA	law enforcement agency
lg.	large
L/min or lpm	liters per minute
LLQ	left lower quadrant
LMP	last menstrual period
LOC	loss of consciousness or level of consciousness
LP	lumbar puncture
LR	lactated ringers
LUQ	left upper quadrant

M

MAE	moves all extremities
MAST	medical anti-shock trousers
mA	milliampere
MBL	major blood loss
MCA	motorcycle accident
mcg	microgram
MCI	mass casualty incident
MCL	mid-clavicular line
MD	medical doctor
MDFR	Miami Dade fire rescue
MDPD	Miami Dade police department
MedCom	medical communications center
meds	medications
mEq	milliequivalent
MI	myocardial infarction
min.	minute
mg.	milligram
mkd.	marked
mL	milliliter
mm	millimeters
mod.	moderate
MOE	movement of extremities
MOM	medical operations manual
MS	morphine sulfate

M (cont.)

mult.	multiple
MVA	motor vehicle accident
MVC	motor vehicle crash

N

N2O	nitrous oxide
NaCl	sodium chloride
NAD	no acute distress
NC	nasal cannula
neg.	negative
NKA	no known allergies
n/g	nasogastric
NPO	nothing by mouth
NRB	non-rebreather mask
NS	normal saline
NSR	normal sinus rhythm
NTG, nitro	nitroglycerin
N/ V	nausea and vomiting

O

O_2	oxygen
OB	obstetrics
OBS	organic brain syndrome
OD	overdose - also means right eye
OPQRST	onset, provocation, quality, radiation, severity, time
ophth	ophthalmology
OPP	organophosphate poisoning
OR	operating room
OS	left eye
OU	both eyes

P

P	pulse, para
$\overline{p}$	after
PA	posteroanterior
PAC	premature atrial contraction
PaCO2	partial press. of CO_2 in arterial blood
PaO2	partial press. of O_2 in arterial blood
PASG	pneumatic antishock garment

P (cont)

PAT	paroxysmal atrial tachycardia
PCI	percutaenous coronary intervention
PD	police department
PDR	physician's desk reference
PE	pulmonary edema
PEA	pulseless electrical activity
ped.	pedestrian
pedi	pediatric
per	by
PERL	pupils equal and reactive to light
PERLA	pupils equal and reactive to light, and accommodation
PHX	past history
PID	pelvic inflammatory disease
PIH	pregnancy induced hypertension
PJC	premature junctional contraction
p.m.	evening
PMD	private medical doctor
PO	by mouth
post	after
POV	private operating vehicle
PR	administer rectally
pre	before
prn	as needed
PSD	public safety department
PSVT	paroxysmal supraventricular tachycardia
pt.	patient
PTA	prior to arrival
PTS	pediatric trauma score
PTV	percutaneous transtracheal ventilation
PVC	premature ventricular contraction
PVR	peripheral vascular resistance
Px	physical history

Q

q	every
q.h.	hourly
q.i.d.	four times daily
q.o.d.	every other day
QRX	standby
QTH	location

R

RBBB	right bundle branch block
RBC	red blood count
R/	right
RLQ	right lower quadrant
R/O	rule out
ROM	range of motion
RR	respiratory rate
RRR	regular, rate, rhythm (heart)
RUQ	right upper quadrant

S

$\overline{s}$	without
SAMPLE	signs/symptoms, allergies, medications, Past Hx, last oral intake, events prior
SIDS	sudden infant death syndrome
SL	sublingual
SOAP	subjective, objective, assessment, plan
SOB	short(ness) of breath
sol.	solution
spec.	specimen
S/S	signs and symptoms
Sub. Q, SQ, SC.	subcutaneously

T

tab.	tablet
TB	tuberculosis
TC	trauma center
temp.	temperature
TIA	transient ischemic attack
t.i.d.	three times daily
TKO	to keep open
TMJ	temporomandibular joint
TOT	turned over to
TPR	temperature, pulse and respiration
TTC	trauma transport criteria
TTP	trauma transport protocol
Tx.	treatment

U

UA	urinalysis
ULQ	upper left quadrant
unk.	unknown
URI	upper respiratory infection
URQ	upper right quadrant

V

V - fib (VF)	ventricular fibrillation
V - tach (VT)	ventricular tachycardia
VD	venereal disease
via	by way of
vol.	volume
VS	vital signs

W

WBC	white blood count
W/F	white female
W/M	white male
WNL	within normal limits
wt.	weight

X

X	times

Y

Y/O	years old

SYMBOLS

≅	approximately
<	less than
>	more than
-	negative
+	plus/positive
#	number
%	percent
@	at
♂	male
♀	female
↑	increase
↓	decrease
Ⓡ	right
Ⓛ	left
∅	nothing

FLORIDA ABUSE HOTLINE **Fax Transmittal Form**
To Report Abuse/Abandonment/Neglect/Exploitation
Fax Number: 1-800-914-0004

Please *do not fax multiple allegations of abuse or neglect for multiple families at a time. By submitting them* ***one*** *at a time, they will likely get processed* ***faster****.*

REPORTER INFORMATION

This information is required for mandatory reporters. Refer to Chapters 39 and 415, Florida Statutes.

Today's Date: _____

Your Last Name: _____ Your First Name: _____ MI: _____

Your Occupation: _____ Your Agency: _____ Fax #: _____ Phone #: _____

Address: Street # _____ Street Name: _____ City: _____ Zip Code: _____ County: _____ State: _____

VICTIM INFORMATION

If the victim is a child, list other children in the home. If the victim is an adult, describe disability and how he/she is impaired in the ability to care for or protect self in the DESCRIPTION OF INCIDENT section on page 2.

ADDRESS where the victim is currently located:

Street # _____ Street Name: _____ City: _____ Zip Code: _____ County: _____ State: _____

Home Telephone Number: _____ Work Telephone Number: _____

LAST NAME	FIRST NAME	DOB	SEX	RACE	SSN	IS THIS PERSON A VICTIM?
(1)						☐ Yes ☐ No
(2)						☐ Yes ☐ No
(3)						☐ Yes ☐ No
(4)						☐ Yes ☐ No
(5)						☐ Yes ☐ No

PERSON(S) RESPONSIBLE FOR ALLEGED ABUSE, NEGLECT, ABANDONMENT OR EXPLOITATION

NAME	DOB	SEX	RACE	SSN	RELATIONSHIP TO VICTIM
(1)					
(2)					
(3)					

DESCRIPTION OF INCIDENT

Please describe what happened, when and where the incident occurred, the frequency of occurrence, and a description of injuries and/or threat of harm.

WHAT happened?

WHEN did the incident occur?

WHERE did the incident occur?

Description of injuries/threat of harm:

FOR ADULT VICTIMS ONLY: Describe the adult victim's disability and how the victim is impaired in the ability to care for or protect self.

OTHER INDIVIDUALS

Please list others who might be aware of the abuse/abandonment/neglect/exploitation of the victim.

NAME	RELATIONSHIP TO THE VICTIM	ADDRESS	HOME PHONE	WORK PHONE

DO NOT SEND COPIES OF MEDICAL NOTES, CASE FILES, ARREST REPORTS, OR SIMILAR DOCUMENTS.

Alliance for Aging, Inc.
Aging Resource Center/Elder Helpline Referral Form

To: **Aging Resource Center/Elder Helpline**

From: _____ Date: _____

Agency/ALF: _____ Phone#: _____

Section I

Applicant's Name: _____ SSN: _____

Address: _____ Zip Code: _____

Phone #: _____ DOB: _____

Next of Kin / Contact Person / Representative: _____

Relationship to applicant: _____ Phone: _____

IS CLIENT CAPABLE OF SPEAKING ENGLISH? Yes: _____ No: _____
(Or Is There Someone in the Home That Speaks English for Screening and Assessment Purposes?)

Does the applicant or representative know about this referral? Yes: _____ No: _____
If No, please have applicant contact the Elder Helpline at (305) 670-4357.
(Under HIPPAA guidelines, the ARC/EHL will not contact a client if they are not aware of the referral)

Is applicant active in CIRTIS? Yes: _____ No: _____ If Yes, Specify Program: _____

Referring for which program: ☐ MW ☐ CCE ☐ ALW ☐ HCE

If client is already Active or on your agency waiting list for another program, was the client informed that they are being referred to be placed on our waiting list? Yes: _____ No: _____

Services Requested:

- ADC	- Congregate Meals	- Medical Supplies	- Caregiver Training
- Basic Subsidy	- Escort	- Nutrition Counseling	- Emergency Response
- Personal Care	- Caregiver Support	- Home Delivered Meals	- Respite
- Chore	- Homemaking	- Transportation	- Companionship
- Health Support	- Counseling	- Home Modification	- Other _____

Comments: _____

Section II **FOR ELDER HELPLINE USE ONLY:**

Date Received from Agency: _____

I&R Specialist Assigned: _____ Date Assigned: _____

Outcome / Notes from I&R Specialist: _____

ALLIANCE FOR AGING, INC.
AREA AGENCY ON AGING FOR MIAMI-DADE AND MONROE COUNTIES
760 NW 107TH AVENUE, SUITE 201 MIAMI, FL 33172-3155
PHONE: 305.670.6500 FAX: 305.222.4109
ELDER LINKS 305-670-HELP (4357) OR 1-800-96ELDER (1-800-963-5337)

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APGAR SCORING SYSTEM

	0 Points	1 Point	2 Points	Points totaled
Activity (muscle tone)	Absent	Arms and legs flexed	Active movement	
Pulse	Absent	Below 100 bpm	Over 100 bpm	
Grimace (reflex irritability)	Flaccid	Some flexion of Extremities	Active motion (sneeze, cough, pull away)	
Appearance (skin color)	Blue, pale	Body pink, Extremities blue	Completely pink	
Respiration	Absent	Slow, irregular	Vigorous cry	

Severely depressed	0-3
Moderately depressed	4-6
Excellent condition	7-10

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Introduction

Treatment and/or transportation of minors shall include informed parental consent when possible. However, there may be certain situations where the ability to provide care, treatment and/or transportation of a minor may be questionable. In situations where a minor or other persons requesting care or treatment of a minor have requested our services, the following guidelines will be used to assist in clarifying consent issues for care, treatment, and/or transportation.

Emergency Medical Care without Parental Consent

1. While implied consent shall be assumed, consent to perform a procedure on a minor who has been injured or who is suffering from an acute illness is not required (FS 743.064) if:

    a. Within a reasonable degree of medical certainty, delay in initiation or provision of medical care or treatment would endanger the health or physical well being of the minor, **or**

    b. Parental or other lawful consent cannot be obtained because either:

        1) The minor is unable to reveal the identity of the parent(s) or other party capable of lawfully consenting and such information is unknown, **or**

        2) Parents or other party capable of lawfully consenting cannot be immediately located.

2. NOTE: Notice must be given to the parents or person who may lawfully consent as soon as possible after the emergency care and/or treatment is administered. Documentation of the above must appear in the Patient Care Report including reason why consent was not obtained.

Persons Authorized to Consent

If after a reasonable attempt, the treatment provider cannot contact the parent who has the power to consent, any of the following persons, in order of priority, may consent to the medical care and/or treatment of the minor (FS 743.0645):

1. A person who possesses a power of attorney to provide medical consent for the minor.
2. The stepparent.
3. The grandparent.
4. An adult sister or brother of the minor.
5. An adult aunt or uncle.

6. Department of Children and Family Services (DCFS) caseworker or administrator assigned to delinquent or dependent child if person with power to consent cannot be contacted and has not expressly objected to such consent.

Release of Care of a Minor

1. If the minor is **not** in need of further medical assistance, the unit OIC shall evaluate the minor's surroundings and his/her capacity (mentally/physically) to function in his/her environment. The OIC should consider the following:

   a. Does the minor know what to do in an emergency?

   b. Does the minor know how to get in contact with a parent or other responsible party?

   c. Is the minor mature enough to take care of himself/herself?

   d. If in the judgment of the OIC, the minor is able to provide for himself/herself, then he/she may be released to himself/herself.

   e. If in the judgment of the OIC, the minor is not able to provide for him or herself, then the Police Department should be called.

2. NOTE: Calling the Police Department does not fulfill the obligation of reporting any cases of known or reasonable cause of suspected abuse, neglect, or exploitation to the Florida Abuse Hotline.

3. Minors who become ill or injured while attending either public or private school may be treated and/or released to school officials, as long as these officials accept responsibility to await the arrival of parents when the minor's condition is stable.

Refusal of Treatment/Transportation

1. Parent(s) or guardian(s) have the legal right to refuse care, treatment, and/or transportation of a minor. The following should be considered:

   a. If in the judgment of the OIC, the situation is life threatening, the police department should be summoned to assist. In a life threatening situation, the primary goal of Rescue is to stabilize the patient.

   b. In a non-life-threatening situation, the same guidelines should be followed as for an adult and the Patient Care Record refusal of treatment area, should be signed by the parent or guardian. If possible the refusal should be witnessed by a sworn law enforcement officer, a third party witness or as a last resort, a crew member.

Introduction

Any mentally competent adult has the right to refuse medical care, treatment, and/or transportation. Patient exam, treatment, or transportation should only be carried out with the adult patient's consent. It may be implied that by requesting our service through 911, the police, or other means, that the adult patient has consented to our care and treatment. However, when in doubt, especially when it is not the patient who requested our service, verbal consent should be obtained. Patients or legal guardians able to **refuse** care include:

1. Mentally competent - defined by the ability to understand the nature and consequences of their actions by refusing medical care and/or transportation, **AND**

2. Must be an adult, 18 years of age or older, except;

   a. Emancipated minors
   b. Self sufficient minors
   c. Married minors
   d. Minors in the military

3. A person may be considered incompetent to refuse medical care and/or transportation if the severity of their condition prevents them from making an informed, rational decision regarding their care. Therefore, they may not refuse medical care and/or transportation based on the following circumstances:

   a. Altered mental status (GCS less than 15)

   b. Suicide attempt (actual or verbal threat)

   c. Unstable vital signs

   d. Mental retardation or deficiency

   e. Not acting as a reasonable person would, given the same circumstances

   f. Under 18 years of age (except those defined in the above section).

In the circumstances listed above the patient is to be treated under **Implied Consent** or the **Incapacitated Persons Act** as defined in the following sections. Police should be requested to assist in the control of the patient and/or family. Careful documentation on the Patient Care Record is essential in supporting your decisions.

Implied Consent

1. In situations where the **adult patient is unconscious** and it is determined that if able, the patient would have acted as any reasonable person in the same circumstance and consented to care, fire rescue personnel may examine, treat and transport the patient under the doctrine of implied consent.

2. This form of consent may also be applied in situations where there is a minor and no adult consent can be obtained. If necessary, reasonable measures can be implemented to restrain the patient.

Incapacitated Persons Law, FS 401.445

1. Fire rescue personnel may examine, treat, and/or transport a patient without their informed (verbal) consent under the following conditions:

   a. The patient is intoxicated, under the influence of drugs, or otherwise incapable of providing informed consent, **AND**

   b. The patient is experiencing an emergency medical condition, **AND**

   c. The patient would reasonably, under all the surrounding circumstances, undergo exam, treatment, or transportation if they were capable.

2. Examination, treatment, and/or transportation are only that which is necessary to alleviate or stabilize the patient's condition.

3. Reasonable force (restraint) may be applied.

4. Careful documentation on the Patient Care Record of the reasoning behind your actions will be required.

Involuntary Examination

1. Refer to The Baker Act (FS 394.463) for a more complete explanation.

2. A person may be taken to a receiving facility for involuntary examination if there is reason to believe that the person has a mental illness and because of his or her mental illness:

   a. The person has refused voluntary examination after conscientious explanation and disclosure of the purpose of the examination; **or**

b. The person is unable to determine for himself or herself whether examination is necessary; **and**

c. Without care or treatment, the person is likely to suffer from neglect or refuse to care for himself or herself; such neglect or refusal poses a real and present threat of substantial harm to his or her well-being; and it is not apparent that such harm may be avoided through the help of willing family members or friends or the provision of other services; **or**

d. There is a substantial likelihood that without care or treatment the person will cause serious bodily harm to himself or herself or others in the near future, as evidenced by recent behavior

3. Refer to The Marchman Act (FS 397.675) for a more complete explanation.

   a. The Marchman Alcohol and Other Drug Services Act may be implemented when a patient has threatened or inflicted physical harm toward themselves or others while under the influence of drugs or alcohol.

   b. Additionally, the implementation of the Marchman Act may be considered if it appears that the individual's judgment is so impaired by alcohol or drugs that while in this state they cannot make appropriate judgments as relates to their health and well being.

Patient Refusal

1. Fire Rescue personnel must inform the refusing party of the potential consequences of their actions.

2. Attempts should be made, including enlisting family members, friends, etc., to try and convince the patient to accept medical care and/or transportation.

3. A release on the Patient Care Record must be signed by the refusing party. If the person refuses to sign, this must be documented on the Patient Care Record and if possible, be witnessed by a sworn law enforcement officer, a third party witness, or as a last resort a crew member.

4. Fire rescue personnel should encourage the patient and/or family to call back if the patient's condition changes.

5. In situations where there are multiple patients refusing care, a separate Patient Care Record with signed release must be completed for each patient.

6. In situations where the patient refuses to be transported to the closest appropriate facility and wishes to be transported to a more distant facility, this will be treated like any other refusal of care. Depending on the patient's condition, fire rescue personnel have 2 options:

   a. For stable patients, transport the patient to the facility of their choice. This should be accomplished within reason.

   b. For unstable patients, explain to them the seriousness of the illness/injury and if still refusing, transport them to the closest appropriate facility utilizing the Incapacitated Person Law if necessary.

7. Under no circumstances will a patient requiring **ALS** transportation be released to a BLS unit, an ambulance, or private transportation simply because they do not wish to go to the closest appropriate facility.

Medical Support

1. In situations where the decision to examine, treat, or transport a patient is difficult based on patient/guardian refusal, assistance can be obtained from the following resources:

   a. EMS Supervisor
   b. Medical Control

NOTE: Refer to current department policies, procedures, and SOGs for clarification.

DO NOT RESUSCITATE ORDER (DNRO)

The **Do Not Resuscitate Order (DNRO)** is a legal document that expresses the patient's decision not to be resuscitated. It is also a Physician's direct order to withdraw or withhold **C**ardio **P**ulmonary **R**esuscitation (i.e. artificial ventilations, cardiac compressions, endotracheal intubation, and defibrillation) from a patient in the event of a **cardiac** or **respiratory arrest**. However, the presence of a DNRO does not exclude a patient from receiving any medical care short of resuscitation.

Valid DNRO

1. An original or completed copy of DH Form 1896, **State of Florida Do Not Resuscitate Order**, Revised December 2002.

2. DH Form 1896 may be duplicated provided that the content of the form is unaltered, the reproduction is of good quality, and the paper used is **yellow**.

3. Any previous edition of DH Form 1896 is acceptable.

4. A DNRO Patient Identification Device. This device is a miniature version of DH Form 1896 and is incorporated as part of the DNRO form. Use of this device is voluntary and is intended to provide a portable DNRO that travels with the patient.

5. Either the DNRO or Patient Identification Device must:

   a. Be signed and dated by the patients' physician.
   and
   b. Be dated and signed by the patient, or the patient's health care surrogate, or a court appointed guardian, or a proxy (as defined in FS 765), or by a Durable Power of Attorney (pursuant to FS 709).

Confirmation and Documentation

1. You must confirm the identity of the patient with a DNRO using a driver's license or other photo ID, or a witness who knows the patient. If a witness is used to identify the patient, you must document the following in the Patient Care Record:

   a. The full name of the witness.
   b. The address and telephone number of the witness.
   c. The relationship of the witness to the patient.

2. Document in the narrative portion of the run report;

   a. The **effective date of the DNRO**.

   b. Information pertaining to a witness if one was used to establish patient identification.

c. The **name of the attending physician** who signed the DNRO.

d. **Who signed the DNRO** (patient, health care surrogate, guardian, proxy or by durable power of attorney).

e. If the DNRO patient dies during transport.

3. Ensure a copy of the DNRO accompanies the live patient if transported. Upon arrival personnel shall relinquish the DNRO form to the receiving facility.

Additional Information

1. If it is determined that the patient has a valid DNRO, personnel should not initiate pulmonary or cardiac resuscitation. Any other medical care, short of resuscitation is indicated.

2. If personnel are presented with an incomplete or invalid pre-hospital DNRO or if there is no pre-hospital DNRO, initiation of CPR and other standard life-saving techniques is required.

3. If CPR has been initiated and it is later determined that the patient has a valid DNRO, **CPR shall be discontinued**. Proper documentation is required in accordance with Section B-Confirmation and Documentation above.

4. A DNRO may be revoked at any time by the patient, or the designated health care surrogate, or the legal guardian, or the proxy pursuant to FS 765.104. Under this statute the patient can revoke a DNRO verbally, or in writing, or by physical destruction of the DNRO.

State of Florida
DO NOT RESUSCITATE ORDER

(please use ink)

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

PATIENT'S STATEMENT

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

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

(Applicable Signature) (Print or Type Name)

PHYSICIAN'S STATEMENT

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

(_ _ _) _ _ _ - _ _ _ _

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

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

DH Form 1896, Revised December 2004

PHYSICIAN'S STATEMENT

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

(_ _ _) _ _ _ - _ _ _ _

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

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

DH Form 1896,Revised December 2004

State of Florida
DO NOT RESUSCITATE ORDER

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

PATIENT'S STATEMENT

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

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

(Applicable Signature) (Print or Type Name)

Estado de Florida ORDEN DE NO RESUCITAR (por favor, use tinta)

Este lado del formulario está destinado únicamente a la traducción. Los proveedores de Servicios Médicos de Emergencia y el personal médico sólo deben acatar la versión en inglés del presente formulario. "División de Operaciones Médicas de Emergencia, Oficina de Traumatología"

Nombre legal completo del paciente:_____ Fecha: _____

(Escriba el nombre con letra de imprenta o digítelo)

DECLARACIÓN DEL PACIENTE

Sobre la base del consentimiento informado, yo, quien suscribe, por medio de la presente ordeno que no se me proporcione RCP.

(Si este documento no está firmado por el paciente, marque la casilla pertinente):

- □ Responsable del sujeto
- □ Tutor designado por el tribunal
- □ Apoderado (ambos, según se definen en el Capítulo 765 de los Estatutos de Florida)
- □ Poder de duración indeterminada para fines de atención médica (de acuerdo con el Capítulo 709 de los Estatutos de Florida)

(Firma correspondiente) (Escriba el nombre con letra de imprenta o digítelo)

DECLARACIÓN DEL MÉDICO

Yo, quien suscribe, un médico licenciado de acuerdo con el Capítulo 458 ó 459 de los Estatutos de Florida, soy el médico del paciente anteriormente mencionado. Por medio de la presente, ordeno que no se proporcione resucitación cardiopulmonar (ventilación artificial, compresión torácica, intubación endotraqueal y desfibrilación) al paciente en caso de que éste sufra un paro cardíaco o respiratorio.

(_ _ _) _ _ _ - _ _ _ _

(Firma del médico) (Fecha) Número telefónico (Emergencia)

(Escriba el nombre con letra de imprenta o digítelo) (Número de licencia médica)

FORMULARIO 1896 DEL DEP. DE SALUD, revisado en diciembre de 2004

DECLARACIÓN DEL MÉDICO

Yo, quien suscribe, un médico licenciado de acuerdo con el Capítulo 458 ó 459 de los Estatutos de Florida, soy el médico del paciente anteriormente mencionado. Por medio de la presente, ordeno que no se proporcione resucitación cardiopulmonar (ventilación artificial, compresión torácica, intubación endotraqueal y desfibrilación) al paciente en caso de que éste sufra un paro cardíaco o respiratorio.

(_ _ _) _ _ _ - _ _ _ _

(Firma del médico) (Fecha) Número telefónico (Emergencia)

(Escriba el nombre con letra de imprenta o digítelo) (Número de licencia médica)

FORMULARIO 1896 DEL DEP. DE SALUD, revisado en diciembre de 2004

Estado de Florida ORDEN DE NO RESUCITAR

Nombre legal completo del paciente (Fecha)
(Escriba con letra de imprenta o digítelo)

DECLARACIÓN DEL PACIENTE

Sobre la base del consentimiento informado, yo, quien suscribe, por medio de la presente ordeno que no se me proporcione RCP. **(Si este documento no está firmado por el paciente, marque la casilla pertinente):**

- □ Responsable del sujeto
- □ Apoderado (ambos, según se definen en el Capítulo 765 de los Estatutos de Florida)
- □ Tutor designado por el tribunal
- □ Poder de duración indeterminada para fines de atención médica (de acuerdo con el Capítulo 709 de los Estatutos de Florida)

(Firma correspondiente) (Escriba el nombre con letra de imprenta o digítelo)

Eta Laflorid LÒD PA RESISITE (tanpri itilize lank)

Kote fòm sa a se pou tradiksyon sèlman. Founisè Sèvis Medikal Dijans ak fonksyonè medikal dwe onore vèzyon Anglè fòm sa a. Divizyon Pou Operasyon Medikal Dijans, Biwo Twoma

Non Legal Konplè pasyan an:_____ Dat: _____

(Ekri an Majiskil oswa Tape Non an)

DEKLARASYON PASYAN AN

Baze sou konsantman enfòme an, mwen, ki siyen la, ak prezant sa a deklare pou yo pa fè CPR sou mwen ditou.

(Si pasyan an pat siyen limenm, tcheke kazye ki apwopriye an):

- □ Reprezantan Swen Sante
- □ Gadyen Tribinal la Chwazi
- □ Pwokirè (tou de jan li dekri nan Chapit 765, F.S.)
- □ Responsablite Pwokirasyon Dirab (daprè Chapit 709, F.S.)

(Siyati ki Aplikab) (Ekri an Majiskil oswa Tape Non an)

DEKLARASYON DOKTÈ AN

Mwen, ki siyen la a, yon doktè sètifye daprè Chapit 458 oswa 459, F.S., mwen doktè pasyan an ki nonmen anwo la. Mwen dirije pou yo kenbe ak elimine resisitasyon kadyopilmonè (vantilasyon atifisyèl, konpresyon kadyak, endotrakyal entibasyon akdefibrilasyon) pou pasyan an Sizoka pasyan an ta gen yon epizòd arèdkè oswa respiratwa.

(_ _ _) _ _ _ - _ _ _ _

(Siyati Doktè an) (Dat) Nimewo Telefòn (Ijans)

(Ekri an Non an Majiskil) (Nimewo Lisans Medikal Doktè an)

Fòm 1896 DH, Revize Desanm 2004

DEKLARASYON DOKTÈ AN

Mwen, ki siyen la a, yon doktè sètifye daprè Chapit 458 oswa 459, F.S., mwen doktè pasyan an ki nonmen anwo la. Mwen dirije pou yo kenbe ak elimine resisitasyon kadyopilmonè (vantilasyon atifisyèl, konpresyon kadyak, endotrakyal entibasyon akdefibrilasyon) pou pasyan an sizoka pasyan an ta gen yon epizòd arèdkè oswa respiratwa.

(_ _ _) _ _ _ - _ _ _ _

(Siyati Doktè an) (Dat) Nimewo Telefòn (Ijans)

(Ekri an Majiskil oswa Tape Non an) (Nimewo Lisans Medikal Doktè an)

Fòm 1896 DH, Revize Desanm 2004

Eta Laflorid LÒD PA RESISITE

Non Legal Konplè pasyan an (Ekri an Majiskil oswa Tape) (Dat)

DEKLARASYON PASYAN AN

Baze sou enfòmasyon konsanti, mwen, ki siyen la, ak prezant sa a dirije pou yo pa fè CPR oswa elimine. **(Si pasyan an pat siyen limenm, tcheke kazye ki apwopriye an):**

- □ Reprezantan Swen Sante
- □ Pwokirè (tou de fason ki dekri nan Chapit 765, F.S.)
- □ Gadyen Tribinal la Chwazi
- □ Responsablite Pwokirasyon Dirab (daprè Chapit 709, F.S.)

(Siyati ki Aplikab) (Ekri an Majiskil oswa Tape Non an)

GLASGOW COMMA SCALE (GCS)

The patient should be scored by the response. This is a dynamic score and can be calculated multiple times during resuscitation and transport of a patient				
RESPONSE	**SCORE**	**ADULT**	**CHILD**	**INFANT**
EYES OPENING	4	Spontaneous	Spontaneous	Spontaneous
	3	To speech	To speech	To speech
	2	To pain	To pain	To pain
	1	No response	No response	No response
BEST VERBAL RESPONSE	5	Oriented	Oriented, appropriate	Coos and babbles
	4	Confused	Confused	Irritable, cries
	3	Inappropriate words	Inappropriate words	Cries in response to pain
	2	Incomprehensible sounds	Incomprehensible words / grunts	Moans in response to pain
	1	No response	No response	No response
BEST MOTOR RESPONSE	6	Obeys	Obeys commands	Moves spontaneously and purposely
	5	Localizes	Localizes painful stimulus	Withdraws in response to touch
	4	Withdraws	Withdraws in response to pain	Withdraws in response to pain
	3	Abnormal flexion (decorticate)	Abnormal flexion (decorticate)	Abnormal flexion (decorticate)
	2	Abnormal extension (decerebrate)	Extension (decerebrate) in response to pain	Extension (decerebrate) in response to pain
	1	No response	No response	No response

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MIAMI-DADE COUNTY FACILITIES

FACILITY	ADULT MED/TRAUMA	ADULT TTC	PEDI MED/TRAUMA	PEDI TTC	BURN	SPINAL CORD CENTER	OB GENERAL/ HIGH RISK	GYN	PSYCH	STROKE CENTER LEVEL	HYPER-BARIC	HAZMAT RADIOLOG	HELI PORT	STEMI CENTER
Aventura	YES	YES							YES	**CSC**		HAZ	YES	YES
Baptist	YES		YES				GEN	YES		**CSC**		HAZ/RAD	YES	YES
Baptist West	YES		YES				GEN	YES		PSC		HAZ		
UM/Cedars	YES							YES	YES	PSC		HAZ/RAD		YES
Coral Gables	YES							YES		PSC				
Doctors	YES													
Hialeah	YES						GEN	YES		PSC		HAZ/RAD		
Homestead	YES		YES				GEN	YES				HAZ		
JMH/Ryder	YES	YES	YES	YES	YES	YES	GEN/HR	YES	YES	**CSC**		HAZ/RAD	YES	YES
JMH North	YES		YES				GEN	YES	YES	PSC				YES
JMH South	YES	YES					GEN	YES	YES				YES	YES
Kendall	YES	YES	YES	YES	YES		GEN/HR	YES	YES	**CSC**		HAZ	YES	YES
Larkin	YES								YES					
Larkin-Palm Springs	YES							YES		PSC		HAZ/RAD		
Mercy	YES						GEN/HR	YES	YES	PSC	YES	HAZ/RAD	YES	YES
Nicklaus Children			YES	YES					YES			HAZ/RAD	YES	
Mount Sinai	YES		YES				GEN/HR	YES	YES	**CSC**		HAZ/RAD	YES	YES
Mount Sinai FSED	YES		YES					YES	YES					
North Shore	YES		YES				GEN/HR	YES	YES	PSC		HAZ/RAD		YES
Palmetto	YES		YES				GEN/HR	YES	YES	**CSC**		HAZ/RAD	YES	YES
South Miami	YES						GEN	YES		PSC				YES
Veterans	YES								YES	PSC		HAZ/RAD		YES

SOUTH BROWARD FACILITIES

Cleveland Clinic	YES		YES					YES				HAZ/RAD	YES	YES
Memorial South	YES											HAZ/RAD		
Memorial Miramar	YES		YES				GEN/HR	YES				HAZ/RAD		
Memorial West	YES		YES				GEN/HR	YES		**CSC**		HAZ/RAD	YES	YES
Memorial Pembroke	YES							YES				HAZ/RAD		
Memorial Regional	YES	YES	YES	YES			GEN/HR	YES	YES	**CSC**		HAZ/RAD	YES	YES

Revision Date: August 10, 2016

Blank Space = Service not Provided
Stroke Center=Acute CVA Intervention
HR = High Risk
TTC = Trauma Transport Criteria
HM = HAZMAT Capable
GEN = General OB
RAD = Radioactive Capable
STEMI = ST Elevation Myocardial Infarction
BURN = Burn Unit Center
PSC = Primary Stroke Center
CSC = Comprehensive Stroke Center

"Committed To Excellence"

SPINAL CORD CENTER = Brain and Spinal Cord Acute Care Center
FSED=Mt. Sinai-Aventura Free Standing ED ONLY

**St Mary,s Hospital, West Palm Beach, multiplace hyperbaric facility
Mariners Hospital, Tavernier, multiplace hyperbaric facility

Note: If MERCY is off line, these **hyperbaric facilities can be used.

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All patient related medical communications will be conducted through the dispatch center, also known as the Public Safety Answering Point or PSAP, by means of recorded telecommunications, utilizing only department authorized equipment.

Alerts should also be transmitted directly to the receiving facility on the appropriate channel.

1. A **TRAUMA ALERT** should be declared and transmitted to the PSCU to be time stamped, and to the receiving Trauma Center as soon as it is determined that the patient(s) meet Trauma Alert Criteria. The OIC shall then contact the Trauma Center with additional patient trauma information as soon as possible.

2. A **STEMI ALERT** should be declared and transmitted to the PSCU to be time stamped and to the STEMI/Cath Lab as soon as it is determined that the patient is having an MI. The OIC shall alert the appropriate receiving facility with additional information as soon as possible.

3. A **STROKE ALERT** should be declared and transmitted to the PSCU to be time stamped and to the Stroke Center as soon as it is determined that the patient is having or has had stroke symptoms for **less than 12 hours**. The OIC shall alert the appropriate receiving facility with additional information as soon as possible.

Use of a medical communication channel is authorized and appropriate under the following circumstances:

1. When required under medical protocol.

2. For clarification of a diagnosis or treatment in complex situations not covered by protocol/procedure or, when beyond the paramedic's scope of knowledge.

3. For instructions covering treatment over and above protocol/procedure.

4. In situations where medical supervision is deemed necessary or desirable by the pre-hospital provider.

5. In situations where consultation or administrative intervention by EMS Division Staff is necessary.

6. For routine radio checks.

Medical Priorities

1. **Critical / Priority I:**
   Used for patients presenting with an immediately life-threatening illness or critical injury.

2. **Serious / Priority II:**
   Used for those patients presenting with an illness or injury requiring immediate medical intervention, which has the potential for becoming life threatening if not treated promptly.

3. **Stable / Priority III**:
   Used for those patients presenting with an illness or injury not requiring immediate medical intervention, or is so easily managed that medical direction is not required. Also used for notification of impending patient arrival.

4. **Administrative / Priority IV**:
   Used for all transmissions not involving care of a patient.

5. **Trauma Alert**
   Used for those patients meeting Trauma Alert Criteria.

6. **STEMI Alert**
   Used for those patients with a suspected ST Elevation MI (STEMI) that might require a fibrinolytic and/or an acute angioplasty in a Cath Lab.

7. **Stroke Alert**
   Used for those patients with suspected stroke and within 12 hours of onset of symptoms.

Communications with a Receiving Facility

1. Establish communications with receiving hospital. Announce name of receiving hospital, followed by department and unit number.

2. After receiving acknowledgment from hospital, relate the following:

   a) Priority of the call.

      1) Communications with a Trauma Center or Pediatric Trauma Referral Center for patients meeting Adult or Pedi Trauma Alert Criteria must begin with the statement "This is a Trauma Alert" and the specific Trauma Alert Criteria.

2) Communications with a STEMI/Cath Lab facility must begin with the statement "This is a STEMI Alert"

3) Communications with a Stroke Center must begin with the statement "This is a Stroke Alert" if onset of symptoms is less than 12 hours.

b) Age, sex, approximate weight (if appropriate, e.g., pediatric patients) and chief complaint.

c) A brief, pertinent history of the present illness, condition, situation, mechanism of injury, etc.

d) Level of consciousness (oriented to person, place, time, & event), Adult Glasgow Coma Score, Pedi Glasgow Coma Score.

e) Vital signs (B/P, pulse, respirations, pulse Ox reading, and Glucometer reading).

f) Physical findings – skin: color, temperature, turgor; obvious injuries or deformities, breath sounds, neurological status, ECG, etc.

g) Treatment given and any results observed.

h) Estimated time of arrival.

3. Using the mnemonic **SBAR**, can help state briefly and concisely (in less than 2 minutes) the pertinent aspects listed above:

a) **S---Situation**
   1) Patient's age and gender
   2) Basic problem or chief complaint

b) **B---Background**
   1) BRIEF summary of medical history, medications, and allergies.
   2) Vital signs.
   3) Physical findings.
   4) Rhythm interpretation when appropriate.

c) **A---Assessment and Actions taken**
   1) Treatment performed or in progress.
   2) Status following treatment(s).

d) **R---Recommendations**
   1) Transport status, assistance if indicated, nothing further if indicated
   2) Estimated time of arrival.

4. Await response to transmission and be prepared to carry out instructions for further patient management from emergency department physician.

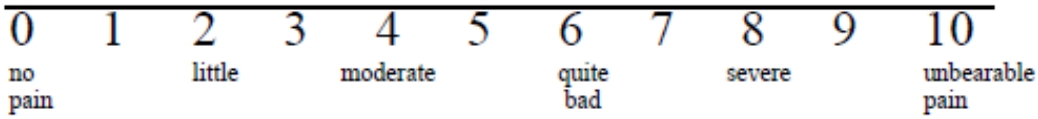
5. Medication orders received by the paramedic must be repeated back to the hospital prior to administration. Paramedics receiving treatment orders that exceed or violate accepted medical practice or protocol will:

   a) Re-confirm the treatment order and advise the physician of your belief that it exceeds or violates established protocol.

   b) If unresolved, immediately seek on-line intervention through your proper chain of command, or if time permits, contact Medical Control.

Pain Assessment

Pain scales help measure how well treatment is working and to adjust the treatment plan if needed.



Wong-Baker FACES Pain Rating Scale

0 NO HURT | 2 HURTS LITTLE BIT | 4 HURTS LITTLE MORE | 6 HURTS EVEN MORE | 8 HURTS WHOLE LOT | 10 HURTS WORST

FLACC scale

Behavioral Observation Pain Rating Scale

Categories	Scoring		
	0	1	2
Face	No particular expression or smile; disinterested	Occasional grimace or frown, withdrawn	Frequent to constant frown, clenched jaw, quivering chin
Legs	No position or relaxed	Uneasy, restless, tense	Kicking, or legs drawn up
Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid, or jerking
Cry	No crying (awake or asleep)	Moans or whimpers, occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content, relaxed	Reassured by occasional touching, hugging, or talking to. Distractable	Difficult to console or comfort
Each of the five categories (F) Face; (L) Legs; (A) Activity; (C) Cry; (C) Consolability is scored from 0-2, which results in a total score between 0 and 10.			

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Introduction

Treatment and transportation will be ensured by the most effective and efficient means possible to all patients with illness or injury in accordance with this protocol. It is incumbent upon all Paramedics and EMTs involved with the patient to act in the patient's best interest.

State laws governing Paramedic and EMT practice do not recognize the supervisory rank structure of the EMS provider agencies. It is therefore the responsibility of the Officer in Charge (OIC) to ensure that all patient care decisions are based upon teamwork. It is important for all of the involved Paramedics and EMTs to assume equal responsibility for the care of the patient. If problems are encountered while carrying out any part of this protocol, an EMS Supervisor or Medical Control can be contacted to provide guidance and/or clarification, or refer to current department policies, procedures, and SOGs for clarification.

Procedure

ALS Transport

1. All patients deemed critical will be transported to the closest appropriate facility.

2. All stable patients requiring transportation will be transported to the most appropriate (but not necessarily the nearest) facility considering the following:
   a. Specialized treatment.
   b. Patient or physician requests.

3. If there is any doubt or concern about a patient's condition or stability, the patient will be transported in a Fire Rescue ALS unit to the most appropriate facility.

4. If any Fire Rescue personnel believes a patient care decision will have a negative impact on a patient's outcome, that individual should immediately advise the OIC of this concern. When possible, this should be accomplished away from the patient and family members.

5. If the OIC or Paramedic or EMT needs assistance with any aspect of the treatment and/or transport decision they may seek assistance from one of the following:
   a. EMS Supervisor.
   b. Medical Control.

6. NOTE: If a dispute arises regarding the transport of patient(s) or transport destination of patient(s), the EMS Supervisor or Medical Control will make the final decision.

7. The decision to transport a patient utilizing emergency lights and sirens will be at the discretion of the OIC.

Non-ALS Transport

1. After a complete patient assessment, if it is determined that the patient is stable, the OIC may elect to:

   a. Transport in a fire rescue unit to a hospital located within the city limits.

      NOTE: City of Miami Fire units will transport to facilities within the following boundaries: South Miami Hospital to the South and North Shore Hospital to the North.

   b. Transport to a facility outside city limits with approval from EMS Supervisor.

   c. Release to an ambulance service if fire rescue units are not available, or if patient requests transport to a hospital that is not approved.
   OR
   d. Refer to current department policies, procedures, and SOGs for clarification.

   e. Use alternate transportation.

2. If the patient is to be transported by ambulance, fire rescue personnel will remain on the scene until the arrival of the ambulance. A unit may clear an incident to respond to another incident only if the OIC determines there are no other units available in zone and documents that the patient's condition is stable at the time of release.

3. If a patient consents to alternative means of transportation, every effort will be made to ensure that this transportation can be initiated while the fire rescue unit is on the scene.

4. NOTE: It is imperative that a complete patient assessment with vital signs is properly documented to support the decision to release a patient to either an ambulance or alternate means of transportation.

OB/GYN Transport

1. **Stable** pregnant patients with **less than 20 weeks** gestation, can be transported to the closest appropriate OB/GYN facility by fire rescue, ambulance, or alternate means.

2. Any patient with **at least 20 weeks** gestation experiencing complications of pregnancy or exhibiting signs and symptoms (e.g. BP greater than or equal to 140/90, abdominal pain, or vaginal bleeding) of imminent delivery will be transported by a fire rescue unit to the closest appropriate OB/GYN facility.

3. Patients in suspected active labor should be transported by fire rescue to the closest appropriate OB/GYN facility.

TRAUMA ALERT Transport

1. Patients meeting Trauma Transport Criteria will be transported to the closest appropriate Trauma Center via a Fire Rescue ALS unit or Air Rescue. This includes patients whose status changes to meet Trauma Transport Criteria during transport to another facility.

2. Trauma patients who meet Trauma Transport Criteria may be transported to a non-Trauma Center only when:

   a. An airway cannot be established.
   b. The Trauma Center is on bypass.
   c. An MCI is declared and the Trauma Center is overwhelmed.

STEMI ALERT or STROKE ALERT Transport

1. Patients meeting STEMI Alert or Stroke Alert Criteria will be transported to the closest appropriate facility via a Fire Rescue ALS unit. This includes patients whose status changes to meet STEMI Alert or Stroke Alert Criteria during transport to another facility.

HAZMAT Transport

1. When dealing with HAZMAT incidents, HAZMAT teams typically handle extrication and decontamination. HAZMAT exposures are Biological, Chemical and Radiological. In addition, they may be part of an MCI.

2. Rescue personnel should don appropriate PPE.

3. It may be necessary to prep the transport unit (e.g., visqueen)

4. Ensure the patient is transported to the closest appropriate facility capable of dealing with the type of your patient's contamination.

5. If dealing with an MCI, act in accordance with departmental procedures.

6. Notify the receiving facility of the HAZMAT circumstances and the patient's exposure status.

7. Remove the patient's clothing, and wash the patient down before loading the patient onto the Rescue vehicle.

8. Follow the receiving facility's directions regarding their preparations and management of the HAZMAT patient.

CONTAGIOUS PATIENT Transport

1. Biological pathogens are transmitted by airborne, bloodborne, and fecal-oral exposures; therefore, the responder must consider both the contaminated patient, as well as the environment in which the patient became ill.

2. Consider scene safety, and don appropriate PPE.

3. Consider controlling contamination by applying appropriate PPE to the patient.

4. Advise receiving facility of the possible contagious patient (“Universal Precautions”).

5. Follow the receiving facility’s directions regarding their preparations and management of the contagious patient.

INTERFACILITY Transport

1. EMS may be requested to provide an Interfacility Transport for a critical patient.

2. EMS may transport with a verbal agreement between the doctor at the sending facility and the doctor at the receiving facility, with the understanding that records and documents will be provided ASAP. The names of the sending and the receiving doctors should be obtained and recorded in the ePCR.

3. If any equipment needed to treat the patient is unfamiliar to EMS personnel or not in the EMS Protocol, then the sending facility must send a person qualified to use that equipment during the patient transfer.

4. The patient will be assessed and treated per EMS protocol, unless a doctor accompanies the patient and directs EMS to follow an alternative protocol.

5. Contact the EMS Supervisor for any conflicts.

AIR RESCUE Transport

1. The OIC should consider the use of Air Rescue for victims of critical illness/trauma when either the arrival time to the scene, or the treatment/transport time from the scene to the nearest appropriate hospital or Trauma Center is more than twenty (20) minutes due to a prolonged extrication or traffic conditions.

2. Air Rescue should also be considered for patients requiring immediate medical specialties not available at the nearest appropriate hospital.

3. When transporting children, a non-injured family member may accompany the patient at the discretion of the air crew.

Patient in Possession of a Weapon(s)

1. When it becomes apparent that a patient is armed, and in the opinion of the OIC, the scene is unsafe, Fire Rescue personnel should withdraw and request the appropriate police agency response.

2. The patient will not be examined or transported if the weapon is not surrendered to police. Under no circumstances will fire rescue personnel impound a weapon.

3. Any actions taken should be documented on the Patient Care Record.

Patient Release at the Hospital

1. Fire rescue personnel will not release a patient until they have provided the Emergency Department with a minimum of a face-to-face verbal transfer of pertinent information and a preliminary Patient Care Record.

2. The name of the health care professional who received the patient should be recorded on the Patient Care Record.

3. If an Advanced Airway is in place, placement shall be confirmed at the time of transfer by running Capnography and documenting the CO_2 reading in the Patient Care Record.

Definitions

1. **Alternate transport -** Transportation other than by fire rescue, obtained through alternate means such as; private vehicle, taxi, bus, etc.

2. **Appropriate hospital -** A hospital having the capabilities to provide the necessary patient care as defined by the Hospital Capability Chart.

3. **STEMI Alert -** Call a STEMI Alert and transport to a STEMI Center when an ST Elevation MI is identified on a 12Lead ECG.

4. **Complications of Pregnancy** - Active vaginal bleeding, premature labor, seizures, prolapsed cord, limb presentation, meconium stained amniotic fluid, or abnormal maternal vital signs (systolic blood pressure less than 90 mmHg, or a blood pressure in the second half of pregnancy equal to or greater than 140/90mmHg with no pre-pregnancy history of hypertension). Additionally, any pregnant female whose blood pressure exceeds 30mmHg systolic and/or 15mmHg diastolic above her normal BP.

5. **Critical patient** - Life threatening emergencies that require immediate intervention including but not limited to:

   a. Airway obstruction.
   b. Respiratory insufficiency or arrest
   c. Decreased cardiac output, cardiac arrest, or shock.
   d. Acute changes in level of consciousness not related to trauma.
   e. Acute MIs or life threatening arrhythmias.
   f. Patients meeting Trauma Alert Criteria.

6. **Imminent delivery** - Signs and/or symptoms that the patient will deliver in a reasonably short period of time. These include: the maternal urge to push, or to move the bowels, evidence of crowning, leakage of amniotic fluid, and/or a bloody show.

7. **Minor** - For the purpose of legal consent, a patient younger than 18 years of age. The definition of emancipated minors is included in Consent Refusal.

8. **Pediatric patient** - For the purpose of hospital capabilities and Pediatric Trauma Transport Criteria, a patient less than 16 years of age.

9. **Pediatric Trauma Referral Center (PTRC)** - Any hospital that has been issued a certificate of verification as a Pediatric Trauma Referral Center by the Florida Department of Health.

10. **Specialized treatment** - Patient care not identified in other areas of the hospital capability chart or the Trauma Transport Protocol such as: eye emergencies, amputations, etc.

11. **Stable patient** - A patient that is not likely to deteriorate between the time initial assessment is conducted and the time of transfer to the receiving hospital.

12. **Stroke Alert** - Call a Stroke Alert and transport to a Stroke Center when a Stroke has been identified on a the Stroke Alert Checklist and the time of onset of symptoms has been less than 12 hours.

13. **Suspected labor** - Patients with greater than 20 weeks gestation experiencing abdominal pain contractions or other indications of labor, but not meeting the definition for imminent delivery.

14. **Trauma Alert** - Call a Trauma Alert and transport to a Trauma Center when a patient meets Trauma Alert Criteria.

15. **Trauma Center** - Any hospital that has been issued a certificate of verification as a trauma center by the Florida Department of Health.

Introduction

Occasionally there will be a physician on the scene, who desires to direct the prehospital care of the patient. This may be in the physician's office, or on the scene of the call you have responded to.

Procedure

To comply with the request of a physician on scene to direct treatment, you must:

1. Act in a professional manner.
2. Advise the physician that you have a protocol to follow.
3. If the physician insists on actively participating in the patient's care, ask to see a copy of their current **Florida** DOH **MD** or **DO License.**
4. Determine if the physician is willing to ride with the patient during transport, unless the EMS Supervisor or Medical Control agrees that this is not necessary.
5. Contact EMS Supervisor or Medical Control and advise that a physician on scene is assuming responsibility for the treatment of the patient.
6. Inform the physician on scene that you are documenting this assumption of care in your PCR.
7. Advise the physician on scene that their signature is required in the electronic PCR for any orders given during this incident.
8. If the Paramedic in charge questions an order, or considers it harmful, inform the physician on scene that this issue must be resolved with the EMS Supervisor or Medical Control.
9. All interactions between the physician on scene and the EMS Supervisor or Medical Control must be documented in the PCR.
10. In the event there is not agreement, the paramedic will follow established protocols and/or the orders of the EMS Supervisor or Medical Control.

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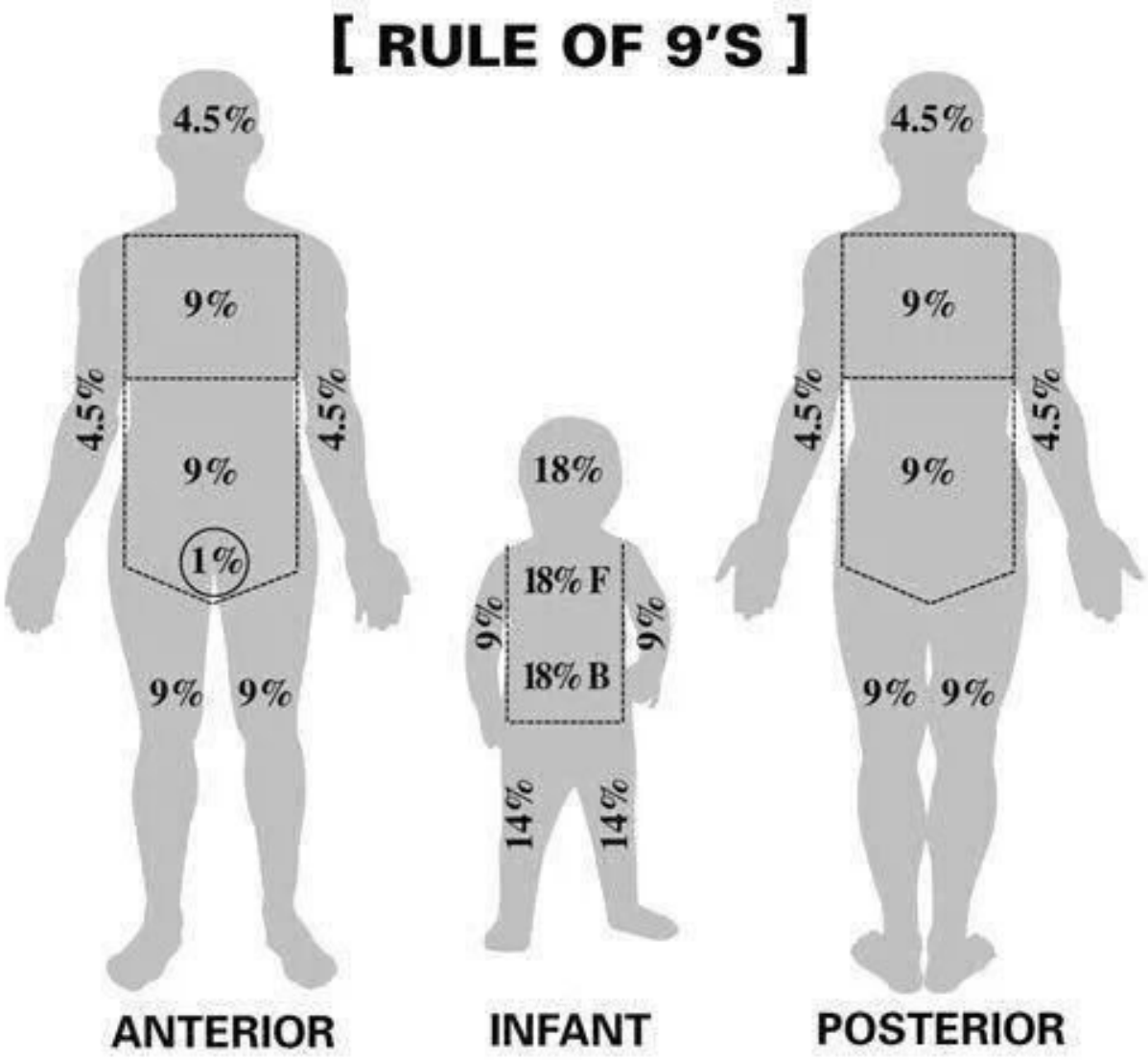
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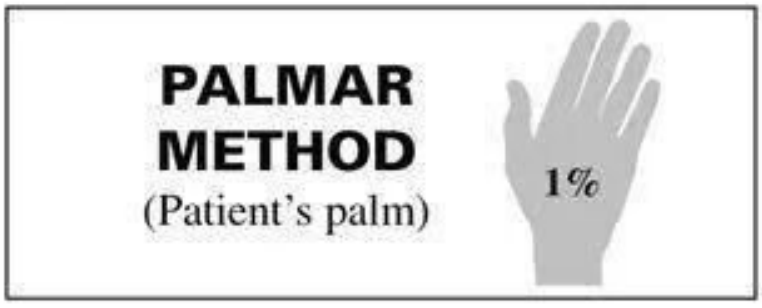
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Committed to Excellence

FOAMD EMS STROKE ALERT

Field Assessment Stroke Triage for Emergency Destination (FAST-ED)

(Circle value that apply)

	FAST-ED SCORE
Facial Palsy (Facial droop): Have patient smile or show teeth (look for asymmetry)	
Normal: Both sides of face move equally or not at all	**0**
Abnormal: One side of face droops (or is clearly asymmetric)	**1**
Arm Weakness (Arm drift): Close eyes, extend arms palms up	
Normal: Both arms remain up > 10 seconds or slowly drifts down equally	**0**
Mild: One arm drifts down in < 10 seconds with some effort against gravity	**1**
Moderate/Severe: One arm fall rapidly against gravity or no movement at all	**2**
Speech Changes (Expressive aphasia): Have patient repeat the following words "Mama" "Huckleberry" and "Baseball Player"	
Normal: Speech content normal AND names 2-3 items correctly	**0**
Abnormal: Speech content clearly abnormal OR names 0-1 items correctly	**1**
Speech Changes (Receptive aphasia): Ask patient "show me two fingers" (no visual clues)	
Normal: Patient shows two fingers	**0**
Abnormal: Patient does not understand or does not show two fingers	**1**
Eye Deviation (Gaze deviation): Ask the patient to follow your finger as you move it from right to left and back from left to right	
Normal: No deviation, eyes move to both sides equally	**0**
Gaze preference: Patient has clear difficulty when looking to one side (left or right)	**1**
Forced deviation: Eyes are deviated to one side and do not move	**2**
Denial/Neglect (Anosognosia): Ask patient "Are you weak anywhere"	
Normal: Patient recognizes weak side or has no weakness	**0**
Abnormal: Patient does not recognize their weak side	**1**
Denial/Neglect (Asomatognosia): Show the patient his/her weak arm and ask "Whose arm is this?"	
Normal: Patient recognizes his/her weak arm or no weakness at all	**0**
Abnormal: Patient does not recognize his/her weak arm	**1**

TOTAL SCORE _____

0 = NOT A STROKE ALERT (STOP) **1-9 = POSSIBLE "STROKE ALERT" (Continue to Section 2)**

Committed to Excellence

FOAMD EMS STROKE ALERT

Section 2 (Exclusion Criteria)

Baseline GCS (Prior to event) _____

≤ **12:** Patient ***IS NOT*** a stroke alert, Transport to closest Primary or Comprehensive stroke center
> **12** or unknown: **Continue**

Time since last seen normal _____

> **12** hours: Patient ***IS NOT*** a stroke alert, Transport to closest Comprehensive stroke center
≤ **12** hours or unknown: **Continue**

Blood Glucose Level _____

< **60** and symptoms improve with D50: Patient ***IS NOT*** a stroke alert
< **60** and symptoms do not improve with D50: **Continue to Section 3**
≥ **60**: **Continue to Section 3**

Section 3 (Destination Determination)

(Check all that apply)

- ☐ Estimated arrival at Emergency Department is greater than 3.5 hours since time last seen normal
- ☐ Witnessed seizure at onset.
- ☐ Patient taking any blood thinner except aspirin. [Example: Coumadin (warfarin), Plavix (Clopidogrel bisulphate), Pradaxa (dabigatran), Brilinta (ticagrelor), Xarelto (rivaroxaban), Lovenox (enoxaparin), Fragmin (dalteparin)]
- ☐ Recent GI or urinary tract bleeding within the last 21 days.
- ☐ Recent surgery or invasive procedure within the last 14 days
- ☐ Head trauma, spinal surgery or previous stroke within the last 90 days.
- ☐ Woman of child bearing age who has a positive pregnancy test
- ☐ Known Intracranial pathology (Tumor, Aneurysm, ArterioVenous Malformation (AVM) or Intracranial Hemorrhage)
- ☐ Sudden onset of worst headache ever

Are any items checked in this section?

YES: "STROKE ALERT" TRANSPORT TO CLOSEST COMPREHENSIVE STROKE CENTER

NO: FAST-ED SCORE 1-3---"STROKE ALERT"-TRANSPORT TO CLOSEST PRIMARY OR COMPREHENSIVE STROKE CENTER

FAST-ED SCORE 4-9---"STROKE ALERT"-TRANSPORT TO CLOSEST COMPREHENSIVE STROKE CENTER

All Stroke Alert notifications will include the FAST-ED Score. The Comprehensive Stroke Center will activate the Cath Lab and Stroke Team upon notification of a **FAST-ED score ≥ 6 **

Adult Trauma Alert Criteria

Injured persons with anatomical and physiological characteristics of a person 16 years of age or older meeting any one of the parameters in Category 1, or any two parameters in Category 2, are considered trauma transport criteria (TTC) patients and will be transported to the nearest State Approved Trauma Center (SATC).

Once a patient meets trauma alert criteria, begin transport to a Trauma Center. A more complete exam can be made during transport.

	CATEGORY 1 (ANY **1** MEETS TTC)	**CATEGORY 2** (ANY **2** MEETS TTC)
AGE		≥ 55 years old
AIRWAY	active airway assistance beyond supplemental O_2[1]	respiratory rate ≥ 30
MOTOR RESPONSE	BMR[2] ≤ 4, or paralysis, or suspicion of spinal cord injury, or loss of sensation	BMR[2] 5
CONSCIOUSNESS	GCS ≤ 12[3], or GCS <15 of pt. with head injury, taking any blood thinner other than ASA	
CIRCULATION	no radial pulse and sustained heart rate > 120 bpm, or SBP < 90mmHg	sustained heart rate ≥120 bpm
FRACTURE	2 or more long bone fracture sites (humerus, radius/ulna, femur, tibia/fibula)	Any long bone fracture sustained in a MVC or fall ≥10 feet
CUTANEOUS	2nd or 3rd degree burns to ≥ 15% TBSA, or amputation at or proximal to wrist or ankle, or penetrating injury to head, neck, or torso[4]	major degloving injury, or major flap avulsion > 5 inches, or GSW to the extremities
MECHANISM OF INJURY		Ejection from motor vehicle[5], or steering wheel deformity resulting from driver impact, or death of occupant in same passenger compartment.
OTHER	Paramedic or EMT Judgement	

Adult Criteria Footnotes:

1. Assistance includes manual jaw thrust, multiple suctioning, or use of other adjuncts to assist ventilatory efforts.

2. BMR = Best motor response of the Glasgow Coma Scale.

3. Excludes those patients whose baseline GCS is ≤ 12, or BMR is ≤ 4, as established by the patient's medical history or preexisting medical condition when known.

4. Excludes superficial wounds in which the depth of the wound can be easily determined. Gunshot wounds proximal to the elbow or knee with an unknown tract (i.e., no exit or palpable bullet) are trauma patients.

5. Excludes motorcycles, mopeds, all-terrain vehicles, bicycles, or the open body of a pick-up truck.

Paramedic Judgment

1. If a patient does not meet any of the Adult Trauma Alert Criteria, **Paramedic Judgment** may be used as the criteria to transport to a Trauma Center.

2. **Paramedic Judgment** may include, but is not limited to the following injuries:

   a. those sustained in a motor vehicle collision requiring long extrication

   b. penetrating extremity wounds without distal pulses

   c. gunshot wounds to an upper thigh or arm without an exit wound

3. These should be transported to the closest appropriate Trauma Center. Trauma Center personnel may ask for your rationale for transporting a patient to the Trauma Center under Paramedic Judgment. Your response will help the Trauma Center to prepare and care for the patient.

Pediatric Trauma Alert Criteria

Injured persons with anatomical and physiological characteristics of a person 15 years of age or younger meeting any one of the parameters in Category 1, or any two parameters in Category 2, are considered trauma transport criteria (TTC) patients and should be transported to the nearest State Approved Trauma Center (SATC) or State Approved Pediatric Trauma Center (SAPTC).

Once a patient meets trauma alert criteria, begin transport to the Trauma Center. A more complete exam can be made during transport.

	CATEGORY 1 (ANY **1** MEETS TTC)	**CATEGORY 2** (ANY **2** MEETS TTC)
SIZE		11 Kg or less
AIRWAY	assisted or intubated or manual airway opening[1]	
CONSCIOUSNESS	altered mental status or paralysis or coma or suspected spinal cord injury or loss of sensation	amnesia or any reliable[2] history of loss of consciousness
CIRCULATION	faint or not palpable carotid or femoral pulse or SBP < 50mmHg	carotid or femoral pulse palpable, but radial or pedal pulses not; or SBP 50-90mmHg, or capillary refill > 3 seconds
FRACTURE	any open long bone fracture or multiple fracture sites or multiple dislocations or pelvic fracture	single closed long bone fracture anywhere
CUTANEOUS	Major tissue disruption[3] or amputation[4] or 2° or 3° burns to ≥ 10% TBSA or any penetrating injury to head, neck or torso[5]	
MECHANISM OF INJURY		Ejection from motor vehicle[6], or death of occupant in same passenger compartment.
OTHER		
	Paramedic or EMT Judgement	

Pediatric Criteria Footnotes:

1. Assistance includes manual jaw thrust, multiple suctioning, or use of other adjuncts to assist ventilatory effort.

2. "Reliable history of lost consciousness" is that observed by a medically competent prehospital care provider (e.g. first responder, police officer, EMT, paramedic, nurse, physician, etc.)

3. Degloving injuries, major flap avulsions, or major soft tissue disruption.

4. Amputations at or above the level of the wrist or ankle.

5. Excludes superficial wounds in which the depth of the wound can be easily determined.

6. Excludes motorcycles, mopeds, all-terrain vehicles, bicycles, or the open body of a pick-up truck.

7. When EMT or Paramedic Judgment is used it must be documented in the Patient Care Record.

Paramedic Judgment

1. If a child does not meet any of the Pediatric Trauma Alert Criteria, **Paramedic Judgment** may be used as the criteria to transport to a Trauma Center.

2. **Paramedic Judgment** may include, but is not limited to the following injuries:

   a. those sustained in a motor vehicle collision requiring long extrication

   b. penetrating extremity wounds without distal pulses

   c. gunshot wounds to an upper thigh or arm without an exit wound

3. These should be transported to the nearest Trauma Center. Trauma Center personnel may ask for your rationale for transporting a patient to the Trauma Center under Paramedic Judgment. Your response will help the Trauma Center to prepare and care for the patient.

Adult Algorithms

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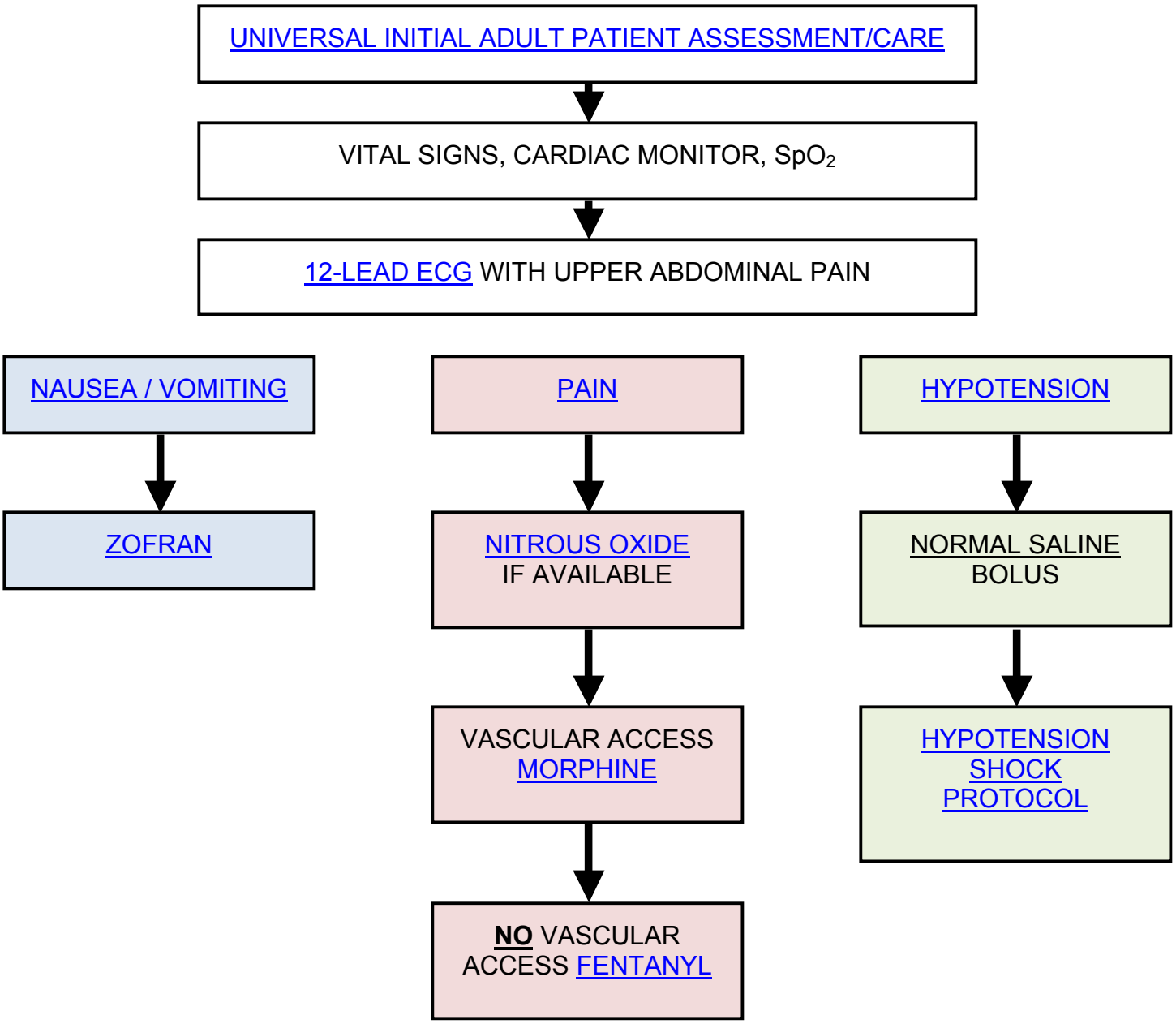
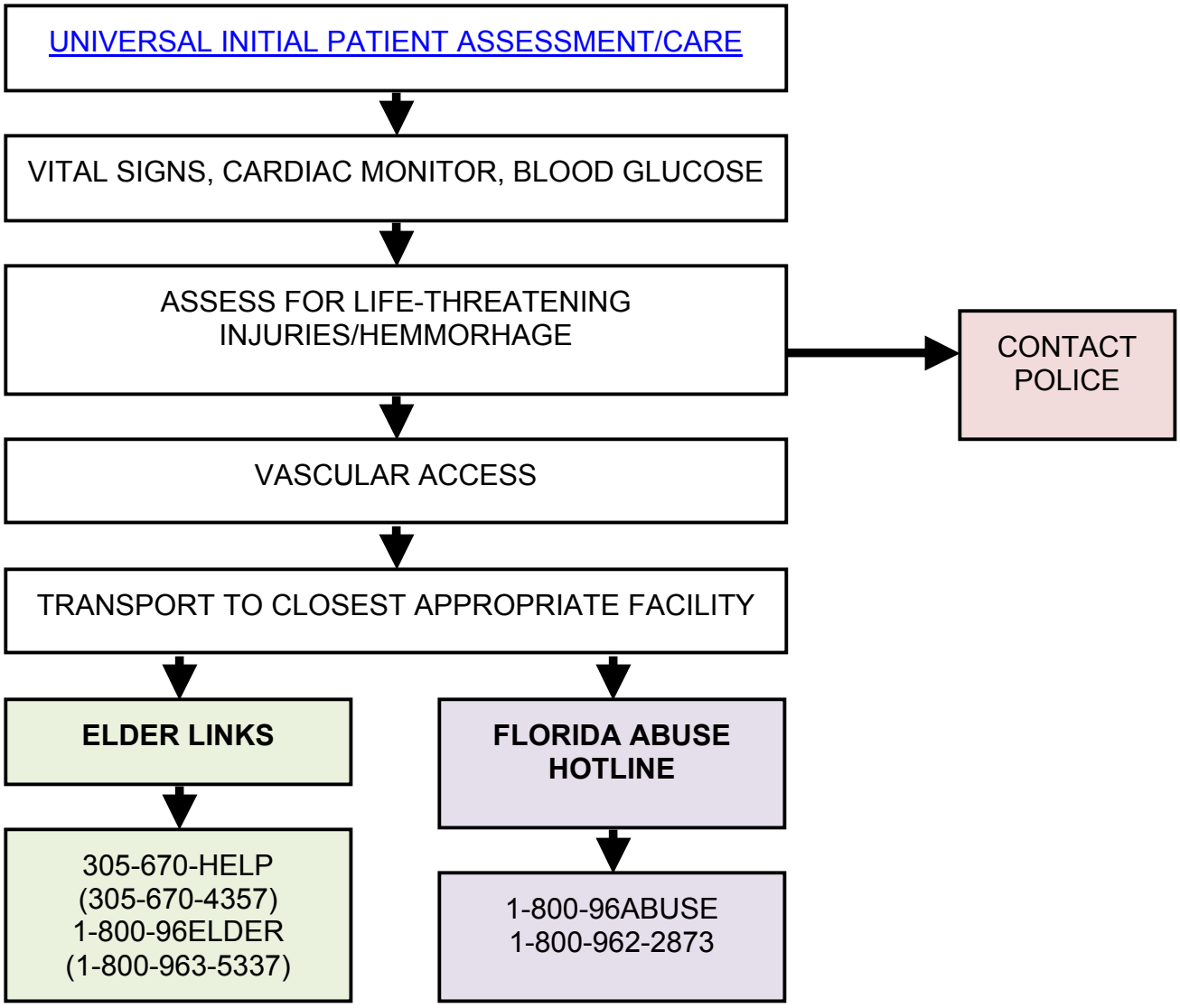
ADULT ABDOMINAL PAIN



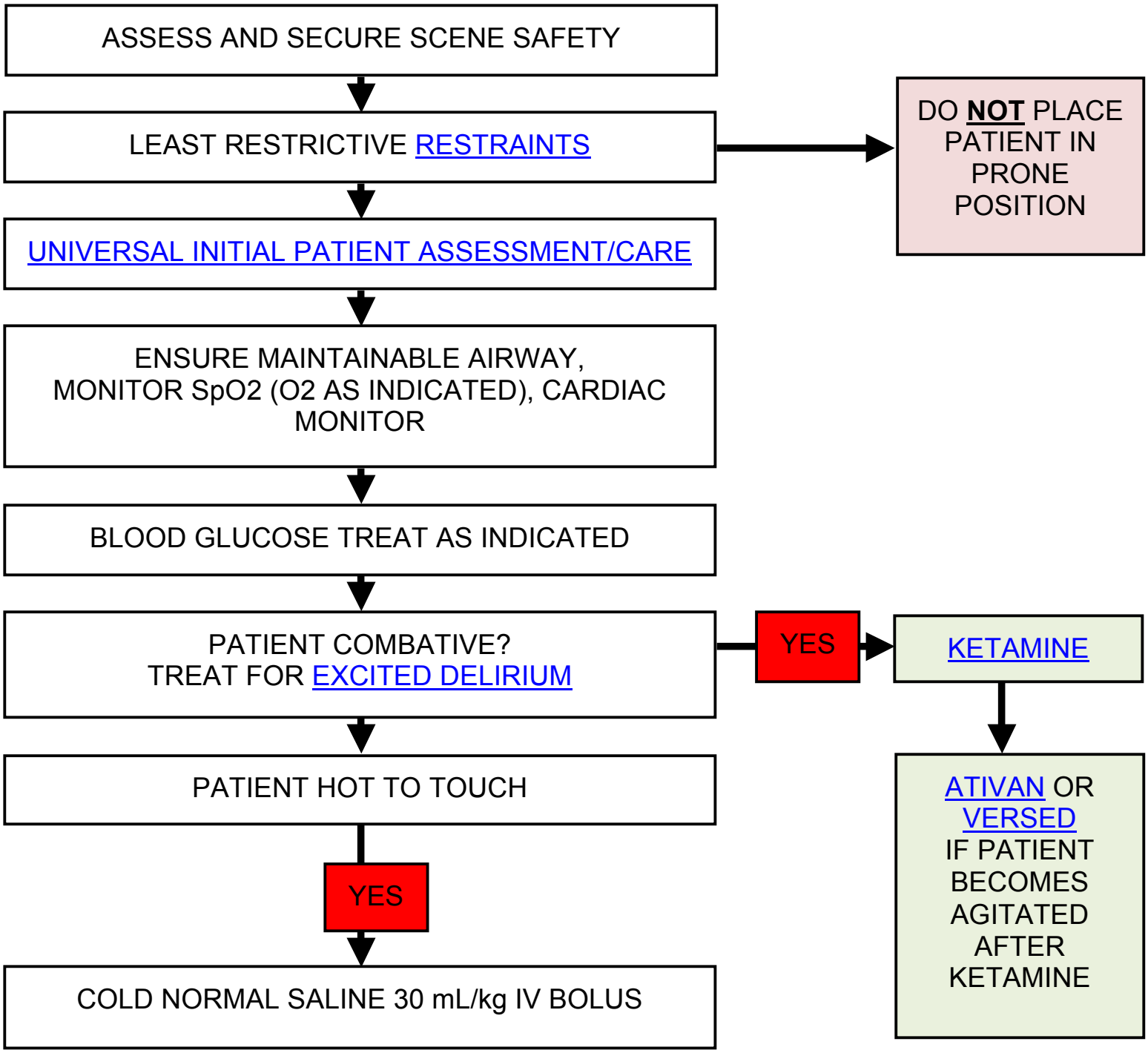
- **Questions:**
  - Onset gradual or sudden?
  - Constant or intermittent?
  - Has the pain moved since it started?
  - Have you had this type of pain before?
  - Anything make it better or worse?
  - Pain Scale – how bad is the pain?
  - Associated symptoms?
    - Nausea, vomiting, diarrhea, SOB
  - Any medications taken?
  - Last menses?
- **Past Medical History**
  - Heart disease, diabetes, ulcers, previous abdominal surgery

ADULT ABUSE REPORTING



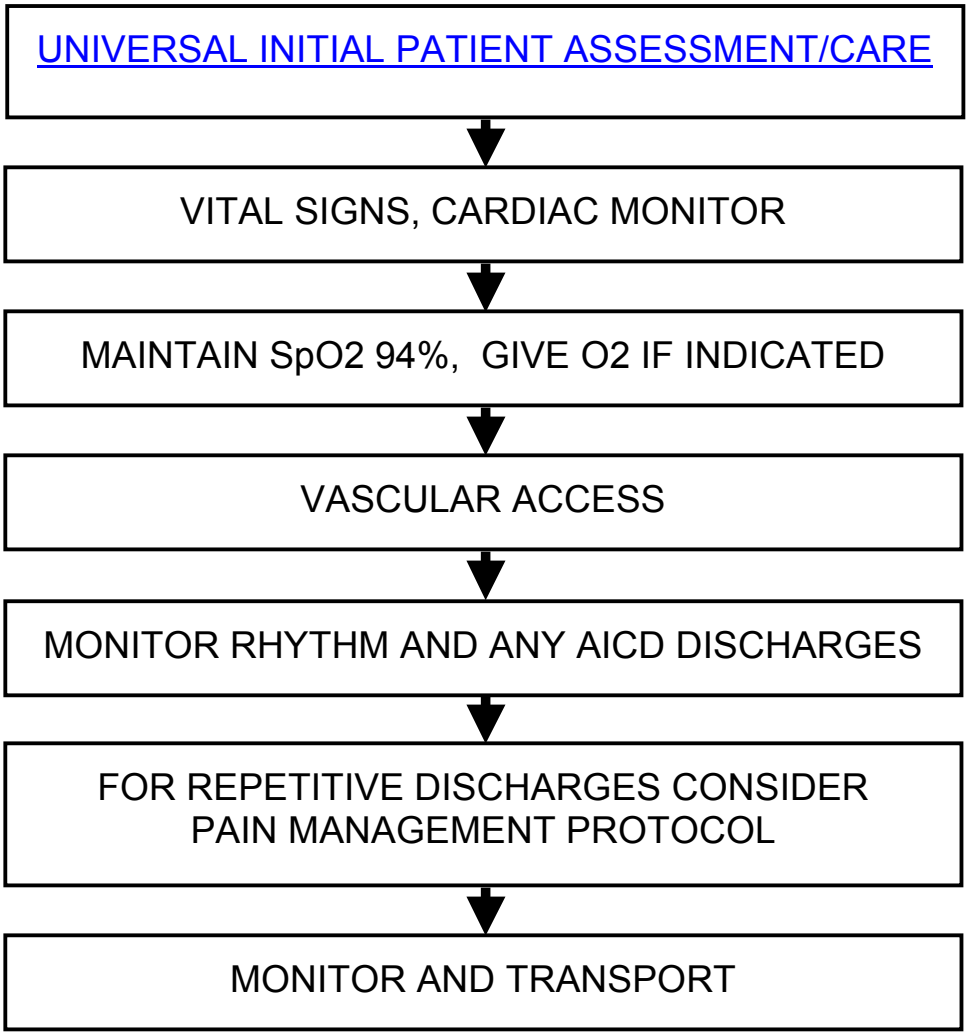
- **Treat the patient's injuries and/or medical condition first.**
- **Do NOT make any accusations.**
- **Report suspected abuse. Florida State Law protects those reporting suspected abuse.**

THE AGITATED PATIENT/EXCITED DELIRIUM



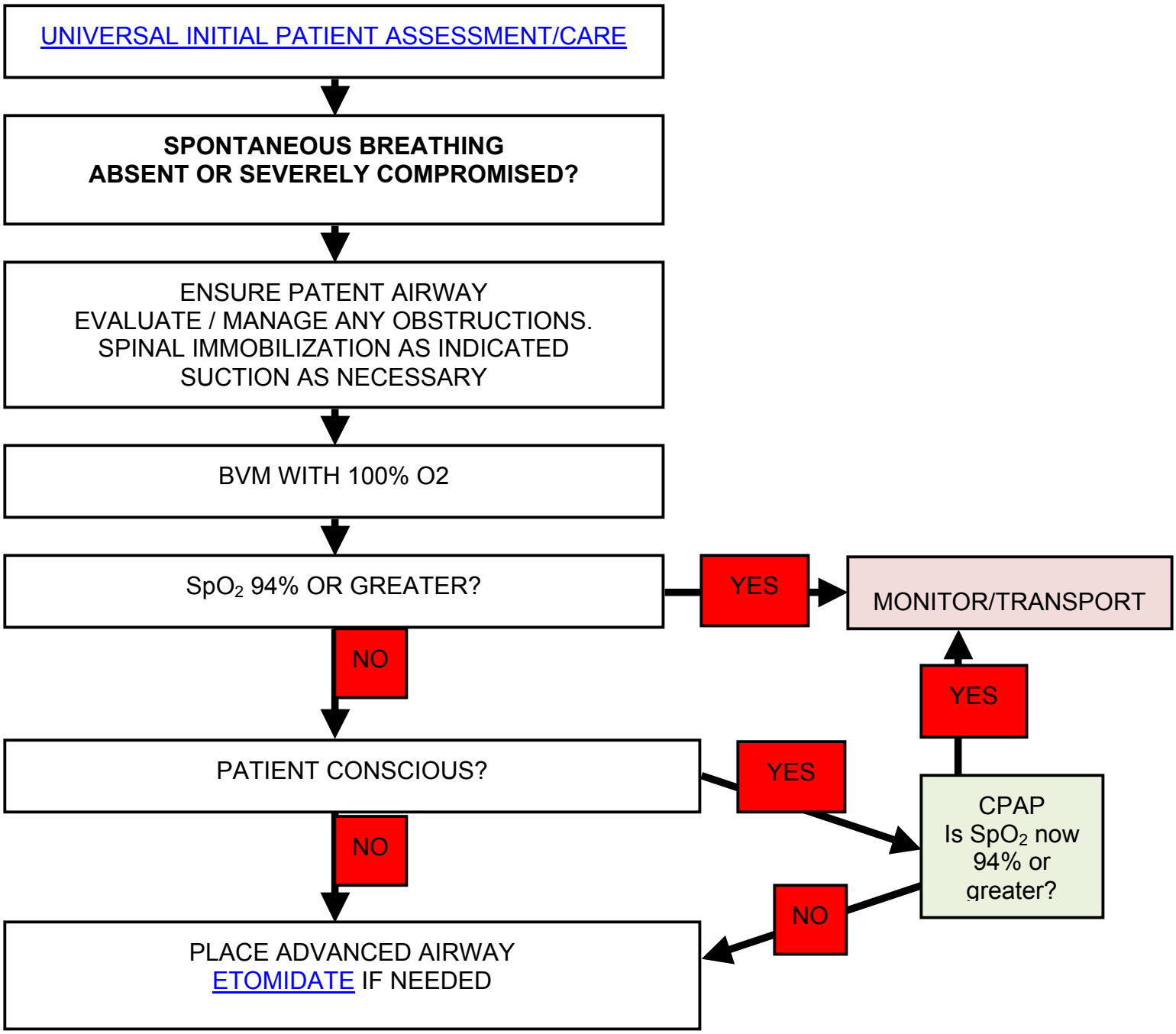
- **EXCITED DELIRIUM----- REMEMBER T.A.S.E.R.**
  - **T-tough, strong, diminished pain response**
  - **A-agitated, combative, verbally and/or physically threatening**
  - **S-sweating**
  - **E-elevated skin temperature**
  - **R-recent drug/alcohol use**
- **These patients may have had a TASER used on them, remember the barbs.**
- **If the patient becomes agitated or aggressive as the effects of the Ketamine are starting to wear off, if vascular access is now available, administer Ativan 2 mg IV OR Versed 5 mg IV. If vascular access is NOT available, administer Ativan 2 mg IM OR Versed 10 mg IM or IntraNasal.**

AUTOMATIC IMPLANTABLE CARDIOVERTER/DEFIBRILLATOR



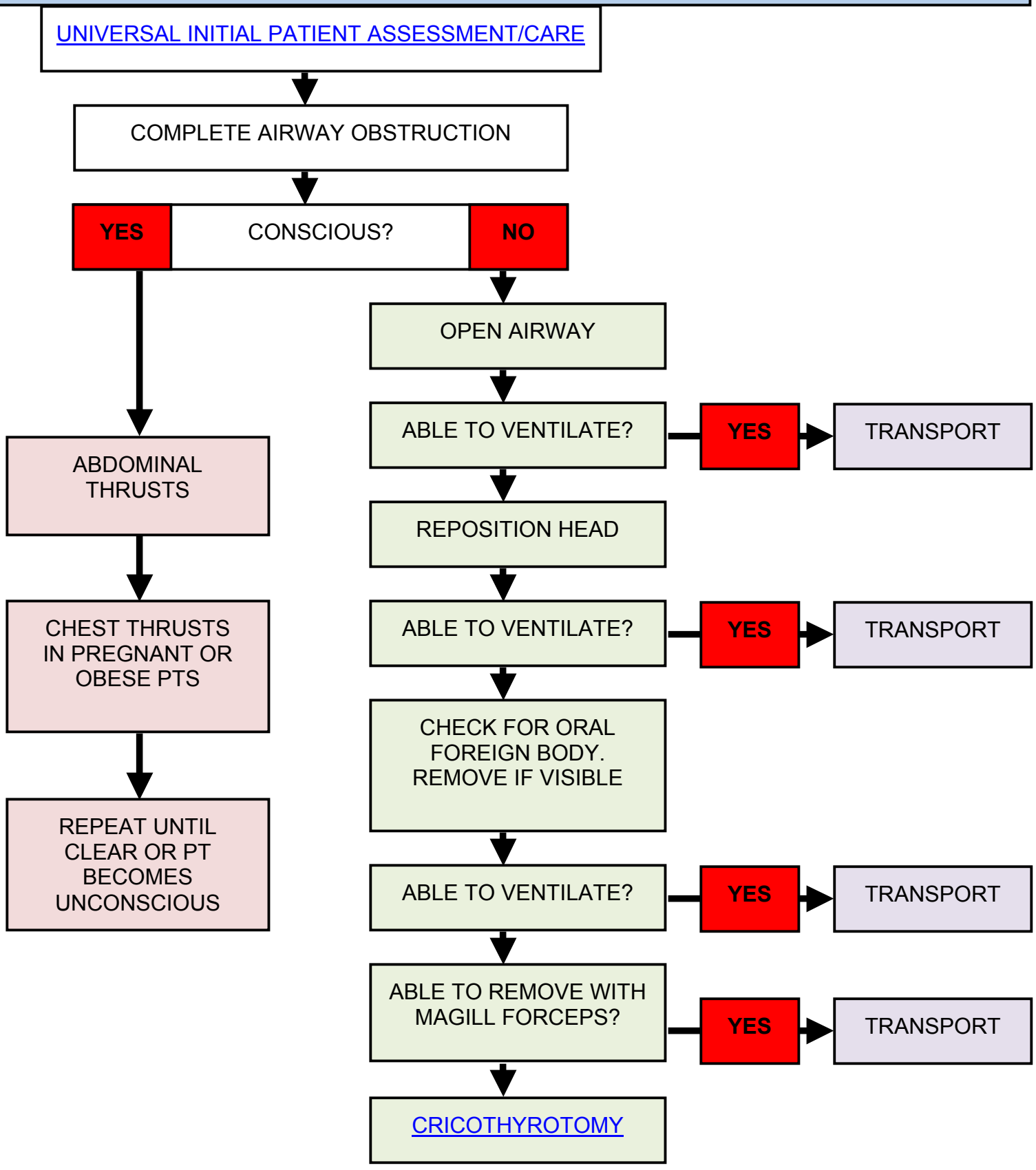
- **Identification information of the AICD type is usually given to the patient as a wallet card. This information should accompany the patient to the hospital.**
- **CPR may be performed over an actively firing internal defibrillator WITHOUT risk to the paramedic.**
- **If external defibrillation is required, avoid placing the defibrillator patches over the implanted device.**

ADULT AIRWAY ABSENT OR SEVERELY COMPROMISED



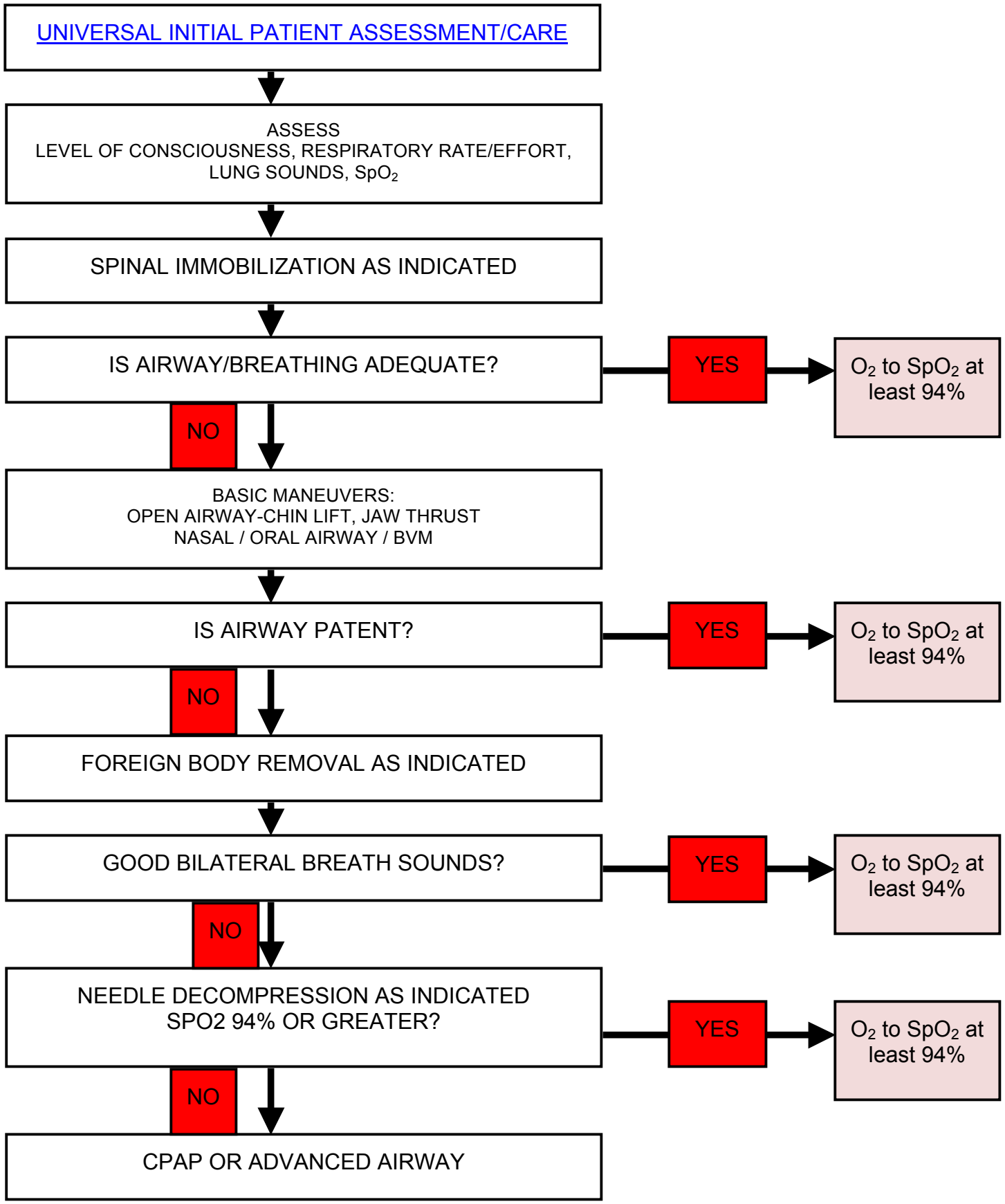
- **In established COPD patients SpO_2 goal should be 88 to 92%.**
- **Obtain $ETCO_2$ level if available, it is a measure of ventilations. Normal range is 35-45 mmHg.**
- **Do NOT perform a blind sweep looking for foreign bodies in the upper airway.**
- **In cardiac arrest, ventilate 10-12 times/minute or once every 6 seconds.**
- **Consider insertion of an OG tube in situations where abdominal distention persists after successful ETT.**
- **Document $EtCO_2$ after placement of an Advanced Airway and again upon every patient transfer.**

ADULT AIRWAY COMPLETE AIRWAY OBSTRUCTION



Obtain $EtCO_2$ level if available, it is a measure of ventilations. Normal range is 35-45 mmHg.
Do NOT perform a blind sweep looking for foreign bodies in the upper airway.
Document $EtCO_2$ after placement of an Advanced Airway and again upon every patient transfer.

ADULT AIRWAY INITIAL ASSESSMENT



In patients with history of COPD SpO^2 goal should be 88 to 92%.
Obtain $EtCO_2$ level if available, it is a measure of ventilations. Normal range is 35-45 mmHg.
Do NOT perform a blind sweep looking for foreign bodies in the upper airway.

ALCOHOL INTOXICATION

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

NO HISTORY/CLINICAL EVIDENCE OF HEAD TRAUMA

HIGH SUSPICION PATIENT IS UNDER THE INFLUENCE OF DRUGS AND/OR ALCOHOL

Bloodshot Eyes
Slurred Speech
Alcohol on Breath
DT symptoms
Unsteady Gait

Evaluate for
Possible Co-ingestions
Overdose

GREEN	YELLOW	RED
ALERT NO DIFFICULTY SPEAKING OR WALKING	DIFFICULTY WALKING, SPEAKING STANDING, MAY BE VIOLENT, MAY BE VOMITING	AMS INJURIES ERRATIC BREATHING
	VITAL SIGNS, SpO2, BLOOD GLUCOSE VASCULAR ACCESS CARDIAC MONITOR	VITAL SIGNS, SpO2, BLOOD GLUCOSE VASCULAR ACCESS CARDIAC MONITOR

- **Green can be transported BLS when appropriate. The patient can sign AMA if the patient refuses transportation AND is of legal age.**
- **Yellow should be transported via ALS.**
- **Red shall be transported via ALS.**
- **Delirium Tremens (DTs) may present as anything from fine tremors to a tonic-clonic seizures. They usually begin 6-24 hours after a decrease in the patient's usual intake of alcohol.**
- **If a patient is uncooperative and a threat to themselves or to others, they can be held and treated under the Marchman Act.**
- **Consider co-ingestions. Drugs and alcohol can be a deadly combination.**

ALLERGIC - SYSTEMIC REACTIONS

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

MILD ALLERGIC

- URTICARIA, HIVES
- ITCHING
- PERI-ORBITAL EDEMA
- RED EYES
- RUNNY NOSE
- WHEEZING

BENADRYL

WHEEZING?

DUO-NEB

SEVERE ALLERGIC

- EVERYTHING SEEN IN MILD ALLERGIC

PLUS

- ANGIOEDEMA
- THROAT CLOSING
- VOICE CHANGES
- HYPOTENSION
- AIRWAY COMPROMISE
- LOW SpO_2
- HIGH $EtCO_2$

0.3 mL EPINEPHRINE
1:1,000 IM

BENADRYL

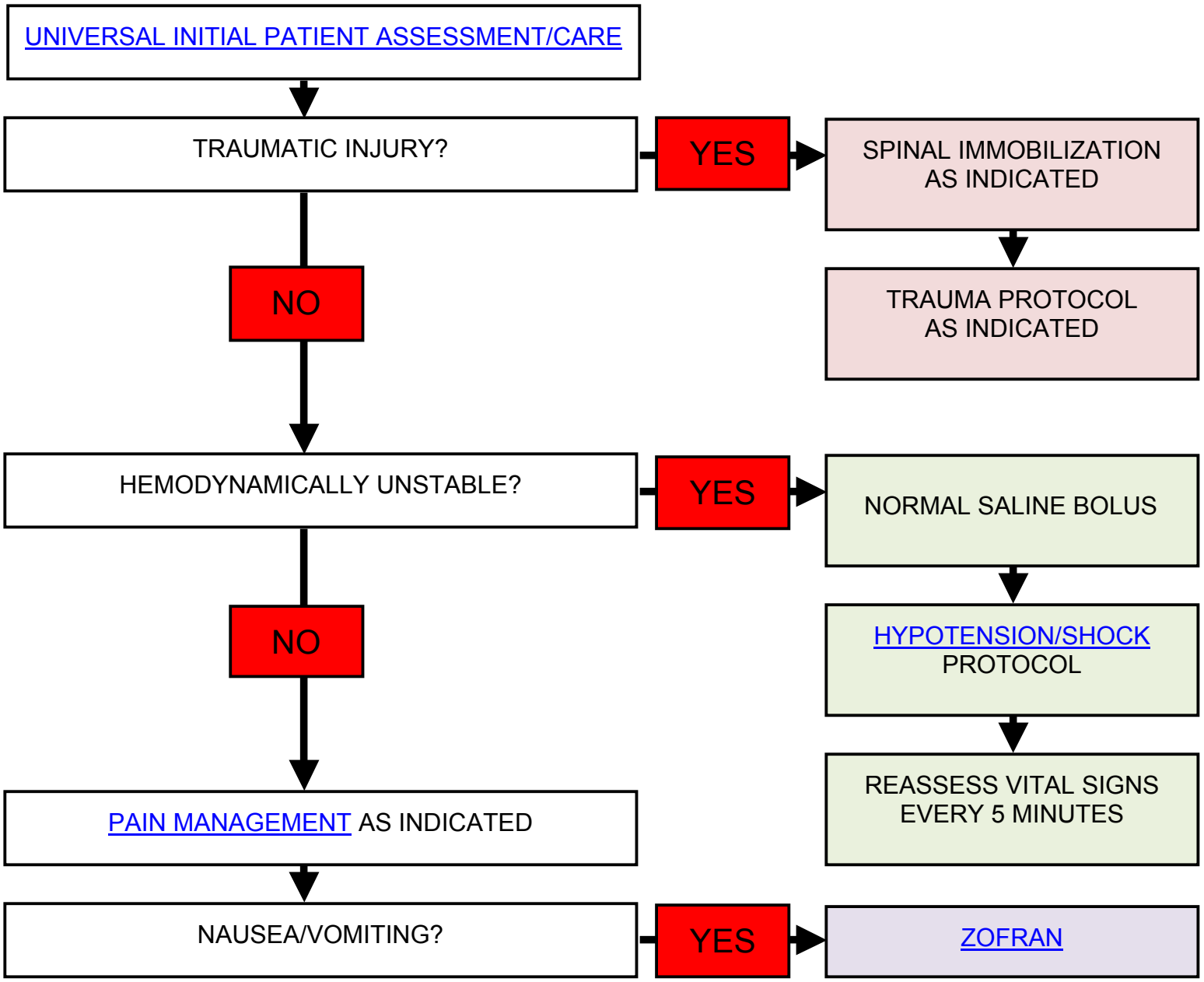
HYPOTENSION
1 mL EPINEPHRINE
1:10,000 IV

CONTINUED
HYPOTENSION
DOPAMINE

WHEEZING⇒DUO-NEB

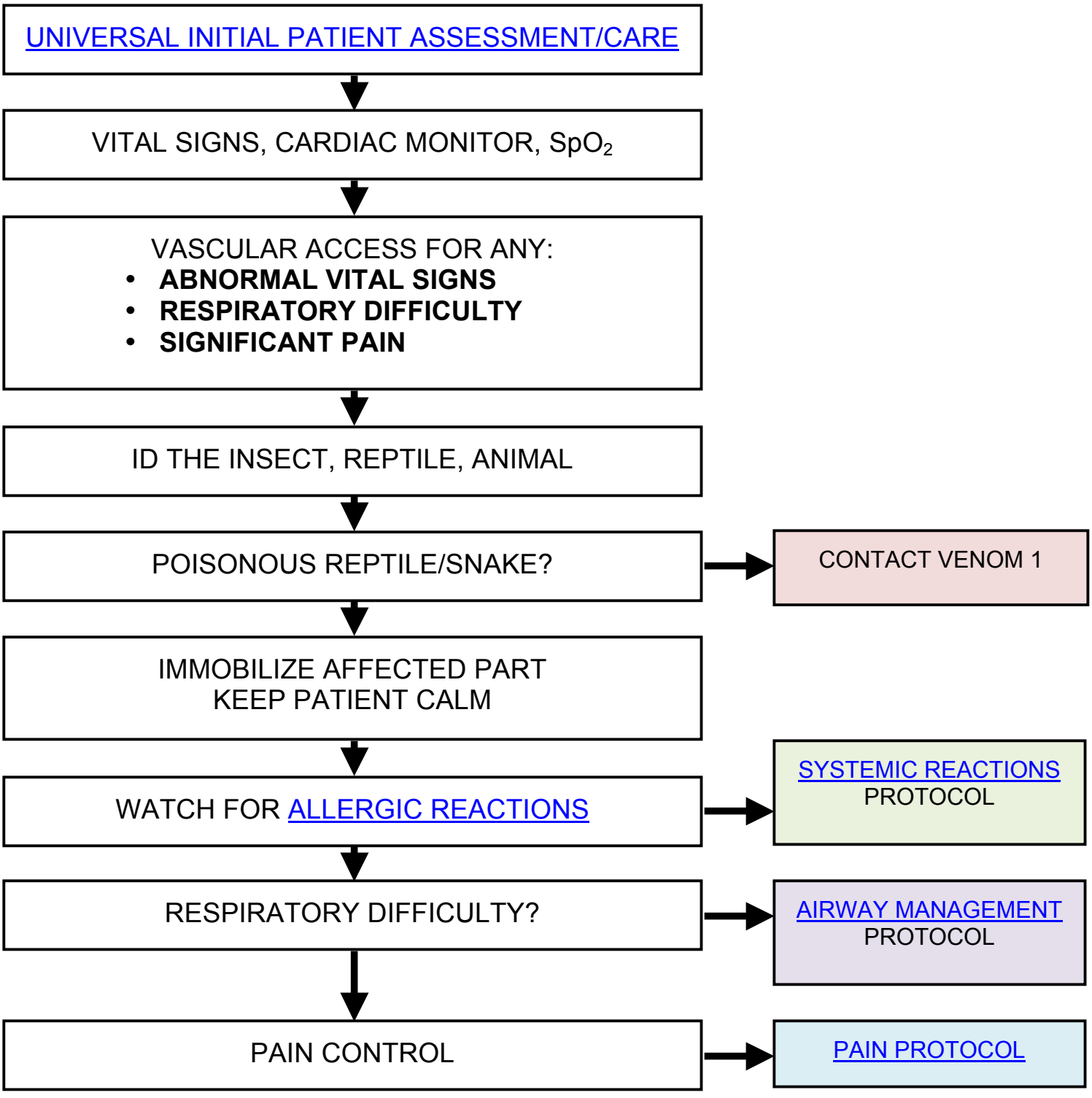
- **Angioedema (localized edema-swelling) commonly of the lips, tongue, and/or throat can occur in patients taking blood pressure medications of the class called ACE inhibitors. It can occur shortly after starting to take the medicine or after years of taking it. These patients can quickly develop upper airway obstruction from the edema. All of these patients should be transported to the closest appropriate facility. They should be closely watched during transport for any airway difficulties including voice changes and/or stridor. This is NOT an allergic reaction and there are currently no medications that will improve the patient's condition. However, some patients may benefit from epinephrine and Benadryl as above.**
- **Patients with any airway compromise should be quickly transported to the hospital for airway management under controlled circumstances.**

BACK PAIN



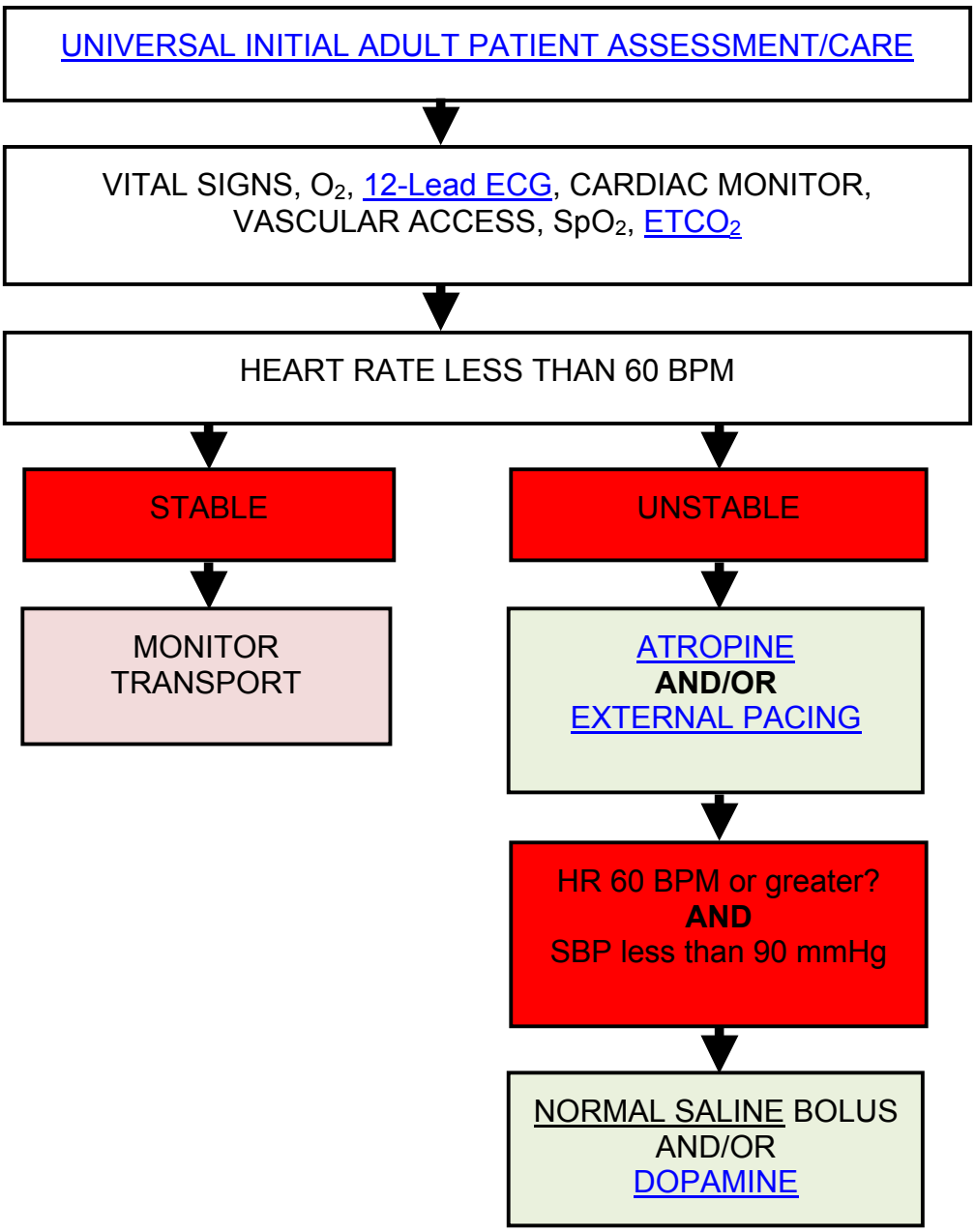
- **Assess and Document any associated loss of motor control, bowel or bladder problems, numbness or shooting pains into the extremities?**
- **Does the patient have a fever?**
- **A 12-lead ECG should be done on all patients who are hemodynamically UNSTABLE or patients with upper back pain**
- **Is the pain upper back?**
  - **Consider herniated disc, muscle strain, fractures, aortic aneurysm, aortic dissection, pneumonia**
- **Is the pain lower back?**
  - **Consider kidney stone, AAA, kidney infection, fractures, sciatica, muscle strain**

ADULT BITES & STINGS



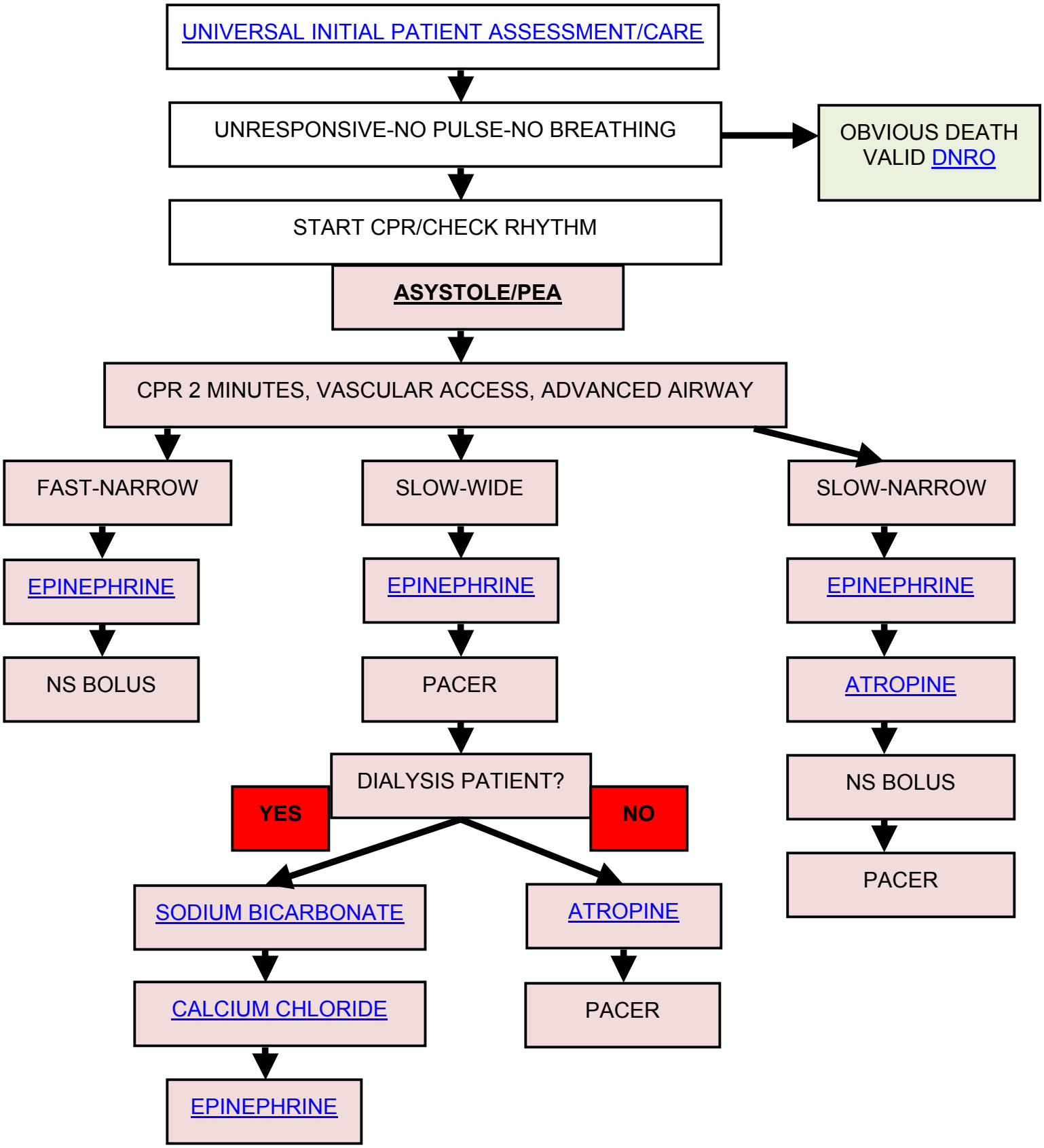
- **Jellyfish stings—Wearing gloves remove tentacles using 4x4 gauze. Apply vinegar or if not available use cold water.**
- **Patients with Coral snake bites may not show any symptoms for a few hours. A patient with a good story of a coral snake bite should be transported to the closest appropriate facility and treated, even if without symptoms. Call Venom 1 if there is any doubt.**
- **Do NOT apply cold packs to reptile or snakebites.**

ADULT BRADYCARDIA



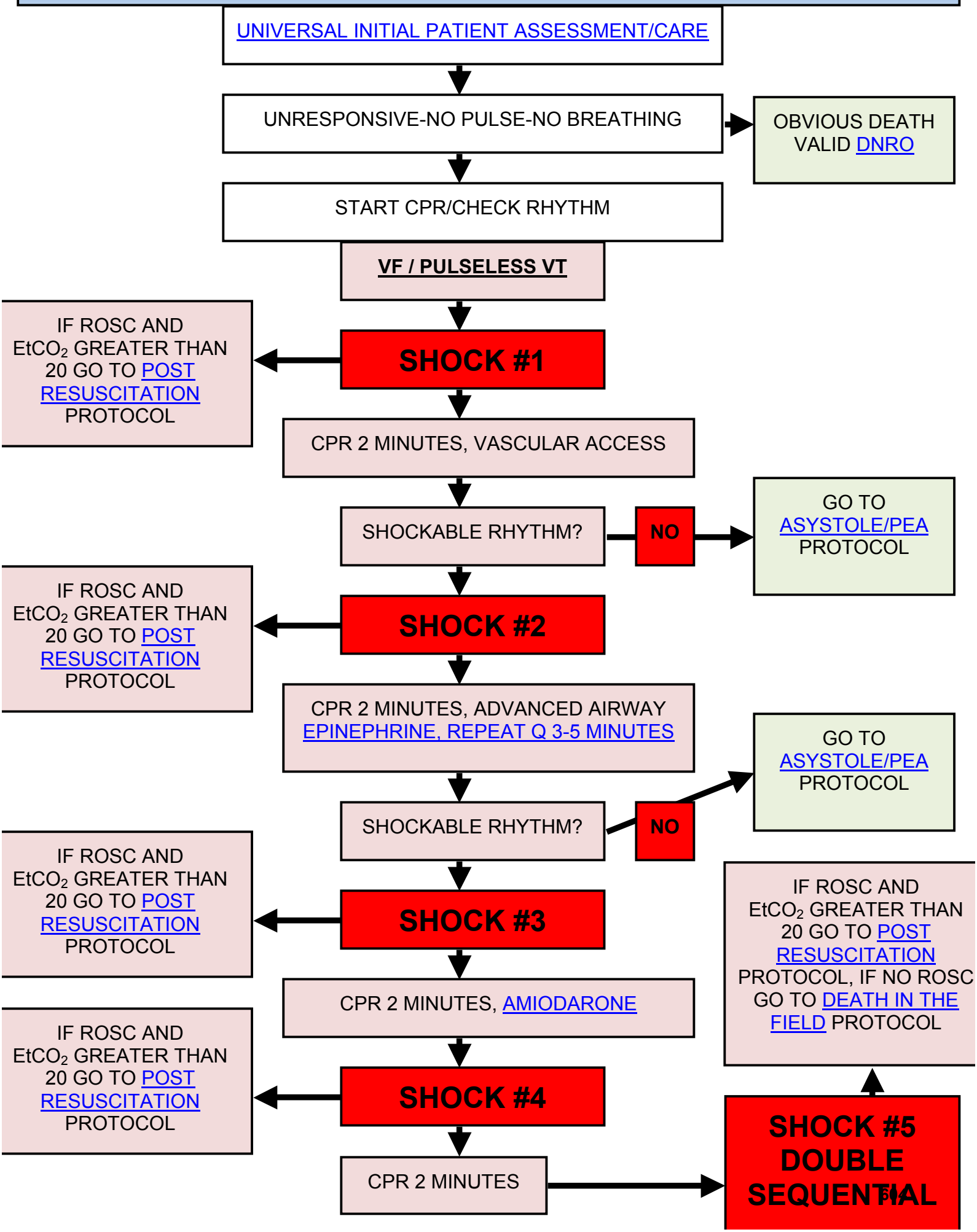
- If at any time the patient loses their pulse—**Defibrillate**.
- For electrical therapy you need **CASH**: Chest pain, AMS, SOB, Hypotension.
- In a patient with an **acute inferior wall MI** and a bradycardia due to a **high-grade Mobitz II** or a **Third Degree heart block (complete)** external pacing is preferred as the initial treatment.
- Patients with bradycardias will frequently have PVCs. Treat the bradycardia, **NOT** the PVCs.
- **Heart transplant patients** with a symptomatic bradycardia will not respond to atropine and need to be paced.
- **Dialysis patients** may develop hyperkalemia and show wide QRS complex bradycardia. Consider calcium chloride and sodium bicarbonate in these patients.
- **Beta-Blocker Overdose** = calcium chloride
- **Calcium Channel Blocker Overdose** = atropine and calcium chloride
- **Organophosphate Overdose** = Large amounts of atropine
- Morphine OR fentanyl for pain relief with external pacing.

ADULT CARDIAC ARREST-ASYSTOLE/PEA

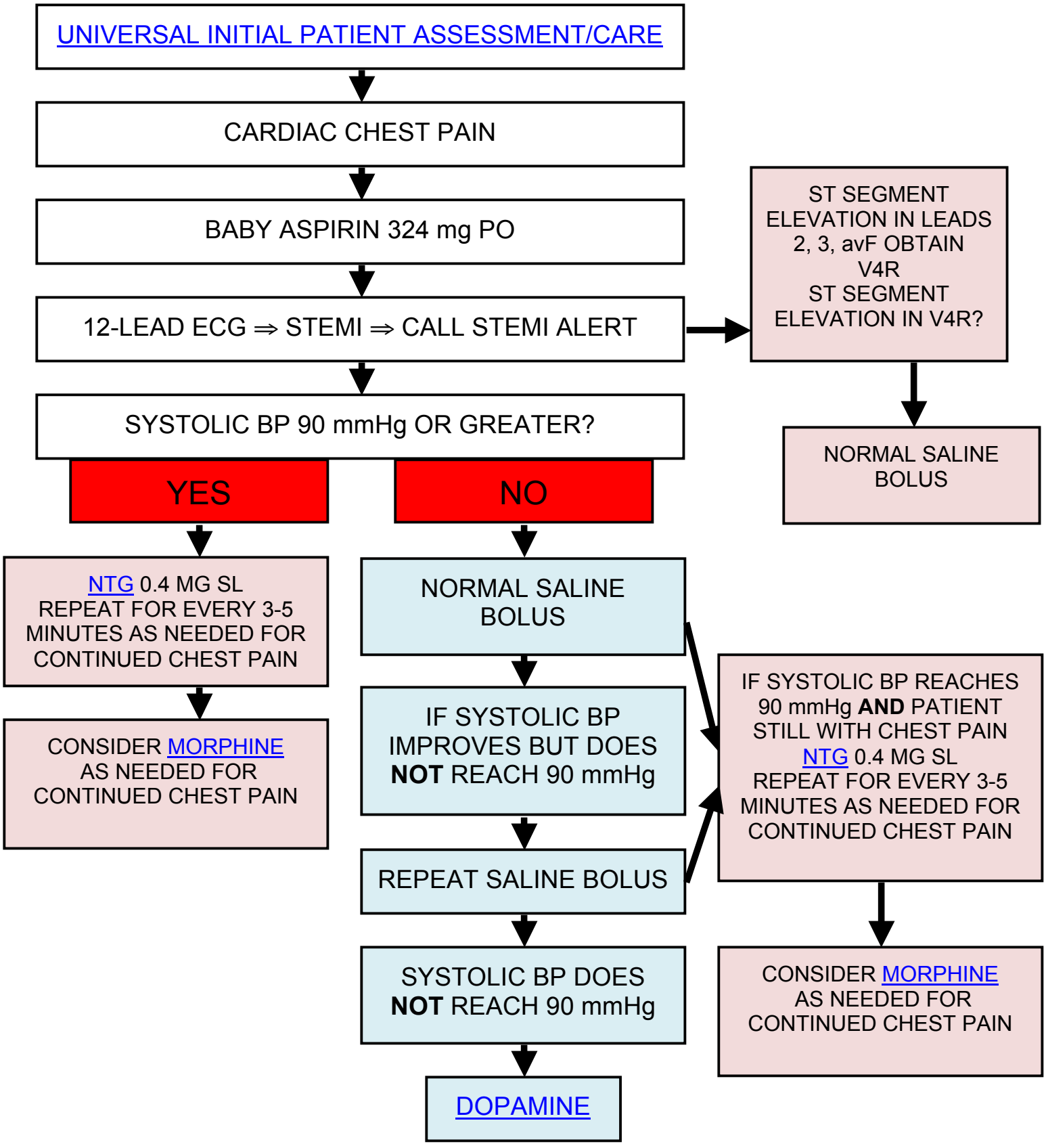


- With all PEA rhythms remember the 6Hs and 6Ts.
- If no ROSC continue with Asystole/PEA or Death in the Field Protocols.
- If ROSC and $EtCO_2$ is greater than 20 mm, go to Post Resuscitation Protocol.

ADULT CARDIAC ARREST-VF/PULSELESS VT



CHEST PAIN/STEMI



- **Do NOT administer NTG if patient is known or suspected of taken any sexually enhancing drugs.**
- **Repeat NTG 0.4 mg SL every 3-5 minutes until symptom relief or systolic BP becomes less than 90 mmHg**

ADULT CO/CN EXPOSURE

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

↓

VITAL SIGNS, CARDIAC MONITOR, SpO_2, BLOOD GLUCOSE, OBTAIN CO LEVEL

↓

HIGH CLINICAL SUSPICION

↓

CARBON MONOXIDE (CO)

↓

HIGH RISK SITUATIONS

- BUILDING FIRES
- HEATERS/GENERATORS
- CAR IN GARAGE
- PAINT STRIPPING
- INDOOR GRILLS

HIGH RISK PATIENTS

- ELDERLY
- CHILDREN
- PREGNANT
- HEART DISEASE
- LUNG DISEASE

↓

ELEVATED CO LEVEL

↓

100% OXYGEN

CYANIDE (CN)

↓

SUGGESTIVE CLINICAL SIGNS

- FIRE/SMOKE EXPOSURE IN CLOSED SPACE
- SOOT IN MOUTH, NOSE, THROAT
- ALTERED MENTAL STATUS AFTER FIRE/SMOKE EXPOSURE

↓

SUSPECTED CN POISONING

↓

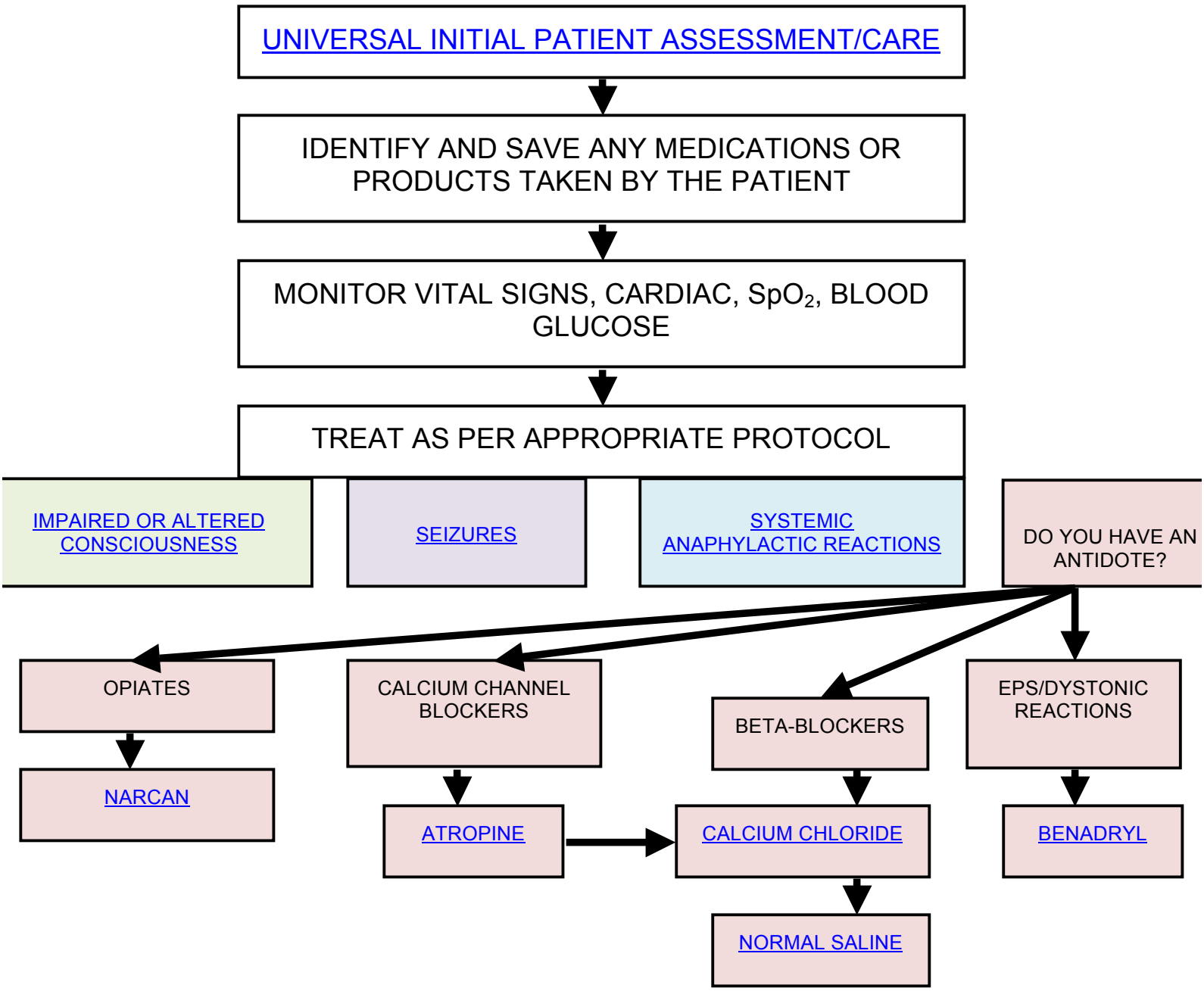
100% OXYGEN

↓

CYANOKIT

- **An individual who is exposed to a high-risk situation and experiences hemodynamic instability and/or a cardiac arrest may also have cyanide (CN) poisoning.**
- **If a patient's condition does not improve or gets worse after treatment with 100% O_2, consider treating for possible cyanide (CN) poisoning.**
- **Refer to the appropriate protocols for Airway, Hypotension, Seizures.**
- **Transport to a Hyperbaric capable facility is recommended for:**
  - **Pregnant AND/OR symptomatic patients WITH CO readings of 12% or greater OR**
  - **Any patient WITH CO readings of 25% or greater.**

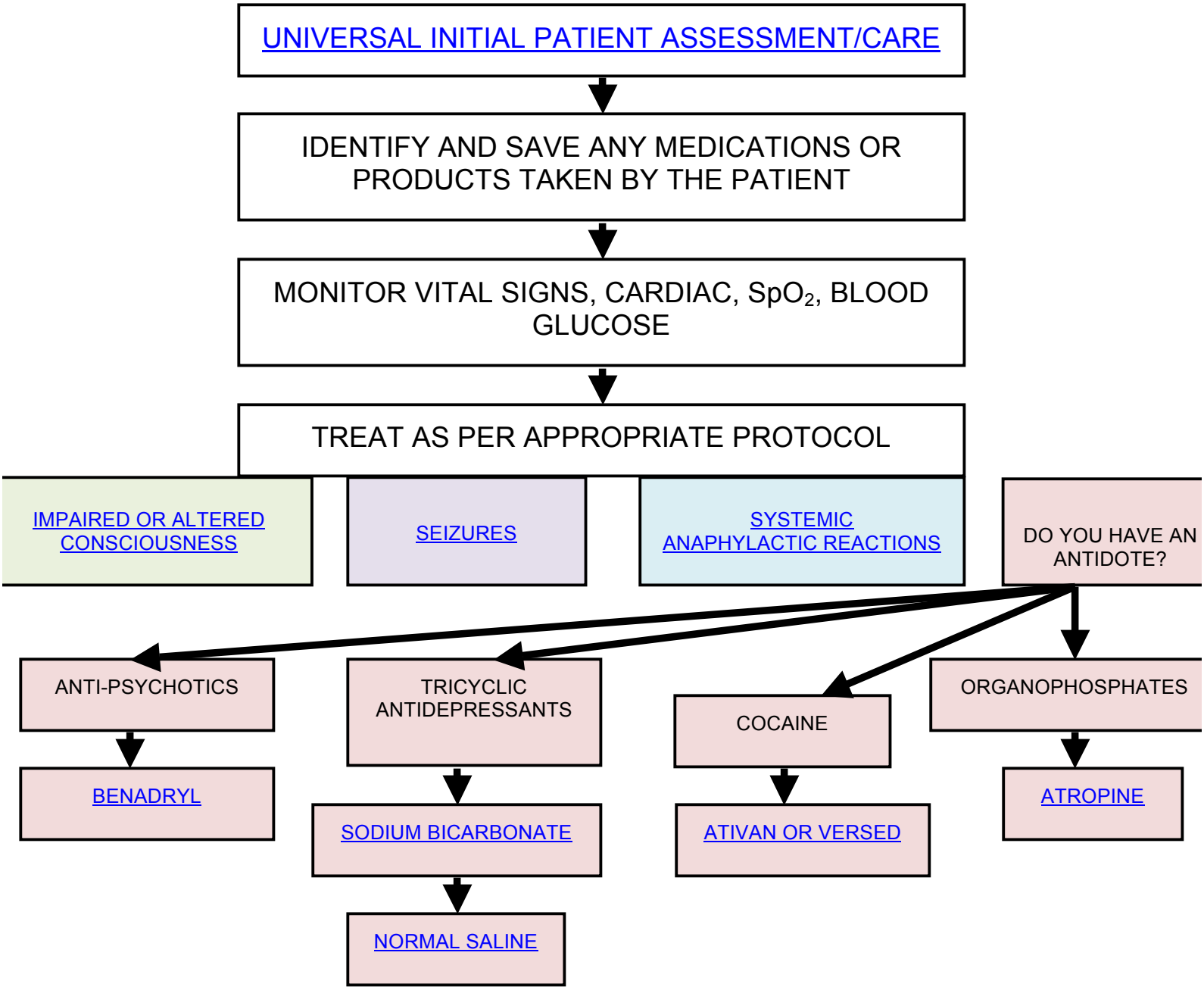
ADULT DRUG OVERDOSE



CALL POISON CONTROL 1-800-222-1222

- **If the patient is to be transported to a hospital, bring with the patient all of the suspected ingestions including medications, pill bottles, and containers of other ingested materials.**
- **Alcohol, acetaminophen (Tylenol), and Aspirin are common co-ingested agents. Ask about them.**
- **If the overdose/poisoning is related to a known or suspected suicide attempt, police presence should be requested. All of these patients should be transported to the closest appropriate facility.**
- **Consider Therapeutic Hypothermia Protocol if patient has a temperature of 40^{0}C (104^{0}F) or higher.**

ADULT DRUG OVERDOSE-2



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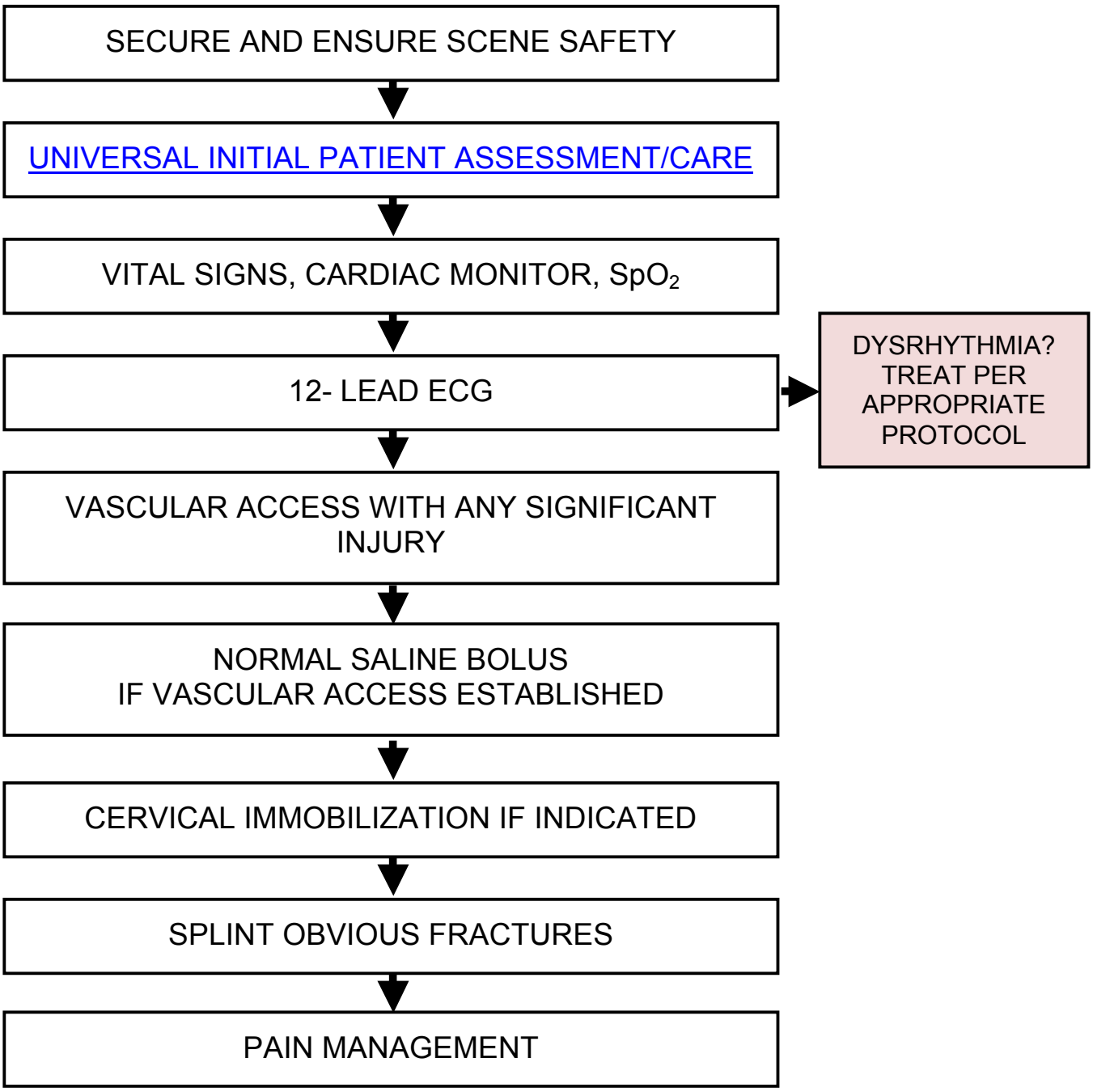
- **Consider Therapeutic Hypothermia Protocol if patient has a temperature of 40^{0}C (104^{0}F) or higher.**
- **For severely agitated patients with suspected BATH SALTS ingestions use KETAMINE AND/OR VERSED/ATIVAN for sedation.**

ELECTRICAL/LIGHTNING INJURIES



- **Electrical burns can be either through direct contact or indirect contact such as with an arc or a flash burn.**
- **Cardiac arrests can occur with electrical accidents.**
- **Look for entrance and exit wounds.**
- **Lightning Strike victims may experience cardiac arrest that may mimic asystole. These patients should have a full cardiac resuscitation.**
- **The respiratory control center of Lightning Strike victims may be stunned and cause prolonged respiratory arrest. These patients should have a full cardiac resuscitation.**

ADULT ENVIRONMENTAL EMERGENCIES

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

VITAL SIGNS, CARDIAC MONITOR, SpO_2, BLOOD GLUCOSE

HYPOthermia

REMOVE WET CLOTHING
COVER WITH BLANKETS

VASCULAR ACCESS

TRANSPORT/MONITOR

HYPERthermia

HEAT CRAMPS
HEAT EXHAUSTION
HEAT STROKE

IF **ABLE** TO TOLERATE PO
ORAL ELECTROLYTE SOLUTION

IF **UNABLE** TO TOLERATE PO
NORMAL SALINE IV BOLUS

MOVE TO COOL AREA
REMOVE CLOTHING/FAN/ICE PACKS

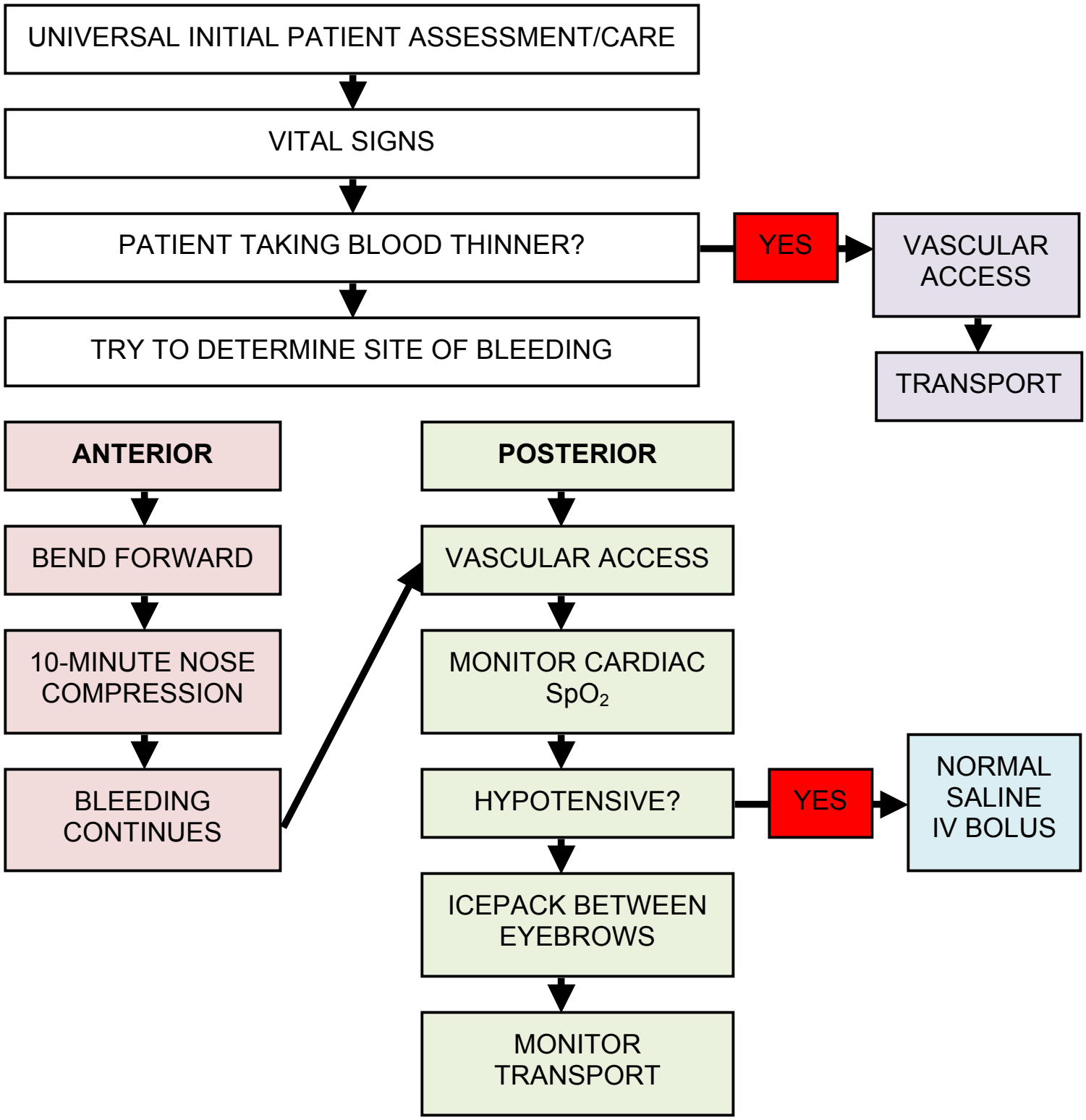
TEMP GREATER THAN 40^0C (104^0F)?
COLD NORMAL SALINE IV BOLUS

TRANSPORT/MONITOR

Neuroleptic Malignant Syndrome: **If suspected treat with COLD Saline and Versed.**

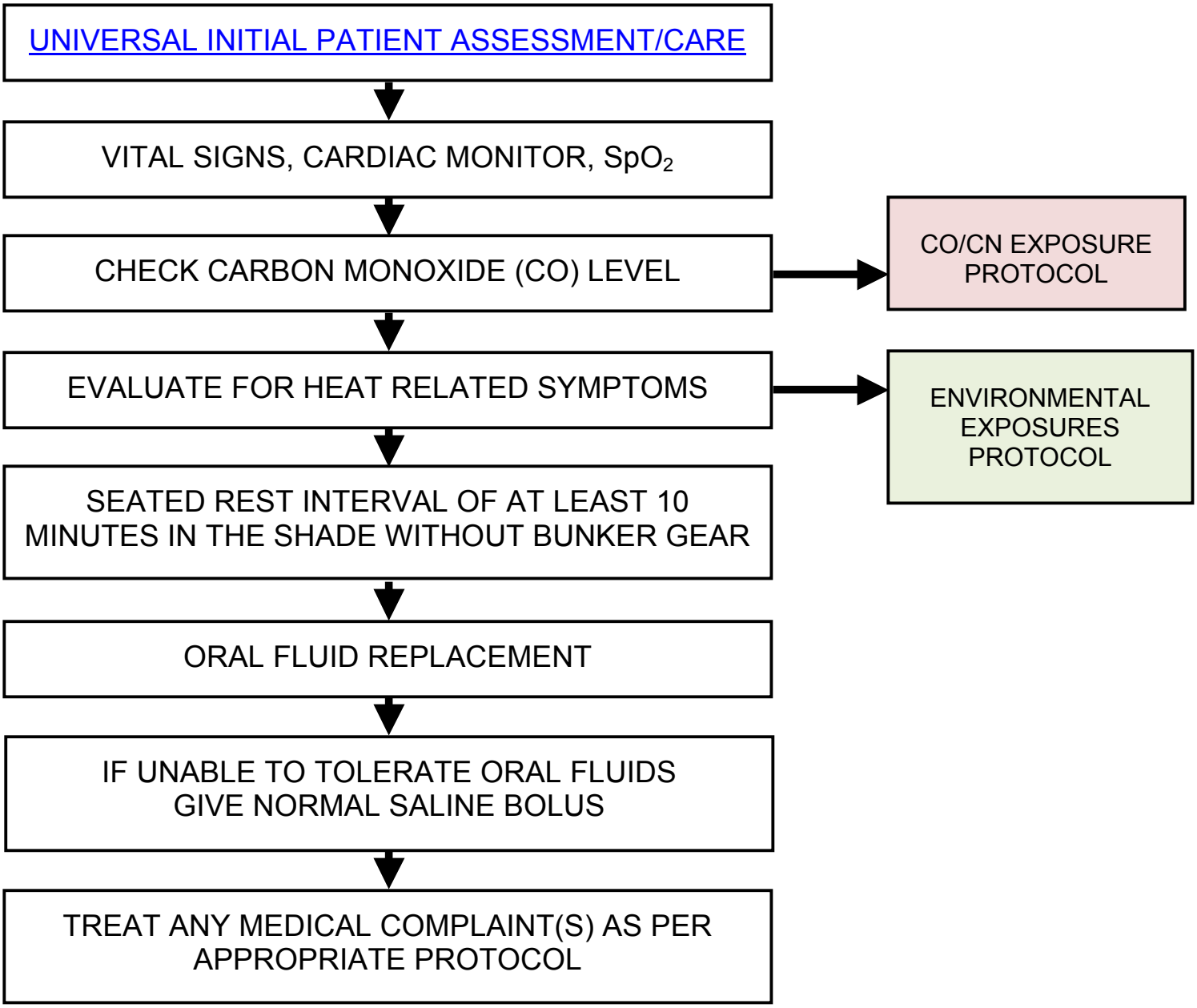
- **Taking anti-psychotic medication**
- **Severe muscle rigidity**
- **High temp usually greater than 40^0C (104^0F)**
- **SOB, tachycardia**
- **EPS**
- **Agitated**

EPISTAXIS (NOSEBLEED)



- **All posterior bleeds should be transported to the closest appropriate hospital.**
- **All patients taking a blood thinner should be transported to the closest appropriate hospital for further evaluation.**
- **If the bleeding site is not visible in the anterior location, assume the patient has a posterior bleed.**
- **Patients that are transported should have a cardiac monitor.**

FIREFIGHTER REHABILITATION



- **For all emergency operations, oral fluid replacement of up to 20 ounces for each 20 minutes of activity.**
- **Any firefighter seen in rehab should be re-evaluated two (2) hours after their recovery. The re-evaluation exam should be documented on the complete medical record.**

ADULT HYPERTENSIVE EMERGENCIES

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

SYSTOLIC BP EQUAL TO OR GREATER THAN 220 mmHg
AND/OR
DIASTOLIC BP EQUAL TO OR GREATER THAN 120 mmHg

TWO READINGS 5 MINUTES APART
AND
THE PATIENT IS SYMPTOMATIC

MONITOR CARDIAC / OBTAIN ECG

VASCULAR ACCESS

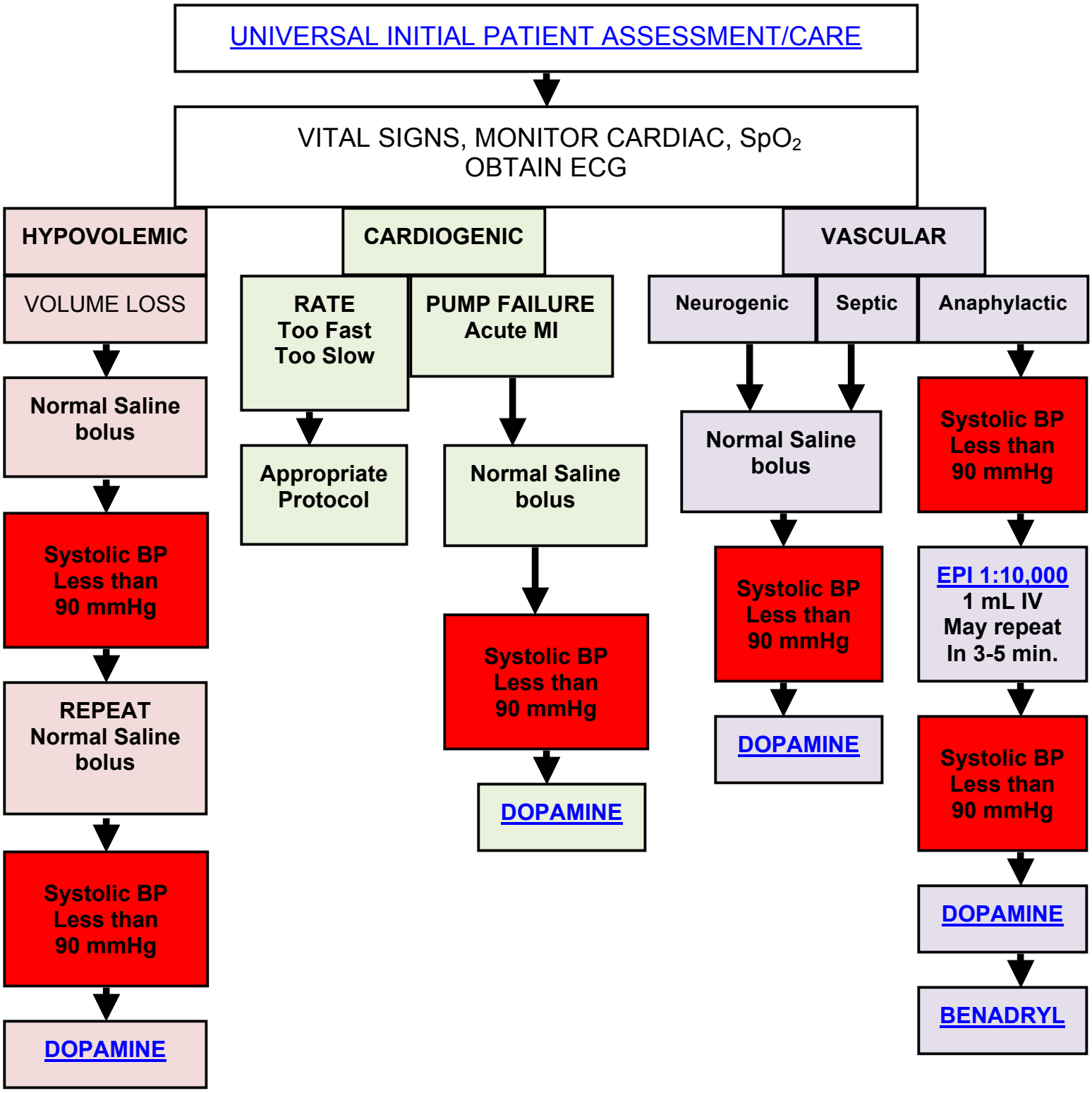
CONSIDER CAUSES

HYPERTENSIVE ENCEPHALOPATHY	CARDIAC ISCHEMIA	ACUTE PULMONARY EDEMA	PRE-ECLAMPSIA ECLAMPSIA	CVA
CARDENE	NTG	NTG	BP 140/90 OR GREATER	DO NOT TREAT HIGH BP WITH ACUTE STROKE SYMPTOMS
	CARDENE	LASIX	MAGNESIUM SULFATE	
			BP 160/100 OR GREATER	CARDENE

STOP CARDENE WHEN BP 180/110 OR LESS

- **Do NOT treat trauma patients for any elevated blood pressures.**
- **Do NOT treat patients with isolated head trauma for any elevated blood pressures.**
- **Start all Cardene drips at 5 mg/hour. Raise to 7.5 mg/hour only after two additional elevated blood pressure readings at least 5 minutes apart.**
- **Pre-eclampsia/Eclampsia can be seen 4-6 weeks after delivery. Consider this diagnosis in any recently pregnant patient with a BP 140/90 or greater.**

ADULT HYPOTENSION/SHOCK



- **Volume Loss may be due to: Bleeding-internal or external, Dehydration, Excessive sweating, prolonged vomiting and/or diarrhea.**
- **When a patient is hypotensive, there is no additional value in placing the head lower than the legs or said another way, the Tredelenburg Position is of no clinical value.**
- **All hypotensive/shock patients should receive 100% oxygen.**
- **An elderly patient with a history of hypertension may be relatively hypotensive, even with a systolic BP greater than 90 mmHg.**

ADULT IMPAIRED OR ALTERED CONSCIOUSNESS

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

↓

DOCUMENT GCS/TIME LAST KNOWN WELL

↓

CHECK BLOOD GLUCOSE, CO LEVELS → GLUCOSE D50 GLUCAGON

↓

MAINTAIN SpO_2 OF AT LEAST 94%
MAINTAIN $EtCO_2$ OF 35 to 45 mmHg

↓

VASCULAR ACCESS/CARDIAC MONITOR → DYSRHYTHMIA PROTOCOL

↓

DOCUMENT PATIENT'S TEMPERATURE

↓

CONSIDER CAUSES

SINGLE PATIENT

OPIATE OD	⇑ GLUCOSE	⇓ GLUCOSE	TOXIN	HIGH CO	TEMP 105^0 OR MORE
NARCAN	NORMAL SALINE BOLUS	GLUCOSE D50 GLUCAGON	POISON PROTOCOL	100% OXYGEN	ENVIRONMENTAL PROTOCOL

MULTIPLE PATIENTS

TOXIN	HIGH CO	TEMP 104^0F OR MORE
POISON PROTOCOL	100% OXYGEN	ENVIRONMENTAL PROTOCOL

- **Head injury or signs of increased intracranial pressure include:**
  - **Hypertension, Bradycardia, Irregular respirations.**
  - **AVOID D50 unless documented hypoglycemia**
  - **GCS 8 or less, place an advanced airway.**
  - **Establish vascular access, no IV fluids.**

NATURAL DEATH IN THE FIELD

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

↓

START CARDIOPULMONARY RESUSCITATION ON ALL PATIENTS WHO HAVE SUSTAINED CARDIAC ARREST → EXCEPT THOSE THAT HAVE VALID DNRO **OR** WHO MEET THE CRITERIA BELOW

OBVIOUS DEATH

- DECAPITATION
- MASSIVE CRUSH INJURY TO HEAD OR TORSO
- INCINERATION WITH BLACK CHARRING OF WHOLE BODY
- EVISCERATION OF BRAIN, HEART, LIVER, BOTH LUNGS
- BODY CUT IN HALF
- GENERAL BODY DECOMPOSITION

APPARENTLY IRREVERSIBLE DEATH

- RIGOR MORTIS
- LIVOR MORTIS

RESUSCITATION EFFORTS MAY BE **TERMINATED** IN THE FIELD WHEN **ALL** OF THESE CONDITIONS ARE MET:

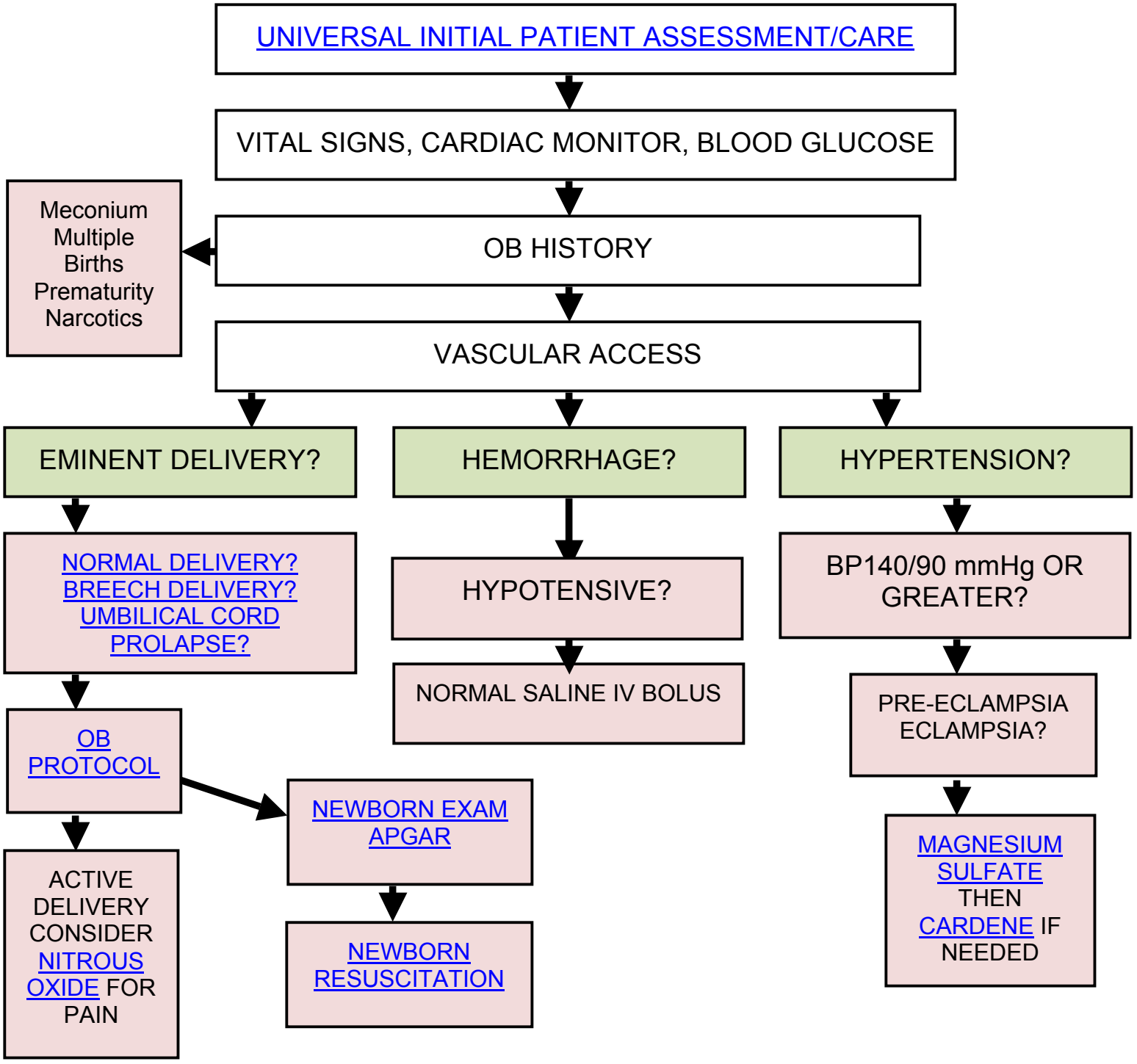
- **UNWITNESSED ARREST**
- **NO ROSC AFTER 30 MINUTES OF RESUSCITATION**
- **PATIENTS WITH ASYSTOLE OR AGONAL TERMINAL RHYTHM AT TIME OF CPR TERMINATION**

RESUSCITATION EFFORTS MAY BE **WITHHELD** WHEN **ALL** OF THESE CONDITIONS ARE MET:

- **UNWITNESSED ARREST**
- **INITIAL RHYTHM ASYSTOLE IN 2 LEADS**
- **KNOWN HISTORY OF SEVERE DEMENTIA**

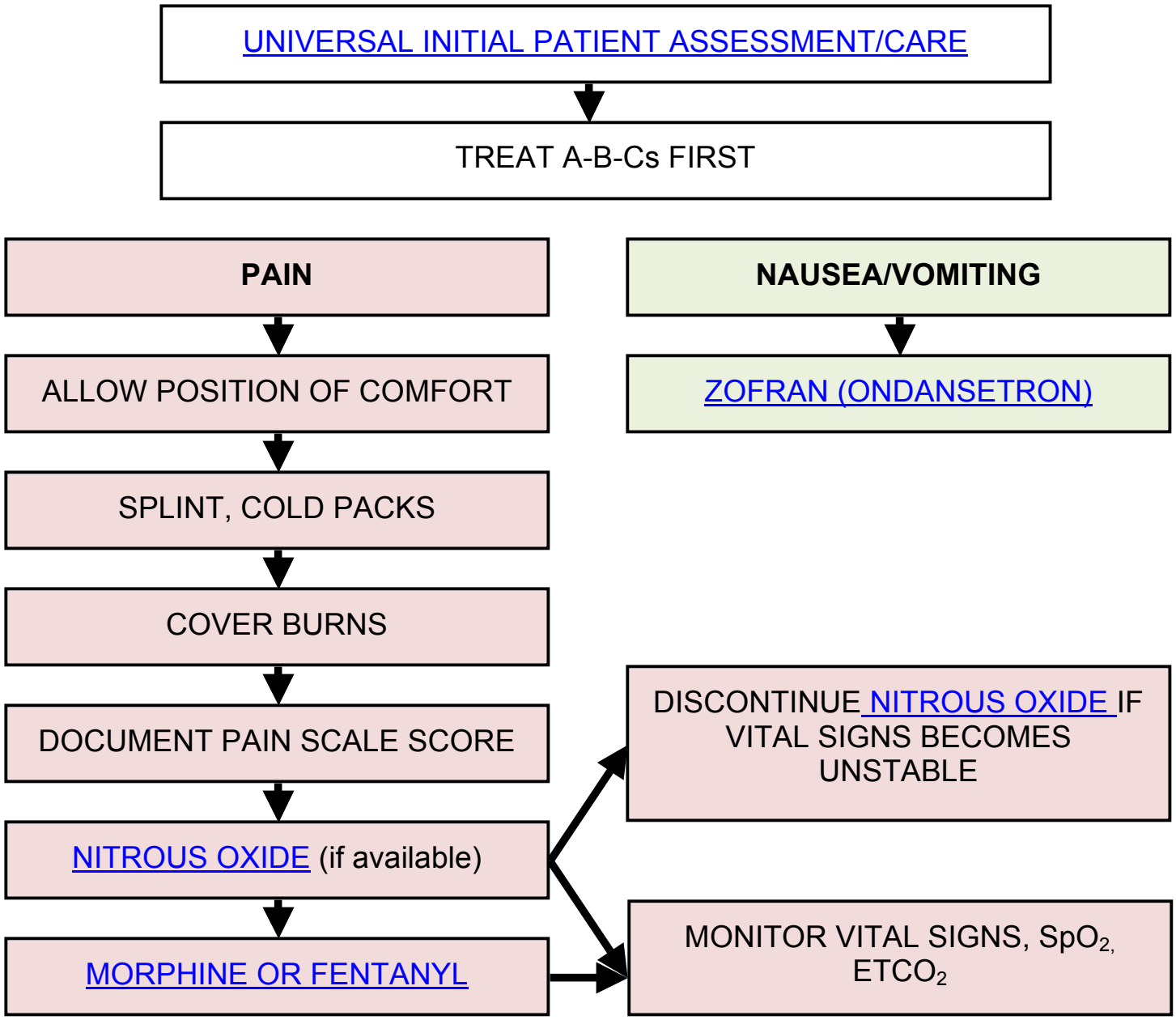
- **Resuscitation efforts may be withheld in any patient with blunt trauma who, based on the paramedics' thorough primary patient assessment, is found apneic, pulseless, and without organized ECG activity upon the arrival of EMS at the scene.**
- **Resuscitation efforts may be withheld in any patient with penetrating trauma to the head, neck, or torso who, based on the paramedic's thorough primary patient assessment, is found apneic, pulseless, and without organized ECG activity upon the arrival of EMS at the scene.**
- **CPR may be terminated if the DNRO is presented after CPR was begun.**

OB/CHILDBIRTH EMERGENCIES



- **Newborn Exam:**
  - **Clear airway, gentle suction**
  - **Evaluate respirations, pulse, color.**
  - **Administer 100% oxygen**
- **Meconium (intrauterine fetal stool)**
  - **Gentle suctioning of nose and throat**

ADULT PAIN AND NAUSEA/VOMITING MANAGEMENT



- **If the Pain Scale remains 6-10 after administration of Nitrous Oxide to appropriate patients then consider administration of Morphine Sulfate OR Fentanyl.**
- It is paramedic judgment as to whether the first choice in pain management is nitrous oxide or fentanyl/morphine. A patient with an obviously painful injury might be a good situation where it would be more appropriate to use fentanyl or morphine as the first choice for pain control.
- **CONTRAINDICATIONS TO THE USE OF NITROUS OXIDE INCLUDE:**
  - **Altered Level of Consciousness**
  - **COPD**
  - **Acute Pulmonary Edema**
  - **Pneumothorax**
  - **Air Embolus**
  - **Pregnancy (except during active labor)**
  - **Abdominal pain with distention**
  - **Inability to self-administer the medication**
  - **Adverse Effects: Hypotension, SpO_2 less than 94%, significant sedation, consider Narcan.**

PEPPER SPRAY EXPOSURES

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

↓

TREAT A-B-Cs FIRST

↓

VITAL SIGNS, CARDIAC MONITOR, SpO_2

↓

100% OXYGEN WITH NRBM

↓

MOVE PATIENT TO FRESH AIR

INHALATION

↓

BRONCHOSPASM

↓

DUONEB

↓

0.3 mL EPI 1:1,000 IM or IntraNasal

EYE

↓

IRRIGATE WITH NORMAL SALINE

↓

TETRACAINE

SKIN

↓

REMOVE CONTAMINATED CLOTHING

↓

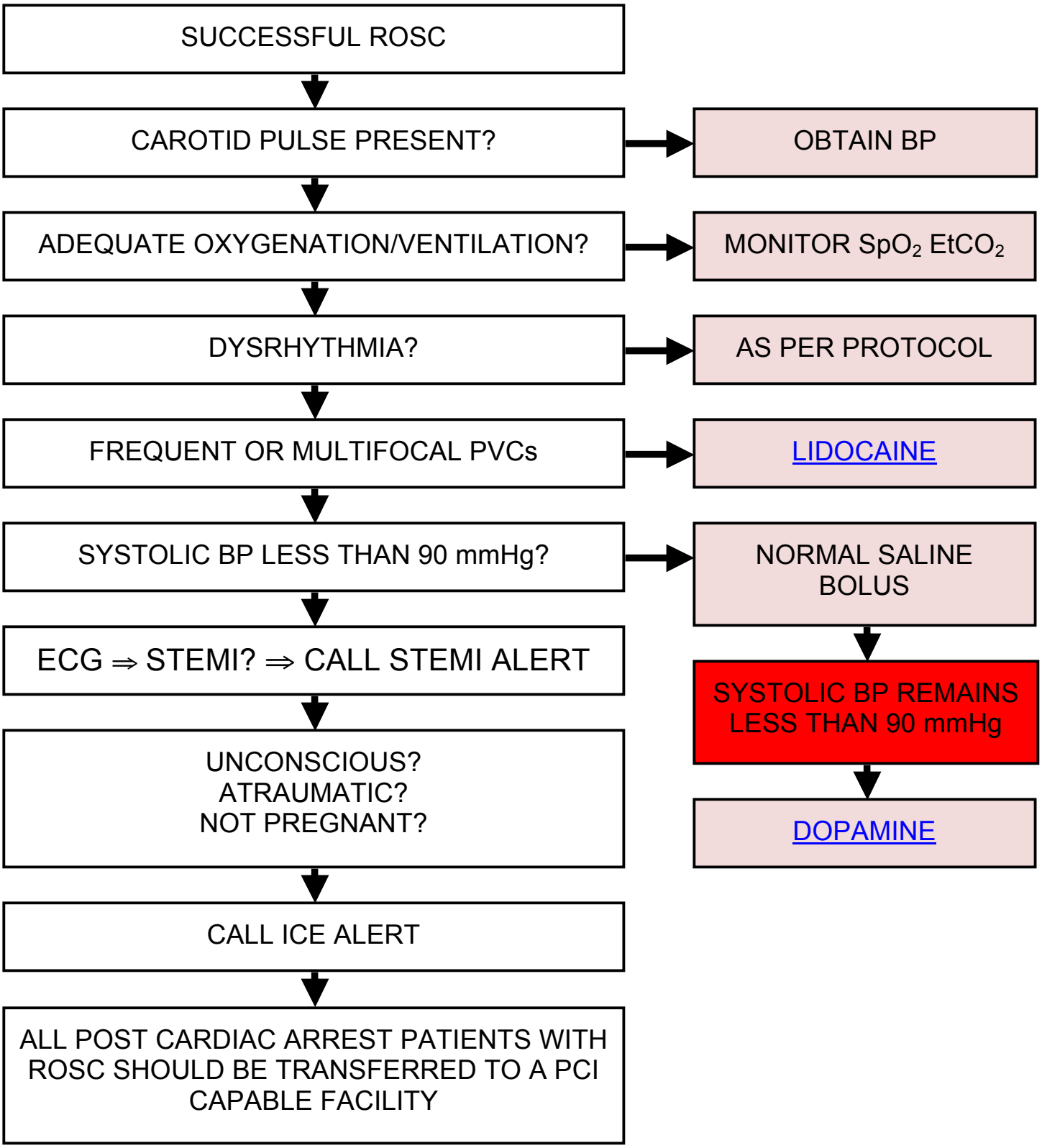
WASH

↓

BURN GEL

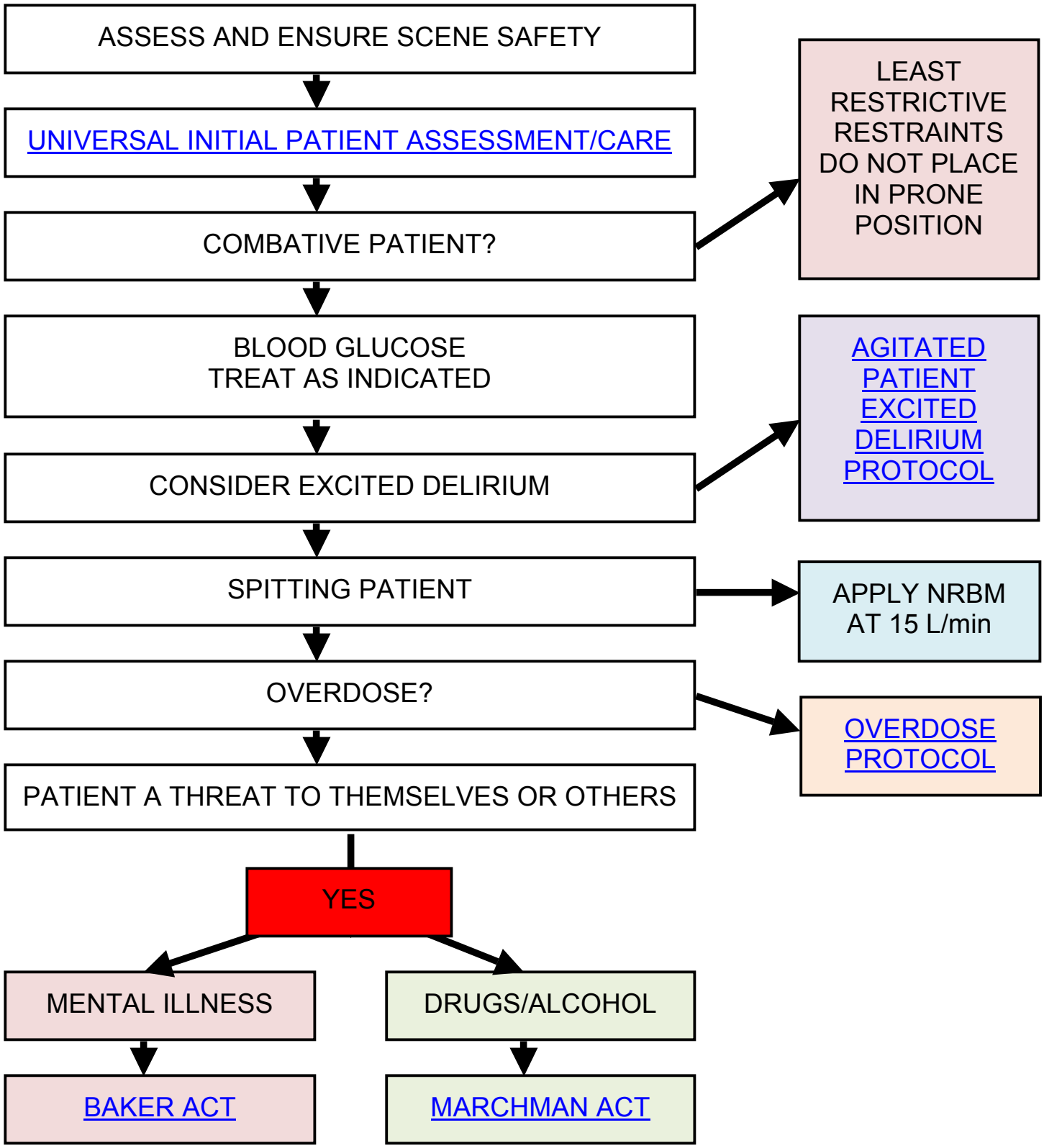
- **Do NOT place patient in a prone (face down) position.**
- **Closely monitor the patient's airway and respiratory status.**
- **Monitor SpO_2 and cardiac.**
- **Patients with pre-existing pulmonary/cardiac disease for example, asthma, COPD, CHF, ischemic heart disease are at increased risk for complications when exposed to pepper spray.**
- **LISTEN to the patient.**

ADULT POST RESUSCITATION



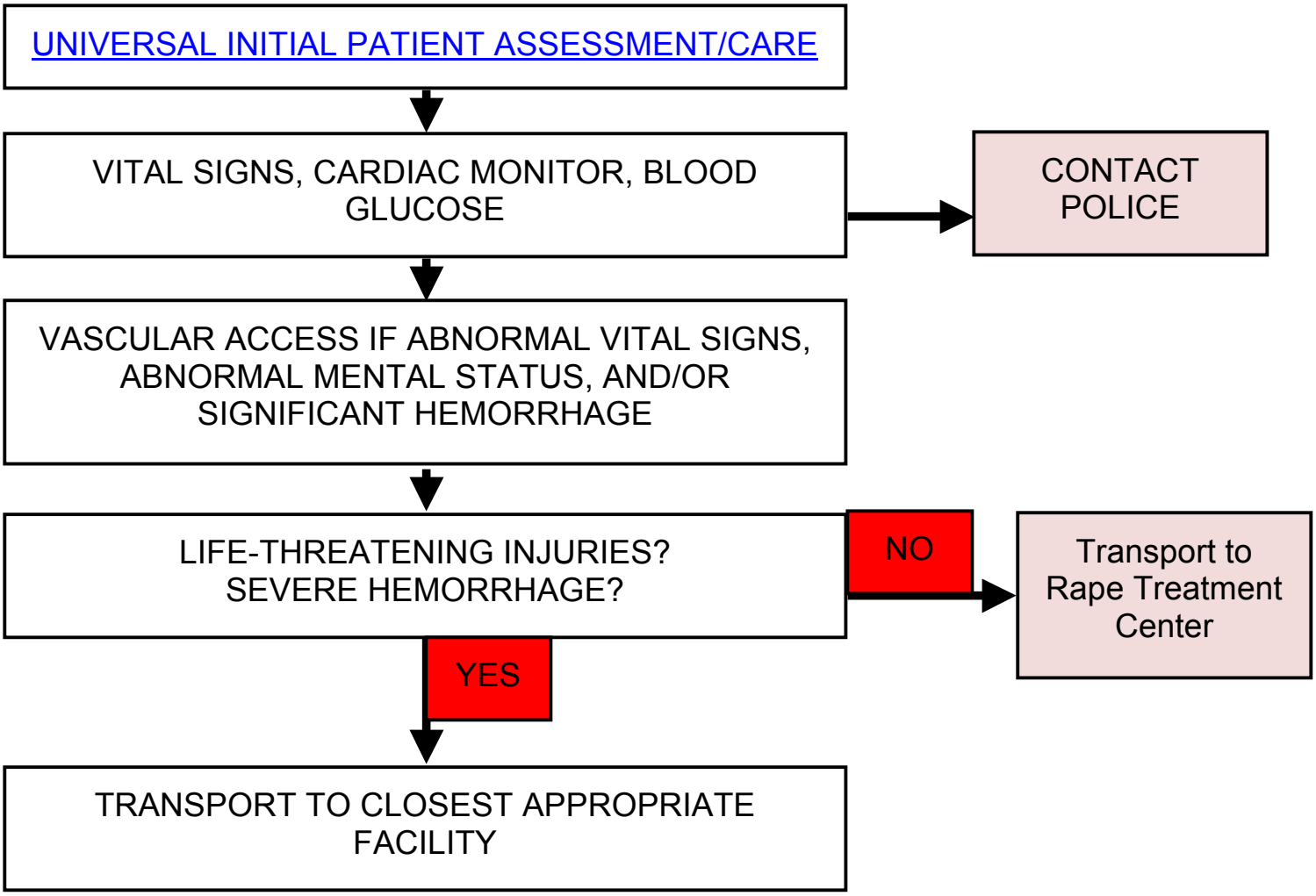
- **If patient remains unconscious after ROSC in an atraumatic arrest AND the patient is not pregnant, AND the patient is 16 years or older: CALL ICE ALERT.**
- **All post cardiac arrest patients with ROSC should be transferred to a PCI-capable facility**

PSYCHIATRIC EMERGENCIES



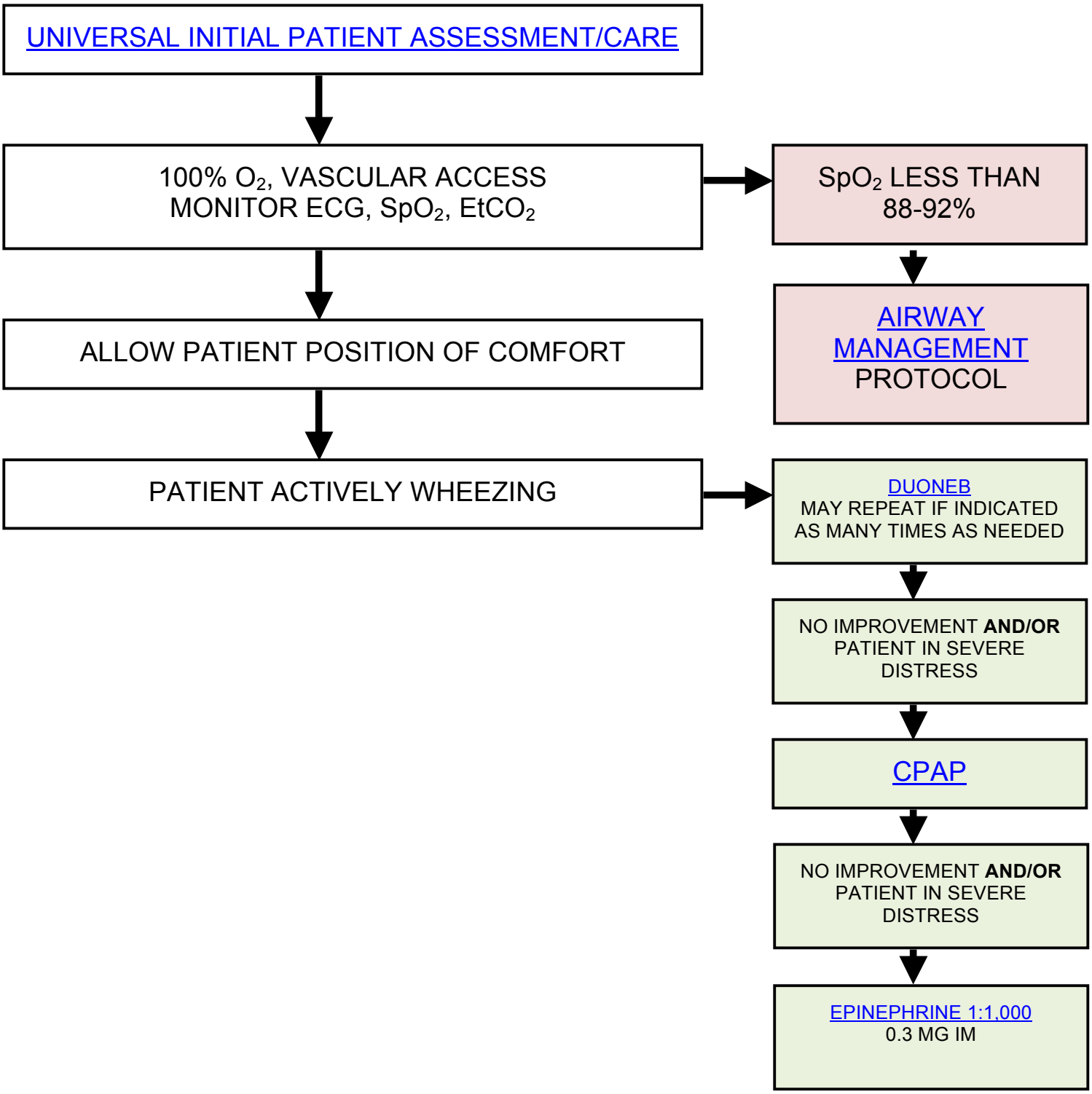
- **REMEMBER that patients with psychiatric issues may also have acute medical conditions.**
- **Personal safety of patients and responders is a primary concern.**
- **Acute psychiatric crises may have an associated drug or alcohol ingestion.**

RAPE MANAGEMENT



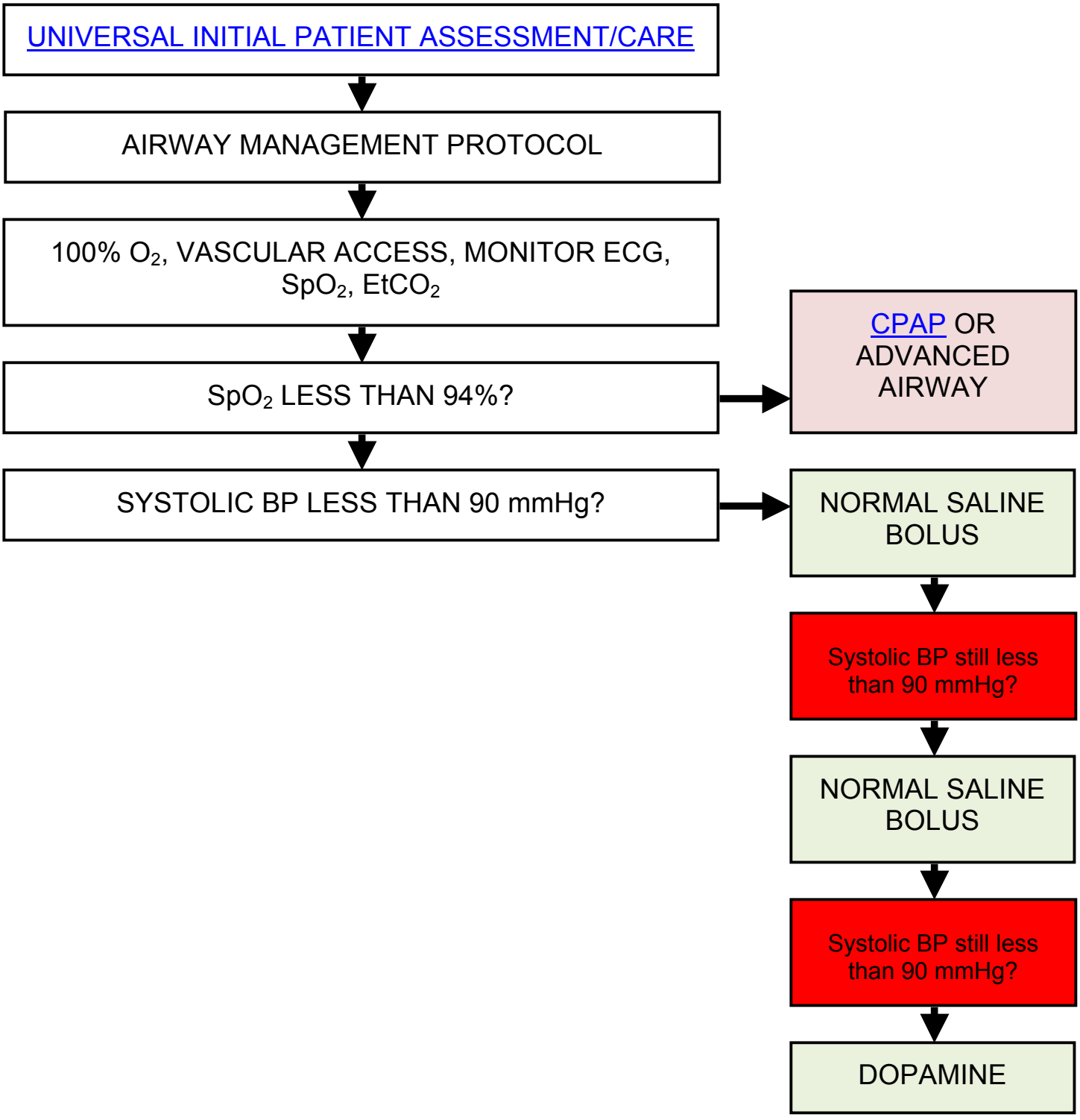
- **Patients should be transported by an ALS Rescue Unit.**
- **Be sure to explain any procedures that involve touching the patient. Ask for their permission before examining the patient or starting vascular access. This includes simple things like taking vital signs.**
- **Victim should be advised not to shower or douche prior to being seen at the Rape Treatment Center.**
- **Do NOT perform a genital exam unless there is obvious severe hemorrhage.**

COPD/ASTHMA/EMPHYSEMA ACUTE WHEEZING



- **Elderly patients may have pneumonia without a fever.**
- **Symptoms usually over days rather than minutes or hours.**
- **Patients with a productive cough, fever, and hypotensive should be considered to be septic.**
- **Patient with severe asthma or COPD may not be moving air when they breathe and as a result they will not have wheezing. Airflow is necessary in order to make the noise of wheezing. It is not unusual for wheezing to appear in these patients after a nebulizer treatment.**

ADULT COUGH WITH FEVER



- **Elderly patients may have pneumonia without a fever.**
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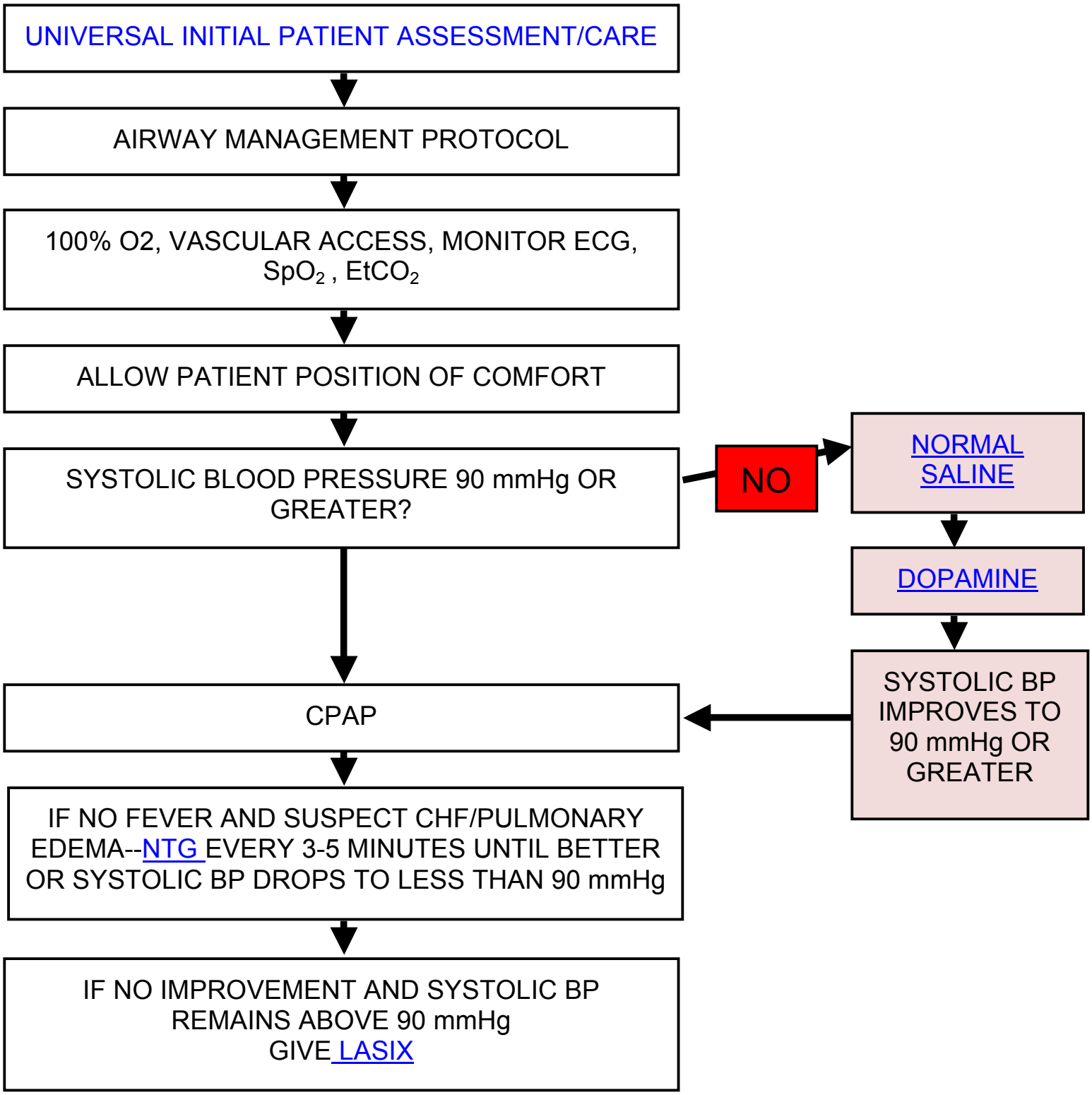
RESPIRATORY DISTRESS WITH RALES



- **DO NOT administer NTG to patients known or suspected of having taken any sexually enhancing drugs.**
- **May repeat the NTG every 3-5 minutes until relief or the systolic BP drops below 90 mmHg.**
- **If patient is taking diuretic, give Lasix 40 mg IV.**
- **If patient NOT taking a diuretic, give Lasix 20 mg IV.**
- **Give Dopamine until systolic BP equal to or greater than 90 mmHg.**

ADULT SEIZURES

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

RECENT SEIZURE

↓

POST-ICTAL

↓

BLOOD GLUCOSE
TREAT AS
INDICATED

LATE PREGNANCY
NO HISTORY OF SEIZURES
RECENT SEIZURE OR ACTIVELY SEIZING

↓

MAGNESIUM SULFATE

↓

IF CONTINUED SEIZURES
ATIVAN or VERSED

↓

BLOOD GLUCOSE
TREAT AS INDICATED

ACTIVE SEIZURE

↓

NO INITIAL VASCULAR ACCESS
VERSED or ATIVAN

↓

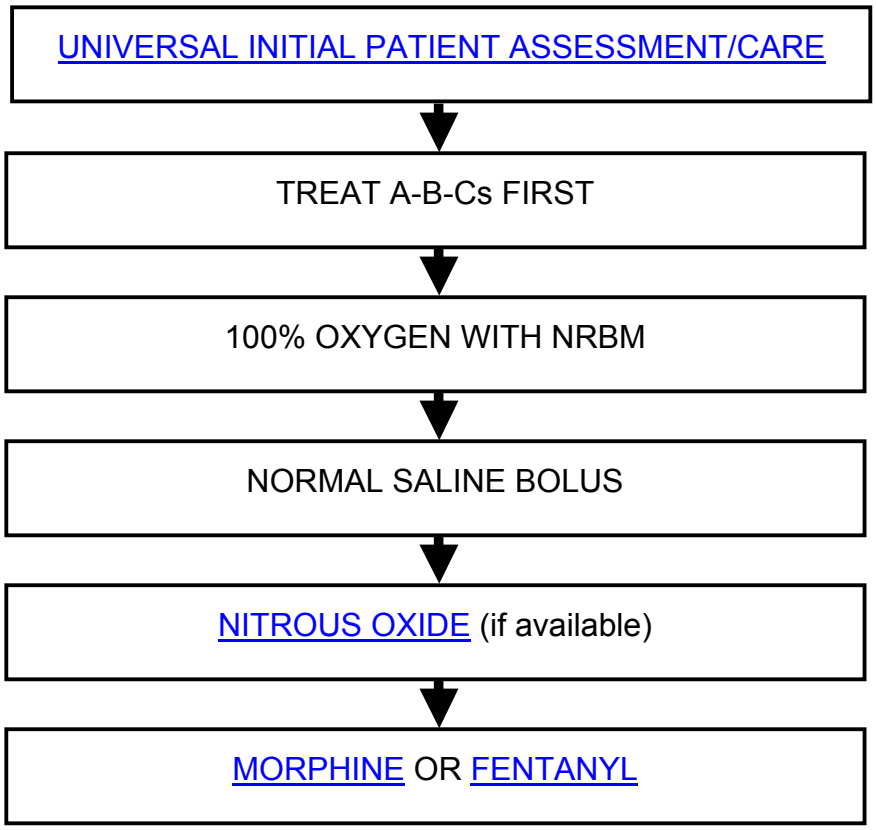
VASCULAR ACCESS ESTABLISHED
VERSED or ATIVAN

↓

BLOOD GLUCOSE
TREAT AS INDICATED

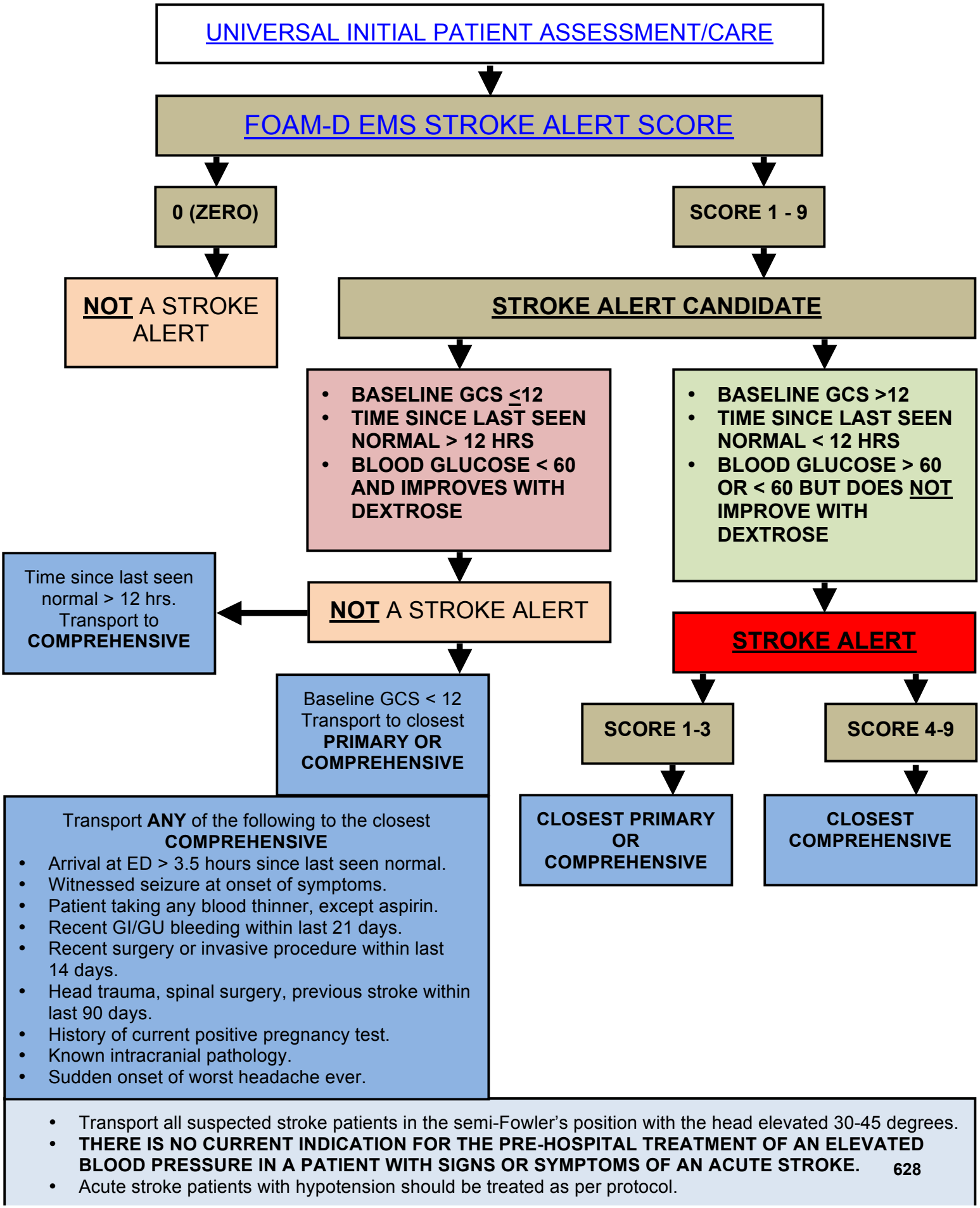
- **If the patient continues to seize 5 minutes after the initial dose of Versed or Ativan, repeat the medication.**
- **Protect the patient from injury. Place the patient in the recovery position if no cervical spine injury is suspected.**
- **During a generalized seizure patients lose consciousness and stop breathing as the diaphragm is also seizing.**
- **During a generalized seizure patients may bite their tongue and may be incontinent of urine or stool.**

SICKLE CELL PATIENTS PAIN CRISIS



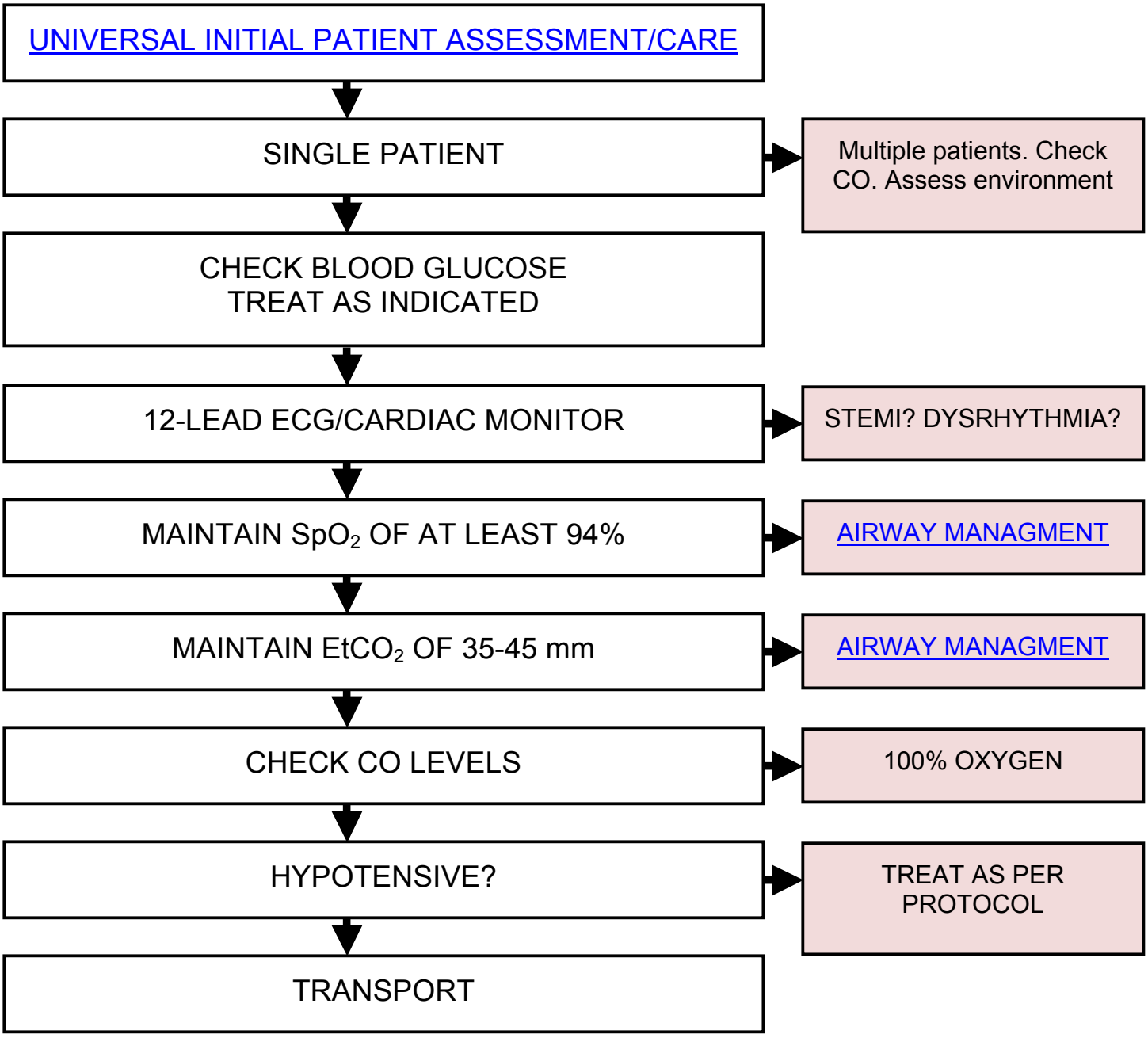
- **After 5 minutes Morphine or Fentanyl may be repeated for pain control.**
- **Nitrous Oxide should only be used with alert, cooperative patients.**
- **Zofran may be given to those patients who develop nausea after receiving Morphine for pain.**
- **Sickle Cell patients have significant pain due to clogging of their capillaries that leads to ischemic tissue pain.**
- **Sickle Cell patients with chest pain may have significant disease frequently related to emboli in the lungs.**

STROKE



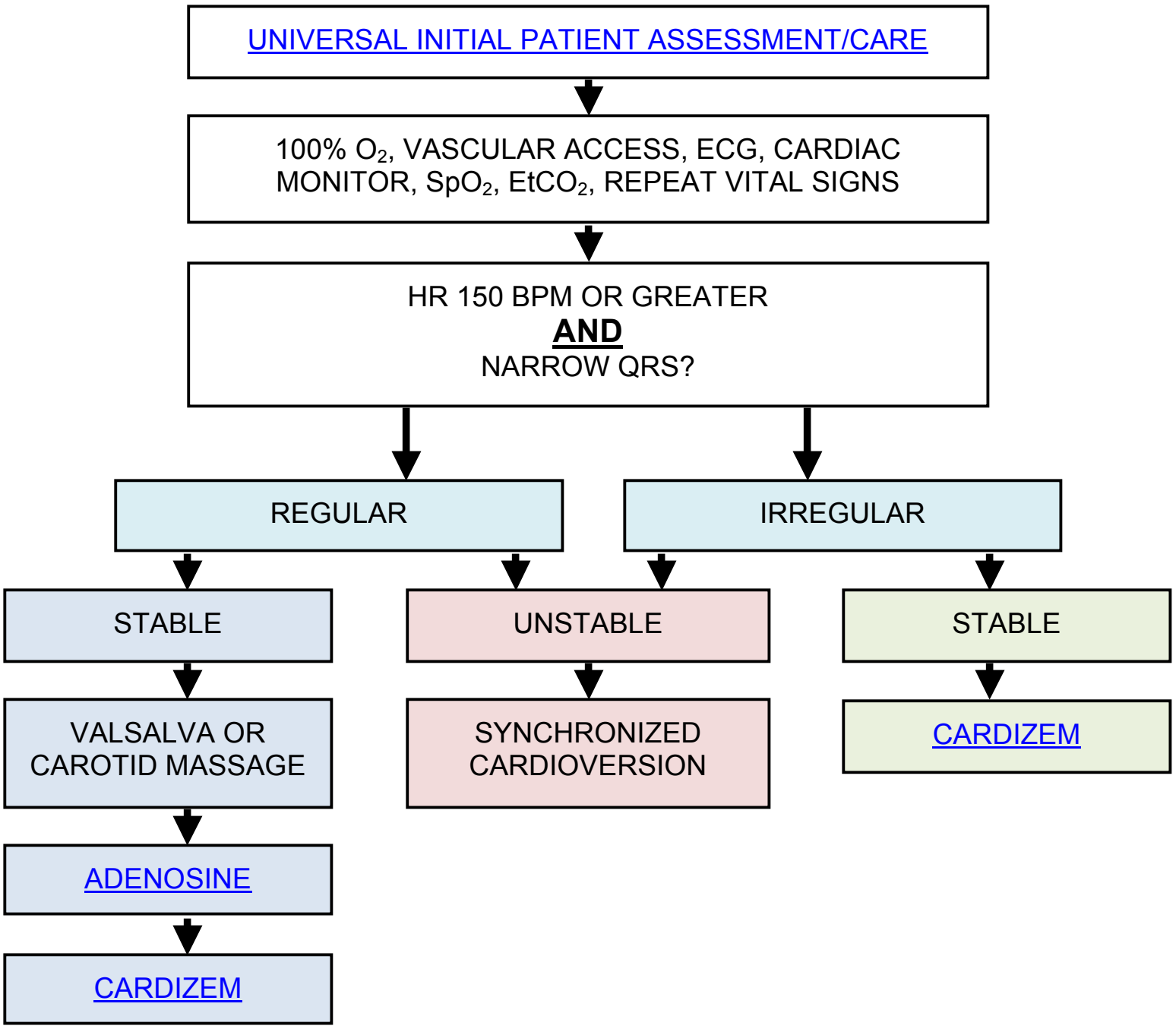
- Transport all suspected stroke patients in the semi-Fowler's position with the head elevated 30-45 degrees.
- **THERE IS NO CURRENT INDICATION FOR THE PRE-HOSPITAL TREATMENT OF AN ELEVATED BLOOD PRESSURE IN A PATIENT WITH SIGNS OR SYMPTOMS OF AN ACUTE STROKE.**
- Acute stroke patients with hypotension should be treated as per protocol.

SYNCOPE



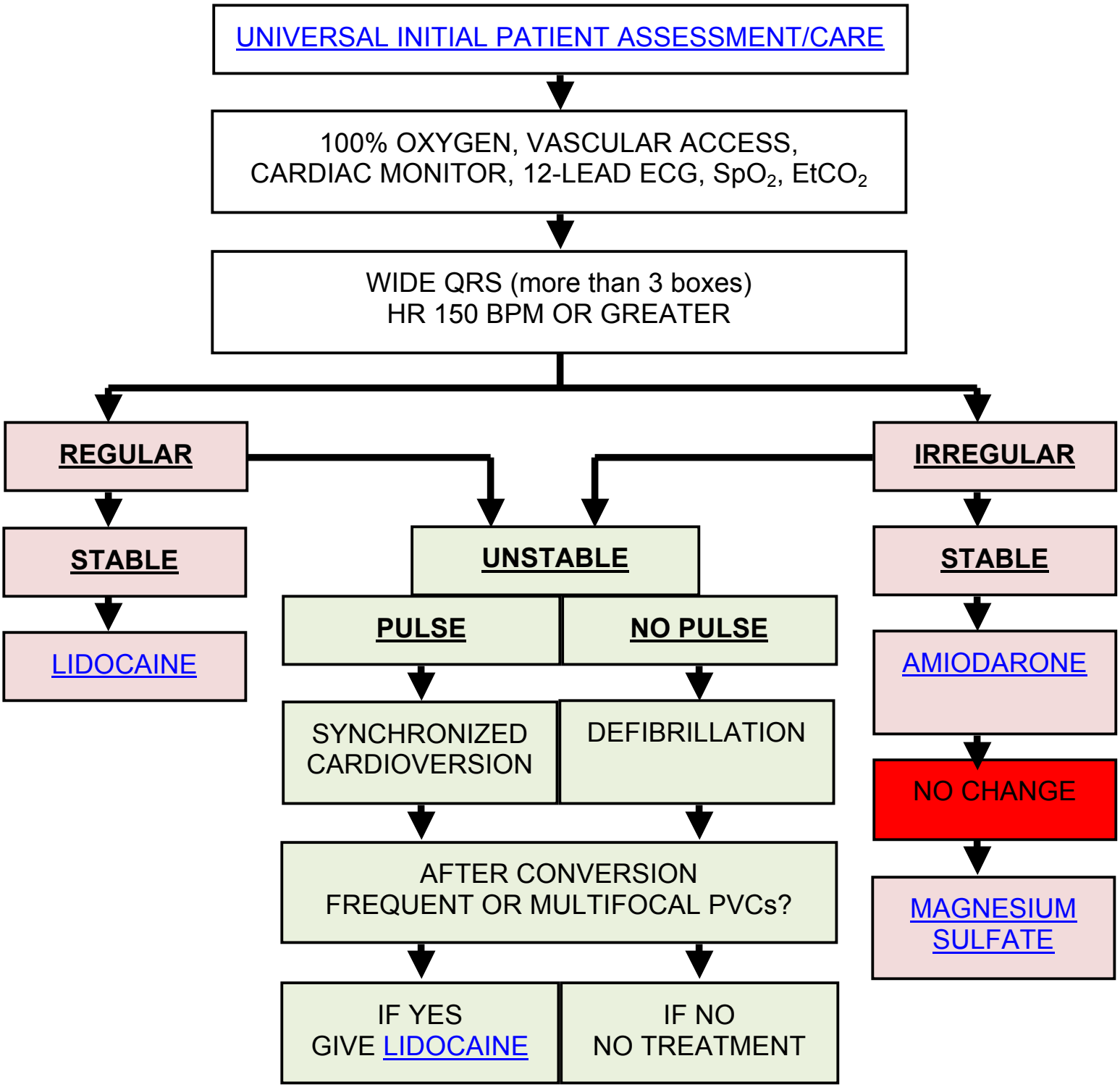
- **Past Medical History/Medications/Environmental conditions are important clues.**
- **Seizure activity noted or reported?**
- **Consider associated trauma if the patient falls during the syncope.**
- **Changes in the heart rhythm are the most common causes of syncope in the elderly.**

ADULT NARROW COMPLEX TACHYCARDIA



- **If at any time the patient loses their pulse – Defibrillate.**
- **For Electrical therapy you need CASH: Chest pain, AMS, SOB, Hypotension.**
- **Patients 55 years of age or older should not receive carotid massage.**
- **Carotid massage should only be performed on one side of the neck at a time.**
- **Unstable, unconscious patients should receive cardioversion.**
- **Consider Morphine or Fentanyl for synchronized cardioversion in conscious patients.**

ADULT WIDE COMPLEX TACHYCARDIA



- **If at any time the patient loses their pulse—Defibrillate.**
- **Torsades-de-Pointe with a pulse give Magnesium Sulfate.**
- **Torsades-de-Pointe hemodynamically unstable AND/OR without a pulse Defibrillate.**
- **Give sedation with Morphine or Fentanyl to conscious patients before cardioversion.**
- **Wolff-Parkinson-White (WPW)**
  - **Defibrillate if ventricular rate 250 bpm or greater OR hemodynamically unstable.**
  - **Avoid Adenosine, Cardizem**
  - **If hemodynamically stable AND ventricular rate 200-249: monitor and transport.**

TASER EXPOSURES

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

↓

ASSESS AND ENSURE SCENE SAFETY

↓

VITAL SIGNS, CARDIAC MONITOR, 12-LEAD ECG

↓

IF PROBES STILL IN PATIENT, MAKE SURE PROBES NOT ATTACHED TO TASER

↓

ENSURE MAINTABLE AIRWAY
SUPPLEMENTAL O_2 TO ACHIEVE
SpO_2 = 94% OR GREATER

↓

BLOOD GLUCOSE⇒TREAT AS INDICATED

↓

EVIDENCE FOR EXCITED DELIRIUM? → EXCITED DELIRIUM PROTOCOL

↓

RESTRAINTS NECESSARY? → LEAST RESTRAINT POSSIBLE

↓

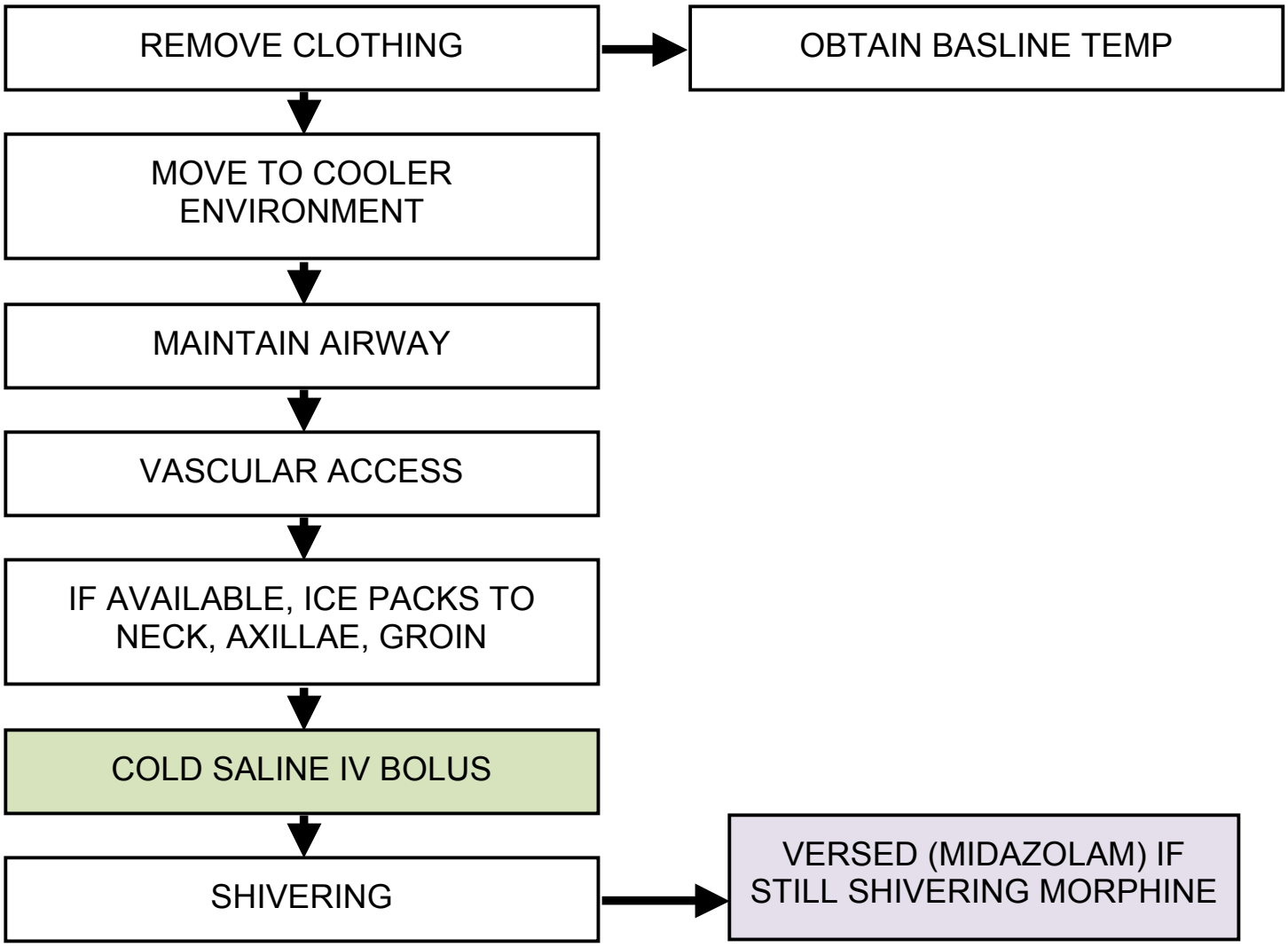
TREAT ANY MEDICAL CONDITION AS PER APPROPRIATE PROTOCOL

↓

MONITOR AND TRANSPORT

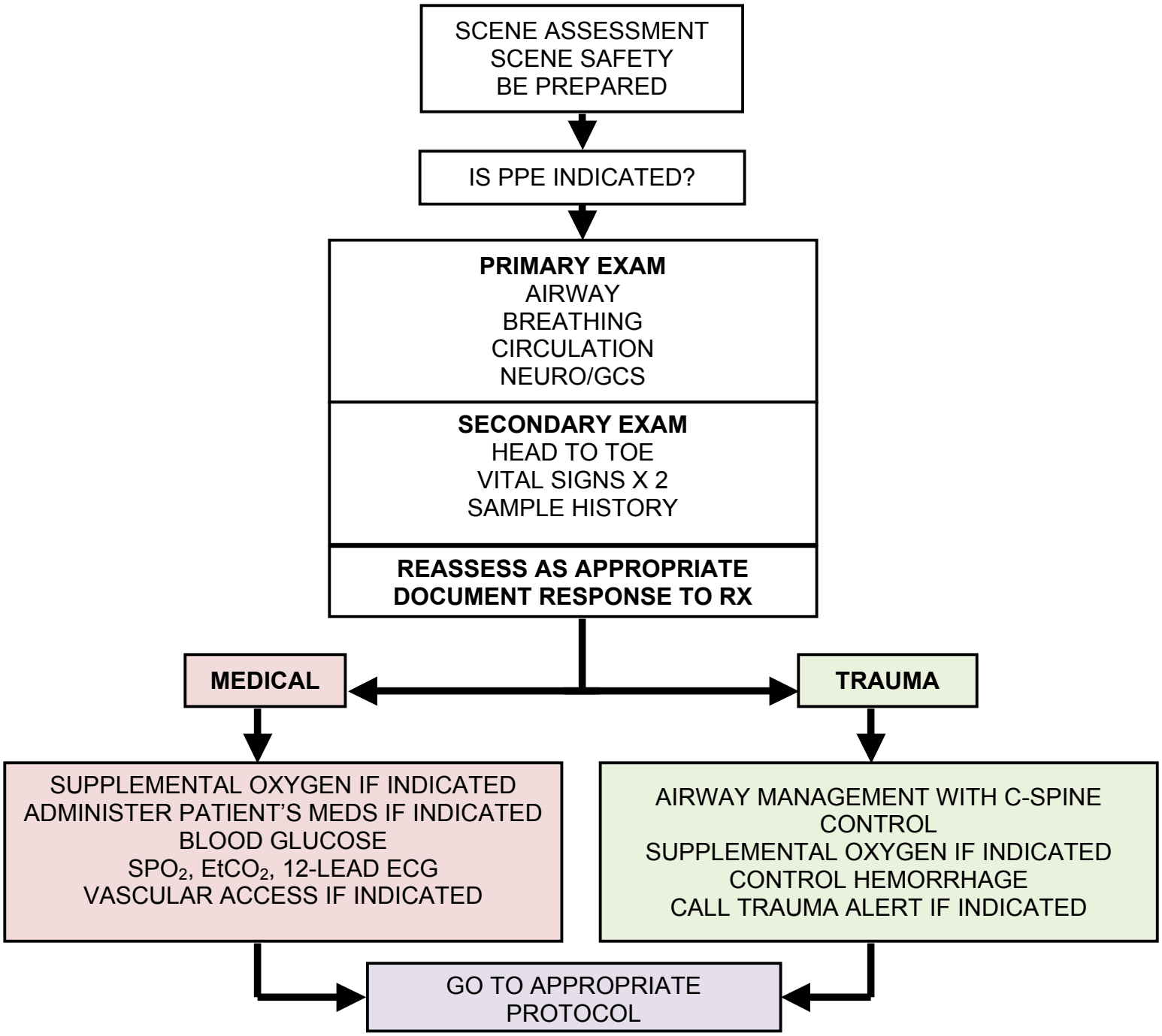
- **If restraints are necessary, do NOT place the patient in a prone (face down) position. Use a supine or recovery position.**
- **Do NOT remove TASER probes lodged in the face, neck, female breast or genitals.**

THERAPEUTIC HYPOTHERMIA



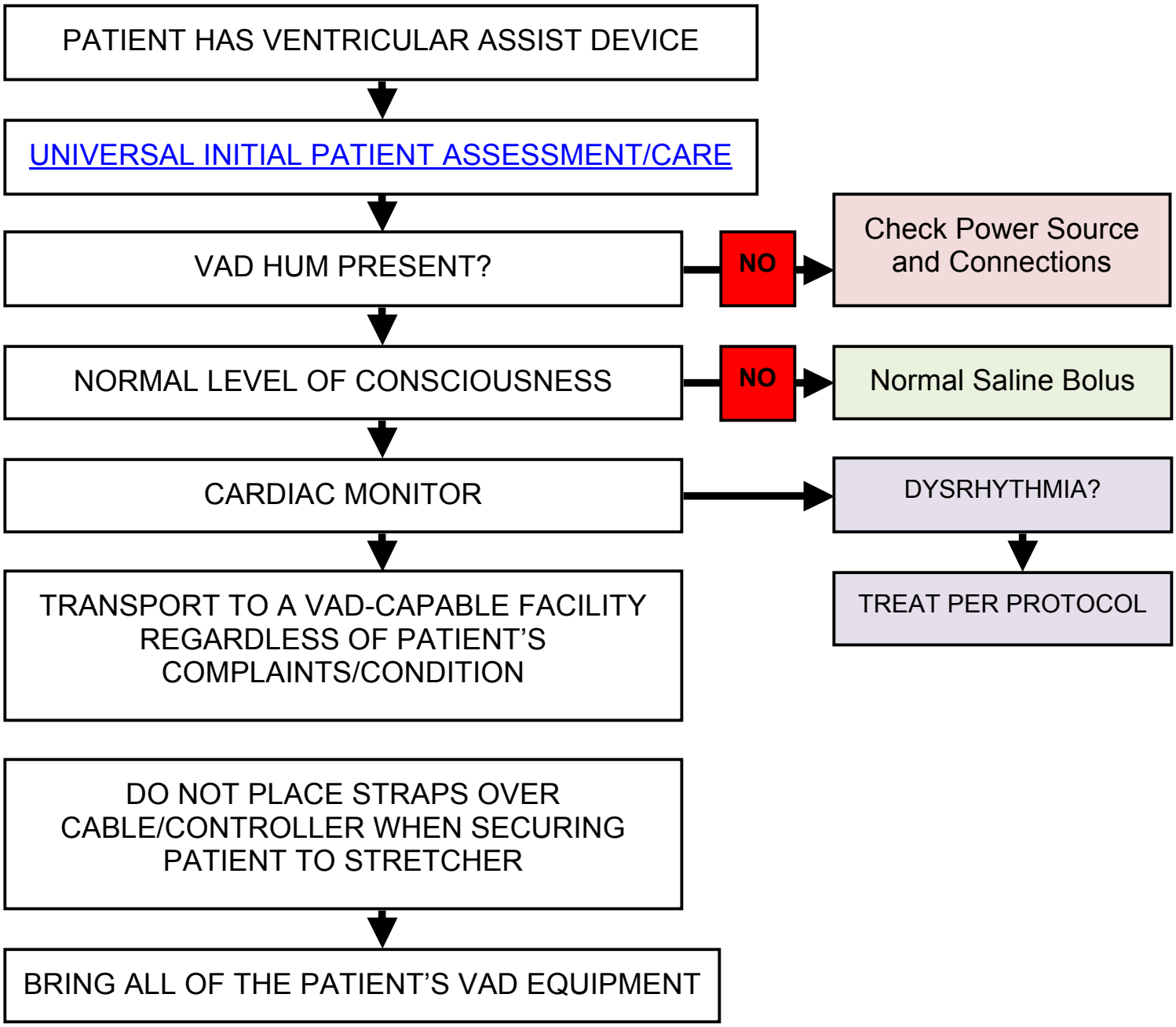
- **Consider Therapeutic Hypothermia when treating Environmental Emergencies such as Heat Stroke, and Malignant Hyperthermia, or Agitated Patient / Excited Delirium.**
- **This protocol is appropriate for patients whose temperature reading is 104°F (40°C) or higher (OR if unable to obtain a temperature and the patient feels hot to the touch), who exhibit mental status changes including agitation, and/or confusion, and/or decreased levels of consciousness.**

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE



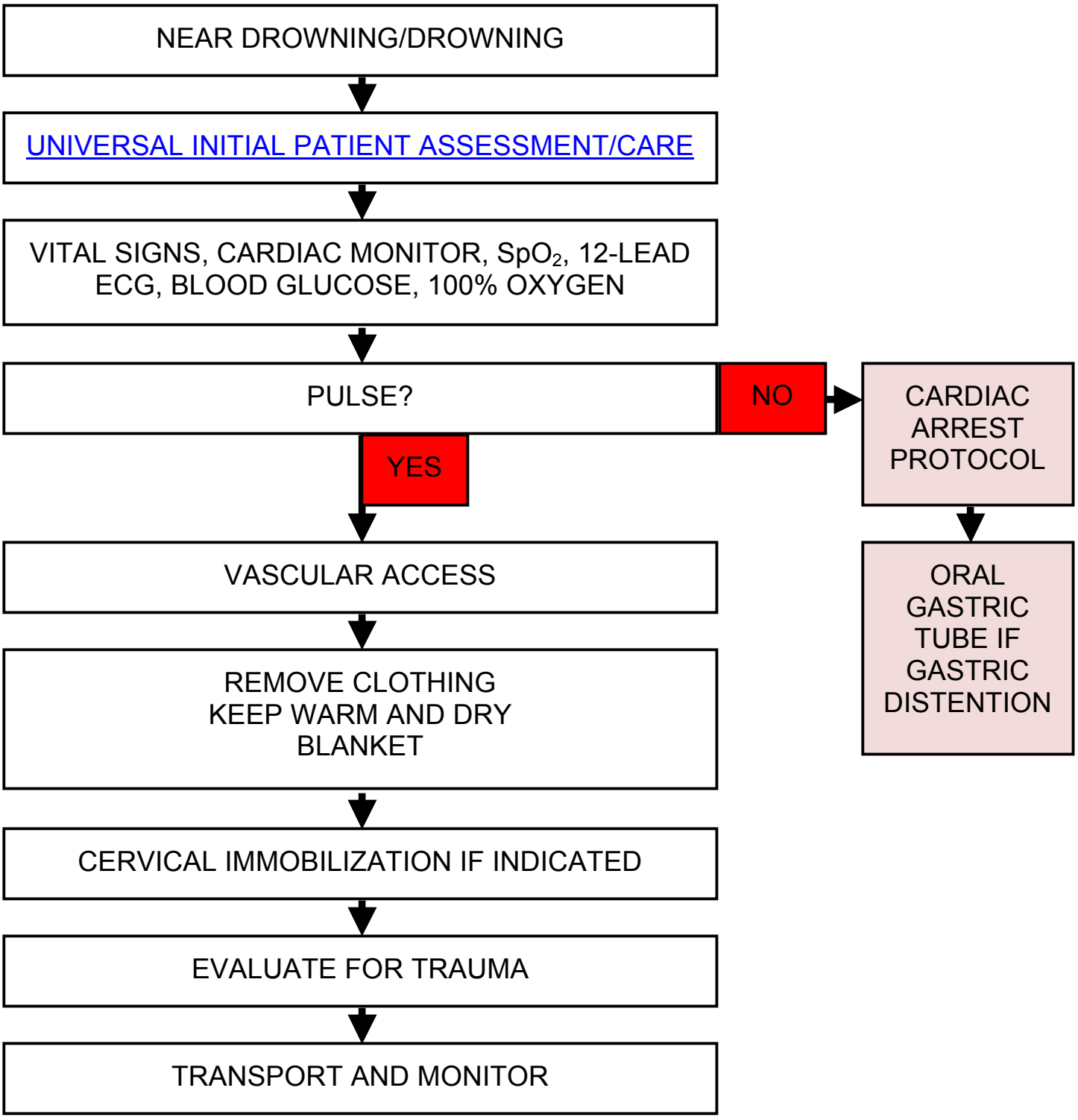
- Universal precautions should be used for all patients.
- After patient contact, the paramedic is responsible for the patient until there is an appropriate transfer of care, the patient is deemed non-viable, or a release is signed.
- If you suspect CHILD or ADULT abuse or neglect, follow appropriate protocol(s) and also report it to the receiving nurse and/or physician. Contact the Florida Abuse Hotline at 1-800-96-ABUSE.
- All patient information is confidential
- Every patient encounter requires a timely, completed, Patient Care Report (ePCR).
- A Patient Care Report is required even though there is no patient, but a request for services was made and personnel responded.
- A patient encounter is dependent on neither treatment, nor transport, nor cooperation from the patient.
- Never hesitate to contact medical control for a patient who refuses transport.

VENTRICULAR ASSIST DEVICE



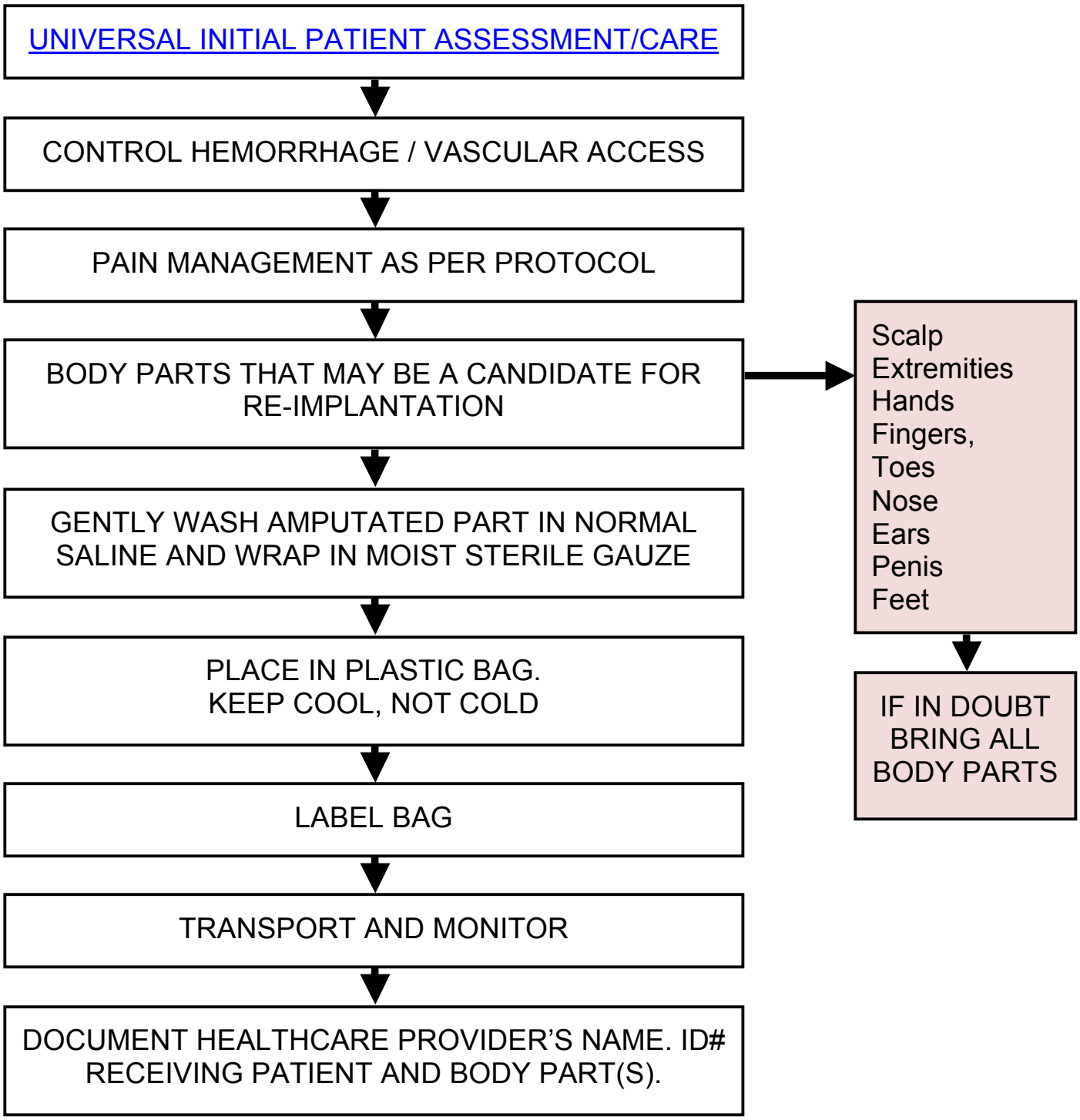
- **Patients with Ventricular Assist Devices (VADs) usually do not have a palpable pulse and you will be unable to obtain a blood pressure.**
- **Do NOT waste your time trying to obtain a blood pressure.**
- **Listen for HUM at the apex of the heart under the left breast. If there is a HUM then the patient has blood flow, even if there is no palpable pulse regardless of the patient's level of consciousness.**
- **An awake, alert patient complaining of being "weak and dizzy" can be VF.**
- **AVOID CPR EXCEPT AS A LAST RESULT as it may dislodge the catheters**
- **Defibrillation/Cardioversion/Pacing are acceptable when indicated. Do NOT place Combipads over the pump/cable area.**
- **Do NOT restart a VAD that has stopped without first contacting the VAD coordinator.**
- **Family members usually have had VAD training and are a good source of information.**

WATER RELATED EMERGENCIES



- **All near drowning patients should be transported to the closest appropriate facility.**
- **Evaluate all drowning/near-drowning patients for associated trauma.**
- **Obtain a 12-lead ECG if time permits.**
- **Early sodium bicarbonate use in cardiac arrest if prolonged submersion suspected.**
- **Decompression Sickness**
  - **Joint pain, AMS, numbness, Weakness, paralysis, Dizziness**
  - **Transport in supine or recovery position.**
  - **Do NOT place in a Trendelenburg position.**
  - **Transport to facility with Decompression Chamber**

ADULT TRAUMA: AMPUTATIONS



- **Do NOT try to determine in the pre-hospital setting whether a body part is salvageable or capable of being re-implanted. Assume that all body parts are capable of being re-implanted.**
- **Keep clear records of which facility and who received the amputated body part.**

ADULT TRAUMA: BURNS

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

DETERMINE TYPE OF BURN → **Thermal** | **Chemical** | **Electrical**

VASCULAR ACCESS → ADULT Greater than 15% TBSA TRAUMA ALERT

ASSESS FOR INHALATION INJURY
MONITOR SpO_2 → Airway Management

PAIN MANAGEMENT PROTOCOL

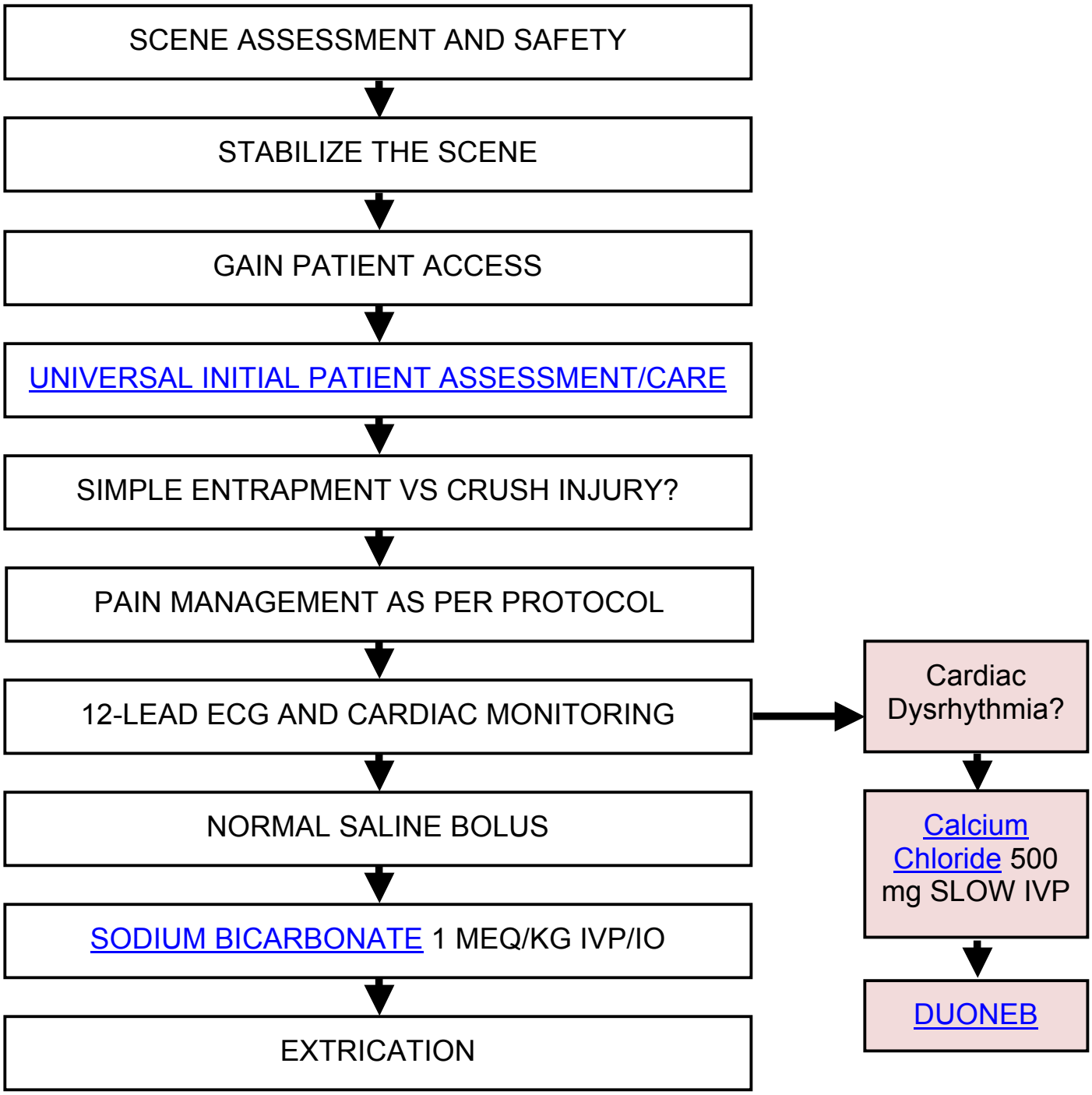
THERMAL
- COVER
- AVOID AGGRESSIVE COOLING
- DO NOT BREAK BLISTERS
- CONSIDER CO/CN

CHEMICAL
- DO NOT NEUTRALIZE
- BRUSH OFF POWDERS
- IRRIGATE LIQUIDS

ELECTRICAL
- SCENE SAFETY
- 12-LEAD ECG
- DYSRHYTHMIAS AS PER PROTOCOL
- ASSESS FOR INJURY

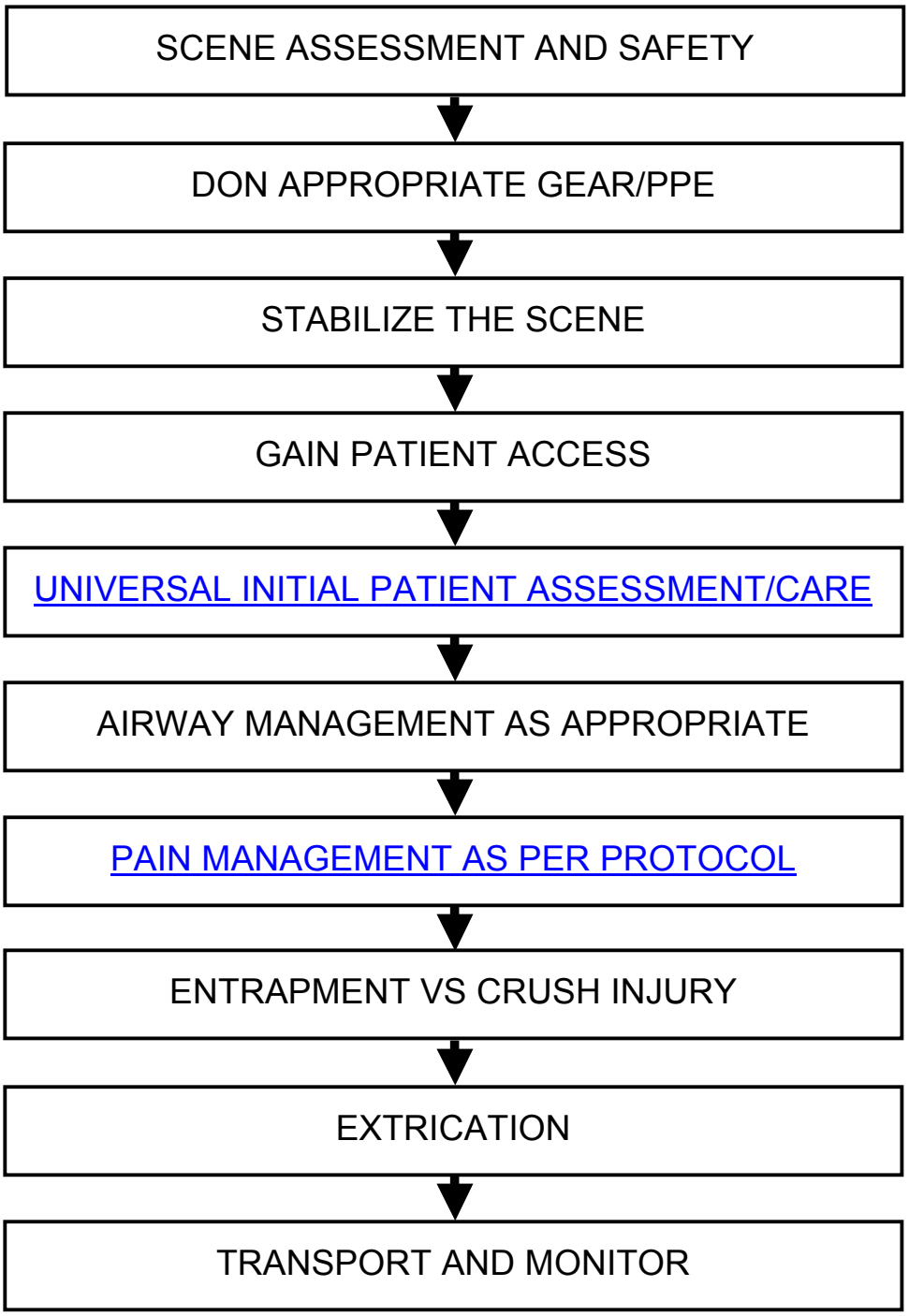
- **TBSA—Total Body Surface Area. Use Rule of Nines**
- **Patient's palm (without fingers) is approximately 1% BSA.**
- **Be generous with pain management.**
- **Inhalation Injury**
  - **Facial Burns, Soot in mouth/throat, changes in voice, difficulty breathing**
- **Call Trauma Alert for Adult greater than 15% TBSA, Pediatric greater than 10% TBSA.**
- **Measuring TBSA includes only second and third degree burns, not first degree burns.**
- **Second/Third degree burns of the face, neck, hands, genitals, and feet should go to the Trauma Center.**

ADULT TRAUMA: CRUSH INJURIES



- **If the patient's extremity/extremities has/have been trapped by a heavy object AND there has been a loss of peripheral perfusion of the entrapped extremity/extremities, the patient must be treated to prevent reperfusion injury.**
- **This treatment should be administered PRIOR to the entrapped extremity being freed from the object.**
- **Prolonged loss of perfusion to any extremity will cause tissue damage and rupture of the cell walls releasing large amounts of potassium into the circulation. This large dumping of potassium is potentially life threatening by causing cardiac dysrhythmias.**
- **Do NOT treat patients with tourniquets, fluids, or medications if the crush injury / entrapment is less than one-hour duration.**

ADULT TRAUMA: PATIENT ENTRAPMENT



- **With patient entrapment, the emphasis is on rapid initial assessment and transport of the patient to achieve definitive care.**
- **If transport of the patient is delayed due to entrapment, the patient must be appropriately treated while technical rescue operations are under way to free the patient.**
- **In cases where spinal injury is suspected, provide manual initial immobilization until you are able to use equipment to stabilize the patient.**
- **Call your supervisor early in those situations where amputation may be necessary to extricate the patient.**

ADULT TRAUMA: EYE INJURIES

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

↓

HISTORY, CONTACT LENSES?
TRAUMA? EXPOSURE?
PREVIOUS SURGERY?

↓

REMOVE ANY CONTACT LENSES

↓

EXAMINE EYE, LIDS, AND ORBIT
DETERMINE VISUAL ACUITY

↓

PENETRATING TRAUMA?
STABILIZE OBVIOUS OBJECTS
AVOID PRESSURE ON EYE(S)
COVER BOTH EYES

↓

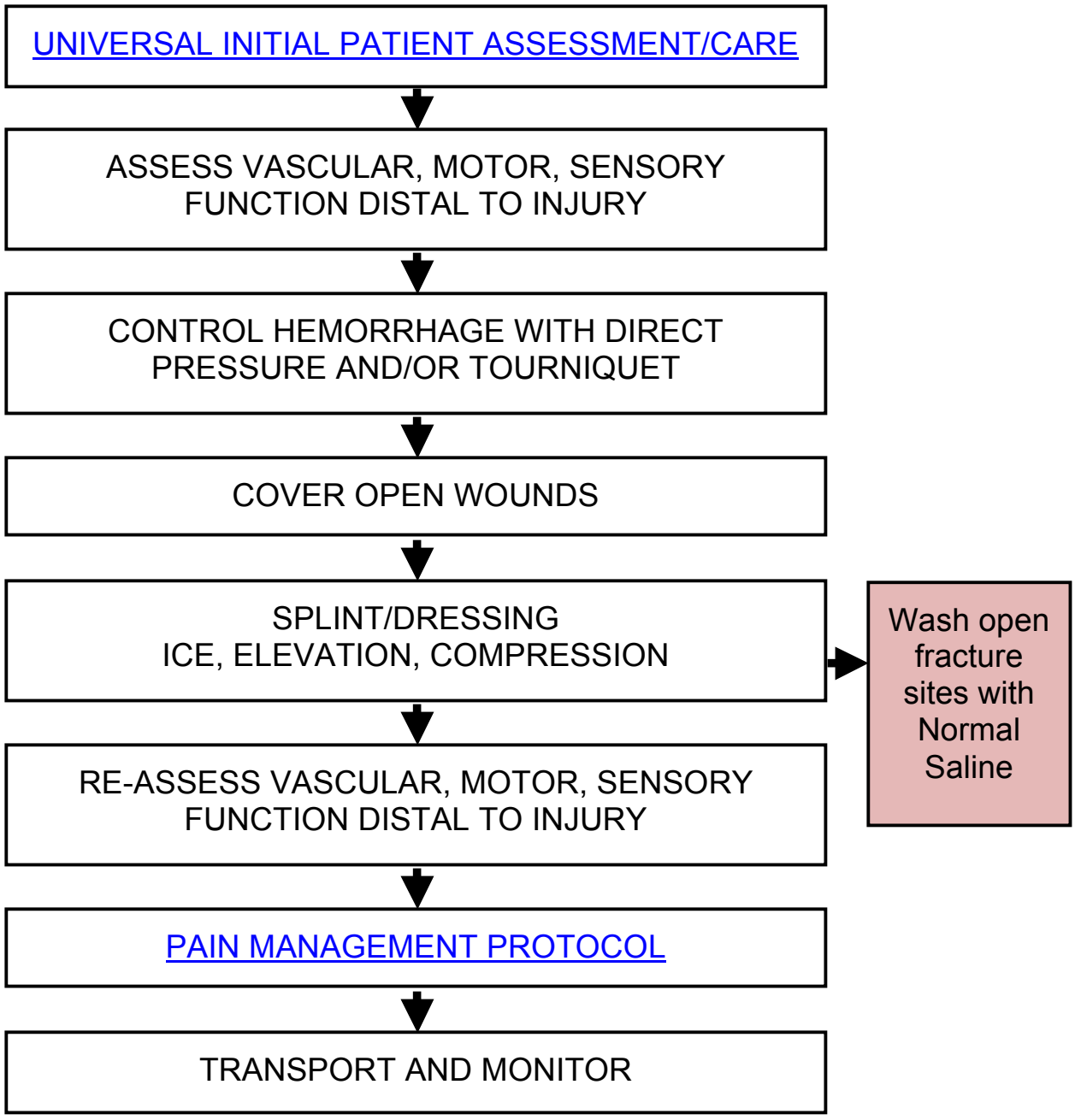
EXPOSURE?
TETRACAINE HCL DROPS FOR PAIN RELIEF
IRRIGATE EYE(S)

↓

PAIN MANAGEMENT PROTOCOL

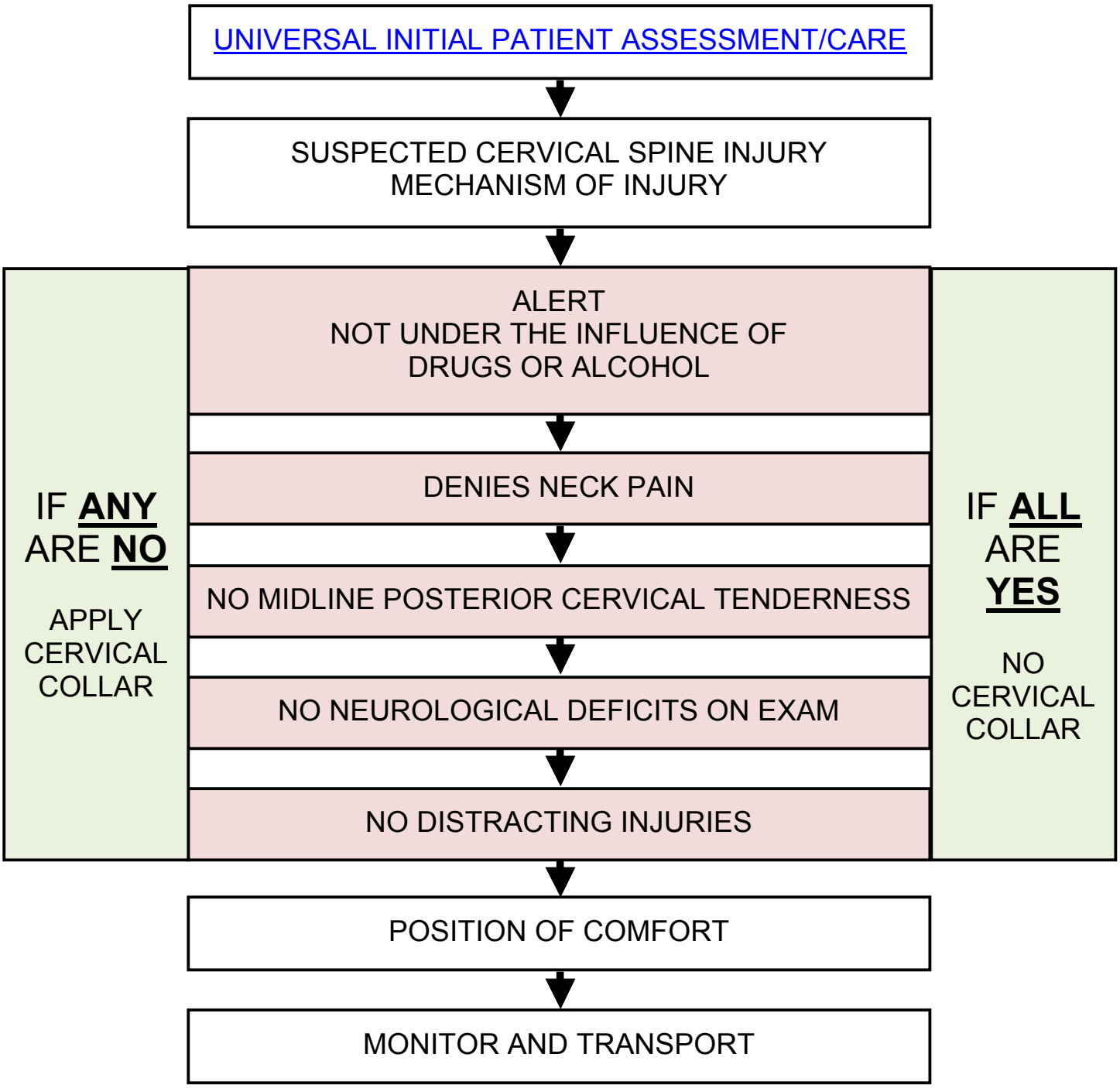
- **If there is a history of signs/symptoms of an eye exposure to chemicals and/or foreign bodies irrigate the involved eye(s) with Normal Saline.**
- **Penetrate of the globe of the eye may be difficult to see. Hints on penetrate include: loss of vision, blood in the anterior portion of the eye, vitreous humor (clear jelly-like substance) oozing from the wound.**
- **Tetracaine initially burns after administering it to the eye. The burning lasts about 10 seconds. Repeat doses may be necessary for adequate pain relief.**
- **If an enucleation (eyeball has been forced out of the socket) has occurred, cover the entire eye area with a rigid container, such as a disposable drinking cup. Avoid direct contact with the exposed globe. If bleeding, control by direct pressure with a sterile moist dressing.**

ADULT TRAUMA: SUSPECTED FRACTURES



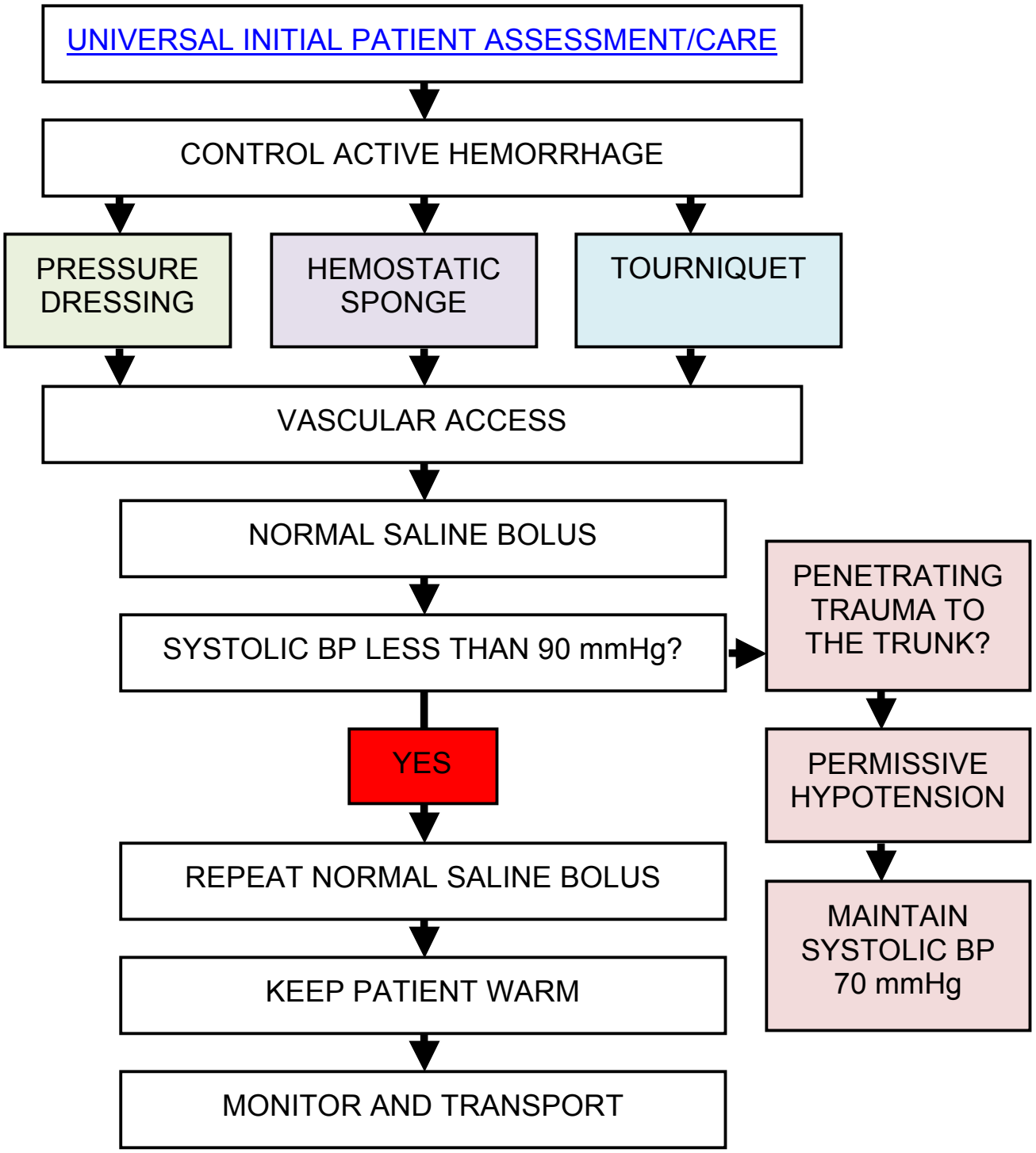
- **Unstable pelvic fractures may be managed with a pelvic girdle/splint such as the T-Pod or KED.**
- **When immobilizing a bone, splint from joint to joint.**
- **When immobilizing a joint, splint from bone to bone.**
- **Severely angulated fractures may be aligned if there is an absence of distal pulses or loss of neurological function. Distal pulse(s), skin color, and skin temperature should be documented before and after splinting the angulated fracture.**
- **Wash open fracture sites with 2 L of sterile Normal Saline before dressing/splinting.**

TRAUMA: SUSPECTED HEAD AND/OR SPINAL INJURIES



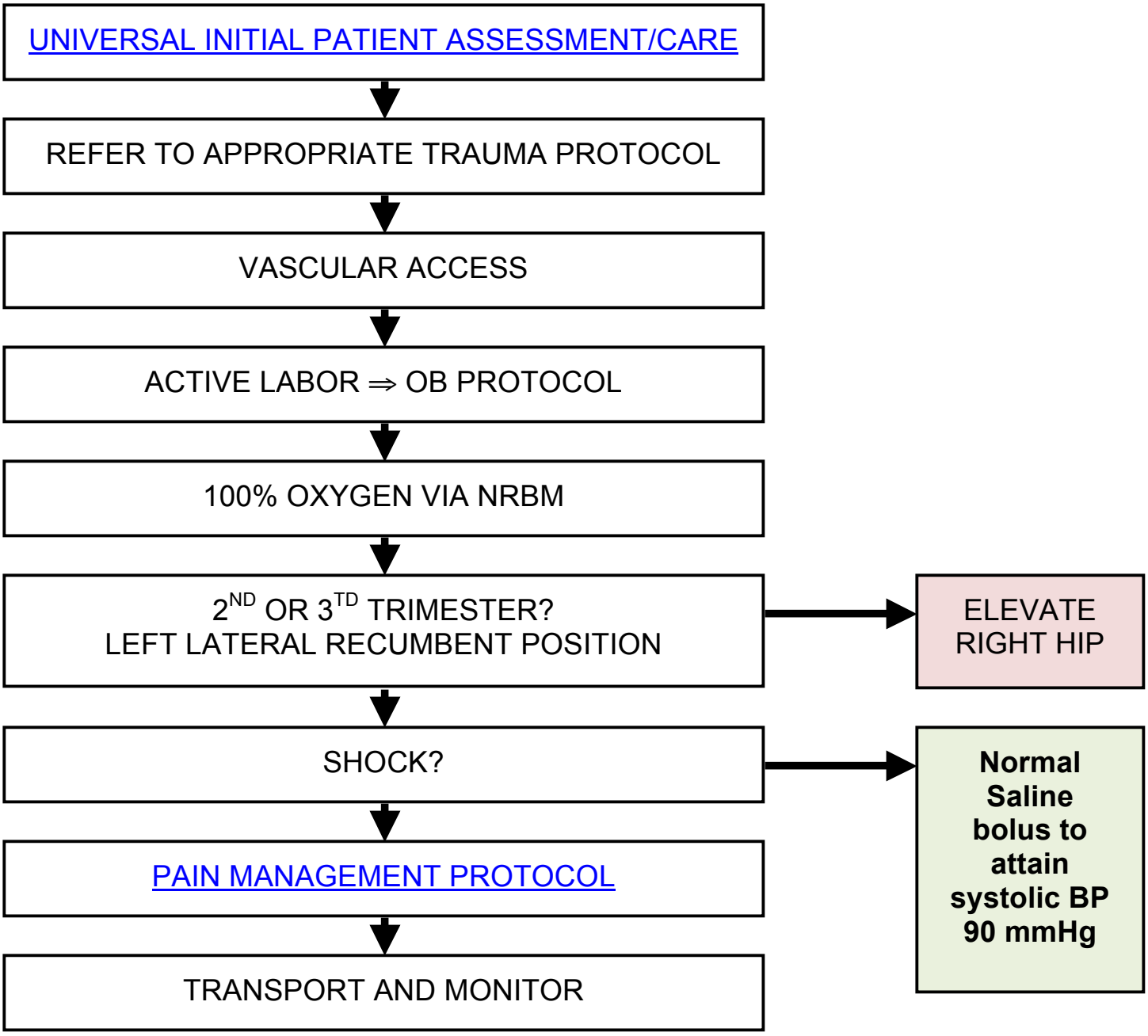
- **Long spine boards are for extrication and not transport, except when the patient is being flown by Air Rescue.**
- **The cervical collar should NOT cause the patient such discomfort that they are compelled to move.**
- **A distracting injury is one that in the paramedic's judgment is of such severity that it would "distract" the patient from other injuries**

ADULT TRAUMA: HYPOVOLEMIC SHOCK



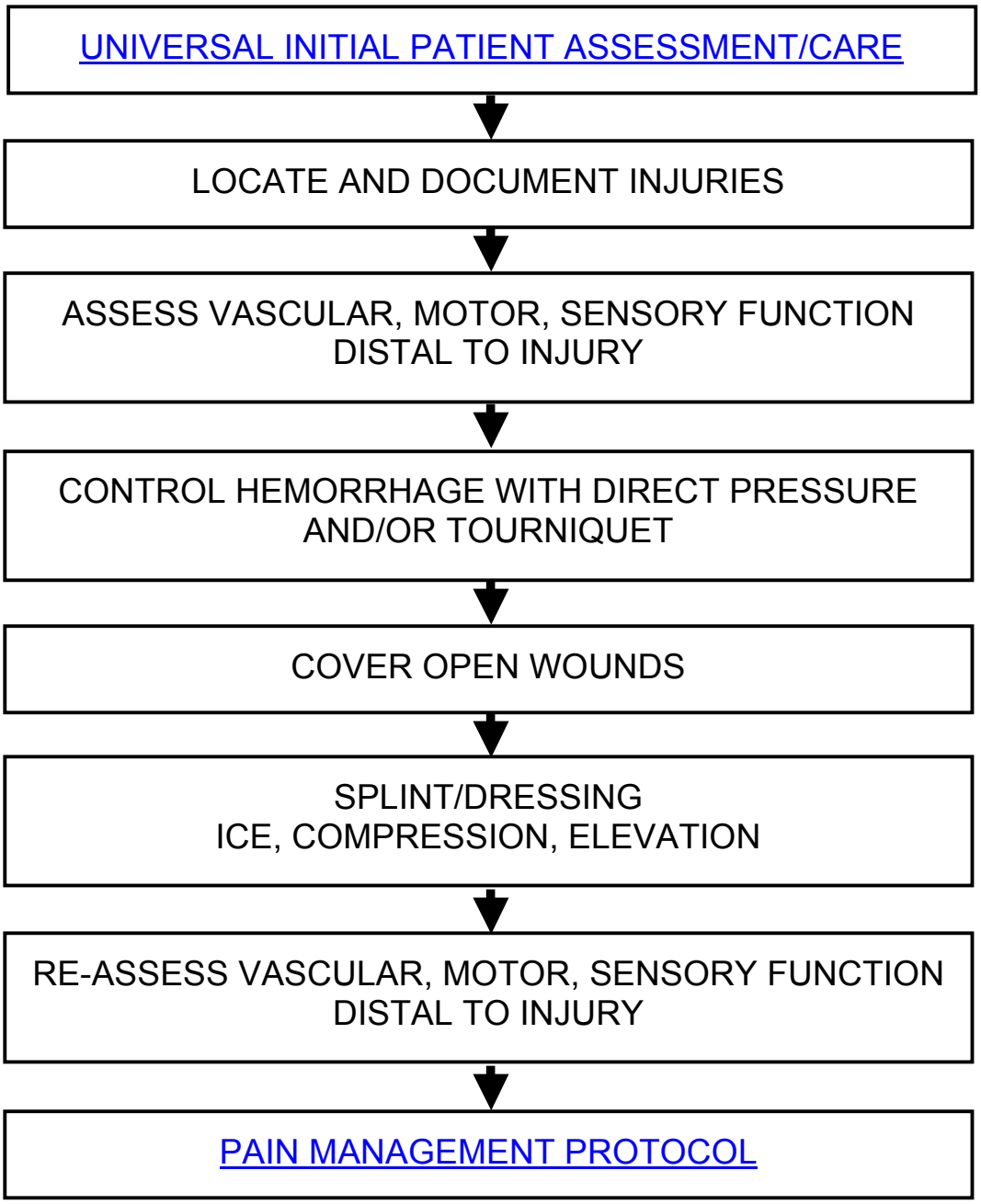
- **Do NOT delay transport to obtain vascular access in the Trauma Alert patient.**
- **Tourniquets are used to control major extremity bleeds due to amputation or due to bleeding not adequately controlled with direct pressure and elevation.**
- **Hemostatic sponges are ineffective in penetrating trauma with small entrance and/or exit wounds. They are most effective in patients with large areas of avulsed tissue and oozing wounds.**

TRAUMA: PREGNANCY



- **Nitrous Oxide should not be given to pregnant patients, except those in active labor.**
- **A Post-mortem C-section (mother obvious/apparent death) may be life-saving for the fetus, but must be done as quickly as possible, requiring rapid transport to the closest appropriate facility.**

ADULT TRAUMA: SOFT TISSUE INJURY



- **Treat CRUSH injuries as per protocol.**
- **Do NOT remove penetrating objects unless they obstruct the airway or the efficient performance of CPR.**
- **Do NOT use providone-iodine topical antiseptics like Betadine.**
- **Do NOT use hydrogen peroxide or alcohol to clean wounds.**
- **Use sterile Normal Saline to cleanse wounds.**
- **Wash open fracture sites with 2 L of sterile Normal Saline before dressing/splinting.**
- **Do NOT attempt to put eviscerated organs back into the abdomen.**
- **Do NOT apply pressure dressings to eye injuries.**
- **Repeated assessments of circulation, motor, and sensory are needed with circumferential injuries to an extremity to evaluate for compartment syndrome.**

Pediatric Algorithms

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PEDIATRIC ABANDONED/SURRENDERED NEWBORN

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

↓

VITAL SIGNS, CARDIAC MONITOR, BLOOD GLUCOSE
INITIATE ANY NEEDED EMERGENCY MEDICAL PROCEDURES FOR THE NEWBORN

↓

ARRANGE FOR RAPID
TRANSPORT TO CLOSEST APPROPRIATE FACILITY

↓

EXCEPT WHERE THERE IS ACTUAL OR SUSPECTED CHILD ABUSE ANY PARENT WHO LEAVES A NEWBORN, HAS THE ABSOLUTE RIGHT TO REMAIN ANONYMOUS AND TO LEAVE AT ANY TIME AND MAY NOT BE PURSUED OR FOLLOWED.

↓

IN THE EVENT SIGNS OF SYMPTOMS OF ABUSE ARE SEEN OR SUSPECTED →

↓

CONTACT POLICE

FLORIDA ABUSE HOTLINE

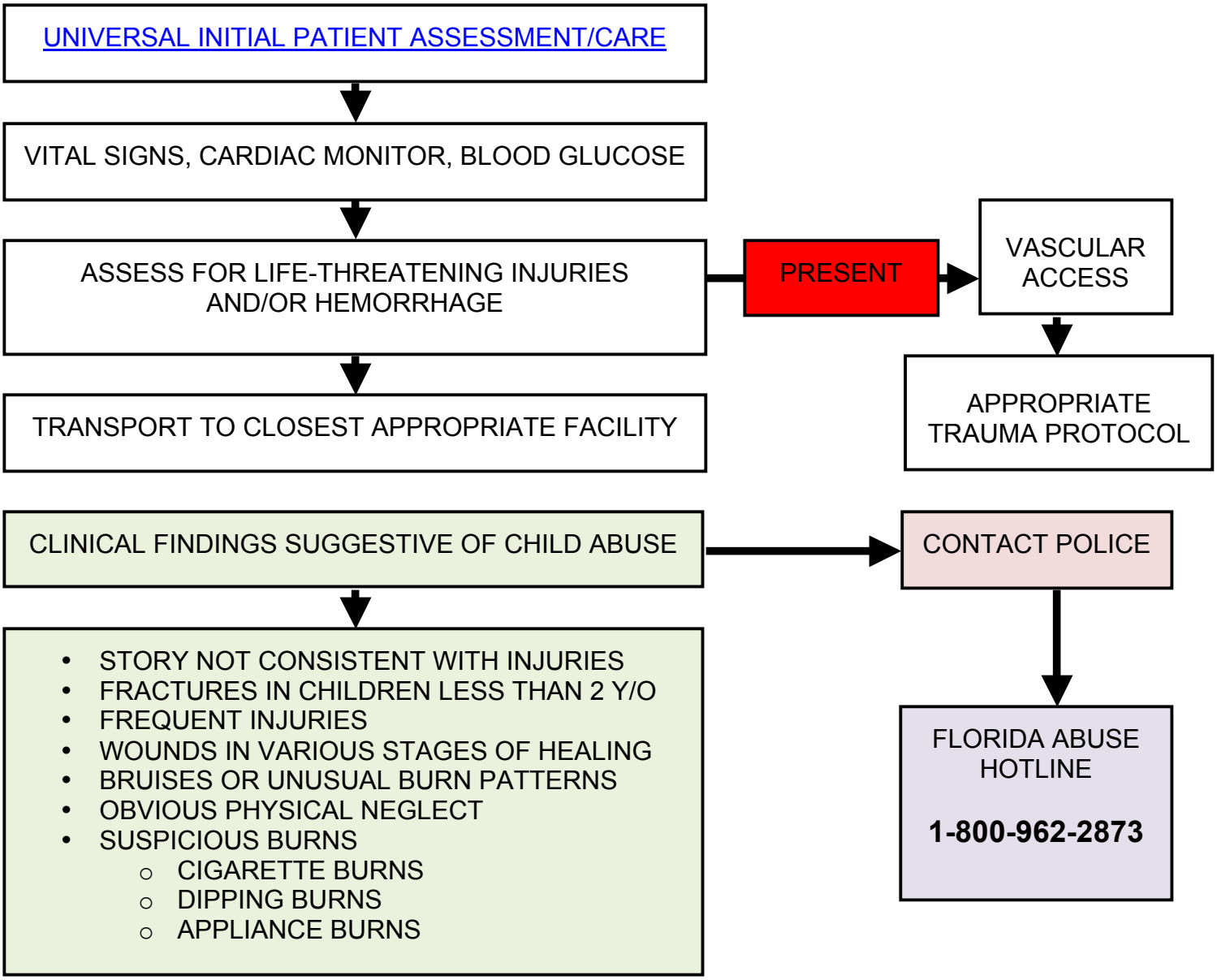
1-800-962-2873

CLINICAL FINDINGS SUGGESTIVE OF CHILD ABUSE

- STORY NOT CONSISTENT WITH INJURIES
- FRACTURES IN CHILDREN LESS THAN 2 Y/O
- FREQUENT INJURIES
- WOUNDS IN VARIOUS STAGES OF HEALING
- BRUISES OR UNUSUAL BURN PATTERNS
- OBVIOUS PHYSICAL NEGLECT
- SUSPICIOUS BURNS
  - CIGARETTE BURNS
  - DIPPING BURNS
  - APPLIANCE BURNS

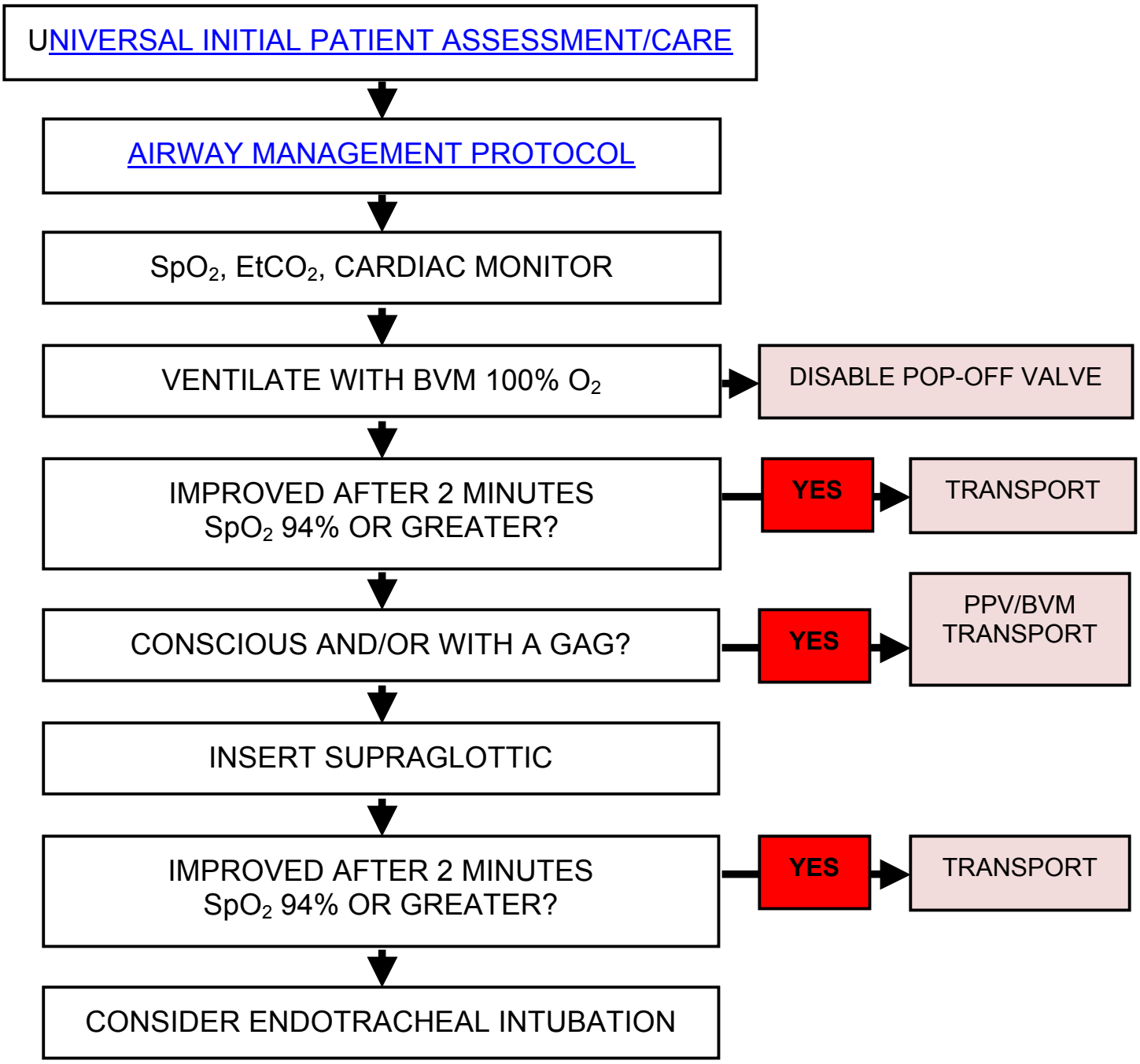
- **A newborn is defined as a child that a licensed physician reasonably believes to be approximately 7 days old or younger at the time the child is left at a hospital or Fire Station.**
- **Do NOT make any accusations.**
- **The identity of a parent who leaves a newborn at a Fire Station is confidential.**
- **A newborn infant left at a Fire Station will not be deemed abandoned, therefore is not subject to reporting and investigation requirements, unless there is actual or suspected child abuse.**
- **A parent of a newborn left at a Fire Station or hospital may claim or her newborn up until the Court enters a judgment terminating his/her parental rights.**

PEDIATRIC: SUSPECTED CHILD ABUSE



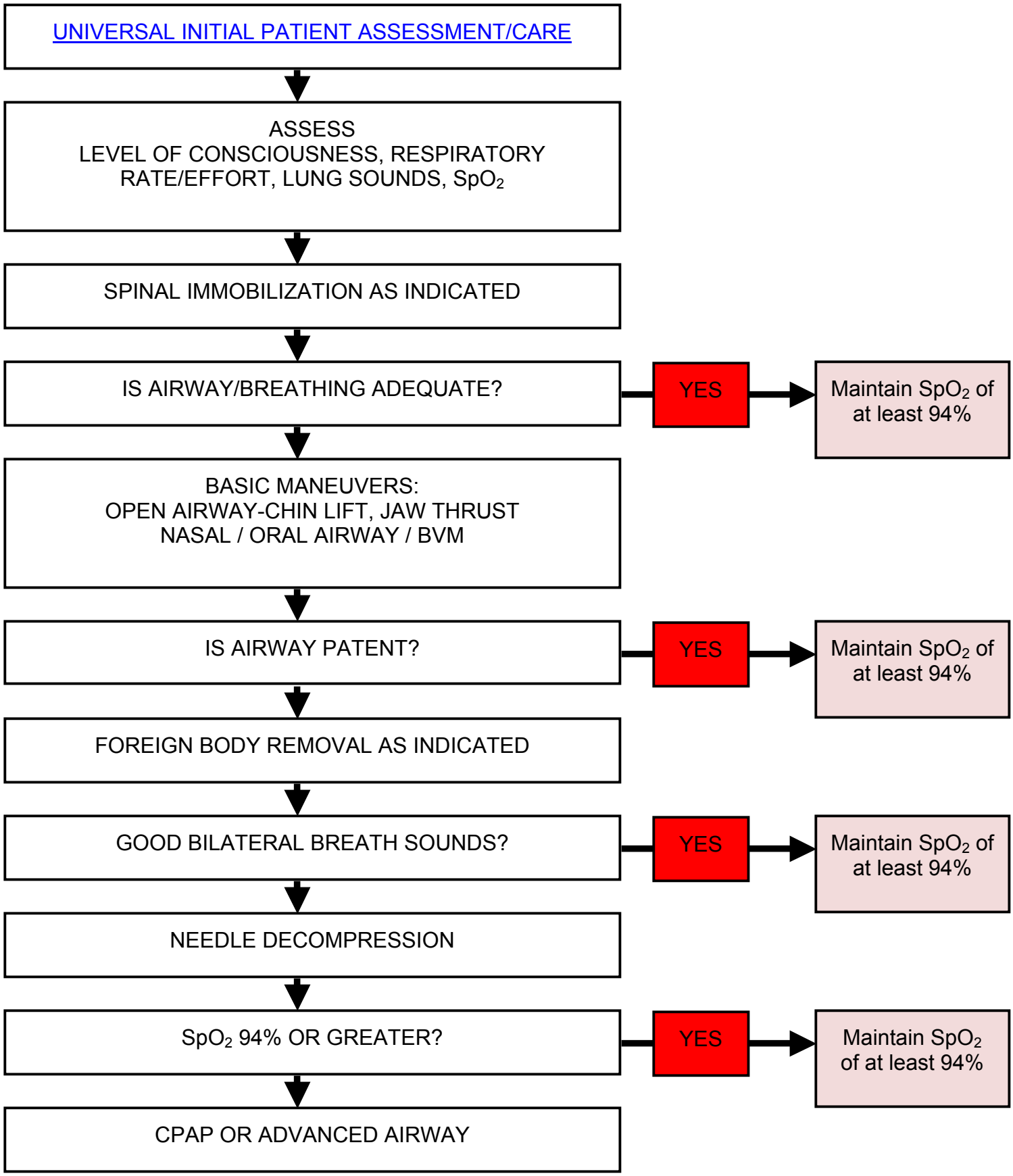
- **Treat the patient's injuries and/or medical condition first.**
- **Do NOT make any accusations.**
- **Report suspected abuse. Florida State Law protects those reporting suspected abuse.**
- **Response by a police agency to the incident scene, or transportation of the neglected or exploited person to a hospital, does not release the Unit from the responsibility of reporting the incident to the Florida Abuse Hotline.**

PEDIATRIC DIFFICULT AIRWAY MANAGEMENT



- **This protocol is intended for use in the event that a child's airway cannot be maintained AND/OR attempts to intubate are unsuccessful.**
- **Consider insertion of an oral gastric suction catheter in situations where abdominal distention persists after successful endotracheal intubation.**
- **Monitor and record EtCO2 after successful placement of an Advanced Airway and again upon every transfer of patient care.**
- **Continuously monitor EtCO2 in all patients with an Advanced Airway.**
- **If unable to intubate, insert a Supraglottic Airway and ventilate the patient.**
- **If unable to ventilate patient by any means, if clinically indicated, perform a surgical Cricothyrotomy.**
- **If the child becomes combative following successful intubation consider sedation with Versed.**

PEDIATRIC AIRWAY INITIAL ASSESSMENT



- **Do NOT hyperextend the neck in infants use the sniffing position aligning the ear lobe with the sternal notch.**
- **Do NOT suction secretions in cases of suspected epiglottitis.**

PEDIATRIC ALLERGIC - SYSTEMIC REACTIONS

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

MILD ALLERGIC

- URTICARIA, HIVES
- ITCHING
- PERI-ORBITAL EDEMA
- RED EYES
- RUNNY NOSE
- WHEEZING

BENADRYL
1 mg/kg SLOW IVP OR IM

WHEEZING?

DUONEB
1.5 mL LESS THAN 10 kg
3 mL MORE THAN 10 kg

SEVERE ALLERGIC

EVERYTHING SEEN IN MILD ALLERGIC
PLUS

- ANGIOEDEMA
- THROAT CLOSING
- VOICE CHANGES
- HYPOTENSION
- AIRWAY COMPROMISE
- LOW SpO_2
- HIGH $EtCO_2$

0.01 mL/kg EPINEPHRINE
1:1,000 IM

HYPOTENSION?
NORMAL SALINE BOLUS

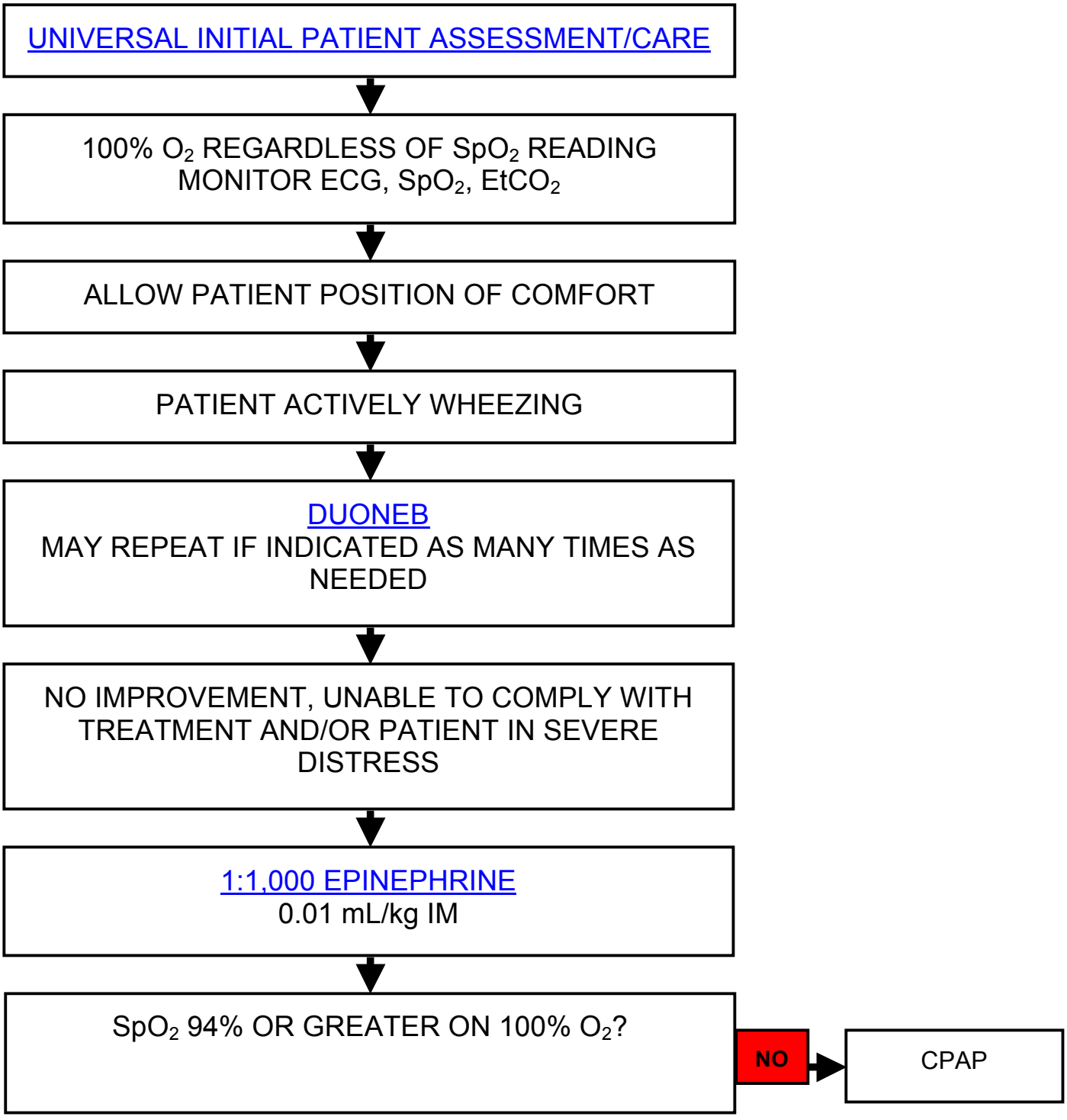
STILL HYPOTENSIVE?
0.1 mL/kg EPINEPHRINE
1:10,000 IV

BENADRYL

WHEEZING?
DUONEB

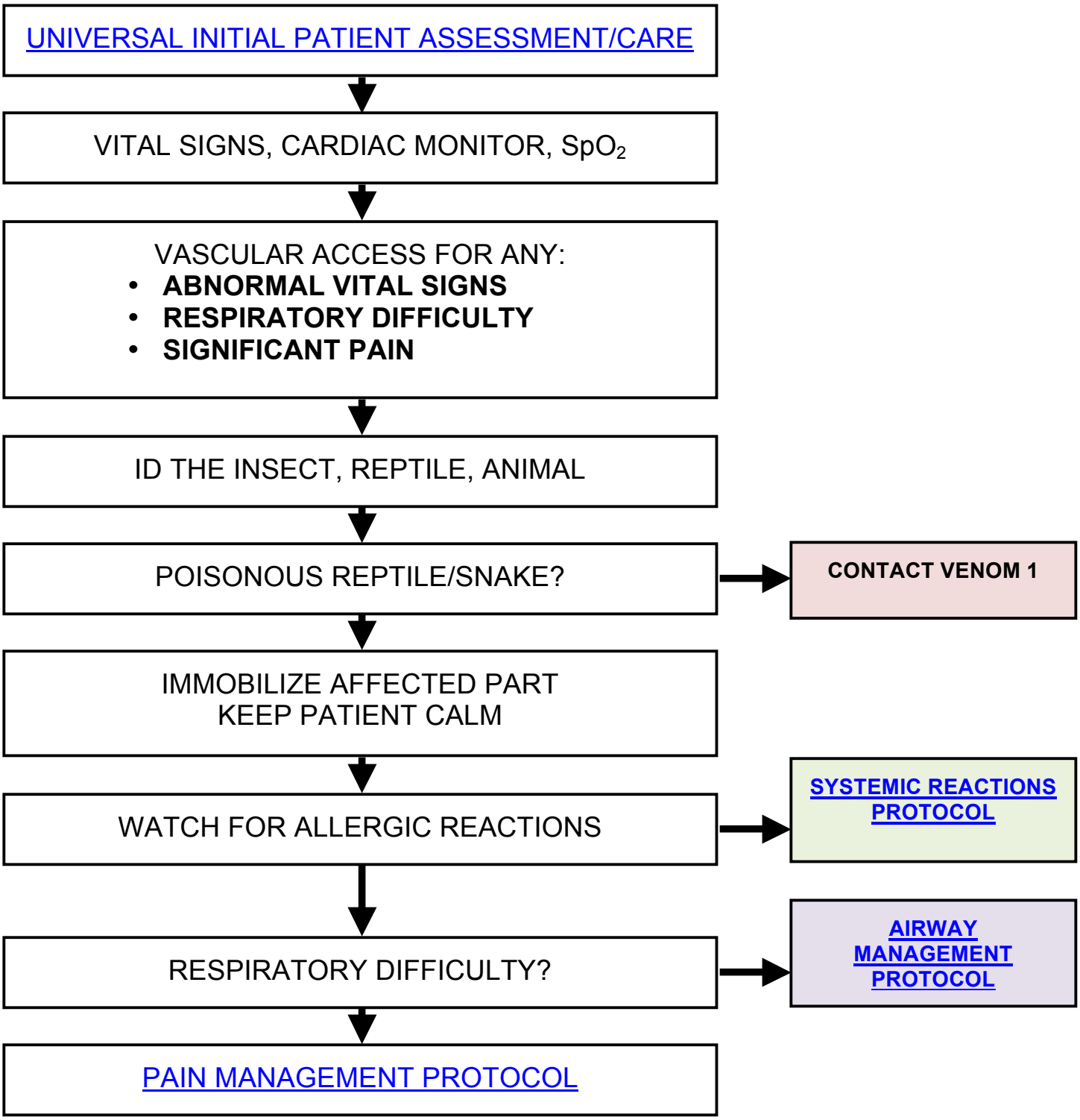
- **Dystonic Reactions are the result of side effects related to a number of anti-psychotic and anti-emetic drugs. These medications can be prescribed to children and occasionally children may take someone else's medication.**
- **Watch for restlessness, teeth clenching, facial grimacing, deviation of the head and eyes, arching of the back, protrusion of the tongue.**
  - **Give Benadryl 1 mg/kg slow IVP or IM (maximum dose 25 mg).**

PEDIATRIC ASTHMA



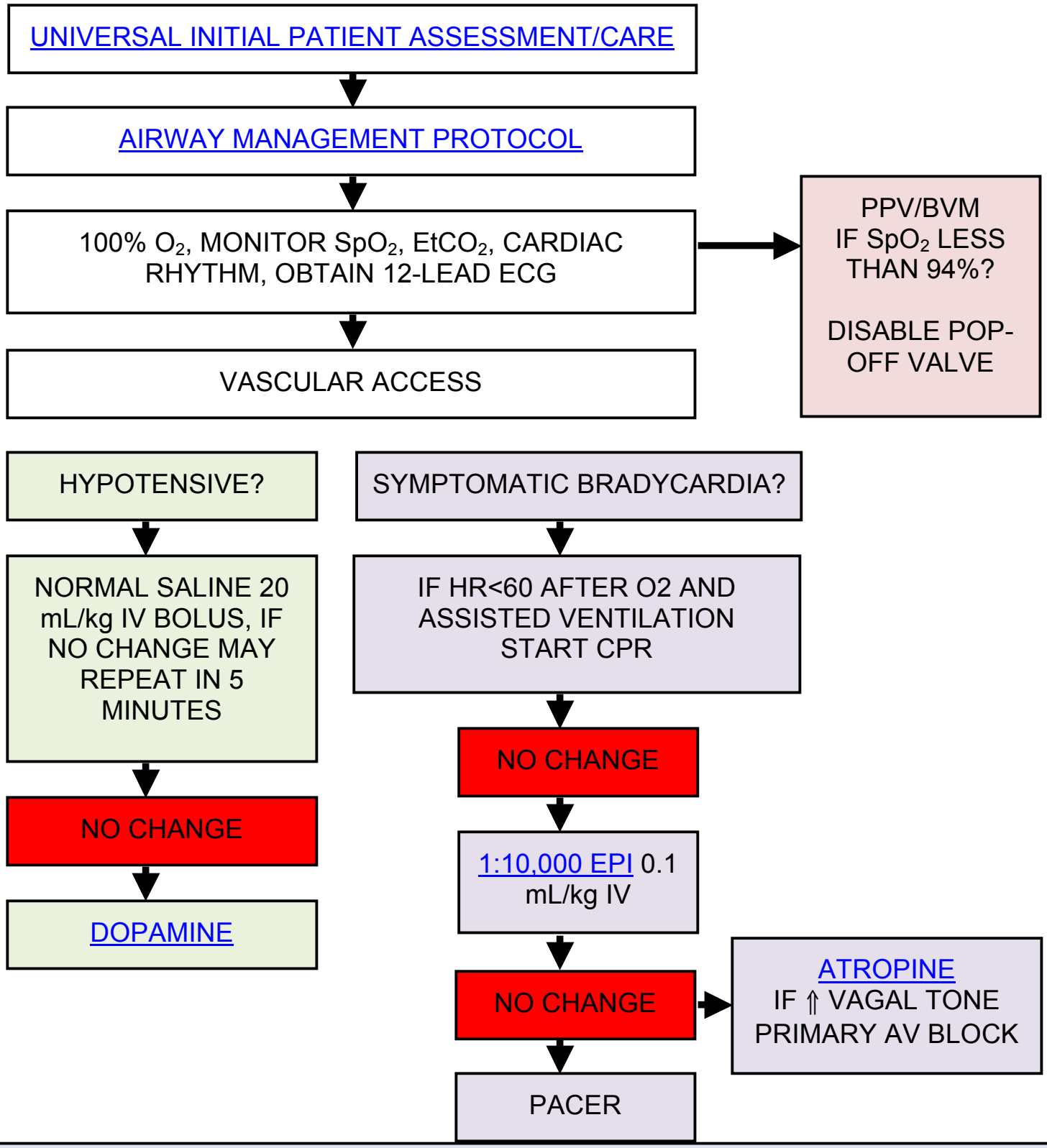
- **CPAP may be considered in the older child IF the CPAP mask forms an adequate seal and the child is cooperative.**
- **If CPAP is immediately indicated for management of the child's respiratory distress AND the child is acutely wheezing, administer DuoNeb through the CPAP mask if available.**
- **DuoNeb may be repeated every 20 minutes if indicated.**

PEDIATRIC BITES & STINGS



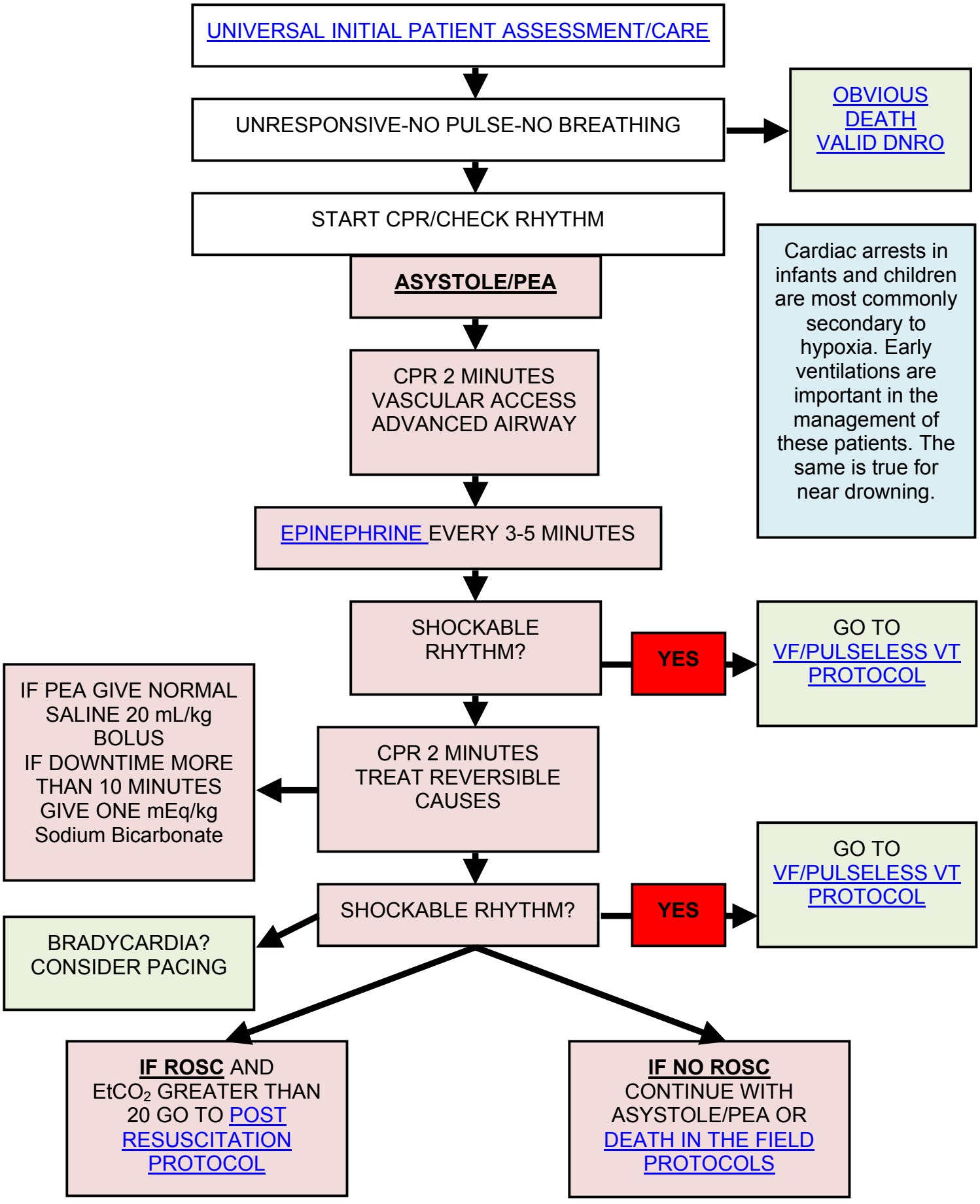
- **Jellyfish stings—Wearing gloves remove tentacles using 4x4 gauze. Apply vinegar or if not available use cold water.**
- **Patients with Coral snake bites may not show any symptoms for a few hours. A patient with a good story of a coral snake bite should be transported to the closest appropriate facility and treated, even if without symptoms. Call Venom 1 if there is any doubt.**
- **Do NOT apply cold packs to reptile or snakebites.**
- **Black Widow spider bite associated with severe muscle spasms, consider Versed.**

PEDIATRIC SYMPTOMATIC BRADYCARDIA



- Children with a symptomatic bradycardia and cardio-respiratory compromise will have a pulse and may present with any or all of the following symptoms:
  - Hypotension
  - Altered mental status
  - Cool and pale distal extremities
  - Prolonged capillary refill
  - Mottling, sweating, cyanosis
- Hypoxemia is the leading cause of bradycardia in children.

PEDIATRIC CARDIAC ARREST-ASYSTOLE/PEA



PEDIATRIC CARDIAC ARREST-VF/PULSELESS VT

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

UNRESPONSIVE-NO PULSE-NO BREATHING → OBVIOUS DEATH VALID DNRO

START CPR/CHECK RHYTHM

VF / PULSELESS VT

SHOCK → IF ROSC AND $EtCO_2$ GREATER THAN 20 GO TO POST RESUSCITATION PROTOCOL

CPR 2 MINUTES
VASCULAR ACCESS

SHOCKABLE RHYTHM? **NO** → GO TO ASYSTOLE/PEA PROTOCOL

SHOCK → IF ROSC AND $EtCO_2$ GREATER THAN 20 GO TO POST RESUSCITATION PROTOCOL

CPR 2 MINUTES
ADVANCED AIRWAY
EPINEPHRINE

SHOCKABLE RHYTHM? **NO** → GO TO ASYSTOLE/PEA PROTOCOL

SHOCK → IF ROSC AND $EtCO_2$ GREATER THAN 20 GO TO POST RESUSCITATION PROTOCOL

CPR 2 MINUTES
AMIODARONE

SHOCK → IF ROSC AND $EtCO_2$ GREATER THAN 20 GO TO POST RESUSCITATION PROTOCOL

CONTINUE WITH
EPINEPHRINE
Every 3-5 minutes.

AMIODARONE
May repeat up to 3 doses for a total of 15 mg/kg.

Cardiac arrests in infants and children are most commonly secondary to hypoxia. Early ventilations are important in the management of these patients. The same is true for near-drowning.

PEDIATRIC CO/CN EXPOSURE

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

↓

VITAL SIGNS, CARDIAC MONITOR, SpO_2, BLOOD GLUCOSE, OBTAIN CO LEVEL

↓

HIGH CLINICAL SUSPICION

↓

CARBON MONOXIDE (CO)

↓

HIGH RISK SITUATIONS

- BUILDING FIRES
- HEATERS/GENERATORS
- CAR IN GARAGE
- PAINT STRIPPING
- INDOOR GRILLS

HIGH RISK PATIENTS

- ELDERLY
- CHILDREN
- PREGNANT
- HEART DISEASE
- LUNG DISEASE

↓

ELEVATED CO LEVEL

↓

100% OXYGEN

CYANIDE (CN)

↓

SUGGESTIVE CLINICAL SIGNS

- FIRE/SMOKE EXPOSURE IN CLOSED SPACE
- SOOT IN MOUTH, NOSE, THROAT
- ALTERED MENTAL STATUS AFTER FIRE/SMOKE EXPOSURE

↓

SUSPECTED CN POISONING

↓

100% OXYGEN

↓

CYANOKIT

- **An individual who is exposed to a high-risk situation and experiences hemodynamic instability and/or a cardiac arrest may also have cyanide (CN) poisoning.**
- **If a patient's condition does not improve or gets worse after treatment with 100% O_2, consider treating for possible cyanide (CN) poisoning.**
- **Refer to the appropriate protocols for Airway, Hypotension, Seizures.**

PEDIATRIC NATURAL DEATH IN THE FIELD

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

↓

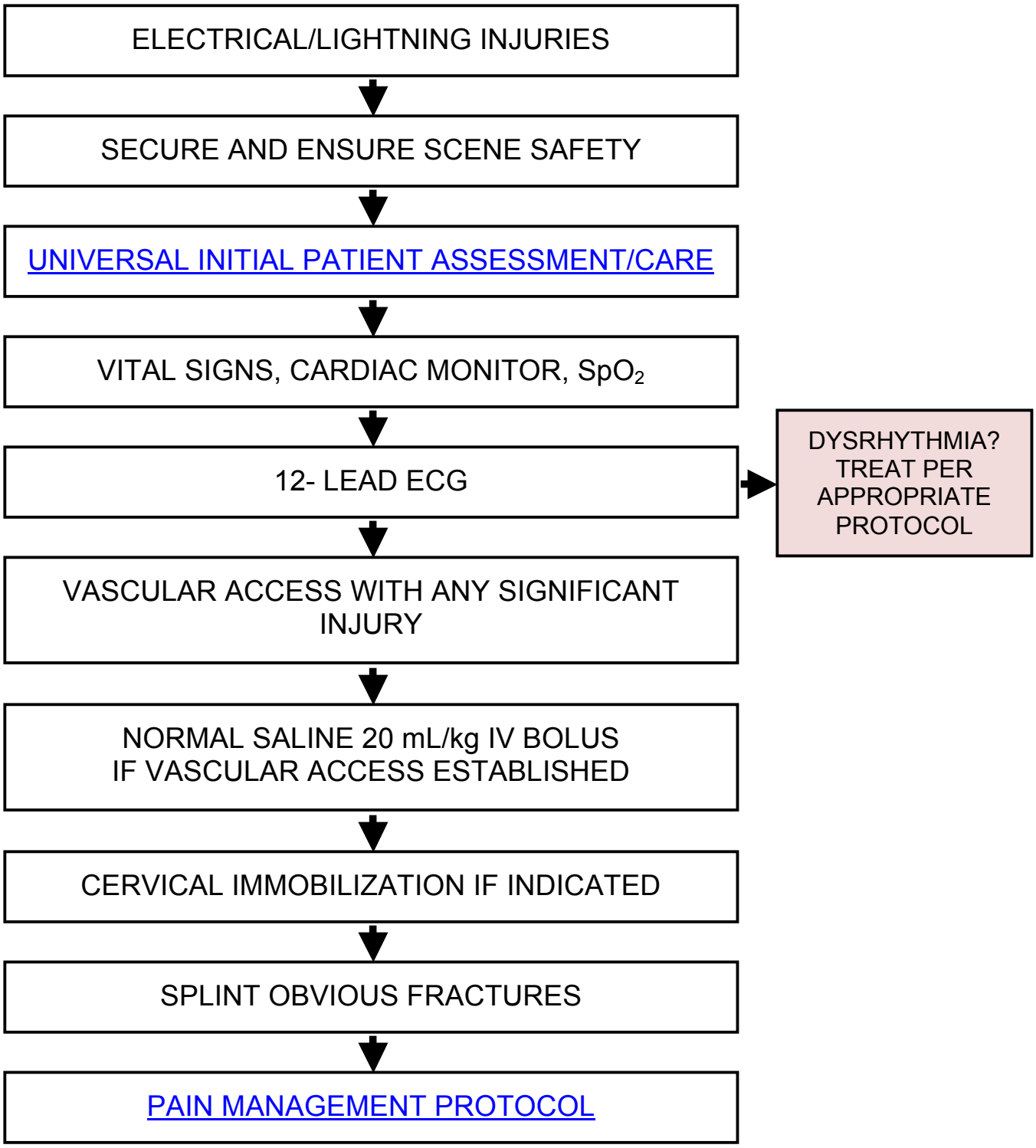
START CARDIOPULMONARY RESUSCITATION ON ALL CHILDREN WHO HAVE SUSTAINED CARDIAC ARREST → EXCEPT THOSE THAT HAVE VALID DNRO

OBVIOUS DEATH	**APPARENTLY IRREVERSIBLE DEATH**
• DECAPITATION • MASSIVE CRUSH INJURY TO HEAD OR TORSO • INCINERATION WITH BLACK CHARRING OF WHOLE BODY • EVISCERATION OF BRAIN, HEART, LIVER, BOTH LUNGS • BODY CUT IN HALF • GENERAL BODY DECOMPOSITION	• RIGOR MORTIS • LIVOR MORTIS

PEDIATRIC CARDIAC ARRESTS ARE EXCLUDED FROM TERMINATION IN THE FIELD, UNLESS THE CHILD MEETS THE CRITERIA FOR OBVIOUS DEATH OR APPARENTLY IRREVERSIBLE DEATH OR HAS A VALID DNRO.

- Resuscitation efforts may be withheld in any child with **penetrating trauma** to the head, neck, or torso who, based on the paramedic's thorough primary patient assessment, is **found apneic, pulseless, and without organized ECG activity upon the arrival of EMS at the scene**.
- CPR may be terminated if the DNRO is presented after CPR was begun.

PEDIATRIC ELECTRICAL INJURIES



- **Electrical burns can be either through direct contact or indirect contact such as with an arc or a flash burn.**
- **Cardiac arrests can occur with electrical accidents.**
- **Look for entrance and exit wounds.**
- **Lightning Strike victims may experience cardiac arrest that may mimic asystole. These patients should have a full cardiac resuscitation.**
- **The respiratory control center of Lightning Strike victims may be stunned and cause prolonged respiratory arrest. These patients should have a full cardiac resuscitation.** 661
- **Children who chew on electrical wires may experience significant burns to the mouth.**

PEDIATRIC ENVIRONMENTAL EMERGENCIES

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

VITAL SIGNS, CARDIAC MONITOR, SpO_2, BLOOD GLUCOSE

HYPOthermia

REMOVE WET CLOTHING
COVER WITH BLANKETS

VASCULAR ACCESS

TRANSPORT/MONITOR

HYPERthermia

HEAT CRAMPS
HEAT EXHAUSTION
HEAT STROKE

IF **ABLE** TO TOLERATE PO
ORAL ELECTROLYTE SOLUTION

IF **UNABLE** TO TOLERATE PO
NORMAL SALINE 20 mL/kg IV BOLUS

MOVE TO COOL AREA
REMOVE CLOTHING/FAN

TEMP GREATER THAN 40^0C (104^0F)?
20 mL/kg COLD NORMAL SALINE IV BOLUS

CONSIDER VERSED TO CONTROL SHIVERING

TRANSPORT/MONITOR

Neuroleptic Malignant Syndrome: If suspected, give COLD Normal Saline and Versed

- **Taking anti-psychotic medication**
- **Severe muscle rigidity**
- **High temp usually greater than 40^0C (104^0F)**
- **SOB, tachycardia**
- **EPS**
- **Agitated**

PEDIATRIC FEBRILE CHILD

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

IS THE CHILD WARM?
TEMP 38^{0}C (100.4^{0}F) OR GREATER

→ DOCUMENT TEMP

PPE PRECAUTIONS IF CONTAGIOUS DISEASE SUSPECTED

POSITION OF COMFORT

REMOVE ALL EXCESS CLOTHING, BLANKETS WITHOUT CAUSING CHILD TO SHIVER

TEMP 40^{0}C (104^{0}F) OR GREATER, MIST OR SPLASH WITH LUKEWARM WATER

ASSESS CHILD
APPEARANCE, ANY DISTRESS, MENTAL STATUS, RESPIRATORY EFFORT, SKIN, HYDRATION, CIRCULATION, NECK STIFFNESS

VASCULAR ACCESS IF CHILD IN DISTRESS

GIVE A FLUID CHALLENGE WITH NORMAL SALINE 20 mL/kg IV/IO IF THE CHILD IS SEVERELY DEHYDRATED OR IN SEPTIC SHOCK

CHILD ACTIVELY SEIZING

VASCULAR ACCESS AVAILABLE
ATIVAN OR VERSED

VASCULAR ACCESS **NOT** AVAILABLE
VERSED 5 mg IM/IntraNasal/Buccal (>5 years old)
2.5 mg IM/IntraNasal/Buccal (<5 years old)

- **A child is considered to have a fever if the temperature is at least 38^{0}C (100.4^{0}F).**
- **All children less than 3 months of age with a temperature of 38^{0}C (100.4^{0}F) or greater should be considered to be seriously ill.**
  Many older children with high fevers may have a viral illness, but a significant number will have bacterial infections.
- **All immuno-compromised children (HIV positive, undergoing cancer treatment, on steroid treatment) who present with fever should be considered to be seriously ill.**
- **Do NOT delay transport to gain vascular access.**

PEDIATRIC IMPAIRED OR ALTERED CONSCIOUSNESS

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

↓

DOCUMENT GCS/TIME LAST KNOWN WELL

↓

CHECK BLOOD GLUCOSE, CO LEVELS → GLUCOSE OR GLUCAGON

↓

MAINTAIN SpO_2 OF AT LEAST 94%
MAINTAIN $EtCO_2$ OF 35 to 45 mmHg

↓

VASCULAR ACCESS/CARDIAC MONITOR → DYSRHYTHMIA PROTOCOL

↓

DOCUMENT PATIENT'S TEMPERATURE

↓

CONSIDER CAUSES

SINGLE PATIENT

OPIATE OD	⇑ GLUCOSE	⇓ GLUCOSE	TOXIN	HIGH CO	TEMP 40^0C (104^0F) OR MORE
NARCAN	NORMAL SALINE BOLUS	GLUCOSE OR GLUCAGON	POISON PROTOCOL	100% OXYGEN	ENVIRONMENTAL PROTOCOL

MULTIPLE PATIENTS

TOXIN	HIGH CO	TEMP 40^0C (104^0F) OR MORE
POISON PROTOCOL	100% OXYGEN	ENVIRONMENTAL PROTOCOL

- **Head injury or signs of increased intracranial pressure include:**
  - **Hypertension, Bradycardia, Irregular respirations.**
  - **AVOID Dextrose unless documented hypoglycemia**
  - **GCS 8 or less, place an advanced airway.**
  - **Vascular access, no IV fluids.**

PEDIATRIC NEWBORN RESUSCITATION

HEAD DELIVERS

ENSURE PATENT AIRWAY
GENTLY SUCTION NOSE AND MOUTH
KEEP WARM AND DRY

AVOID DEEP SUCTIONING

APGAR-DOCUMENT 1 AND 5-MINUTE SCORE

HR > 100

HR 60 to100

HR < 60

CPR

DOUBLE CLAMP CORD/CUT

100% O2 BVM FOR 30 sec.

HR 60 to 100

ADVANCED AIRWAY

HR < 100

CPR

HR < 100

1:10,000 EPI

TRANSPORT

HR > 100

APGAR	Zero	1	2
APPEARANCE	BLUE OR PALE ALL OVER	BODY PINK EXTREMITIES BLUE	EVERYTHING PINK
PULSE	ABSENT	LESS THAN 100 BPM	MORE THAN 100 BPM
GRIMACE (IRRITABILITY)	NO RESPONSE	GRIMACE WITH STIMULATION	CRY WITH STIMULATION
ACTIVITY	NONE	SOME FLEXION	FLEXED ARMS LEGS THAT RESIST EXTENSION
RESPIRATORY EFFORT	ABSENT	WEAK, IRREGULAR GASPING	STRONG LUSTY CRY

- **AVOID deep suctioning of the throat as it may cause a vagal response and bradycardia.**
- **Check Blood Glucose, if less than 60 mg/dL give Dextrose 10%.**
- **Narcan 0.1 mg/kg UVA/IV/IO/IM/IntraNasal for suspected narcotic overdose.**

PEDIATRIC PAIN/NAUSEA MANAGEMENT

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

↓

ASSESS PAIN AS PART OF GENERAL PATIENT CARE. CONSIDER ALL PATIENTS AS CANDIDATES FOR PAIN MANAGEMENT REGARDLESS OF TRANSPORT TIMES.

↓

USE AN AGE-APPROPRIATE PAIN SCALE TO ASSESS PAIN.

↓

NITROUS OXIDE MAY BE USED IN CHILDREN WHO ARE ABLE TO ACTIVELY PARTICIPATE

↓

USE MORPHINE 0.1 mg/kg IV, IO **OR** FENTANYL 1 microgram/kg IntraNasal

↓

REASSESS EVERY 5 MINUTES.
DO NOT GIVE ADDITIONAL PAIN MEDICATION IF THERE IS ANY EVIDENCE OF ADVERSE EFFECTS, HYPOTENSION OR IF THE PATIENT HAS ADEQUATE PAIN RELIEF FROM THE FIRST DOSE

↓

IF AFTER 10 MINUTES, THE PAIN IS STILL GREATER THAN 4 ON A 1 TO 10 PAIN SCALE, GIVE A HALF DOSE OF THE PAIN MEDICATION USED WITH THE FIRST DOSE

NAUSEA

ZOFRAN ODT
(ONDANSETRON)

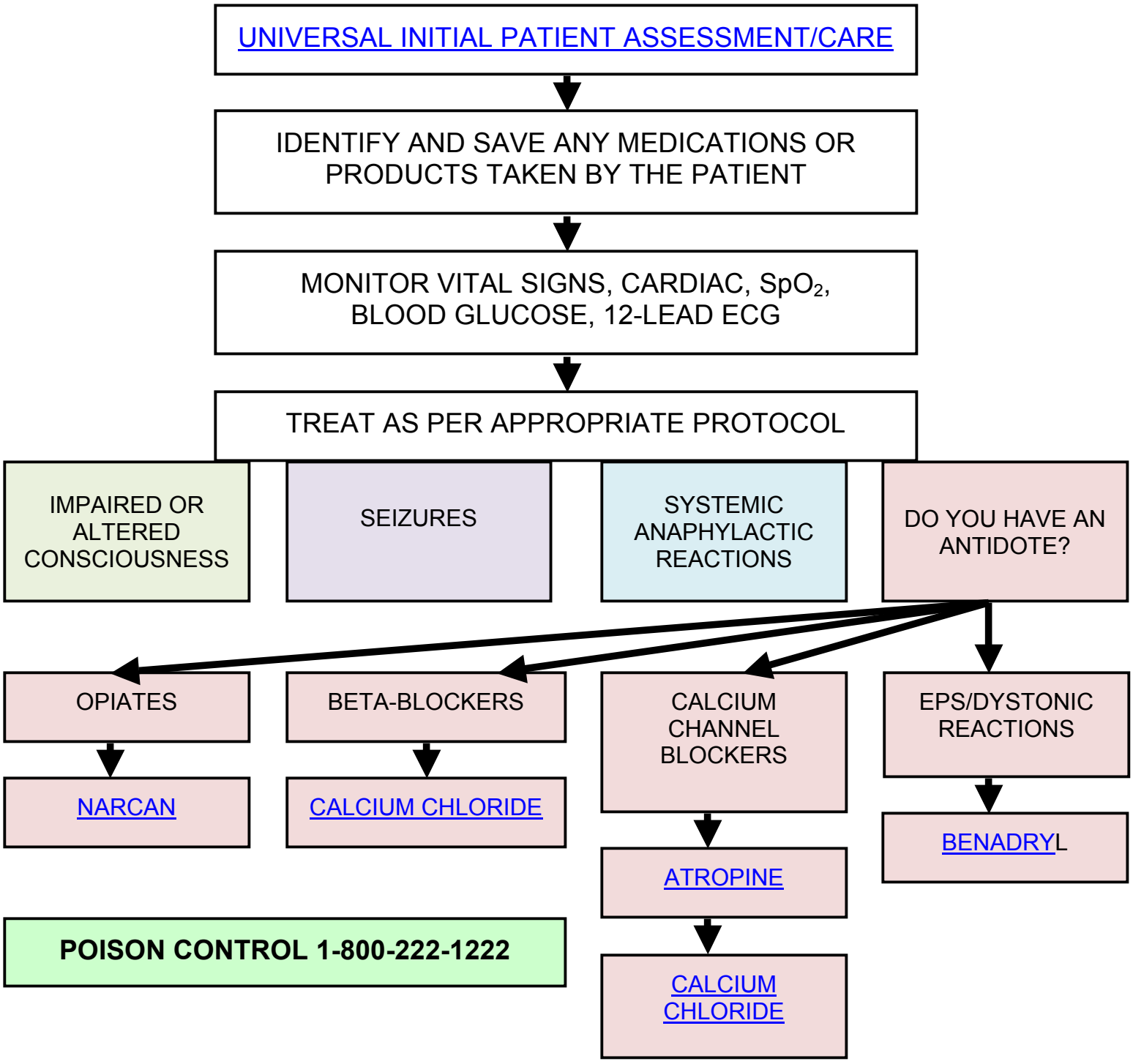
AGE 4-11 YEARS
4 mg

AGE 12 AND OLDER
8 mg

TABLET DISSOLVES IN MOUTH

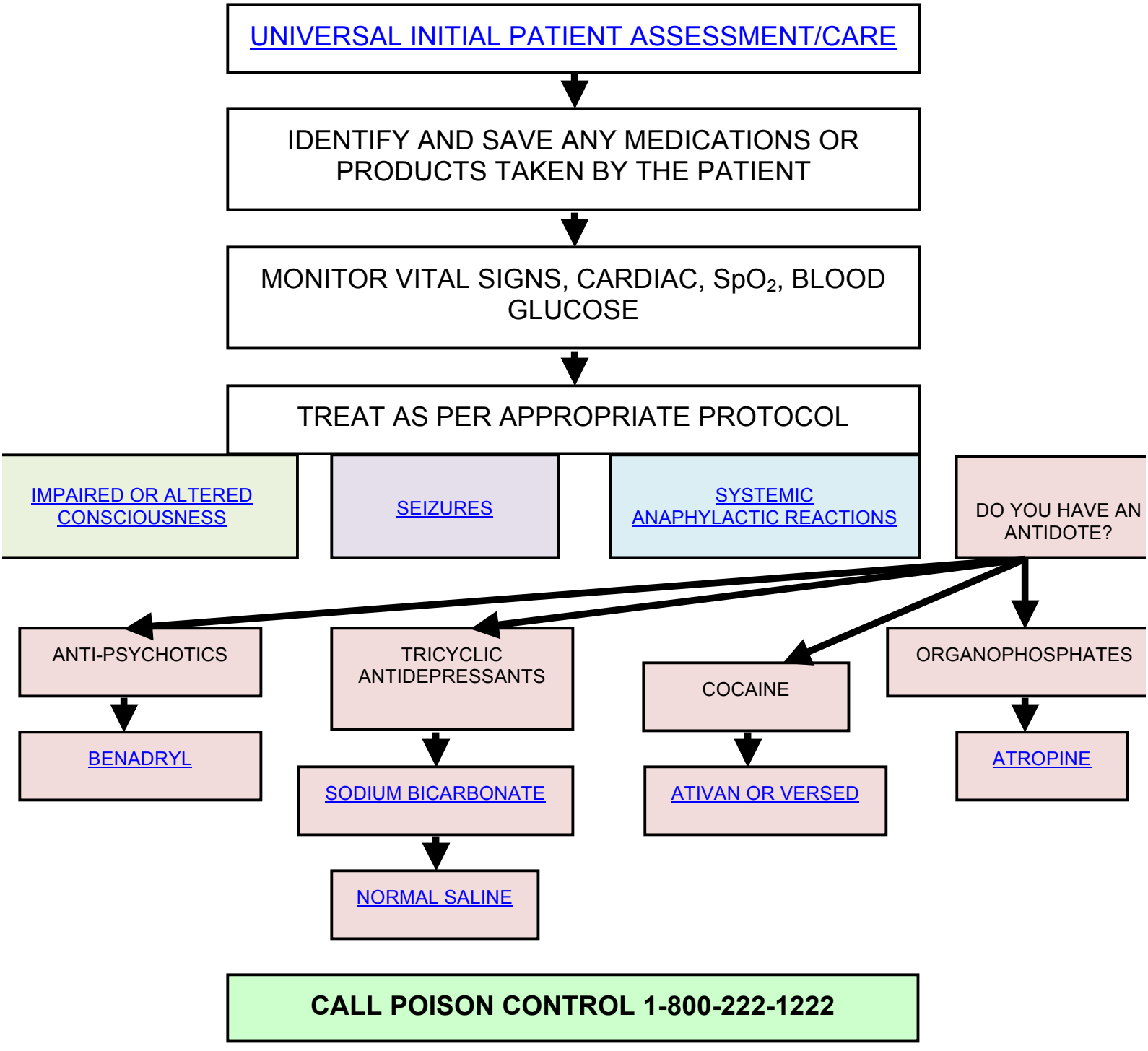
- **This protocol excludes patients who are allergic to narcotic medications AND/OR who have altered mentation (GCS less than 15 or mentation not appropriate for age).**
- **Age less than 4 yrs: Use FLACC**
- **Age 4-12 yrs: Use Wong-Baker FACES**
- **Age greater than 12 yrs use 1-10 pain scale.**
- **Adverse Effects: Hypotension, SpO_2 less than 94%, significant sedation, consider Narcan.**

PEDIATRIC POISONING/DRUG OVERDOSE



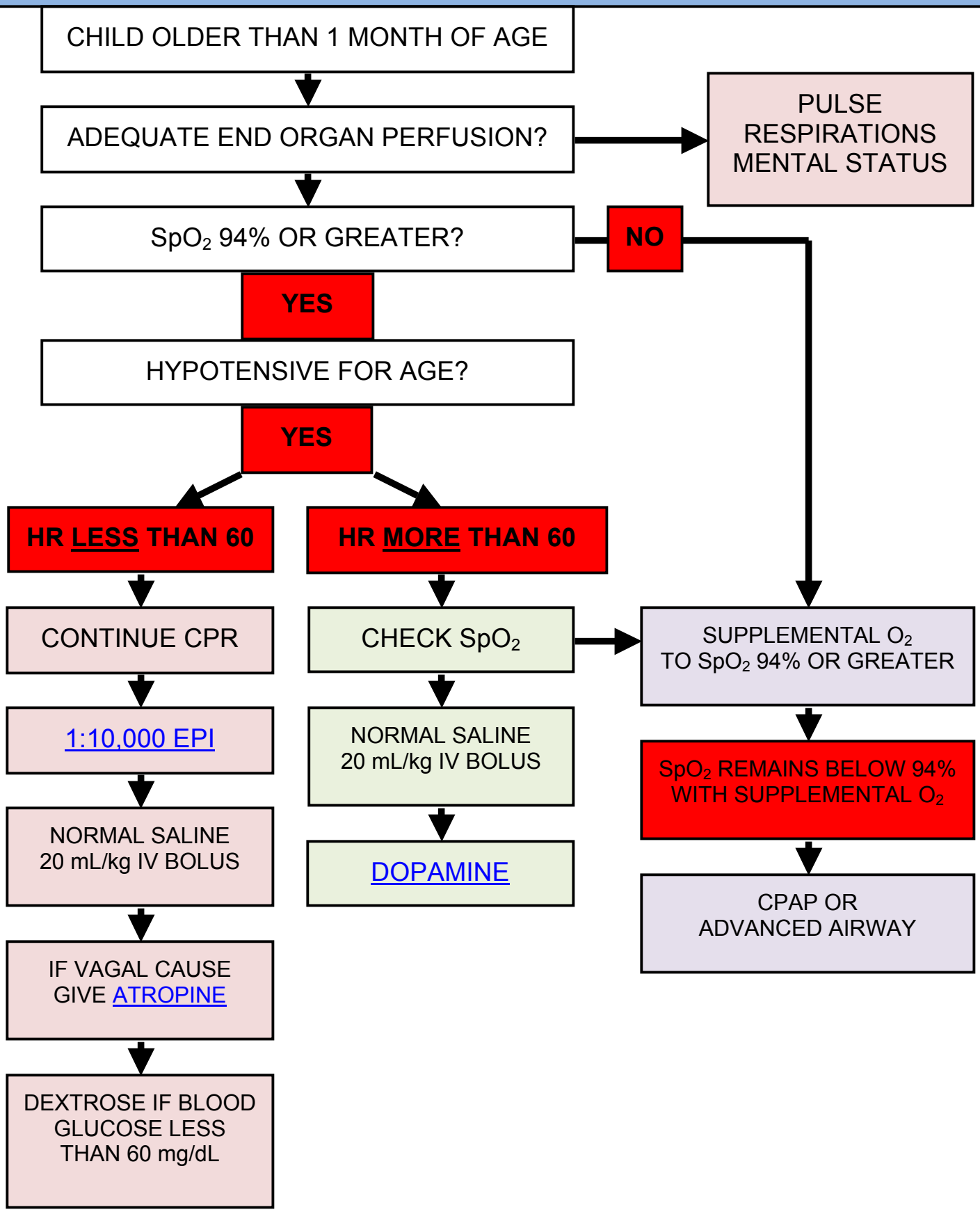
- **If the patient is to be transported to a hospital, bring with the patient all of the suspected ingestions including medications, pill bottles, and containers of other ingested materials.**
- **Alcohol, acetaminophen (Tylenol), and Aspirin are common co-ingested agents. Ask about them.**
- **Alcohol can cause significant hypoglycemia in children.**
- **Older children can use various substances to create an altered state.**
- **If the overdose/poisoning is related to a known or suspected suicide attempt, police presence should be requested. All of these patients should be transported to the closest appropriate facility.**
- **Consider Therapeutic Hypothermia Protocol if patient has a temp of 40^{0}C (104^{0}F) or greater.**

PEDIATRIC POISONING/DRUG OVERDOSE-2



- **If the child is to be transported to a hospital, bring with the patient all of the suspected ingestions including medications, pill bottles, and containers of other ingested materials.**
- **Alcohol, acetaminophen (Tylenol), and Aspirin are common co-ingested agents. Ask about them.**
- **If the overdose/poisoning is related to a known or suspected suicide attempt, police presence should be requested. All of these patients should be transported to the closest appropriate facility.**
- **Consider Therapeutic Hypothermia Protocol if patient has a temperature of 40^{0}C (104^{0}F) or higher.**
- **For severely agitated patients with suspected BATH SALTS ingestions use KETAMINE AND/OR VERSED/ATIVAN for sedation.**
- **Alcohol can cause significant hypoglycemia in children.**

PEDIATRIC POST RESUSCITATION CARE



- **If the child's condition initially improves with one of the above treatments, but the child's condition later deteriorates, repeat the treatment that caused the initial improvement.**
- **Check the Blood Glucose and treat if indicated.**

PEDIATRIC SEIZURES

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

RECENT SEIZURE

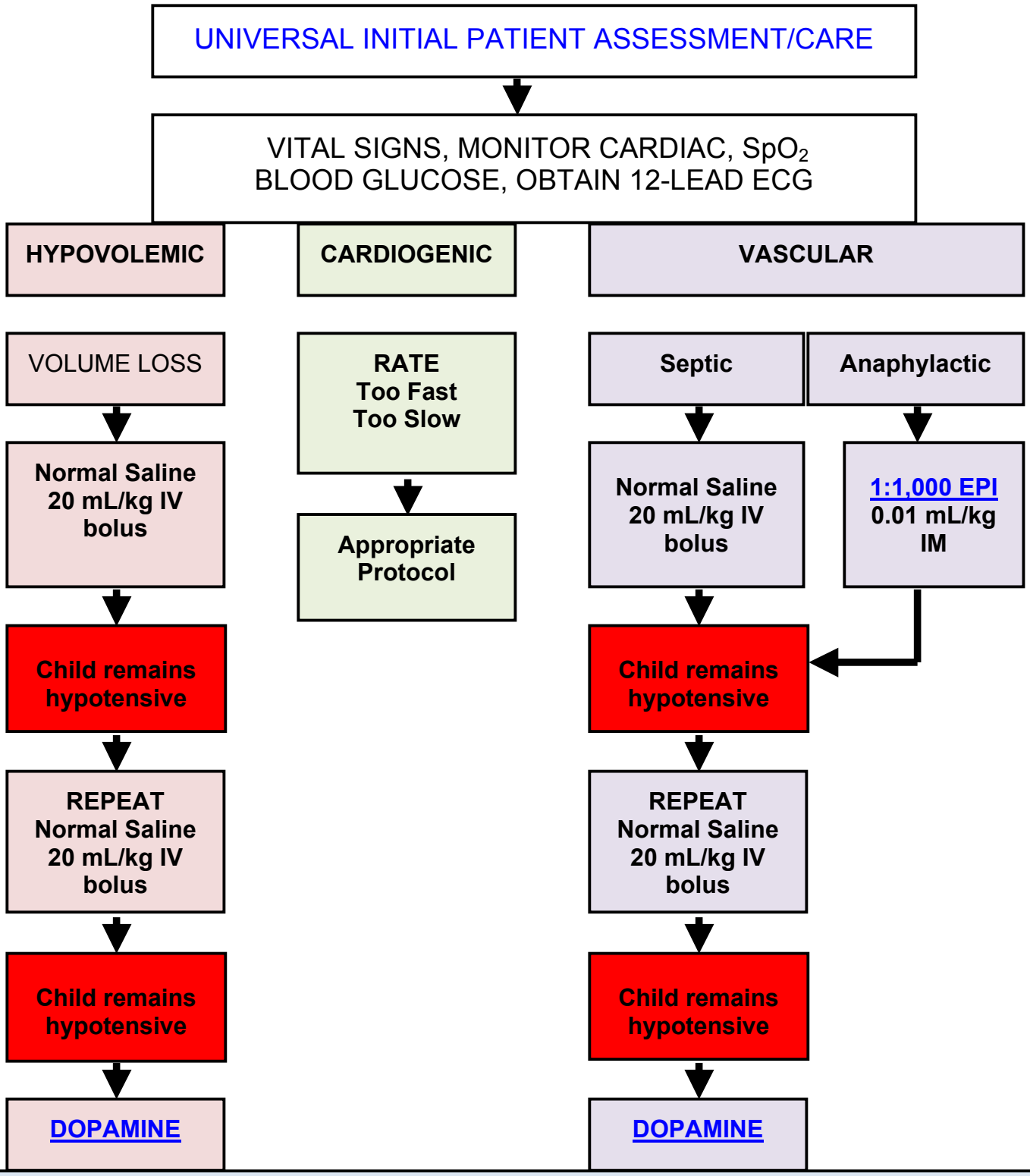
- POST-ICTAL
- BLOOD GLUCOSE TREAT AS INDICATED
- RECURRENT SEIZURE AT SCENE OR DURING TRANSPORT
- **NO** VASCULAR ACCESS VERSED
- MAY REPEAT DOSE ONE TIME IN 5 MINUTES IF CONTINUED SEIZURE

ACTIVE SEIZURE

- CHILD IS A KNOWN DIABETIC
  - CHECK CAPILLARY BLOOD GLUCOSE
  - BLOOD GLUCOSE LESS THAN 60 mg/dL
  - GIVE DEXTROSE OR GLUCAGON
- CHILD HAS NO HISTORY OF DIABETES
  - **NO** VASCULAR ACCESS VERSED
  - **VASCULAR ACCESS** ATIVAN OR VERSED
  - BLOOD GLUCOSE TREAT AS INDICATED

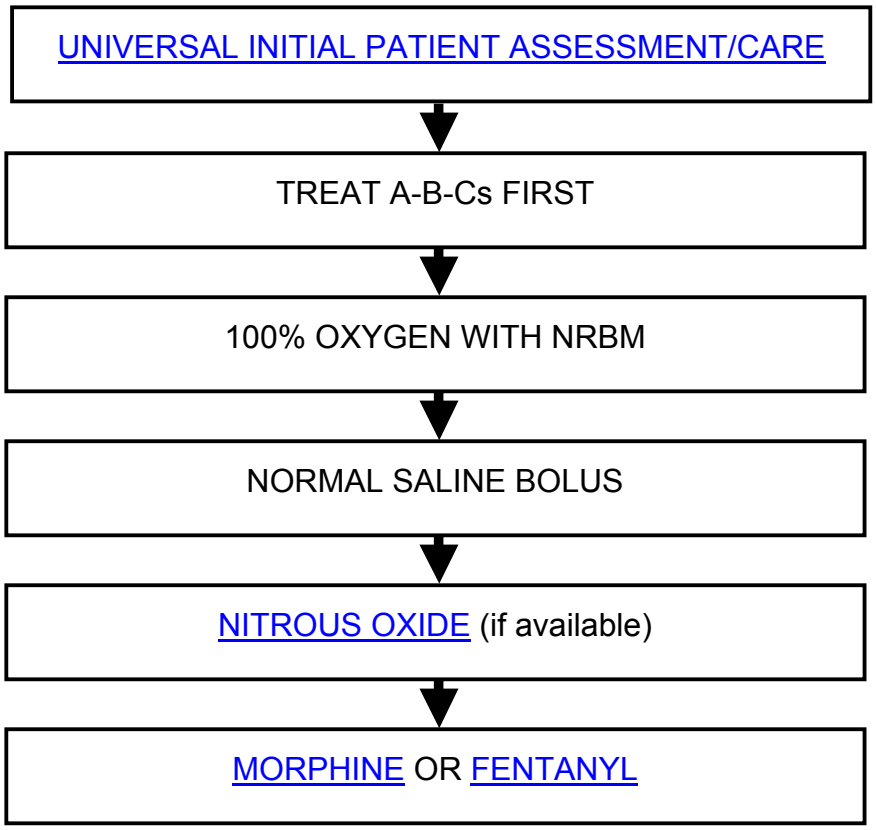
- **If the child is not actively seizing on EMS arrival, check the blood glucose, treat if indicated, continue to monitor and transport.**

PEDIATRIC HYPOTENSION/SHOCK



- **Volume Loss may be due to: bleeding-internal or external, dehydration, excessive sweating, prolonged vomiting and/or diarrhea.**
- **When a patient is hypotensive, there is no additional value in placing the head lower than the legs or said another way, the Tredelenburg Position is of no clinical value.**
- **All hypotensive/shock patients should receive 100% oxygen.**
- **The signs/symptoms of shock in children include:**
  - **Mental status changes, restlessness, confusion, tachycardia, tachypnea, pale or mottled, cool, moist skin. Low blood pressure is a late sign.**
  - **Low blood pressure**

SICKLE CELL PATIENTS PAIN CRISIS



- **After 5 minutes Morphine or Fentanyl may be repeated for pain control.**
- **Nitrous Oxide should only be used with alert, cooperative patients.**
- **Zofran may be given to those patients who develop nausea after receiving Morphine for pain.**
- **Sickle Cell patients have significant pain due to clogging of their capillaries that leads to ischemic tissue pain.**

PEDIATRIC SUDDEN INFANT DEATH SYNDROME (SIDS)

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

↓

INFANT UNDER ONE YEAR OF AGE

↓

UNRESPONSIVE, APNEIC, PULSELESS

↓

ALL OF THESE CONDITIONS MUST BE MET TO WITHHOLD RESUSCITATION EFFORTS → **UNRESPONSIVE, APNEIC, PULSELESS**
OBVIOUS RIGOR MORTIS
OBVIOUS LIVOR MORTIS
HAS ASYSTOLE IN 2 LEADS

↓

IF RESUSCITATION STARTED
CHECK BLOOD GLUCOSE
TREAT AS INDICATED

↓

DOCUMENT LOCATION AND POSITION OF THE INFANT AND POSSIBLE ENVIRONMENTAL FACTORS

↓

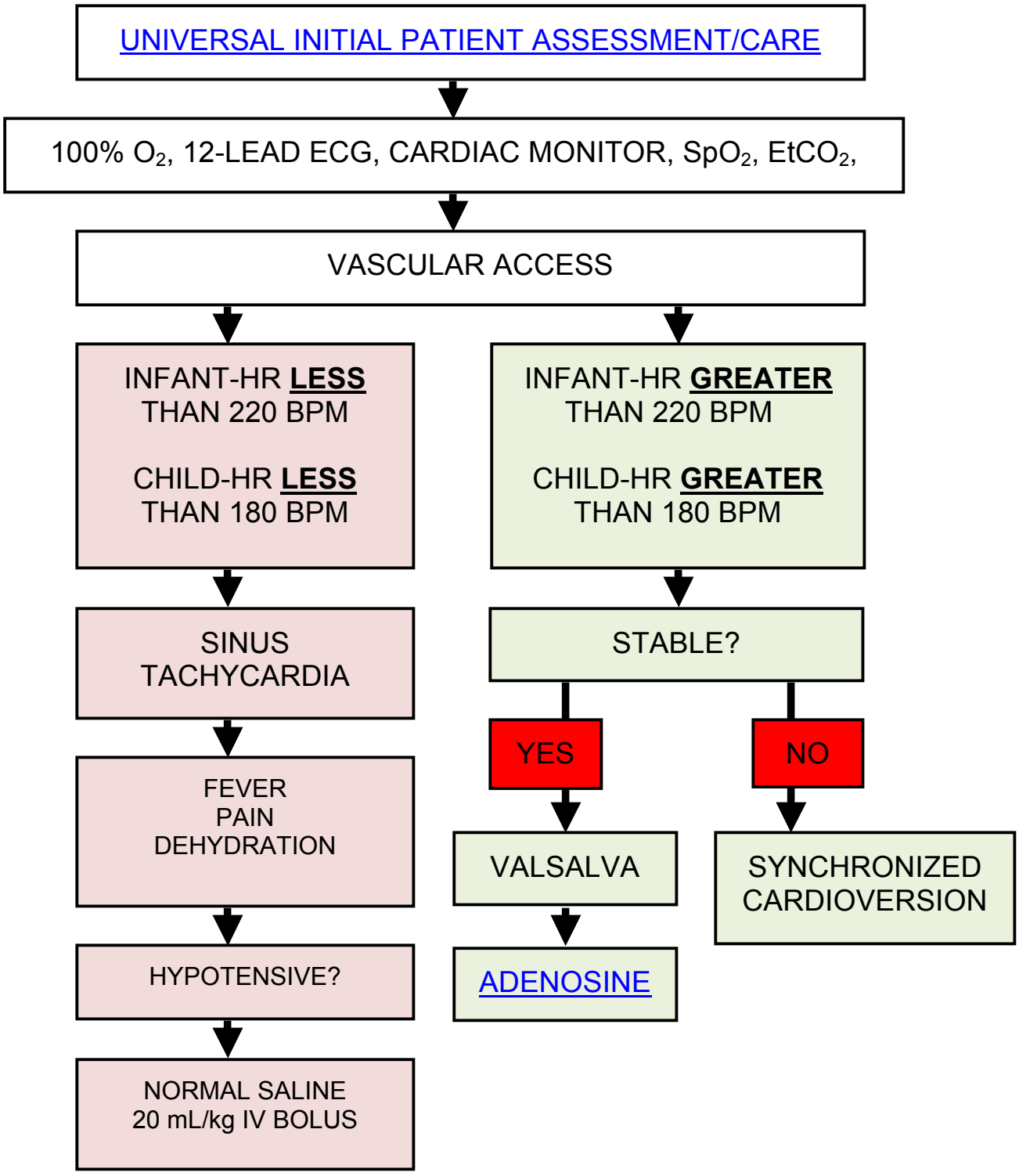
DOCUMENT INFANT'S PRESENTATION

↓

DO NOT MAKE ACCUSATIONS OR BLAME THE PARENTS/CAREGIVERS

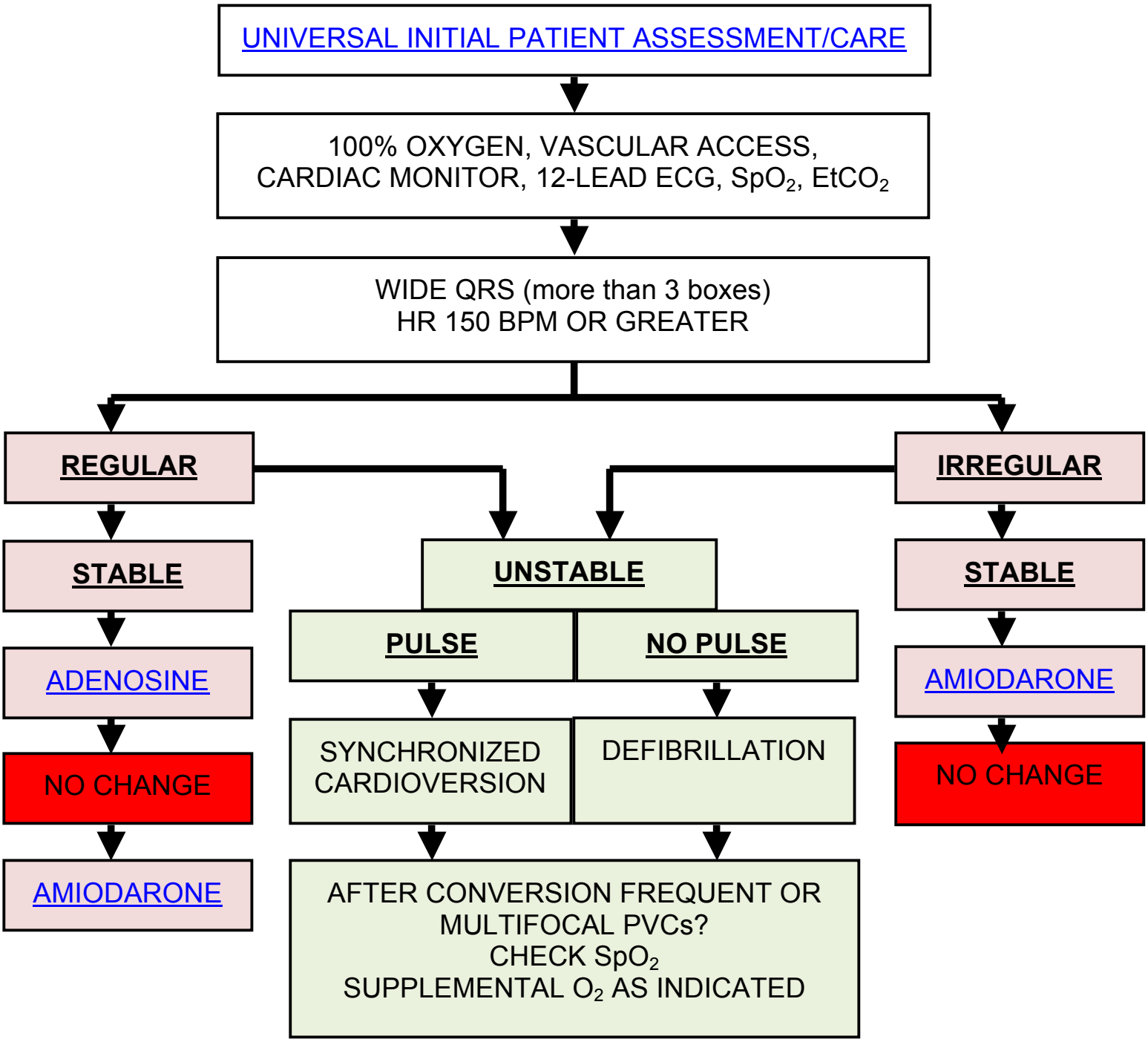
- **The National Institute of Child Health and Human Development defines Sudden Infant Death Syndrome (SIDS) as "the sudden death of an infant under one year of age, which remains unexplained after a thorough case investigation including performance of a complete autopsy, examination of the death scene, and review of the clinical history.**
- **The following factors are associated with but not necessarily causative of SIDS**
  - **Maternal smoking during pregnancy**
  - **Low birth weight**
  - **Preterm delivery**
  - **Infant sleeping face down**
  - **Overheating**

PEDIATRIC NARROW COMPLEX TACHYCARDIA



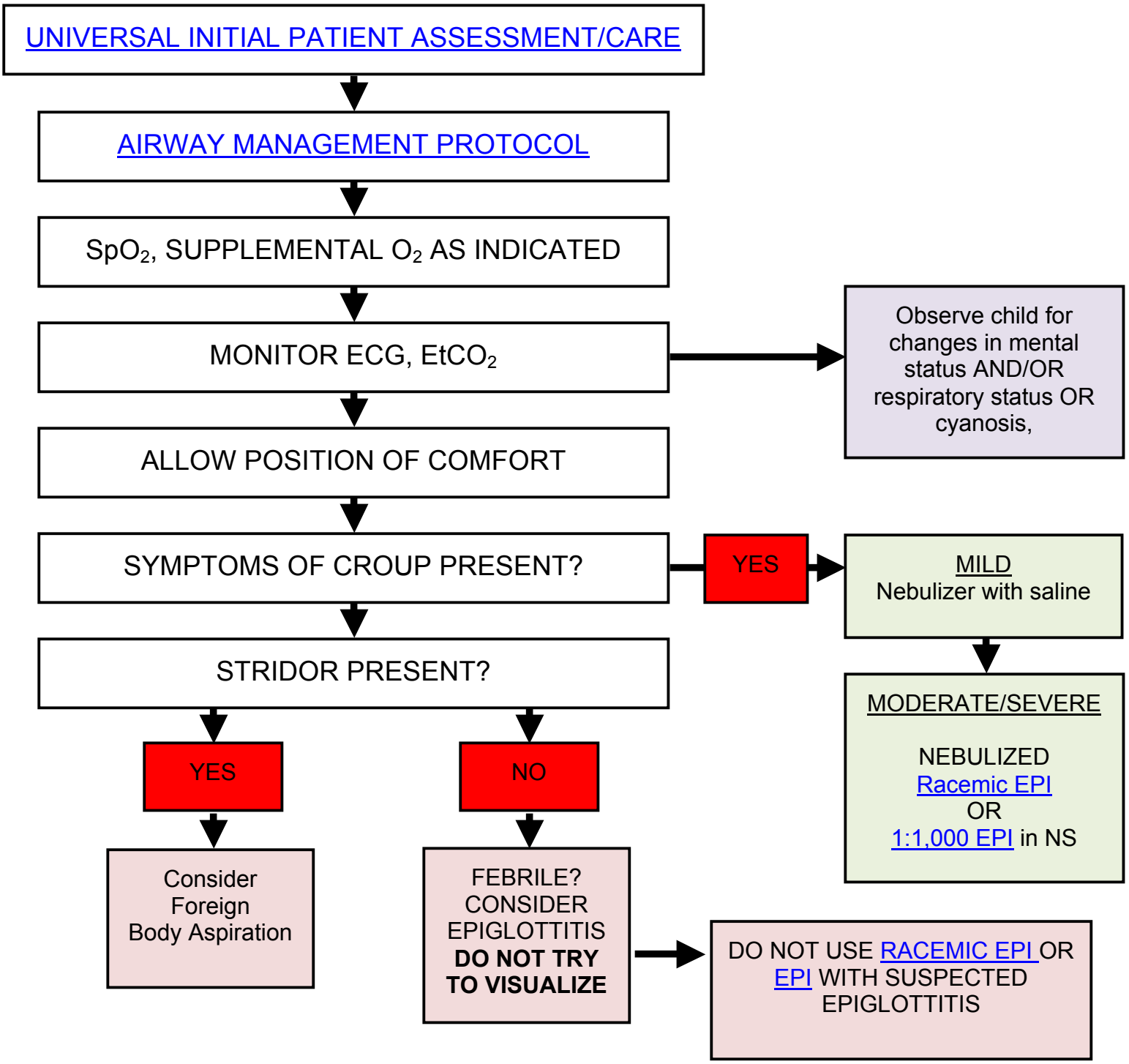
- **Children with a tachycardia who are UNSTABLE will frequently have a pulse AND**
  - **Hypotension, Altered Mental Status, Cool/Pale extremities, Mottling, Sweating, Cyanosis**
- **If at any time the child loses their pulse--DEFIBRILLATE**

PEDIATRIC WIDE COMPLEX TACHYCARDIA



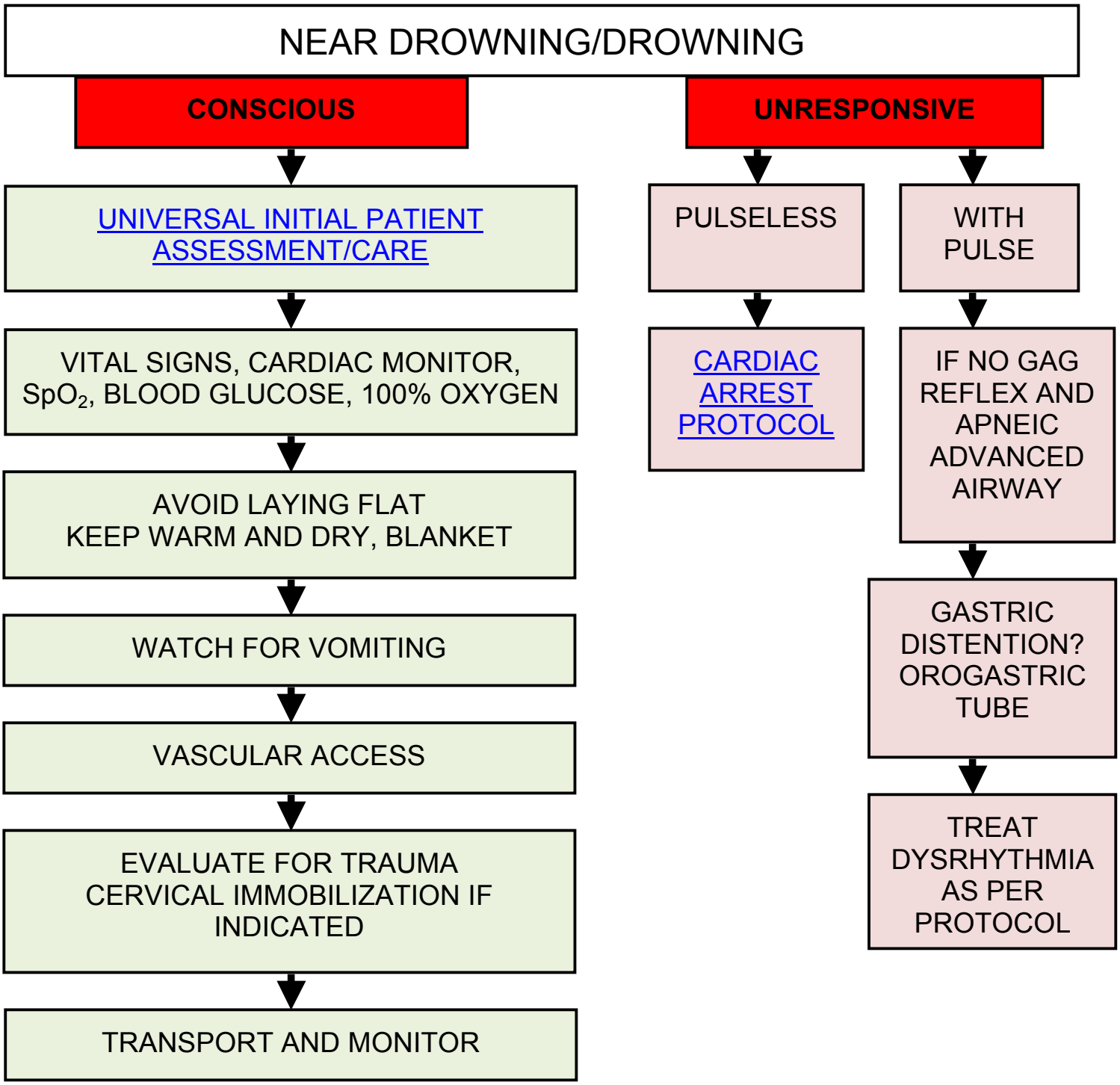
- **Children with a tachycardia who are UNSTABLE will frequently have a pulse AND**
  - **Hypotension, Altered Mental Status, Cool/Pale extremities, Mottling, Sweating, Cyanosis**
- **If at any time the child loses their pulse—DEFIBRILLATE**
- **If the child remains conscious and vascular access is available, give either Morphine or Fentanyl for pain relief before a synchronized cardioversion.**
- **Do NOT delay electrical therapy waiting for sedation.**
- **Wolff-Parkinson-White (WPW)**
  - **Defibrillate if ventricular rate 250 bpm or greater OR hemodynamically unstable.**
  - **Avoid Adenosine, Cardizem**
  - **If hemodynamically stable AND ventricular rate 200-249: monitor and transport.**

PEDIATRIC UPPER AIRWAY EMERGENCIES



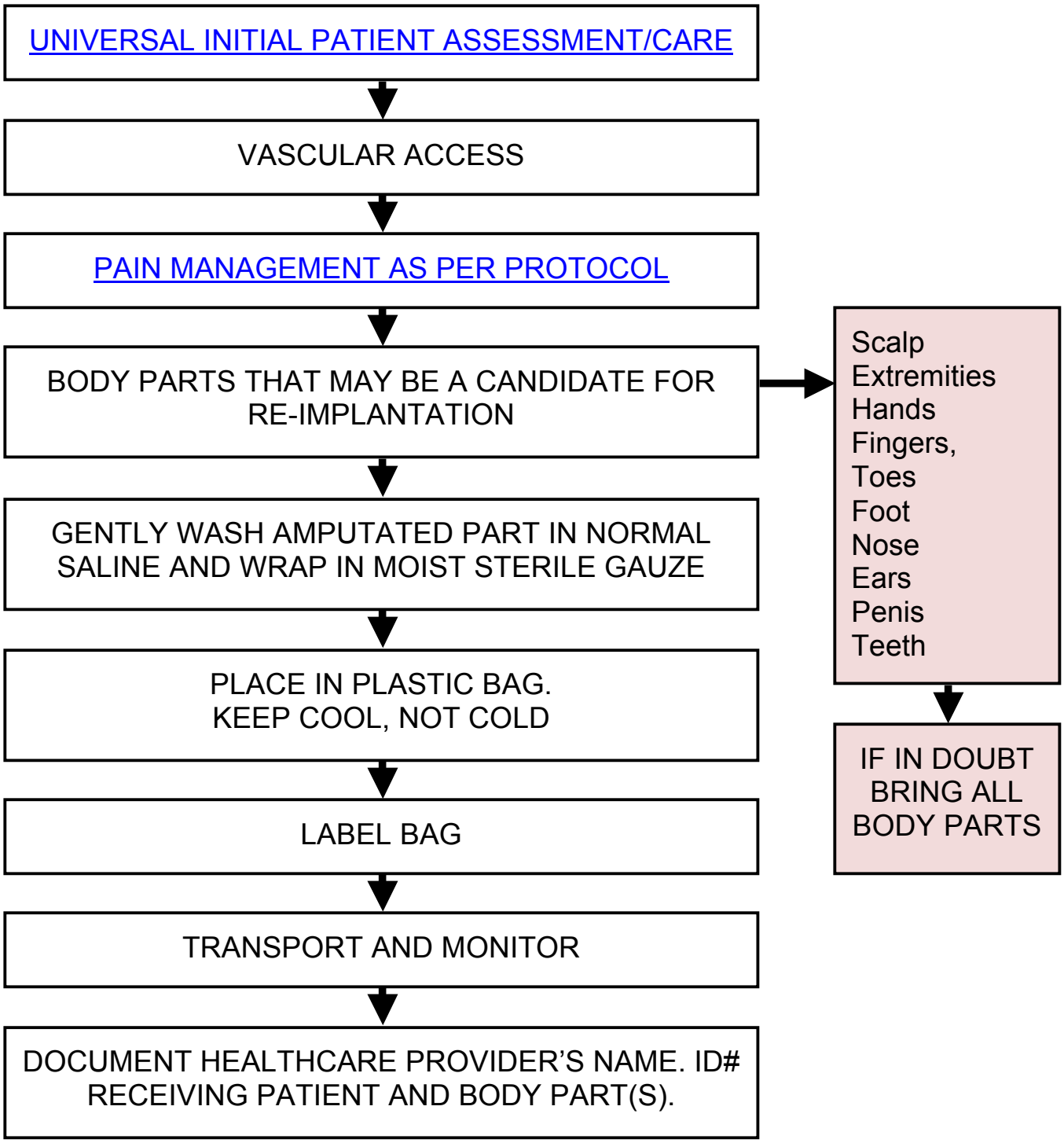
- **Upper Airway is defined as everything from the nose to the trachea.**
- **Stridor is the noisy breathing associated with a partial upper airway obstruction. It may be present in inspiration AND/OR expiration.**
- **Partial upper airway obstruction ABOVE the vocal cords may present with a muffled quality.**
- **Partial upper airway obstruction BELOW the vocal cords may have a high-pitched, almost musical quality.**
- **History is important. Febrile illnesses usually developed over hours to days.**
- **Aspirations are usually sudden in onset and not uncommon in young children who put everything in their mouths.**

PEDIATRIC WATER-RELATED EMERGENCIES



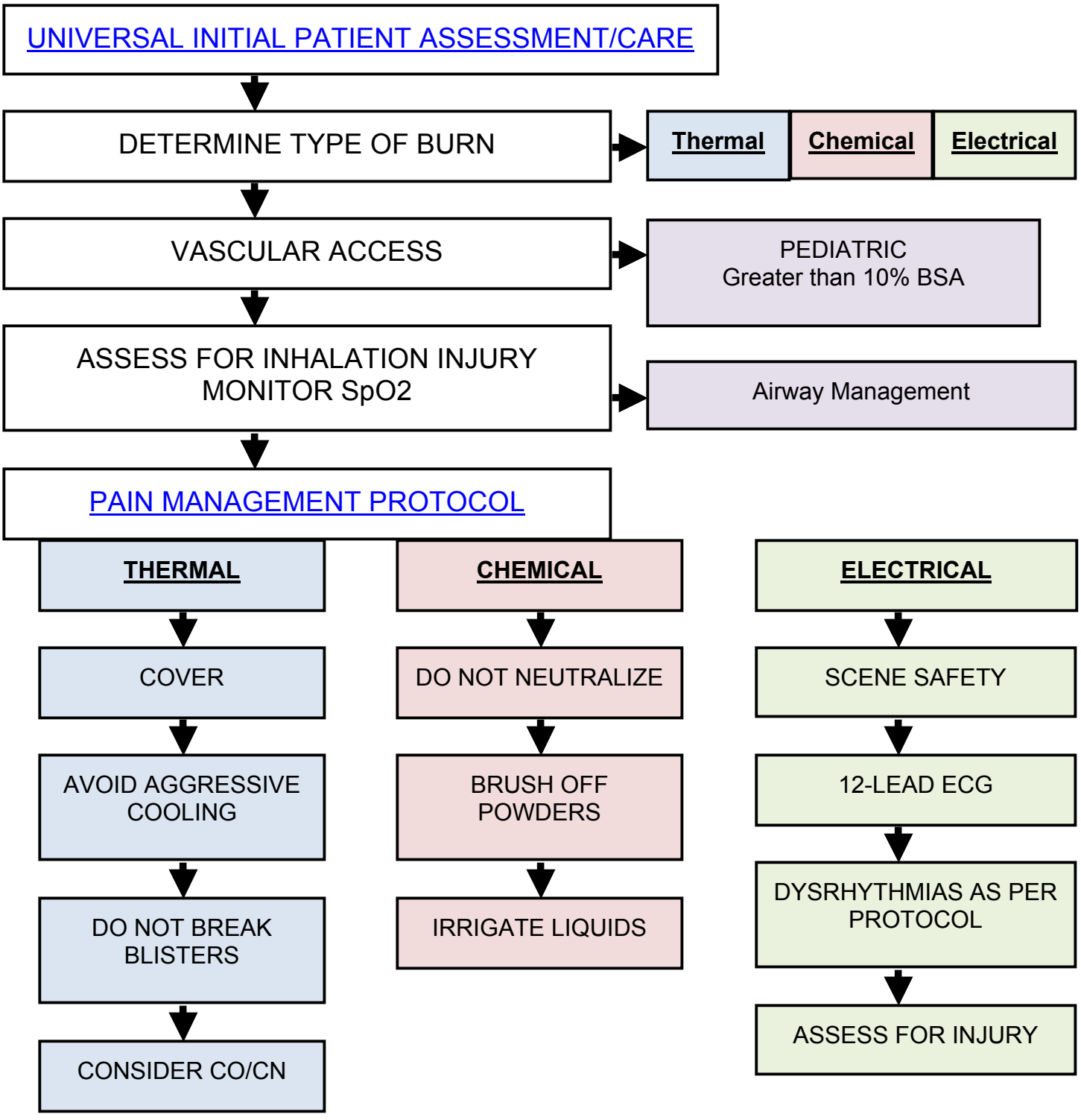
- **All near drowning patients should be transported to the closest appropriate facility.**
- **Evaluate all drowning/near-drowning patients for associated trauma.**
- **Obtain a 12-lead ECG if time permits.**

PEDIATRIC TRAUMA: AMPUTATIONS



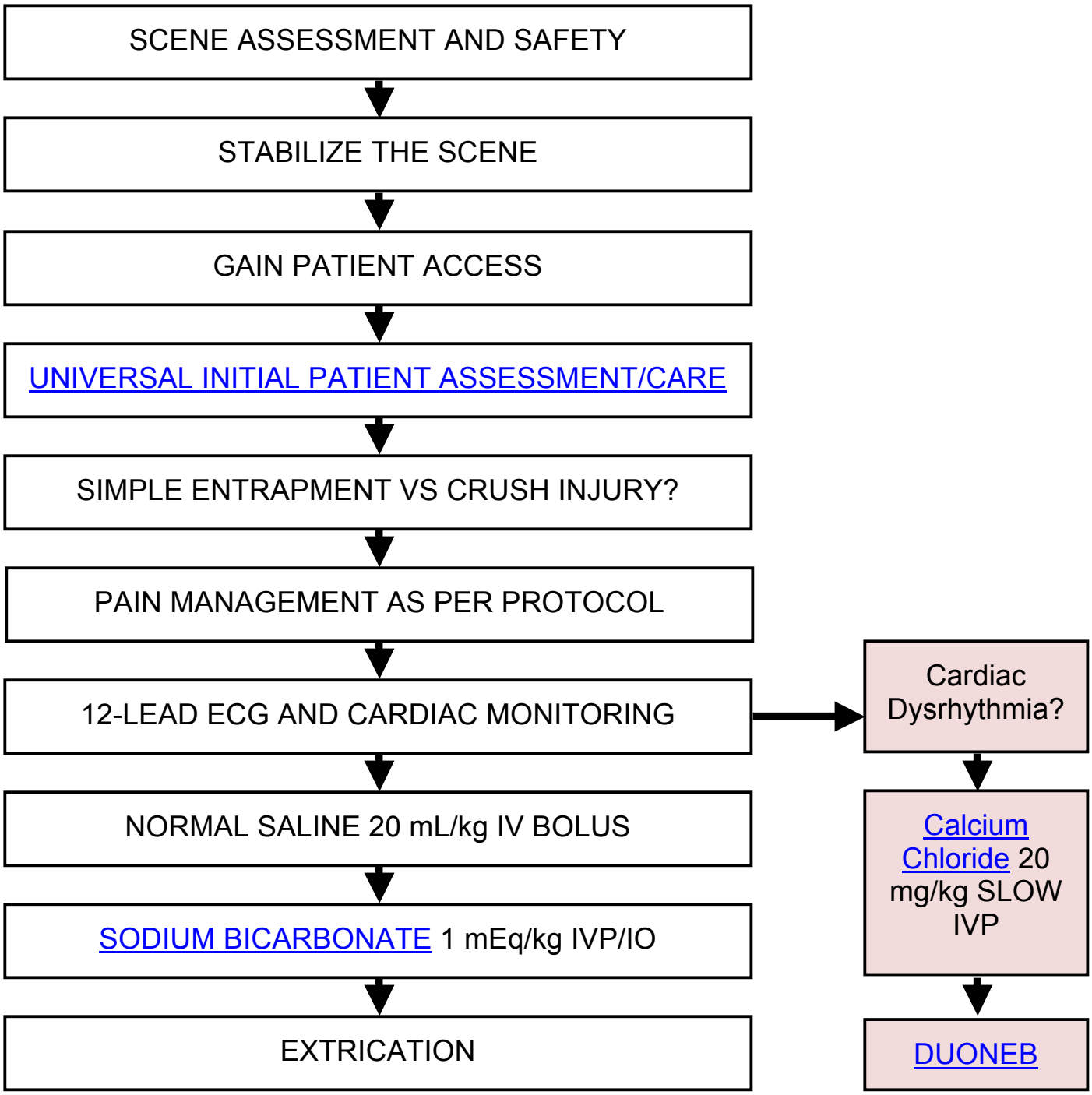
- **Do NOT try to determine in the pre-hospital setting whether a body part is salvageable or capable of being re-implanted. Assume that all body parts are capable of being re-implanted.**
- **Keep clear records of which facility and who received the amputated body part.**

PEDIATRIC TRAUMA: BURNS



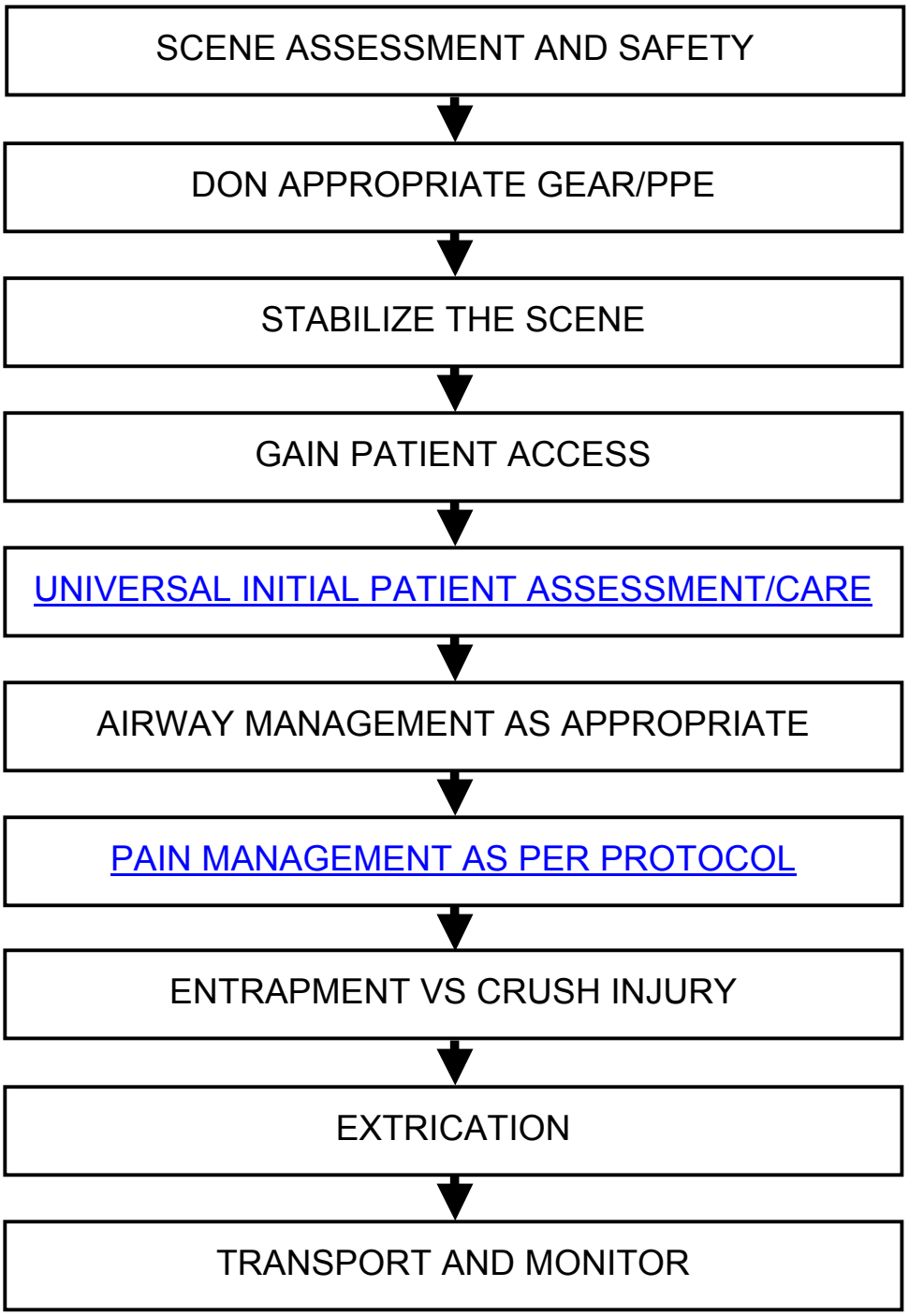
- **TBSA—Total Body Surface Area. Use Rule of Nines**
- **Patient's palm (without fingers) is approximately 1% BSA.**
- **Be generous with pain management.**
- **Inhalation Injury**
  - **Facial Burns, Soot in mouth/throat, changes in voice, difficulty breathing**
- **Consider Child Abuse with suspicious burns like dipping burns of the arms, legs, or buttocks, and cigarette or appliance burns, especially when the history is not consistent with the injury.**
- **Measuring TBSA includes only second and third degree burns, not first degree burns.**
- **Second/Third degree burns of the face, neck, hands, genitals, and feet should go to the Trauma Center.**

PEDIATRIC TRAUMA: CRUSH INJURIES



- **If the patient's extremity/extremities has/have been trapped by a heavy object AND there has been a loss of peripheral perfusion of the entrapped extremity/extremities, the patient must be treated to prevent reperfusion injury.**
- **This treatment should be administered PRIOR to the entrapped extremity being freed from the object.**
- **Prolonged loss of perfusion to any extremity will cause tissue damage and rupture of the cell walls releasing large amounts of potassium into the circulation. This large dumping of potassium is potentially life threatening by causing cardiac dysrhythmias.**
- **Do NOT treat patients with tourniquets, fluids, or medications if the crush injury / entrapment is less than one-hour duration.**

PEDIATRIC TRAUMA: PATIENT ENTRAPMENT



- **With patient entrapment, the emphasis is on rapid initial assessment and transport of the patient to achieve definitive care.**
- **If transport of the patient is delayed due to entrapment, the patient must be appropriately treated while technical rescue operations are under way to free the patient.**
- **In cases where spinal injury is suspected, provide manual initial immobilization until you are able to use equipment to stabilize the patient.**
- **Call your supervisor early in those situations where amputation may be necessary to extricate the patient.**

PEDIATRIC TRAUMA: EYE INJURIES

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

↓

HISTORY, CONTACT LENSES?
TRAUMA? EXPOSURE?
PREVIOUS SURGERY?

↓

REMOVE ANY CONTACT LENSES

↓

EXAMINE EYE, LIDS, AND ORBIT
DETERMINE VISUAL ACUITY

↓

PENETRATING TRAUMA?
STABILIZE OBVIOUS OBJECTS
AVOID PRESSURE ON EYE(S)
COVER BOTH EYES

↓

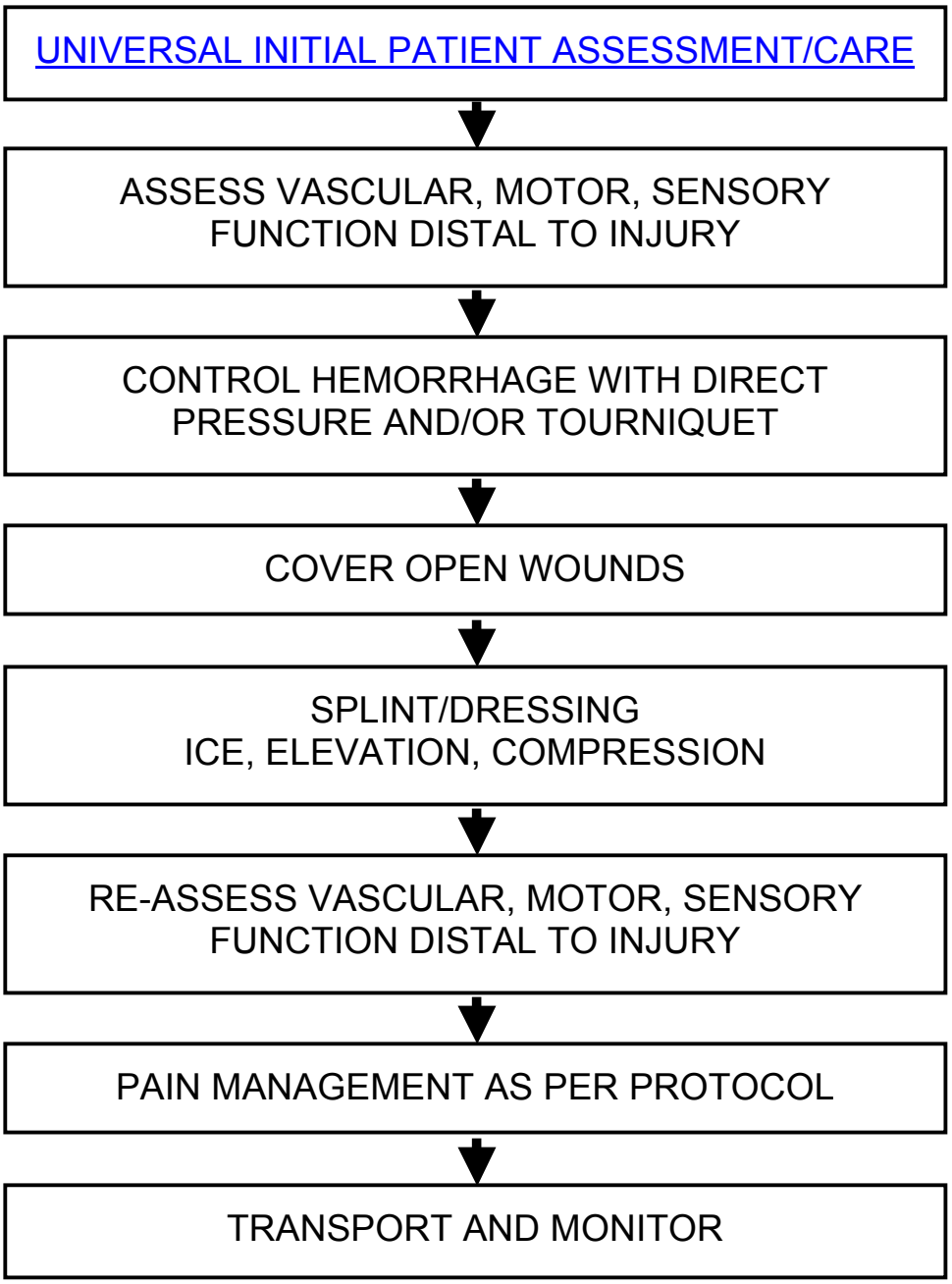
EXPOSURE?
TETRACAINE HCL DROPS FOR PAIN RELIEF
IRRIGATE EYE(S)

↓

PAIN MANAGEMENT AS PER PROTOCOL

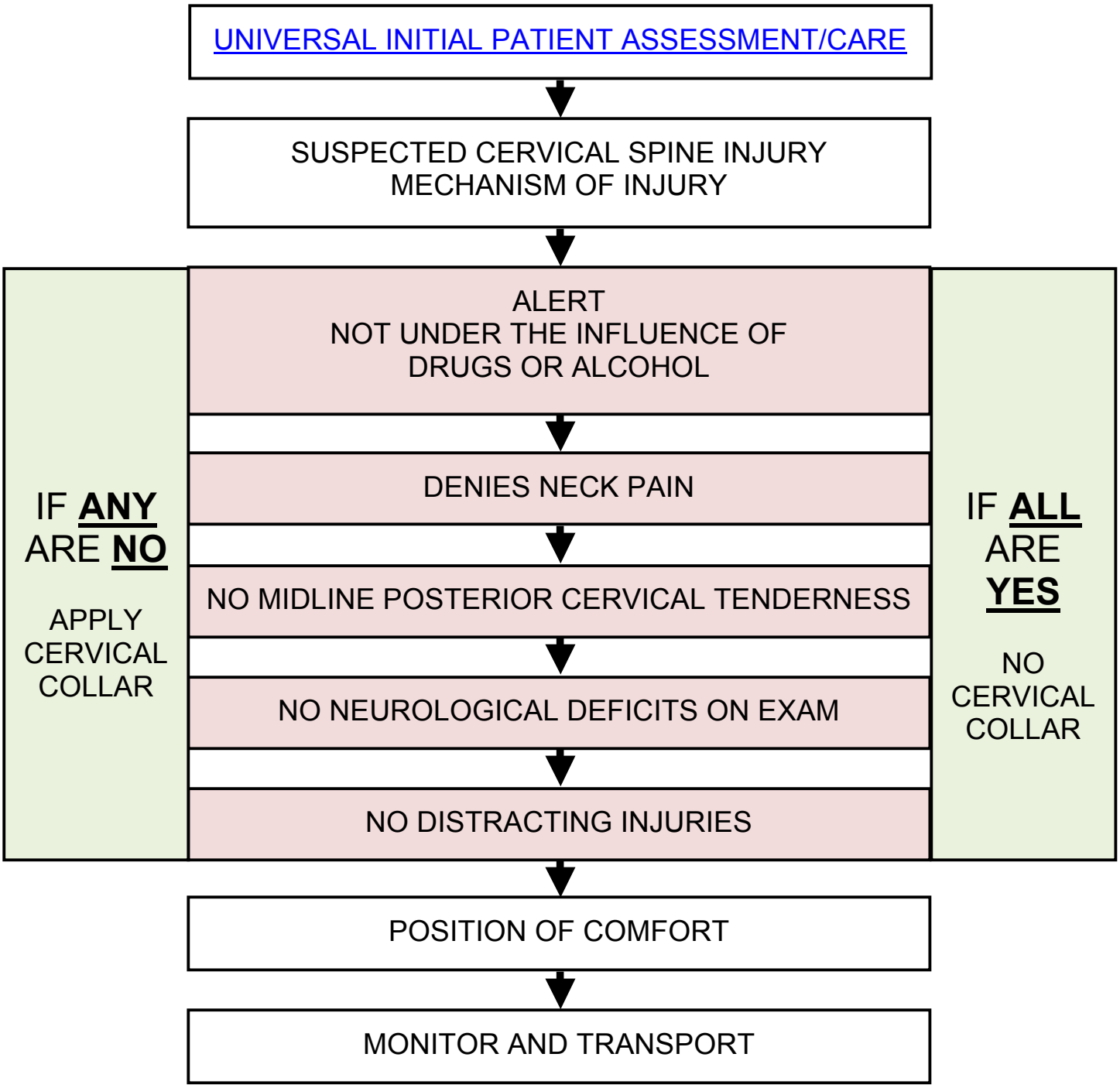
- **If there is a history of signs/symptoms of an eye exposure to chemicals and/or foreign bodies irrigate the involved eye(s) with Normal Saline.**
- **Penetrate of the globe of the eye may be difficult to see. Hints on penetrate include: loss of vision, blood in the anterior portion of the eye, vitreous humor (clear jelly-like substance) oozing from the wound.**
- **Tetracaine initially burns after administering it to the eye. The burning lasts about 10 seconds. Repeat doses may be necessary for adequate pain relief.**
- **If an enucleation (eyeball has been forced out of the socket) has occurred, cover the entire eye area with a rigid container, such as a disposable drinking cup. Avoid direct contact with the exposed globe. If bleeding, control by direct pressure with a sterile moist dressing.**

PEDIATRIC TRAUMA: SUSPECTED FRACTURES



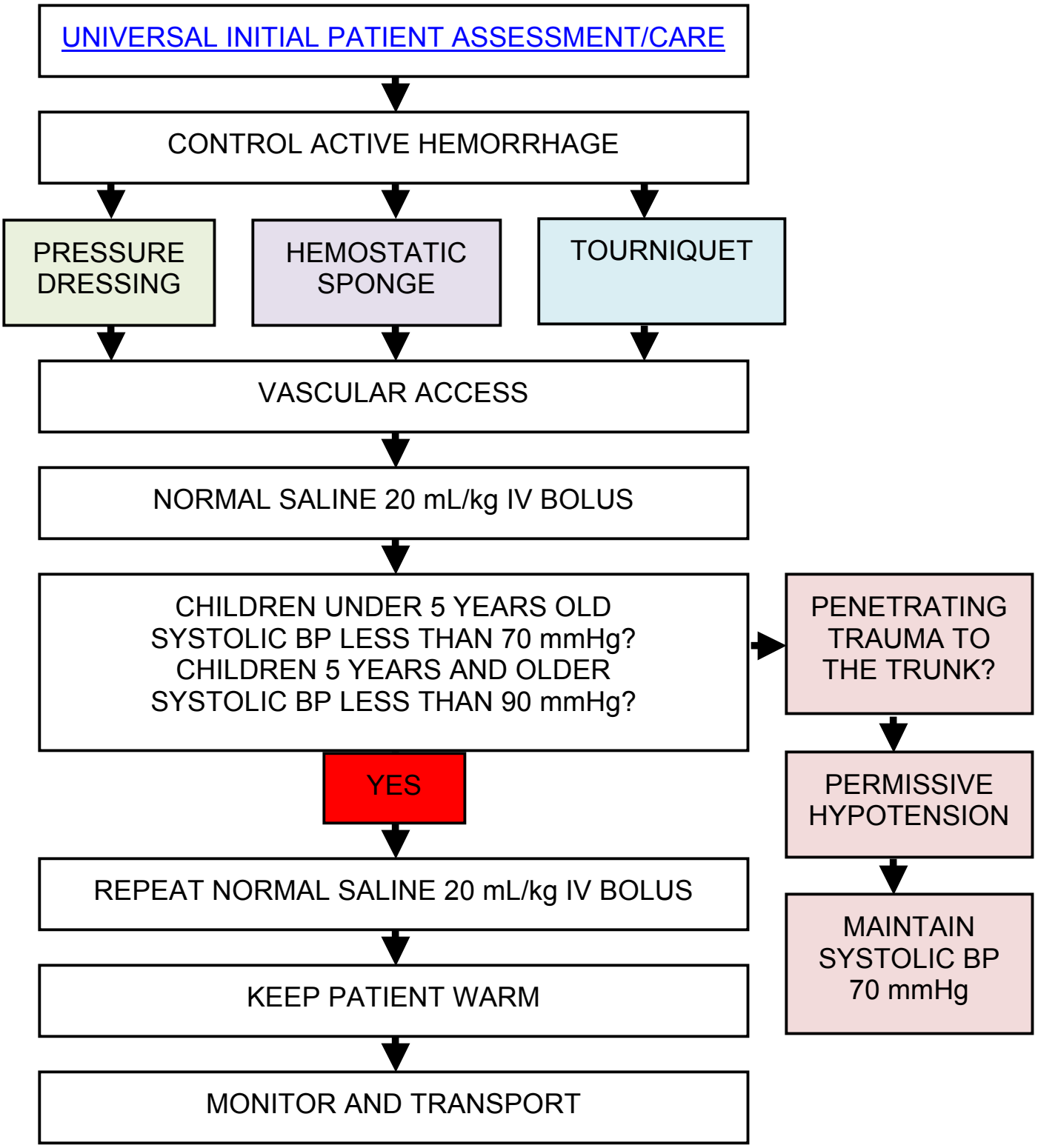
- **Unstable pelvic fractures may be managed with a pelvic girdle/splint such as the T-Pod or KED.**
- **When immobilizing a bone, splint from joint to joint.**
- **When immobilizing a joint, splint from bone to bone.**
- **Severely angulated fractures may be aligned if there is an absence of distal pulses or loss of neurological function. Distal pulse(s), skin color, and skin temperature should be documented before and after splinting the angulated fracture.**

PEDIATRIC TRAUMA: SUSPECTED HEAD/SPINAL INJURIES



- **Long spine boards are for extrication and not transport, except when the patient is being flown by Air Rescue.**
- **The cervical collar should NOT cause the patient such discomfort that they are compelled to move.**
- **A distracting injury is one that in the paramedic's judgment is of such severity that it would "distract" the patient from other injuries.**

PEDIATRIC TRAUMA: HYPOVOLEMIC SHOCK



- **Do NOT delay transport to obtain vascular access in the Trauma Alert patient.**
- **Tourniquets are used to control major extremity bleeds due to amputation or due to bleeding not adequately controlled with direct pressure and elevation.**
- **Hemostatic sponges are ineffective in penetrating trauma with small entrance and/or exit wounds. They are most effective in patients with large areas of avulsed tissue and oozing wounds.**

PEDIATRIC TRAUMA: MAJOR SOFT TISSUE INJURY

UNIVERSAL INITIAL PATIENT ASSESSMENT/CARE

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LOCATE AND DOCUMENT INJURIES

↓

ASSESS VASCULAR, MOTOR, SENSORY FUNCTION
DISTAL TO INJURY

↓

CONTROL HEMORRHAGE WITH DIRECT PRESSURE
AND/OR TOURNIQUET

↓

COVER OPEN WOUNDS

↓

SPLINT/DRESSING
ICE, COMPRESSION, ELEVATION

↓

RE-ASSESS VASCULAR, MOTOR, SENSORY FUNCTION
DISTAL TO INJURY

↓

PAIN MANAGEMENT AS PER PROTOCOL

- **Treat CRUSH injuries as per protocol.**
- **Do NOT remove penetrating objects unless they obstruct the airway or the efficient performance of CPR.**
- **Do NOT use providone-iodine topical antiseptics like Betadine.**
- **Do NOT use hydrogen peroxide or alcohol to clean wounds.**
- **Use sterile Normal Saline to cleanse wounds.**
- **Wash open fracture sites with 2 L of sterile Normal Saline before dressing/splinting.**
- **Do NOT attempt to put eviscerated organs back into the abdomen.**
- **Do NOT apply pressure dressings to eye injuries.**
- **Repeated assessments of circulation, motor, and sensory are needed with circumferential injuries to an extremity to evaluate for compartment syndrome.**