

***Pasco County
Emergency Services***

***2012
Medical
Protocol***



PASCO COUNTY FIRE RESCUE

MEDICAL PROTOCOL 2012

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Pasco County Fire Rescue Medical Protocol Purpose

Pasco County Fire Rescue

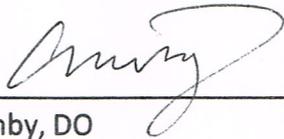
The purpose of this document is to inform the employees of Pasco County Fire Rescue on the policies and procedures to be followed on rescue calls.

No written set of Protocols or Standing Orders is absolute, nor can these orders take into consideration extraordinary circumstances. We do not expect our personnel to be so "procedure oriented" that a run through of Steps 1-6 of the "Chest Pain" Protocol will fit the individual needs of every chest pain patient.

In light of this, it should be understood that when deviating from Medical Protocol or Standing Orders, a written reason is necessary. The EMT or Paramedic must explain their actions to demonstrate how the patient would not have benefited the Protocol was followed. This explanation may be entered on the report. **ALL DEVIATIONS MUST BE EXPLAINED** no matter how trivial. All unexplained deviations from Protocol and/or Standing Orders will be brought to the attention of the Medical Director.

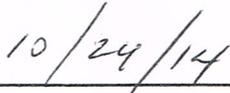
A single asterisk (*) indicates a Paramedic procedure covered by written Standing Order. A double asterisk (**) indicates that the Paramedic should attempt to receive permission for this order from the receiving facility, but may proceed with the procedure if unable to contact the receiving facility of the patient's critical condition will not allow for any delay. A triple asterisk (***) indicates that the Paramedic must receive orders from the receiving facility. For pediatric drug dosages and equipment sizes, refer to the Broselow Pediatric Measuring Tape.

For situations not covered by this text, refer to the list of materials in the Bibliography as approved sources of information.



Charles M. Boothby, DO

Medical Director

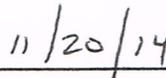


Date



Scott M. Cassin, MSM, BSBA, EMT-P

Emergency Services Director

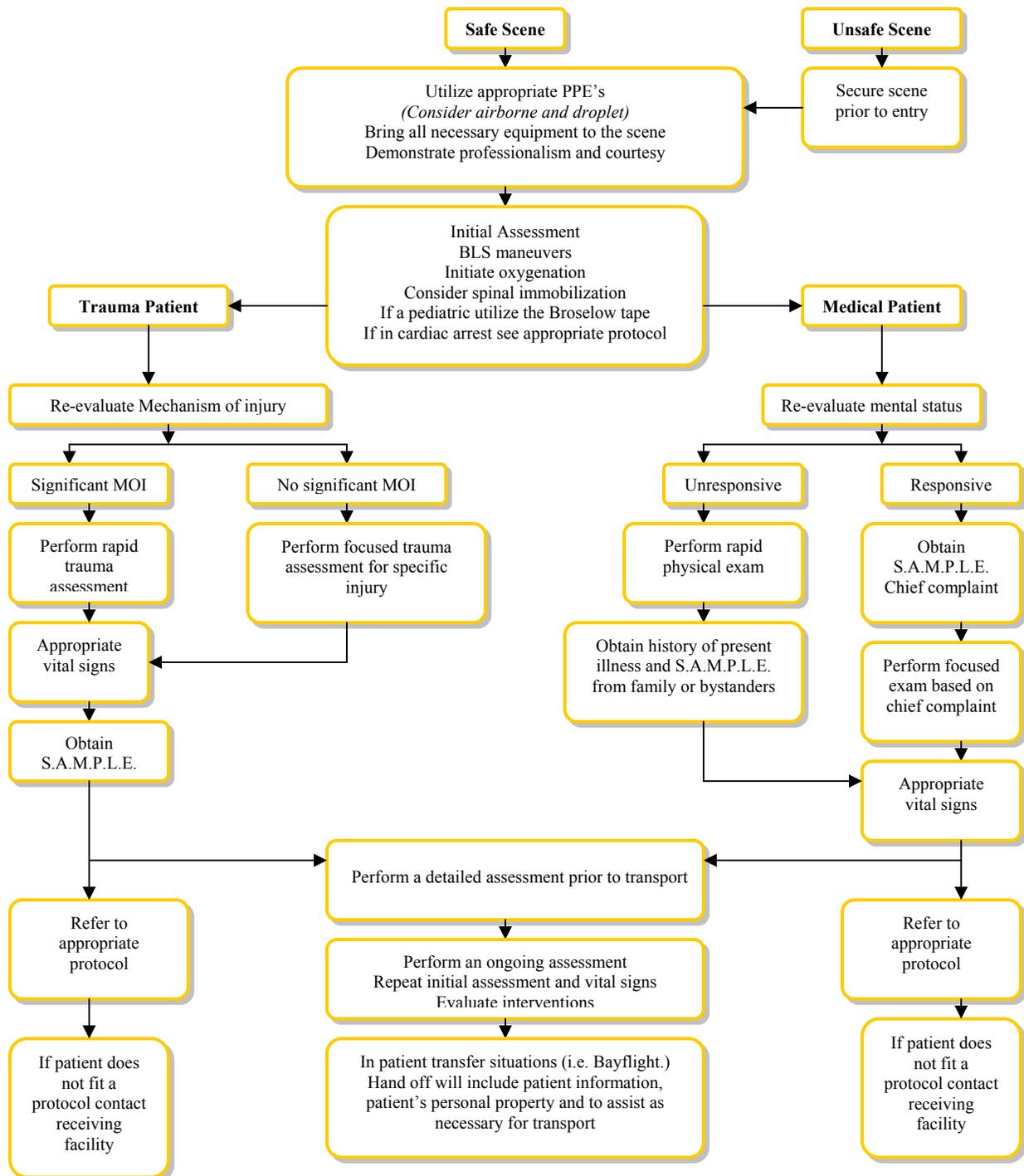


Date

Revised Date: 11/11/14, 20 14

Must be reviewed and revised every two years.

UNIVERSAL PATIENT CARE



* Minimum exam if not noted on a specific protocol is vital signs, mental status, and location of injury or chief complaint.
 * Required vital signs on every patient include LOC, BP, pulse, GCS, and respirations include temperature and blood glucose if appropriate.

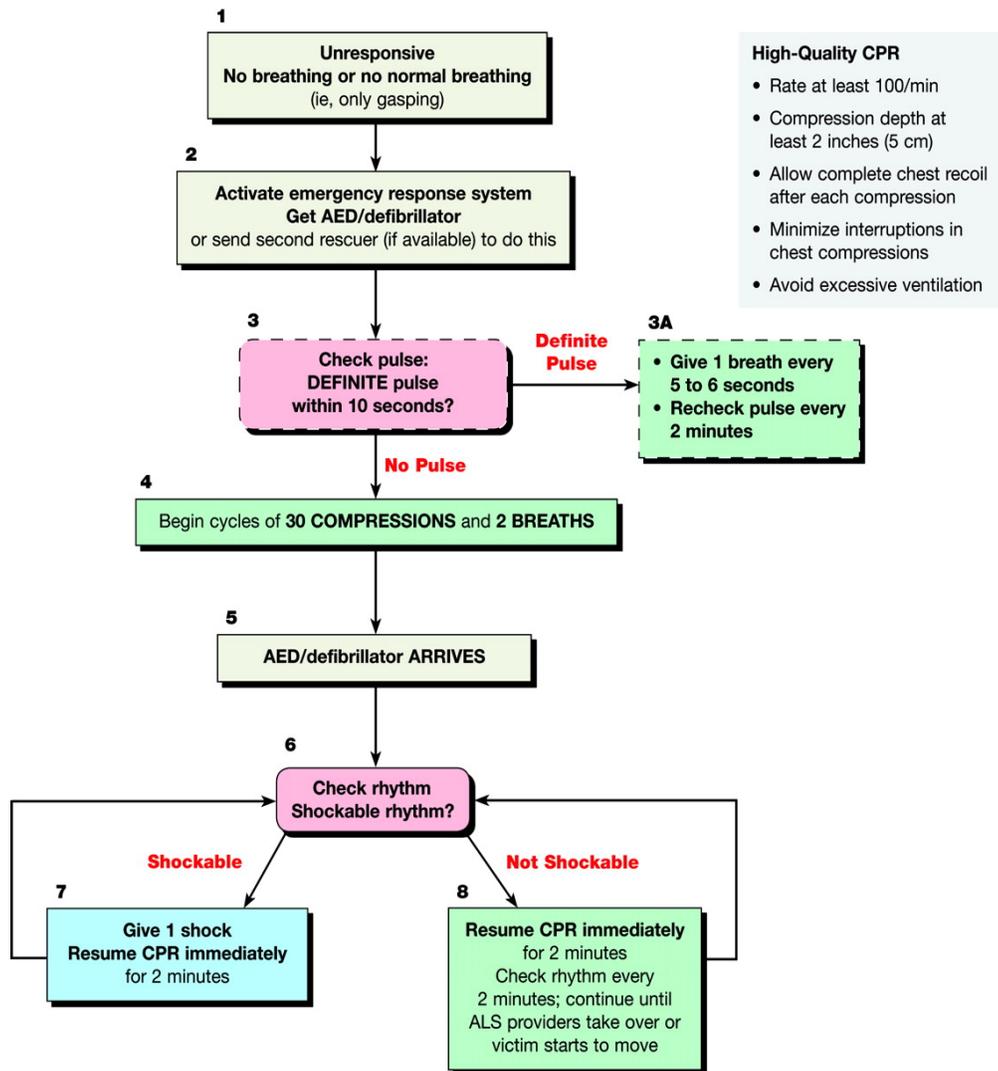
LIFE SUPPORT



PASCO COUNTY MEDICAL PROTOCOL 2012

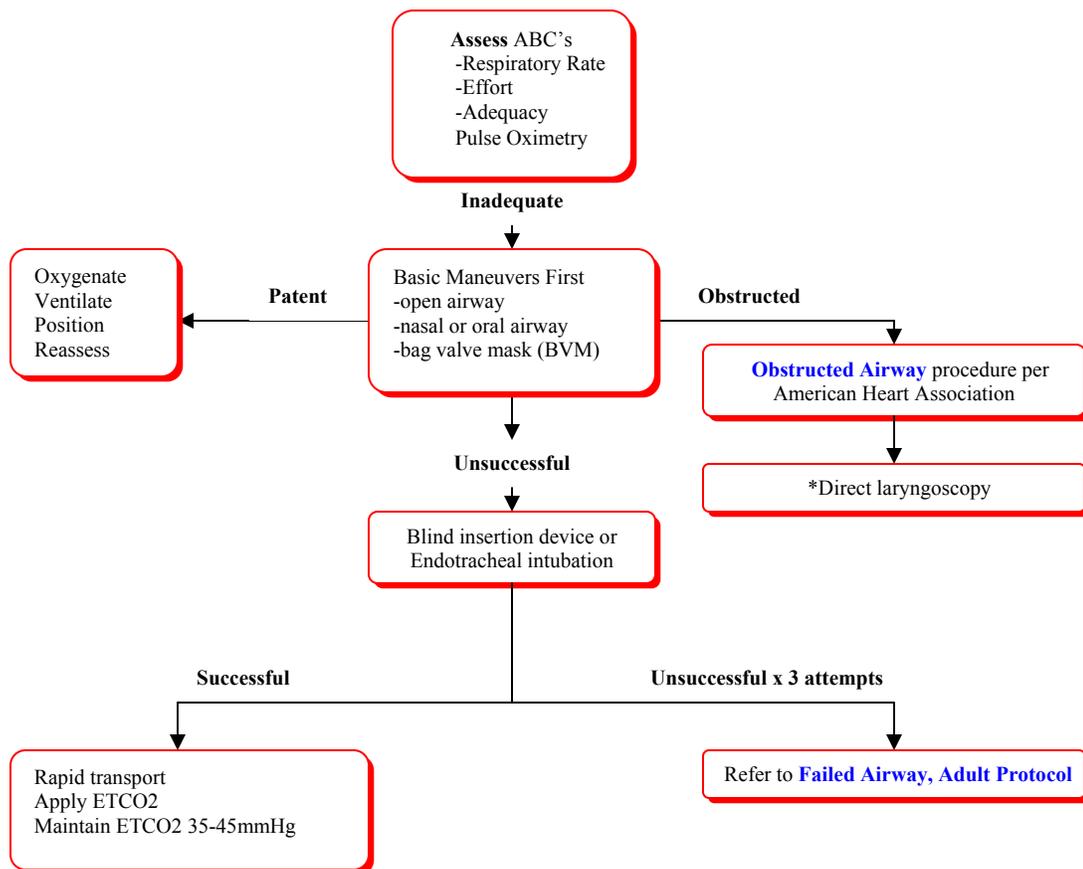
ADULT BASIC LIFE SUPPORT

Adult BLS Healthcare Providers



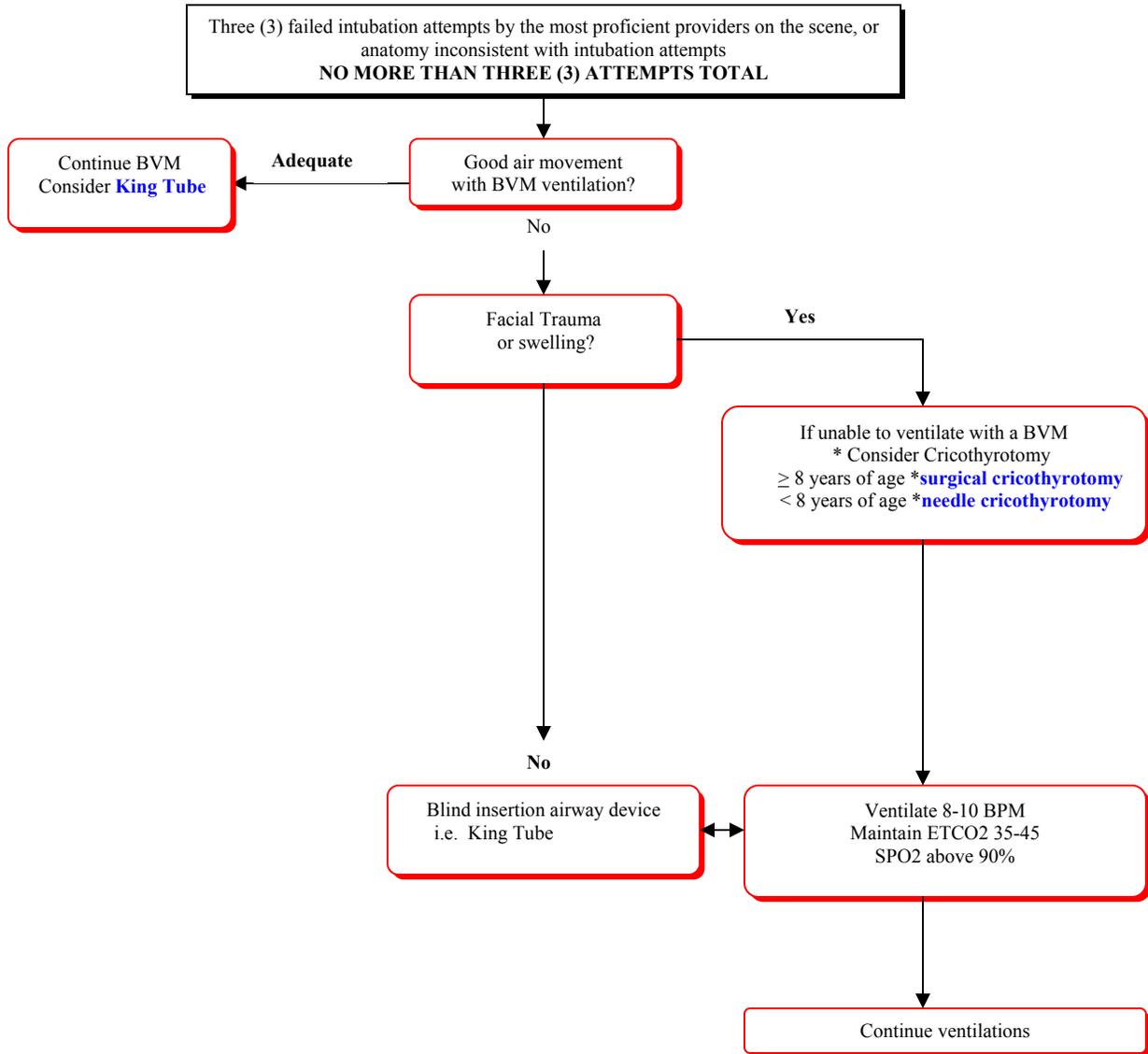
© 2010 American Heart Association

AIRWAY, ADULT



- Capnography is mandatory with all methods of intubation. Document results.
- ETCO2 should be utilized to monitor ventilations with the BVM.
- Maintain C-spine immobilization for patients with suspected spinal injury.
- Ventilation Rate should be between 8-10 breaths per minute to maintain EtCO2 35-45 (avoid hyperventilation).
- Continuous pulse oximetry should be utilized in all patients with an inadequate respiratory function.
- It is important to have a well secured endotracheal tube to maintain ETT placement.
- Gastric tube placement should be considered in all intubated patients once primary treatments have been completed.

AIRWAY, ADULT-FAILED



- Capnography is mandatory with all methods of intubation. Document results.
- ETco2 should be utilized to monitor ventilations with the BVM.
- Maintain C-spine immobilization for patients with suspected spinal injury.
- Ventilation Rate should be between 8-10 breaths per minute to maintain Etco2 35-45 (avoid hyperventilation).
- Continuous pulse oximetry should be utilized in all patients with an inadequate respiratory function.
- It is important to have a well secured endotracheal tube to maintain ETT placement.
- Gastric tube placement should be considered in all intubated patients once primary treatments have been completed.

AIRWAY, ADULT (RSI) RAPID SEQUENCE INDUCTION

Assess ABC's
 IV established in two sites :ie. Two peripheral IV's or one IV peripheral and one IO
 Pre-oxygenate 100% O2 via BVM
 Pulse Oximetry
 Multi-function Padz applied monitored in PADS mode

No
 Refer to [Airway, Adult](#)

Patient requires [RSI](#)—per protocol and 2 Paramedics on scene

Have contingency plans and have the appropriate equipment readily available for maintaining the airway in case of unsuccessful procedure, including but not limited to [bougie](#), camera, [King airway](#) and [cricothyrotomy](#)

Sedation
 Etomidate 0.3 mg/kg IV or IO over 30-60 seconds
Paralysis
 Rocuronium 0.5mg/kg IV ONLY

Yes
 *Known Methamphetamine or cancer with active chemotherapy patient
 *history of hyperkalemia or malignant hyperthermia
 *crush injury >8hrs old
 *burns greater than 15% BSA 2° or 3° greater than 24hours old
 *Eye globe rupture
 *chronic neuromuscular disease
 * spinal cord injury or stroke that is greater than one week but less than six months

No
Sedation
 Etomidate 0.3 mg/kg IV or IO over 30-60seconds
Paralysis
 Succinylcholine 1.5mg/kg IV or IO

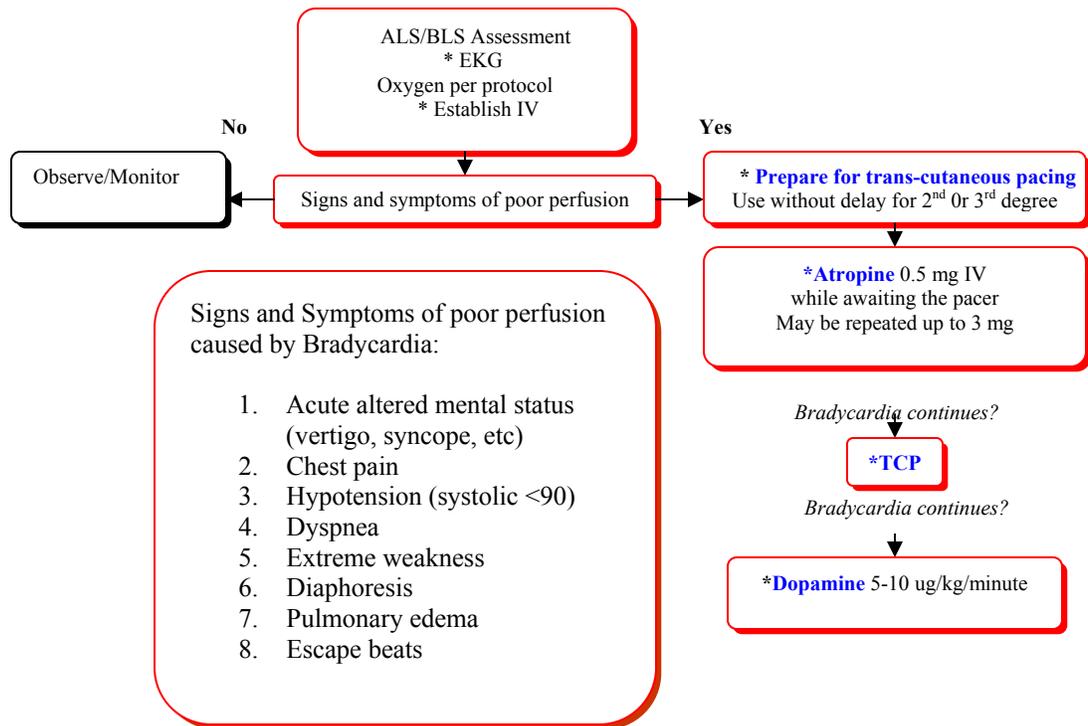
Intubate
 Placement verified and continuous capnography

If unsuccessful after 2 attempts refer to [Airway, Adult—failed](#)

<u>Post Procedure Sedation</u> Versed 2.5— 5 mg IV/IO BP ≥ 100 Systolic -OR- Fentanyl 50mcg IV/IM q 5-10 min BP ≤ 100 Systolic max dose 250 mcg	<u>Post Procedure Paralysis</u> Rocuronium 0.5 mg/kg IV ONLY -OR- if > 45 min ground transport consider Vecuronium 0.1 mg/kg IV/IO
--	--

- Abort RSI if patient is considered "difficult airway" candidate and you are unsure of your ability to intubate prior to administering "RSI"
- Monitor Vital signs q 5 mins
- Special attention should be paid to any problem or complication
- Document all assessment findings, interventions and responses to "RSI"
- Post-Resuscitation management—refer to post procedure sedation/paralysis if required

BRADYCARDIA



Footnotes

* TCP – Use without delay for high-degree AV block Type II second or third degree block.

* Atropine – 0.5 mg IV may be repeated to a total dose of 3 mg
Caution - Accelerating a heart rate of an AMI or a CHF patient may exacerbate the clinical status of a patient. An atropine-mediated increase in heart rate may worsen ischemia or increase infarct size.

* Managing pain caused by TCP – Morphine and Versed may be used to alleviate the discomfort and anxiety caused by TCP. If the patient's condition is critical and is also hypotensive, you may initiate TCP for a brief period without pain medications until capturing takes place and the patient's blood pressure increases to a compatible level.

Administer Morphine and Versed separately. Morphine for pain, Versed for anxiety. Observe closely for upward synergistic effects.

ELECTRICAL THERAPY

ENERGY LEVELS

RYTHM	DEFIBRILLATION	SYNCHRONIZED CARDIOVERSION	NOTES
ATRIAL FIBRILLATION		120-200 JOULES	Rate control not conversion
ATRIAL FLUTTER		50-100 JOULES	Generally requires less energy
SVT		50-100 JOULES	Generally requires less energy
MONOMORPHIC VTACH		100 JOULES	Regular and uniformed
POLYMORPHIC VTACH	150 JOULES		I.E. Torsades de pointes
WIDE- COMPLEX TACH (UNKNOWN)		100 JOULES	Assume pt is in VT until proven otherwise
VFIB OR PULSELESS VTACH	150 JOULES		Normal Defibrillation

Cardioversion:

If the initial energy level fails, increase the dose in a step-wise fashion.

(exception, [Vfib/Pulseless Vtach](#))

Consider sedation in all patients prior to Cardioversion i.e.

***Versed** Adult 2-5 mg IV
 Pedi 0.1mg/kg IV

***** Cardioversion of Junctional Tachycardia and Multifocal Atrial Tachycardia requires a physician's order.**

POST-RESUSCITATION MANAGEMENT / ROSC

Maintain adequate airway and breathing.
Capnography, if patient is intubated

Secure ET, King Tube
Provide supplemental oxygen, O2 oximetry
**EKG/12 lead*

Vital signs; BP bilaterally
**Secure or start a second IV*

Review the *H's* and *T's* and attempt to determine the cause of the arrest

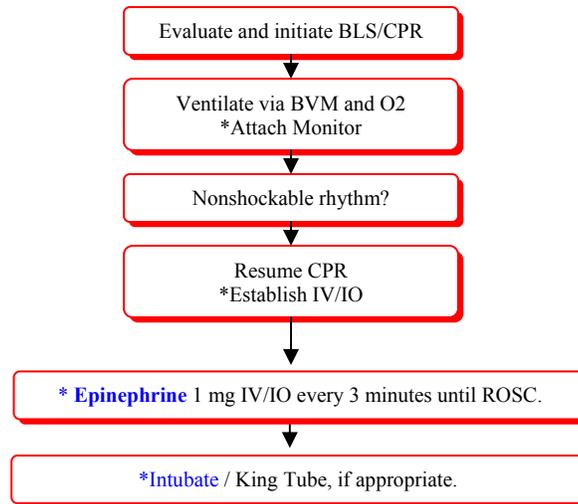
If Hypotensive

1. **250ml bolus of Normal Saline, if there is no evidence of fluid overload*
2. **Dopamine infusion 5–10ug/kg/minute titrated to a systolic pressure of 90mmHg*

Search for and treat contributing factors:

Hypovolemia	↔	Volume infusion
Hypoxia	↔	Intubate, increase O2
Tension Pneumo	↔	Needle Decompression
Acidosis	↔	Hyperventilate, Fluids Sodium Bicarb

PULSELESS, NONSHOCKABLE RHYTHMS ASYSTOLE AND PEA

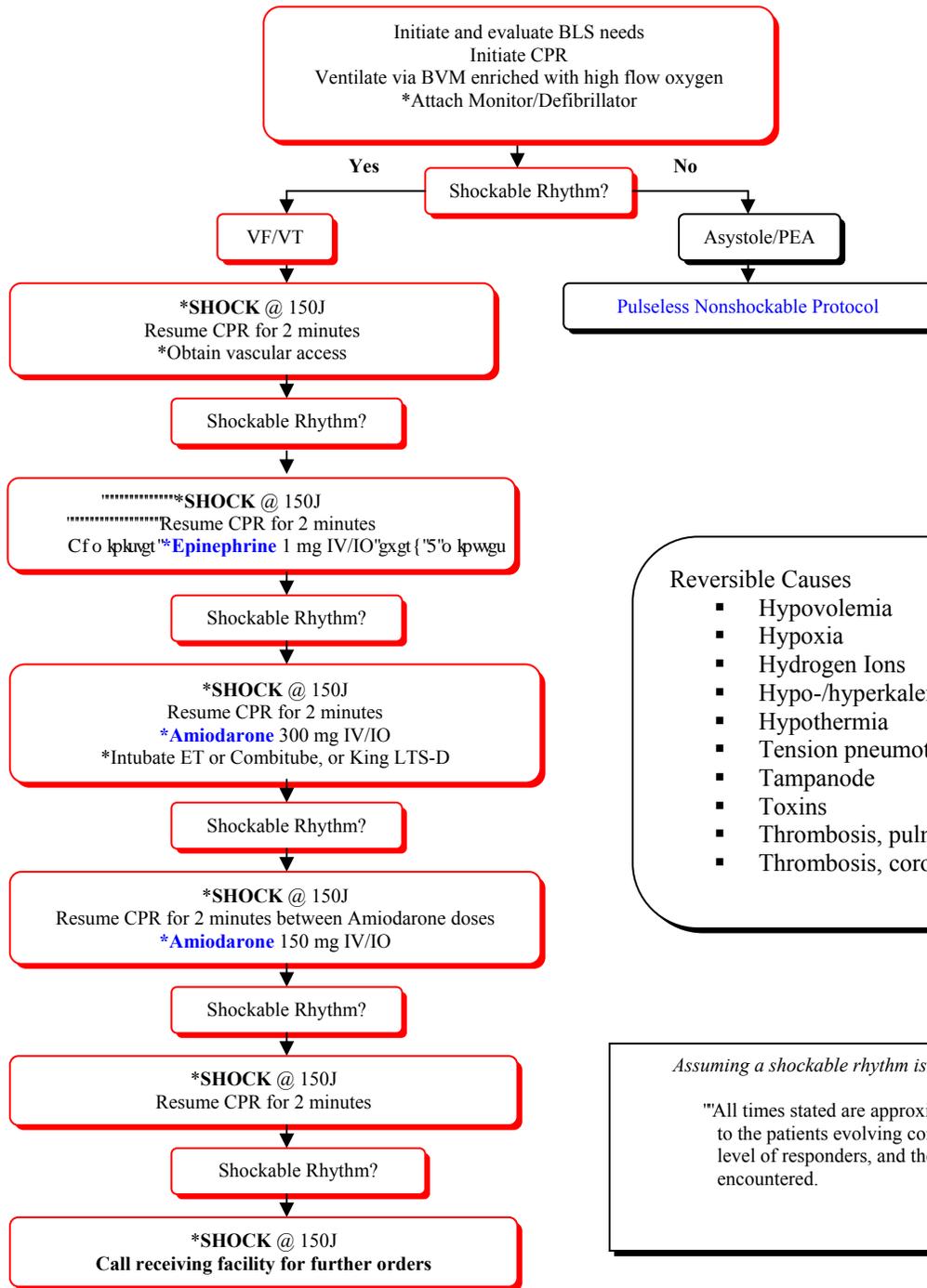


Search for and treat contributing factors:

Hypovolemia	—————>	Volume infusion
Hypoxia	—————>	Intubate, increase O2
Tension Pneumo	—————>	Needle Decompression
Acidosis	—————>	Hyperventilate, Fluids Sodium Bicarb

PULSELESS – SHOCKABLE RHYTHMS

Ventricular Tachycardia (VT) and Ventricular Fibrillation (VF)

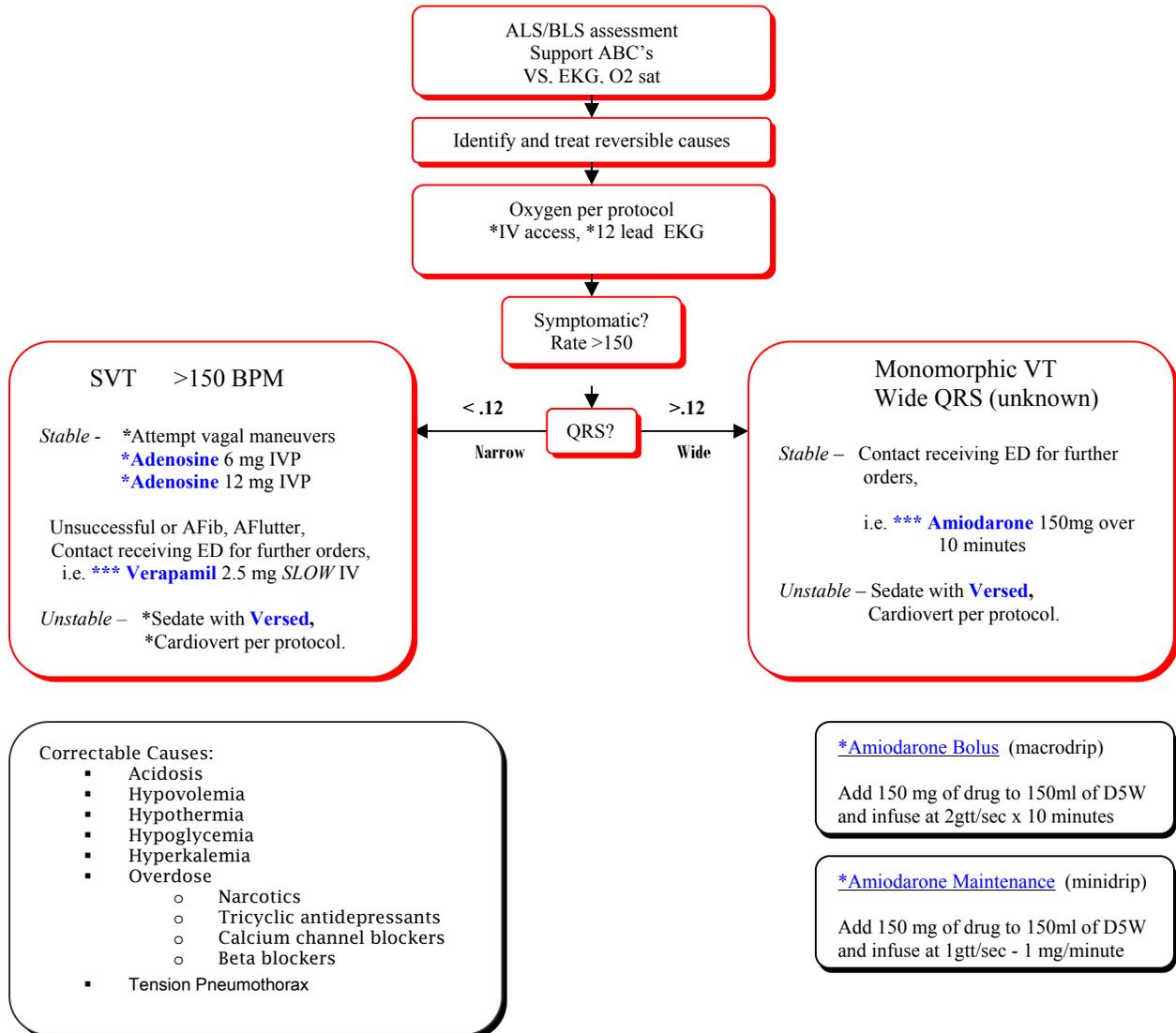


- Reversible Causes**
- Hypovolemia
 - Hypoxia
 - Hydrogen Ions
 - Hypo-/hyperkalemia
 - Hypothermia
 - Tension pneumothorax
 - Tamponade
 - Toxins
 - Thrombosis, pulmonary
 - Thrombosis, coronary

Assuming a shockable rhythm is present:

"All times stated are approximations in response to the patients evolving condition, number and level of responders, and the situation encountered.

TACHYCARDIA WITH PULSES SVT/AFIB/AFLUTTER



❖ **Do Not** allow IV access to delay treatment in the unstable patient

MEDICAL



PASCO COUNTY MEDICAL PROTOCOL 2012

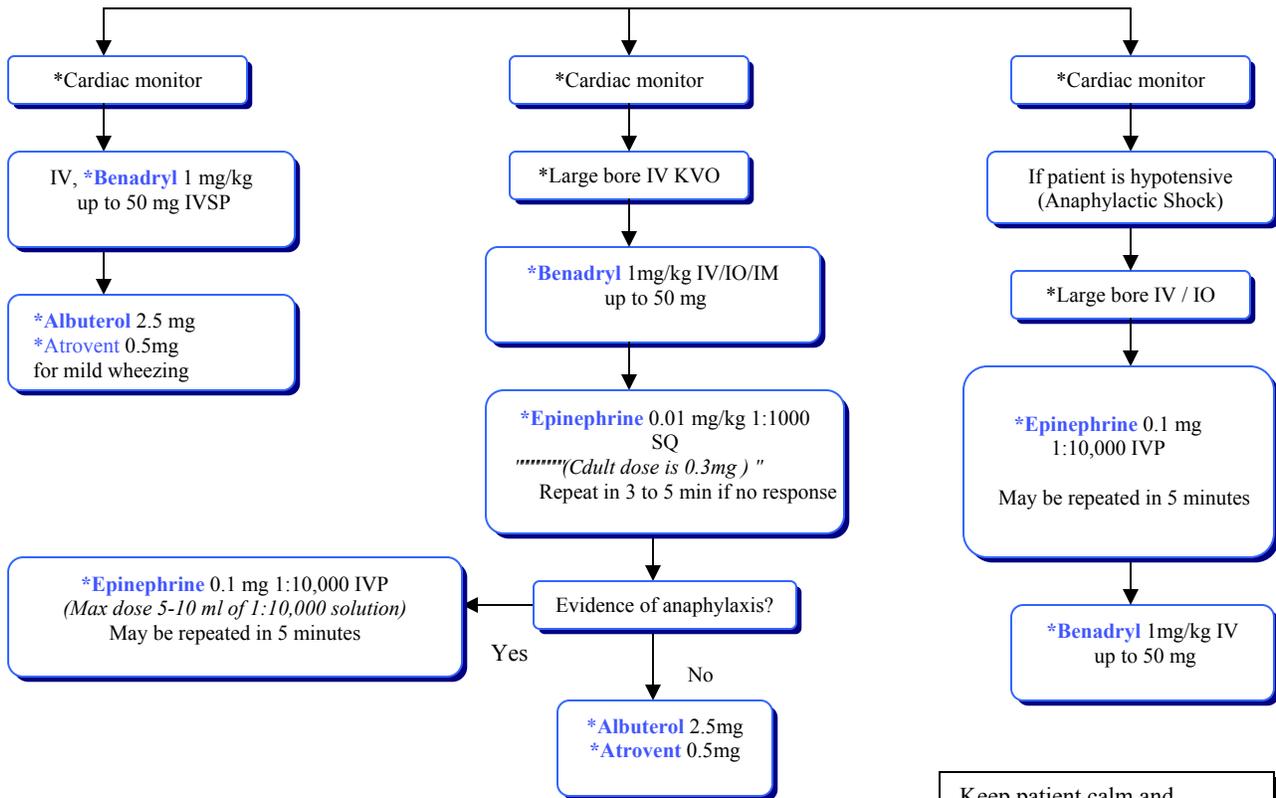
ALLERGIC REACTION

Universal Patient Care Protocol

**Mild to Moderate
with hives and/or
swelling**

**Severe with
respiratory distress
and wheezing**

**Impending
respiratory
arrest and shock**



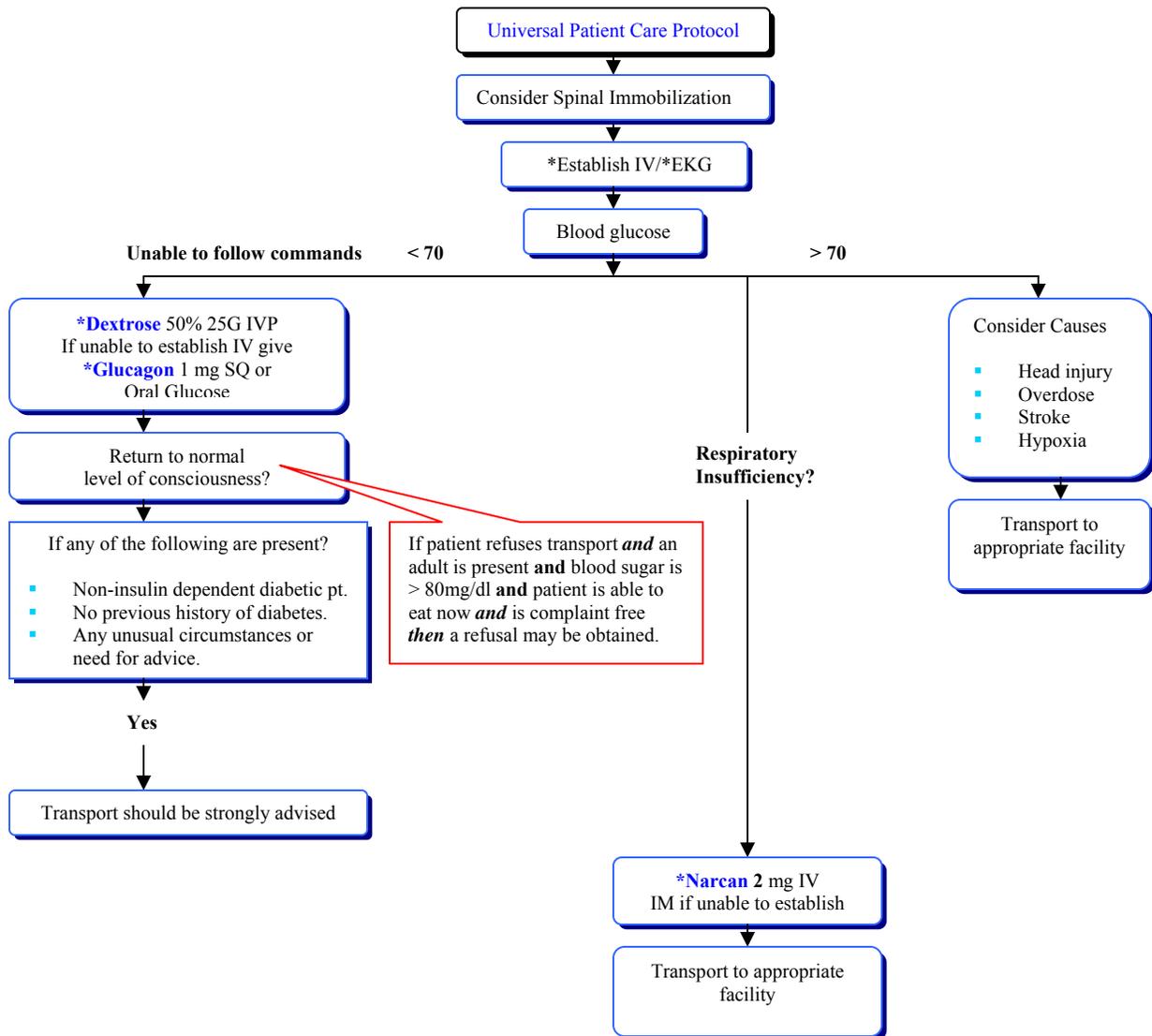
Keep patient calm and discourage activity

Monitor vital signs continuously. Be alert to the possibility of airway obstruction enroute to the hospital.

*Repeat Epinephrine in 5 minutes if initial symptoms return

True anaphylactic shock is extremely rare. It is generalized severe allergic reaction characterized by extreme dyspnea accompanied by airway edema and other allergic signs and symptoms. Mild to moderate allergic reactions are often confused with anaphylactic shock due to the obvious hives and other similarities. It is important to understand that a true anaphylactic reaction is a systemic reaction which places the patient's life in danger within seconds to minutes after contact with the substance to which they are allergic. Most allergic reactions are local and do not place the patients life in immediate danger.

ALTERED MENTAL STATUS



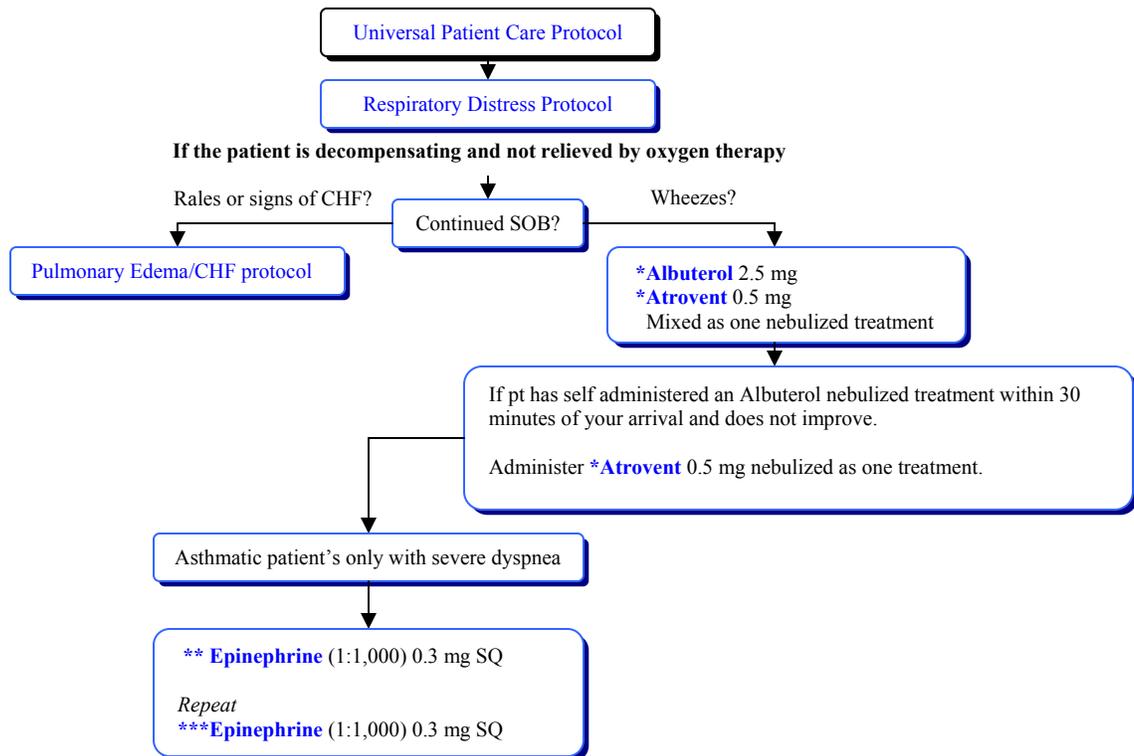
Signs and Symptoms of AMS:

1. Decreased mental status or lethargy
2. Change in baseline mental status
3. Bizarre behavior
4. Hypoglycemia (cool, diaphoretic skin)
5. Hyperglycemia (warm, dry skin, fruity breath, Kussmal respirations)
6. Irritability

It is safer to assume hypoglycemia than hyperglycemia, if doubt exists. Recheck blood glucose
 DO NOT let alcohol confuse the clinical picture. Alcoholics frequently develop hypoglycemia.
 Low glucose: < 70mg/dl *Normal glucose 70-120mg/dl *High glucose >300mg/dl

BRONCHOSPASM

Emphysema, Chronic Bronchitis, Asthma



WARNING

Do not administer Atrovent if the patient has received Spiriva or Atrovent within the last 3 hours. If Albuterol is indicated, withhold the Atrovent and administer *Albuterol 2.5 mg alone.

Footnote:

- A silent chest in respiratory distress is a pre-respiratory arrest sign
- Use caution when treating patients with Beta-Agonists (e.g. Albuterol, Epinephrine), >40 years of age, history of heart disease, heart rate >150,
- Epinephrine may precipitate cardiac ischemia.
- Pulse oximetry should be monitored continuously, if available

CHEST PAIN

Universal Patient Care Protocol

*Transmit 12 Lead EKG

Oxygen 2-6 lpm or 10-15 lpm to maintain pulse oximetry above 94%

***Aspirin** 324 mg P.O. (unless allergic or taken PTA)

***Nitro SL** 0.4mg q 5 min to a total dose of 3 doses, if BP >100 systolic and no sign of Right Ventricular Infarct

Monitor BP after NTG administration

All Patients

- IV normal saline
- Reassess patient
- Document response to Oxygen and NTG
- Document history and medications

STEMI?

No

If pain is not relieved by nitroglycerin,

***Morphine** 1-5 mg IV slow max of 5mg

**** Morphine** over 5 mg IV max of 10mg

***** Morphine** over 10 mg IV max of 15 mg.

Transport to appropriate facility

Cardiac Alert will be called on all *acute coronary syndromes* (ACS) that are not classified as a STEMI

Yes

Symptomatic MI with PVC's and a HR > 60

Rule out treatable cause and manage per protocol

Document the presence of:

- Five or more PVC's a minute
- PVC's which are closely coupled
- R on T phenomenon
- PVC's which occur in pairs
- PVC's which occur in runs

Contact receiving hospital for orders

- **Lidocaine** 1.0-1.5 mg/kg
- **Lidocaine Infusion** 1-4mg/min

Transmit 12 lead EKG to the appropriate facility

Declare a "STEMI ALERT"

STEMI Alert Qualifiers

- Evidence of ST elevation > 1mm in two or more continuous leads.
- New left bundle branch block in the presence of symptoms of acute AMI.

*****Do not** administer Nitroglycerin or Morphine to any patients exhibiting signs of a Right Ventricular Infarct without a physician's order.

Avoid nitroglycerin in any patient who has used Viagra or similar drugs in the past 24 hours, due to the potential for severe hypotension
 To ensure quality control avoid using patients nitroglycerin
 Hypotension in the setting of right ventricular infarct (RVI) should be treated with 250 ml increments
 A "Cardiac Alert" should be called for all acute coronary syndromes (ACS) that are not classified as a STEMI
 Monitor for hypotension following the administration of NTG and MS
 Diabetic and geriatric patients often have atypical pain or only generalized complaints
 All cardiac related chest pain 12 leads will be transmitted to receiving facility

DEHYDRATION

Universal Patient Care Protocol

Oxygen per protocol

Vital signs, History,
Physical Exam

*EKG / *IV

Hypovolemia Protocol

Transport

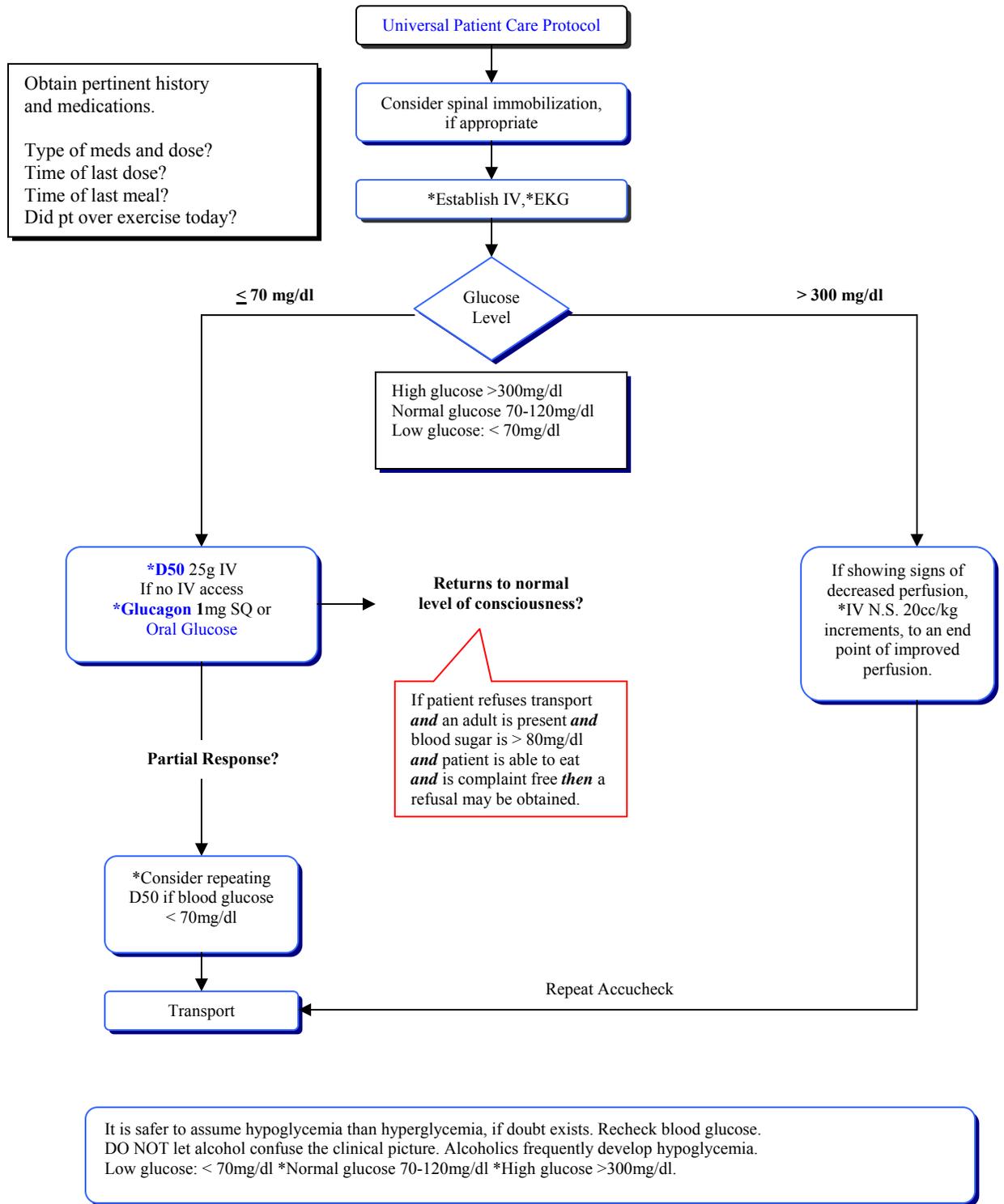
Abnormal loss of fluids and electrolytes, such as:

1. Gastrointestinal; vomiting, diarrhea
2. Increased insensible loss, fever, high environmental temperature
3. Increased sweating
4. Increased urinary loss
5. "Third space loss"; peritonitis
6. Plasma loss; burns

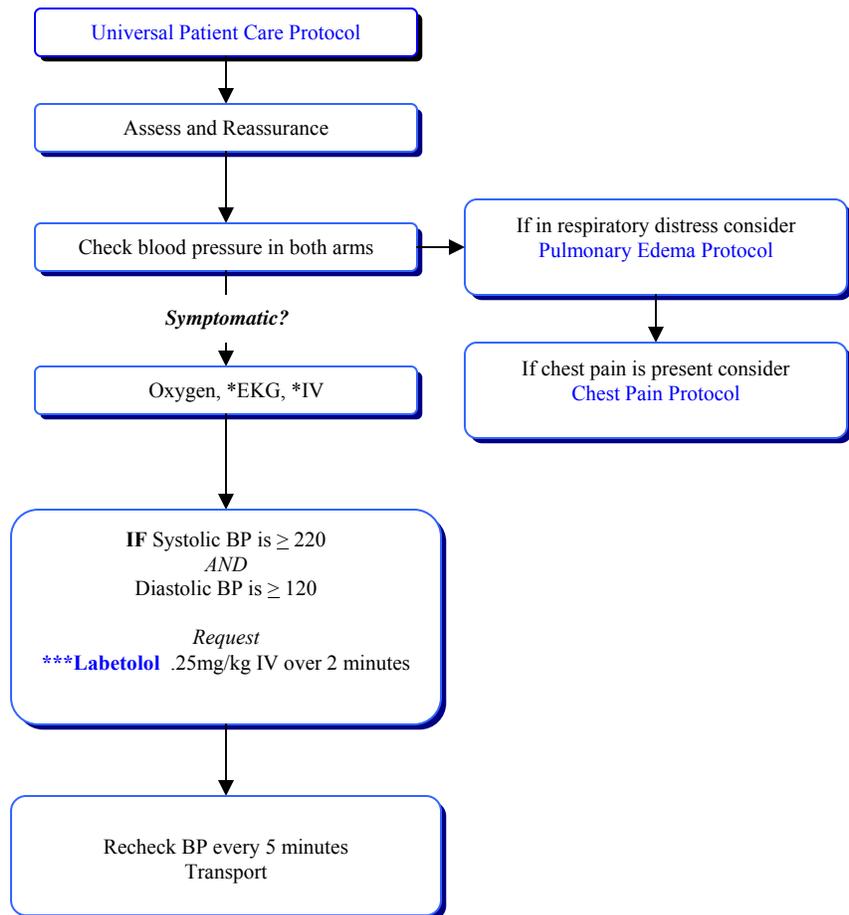
Signs and symptoms

Loss of appetite
Nausea, vomiting
Postural syncope
Poor skin turgor, tenting
Weak, rapid pulse
Postural hypotension

DIABETIC EMERGENCIES

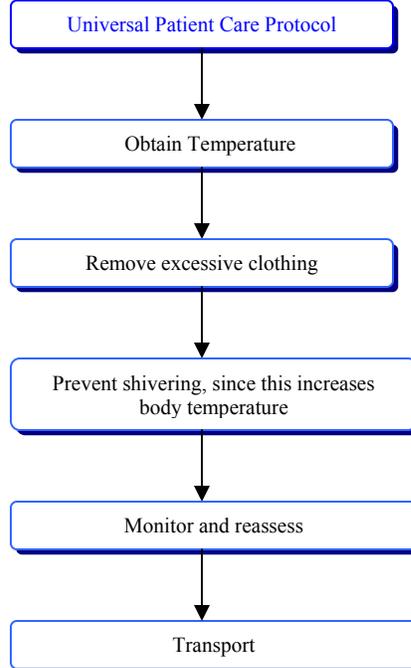


HYPERTENSIVE EMERGENCIES



Never treat blood pressure based on one (1) set of vital signs. Check blood pressure in both arms
All symptomatic patients with hypertension should be transported with head elevated

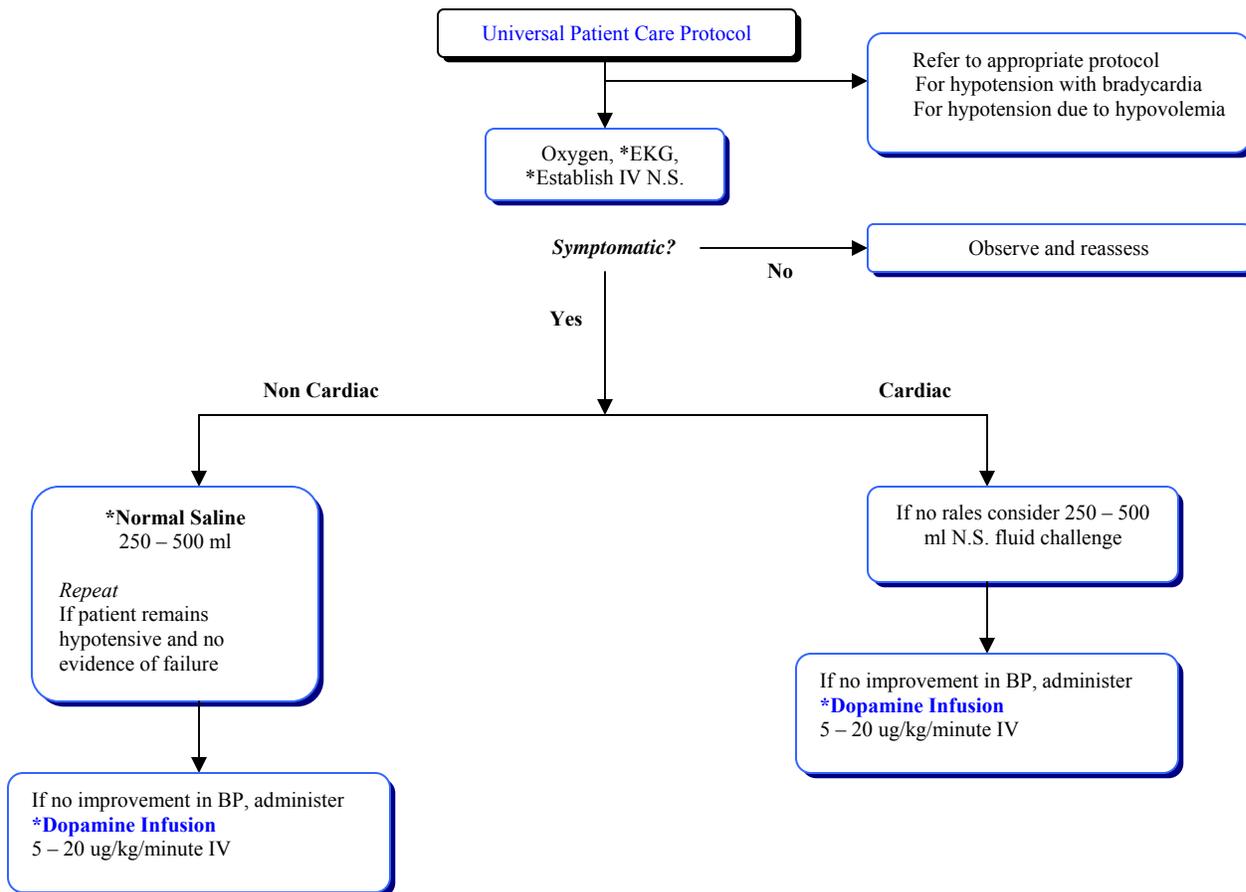
FEVER



Extremes in age are more prone to heat emergencies (i.e. young and old)
Predisposed by use of: tricyclic antidepressants, phenothiazines, anticholinergic medications, and alcohol
Cocaine, Amphetamines, and Salicylates may elevate body temperature
Sweating generally disappears as body temperature rises above 104°F

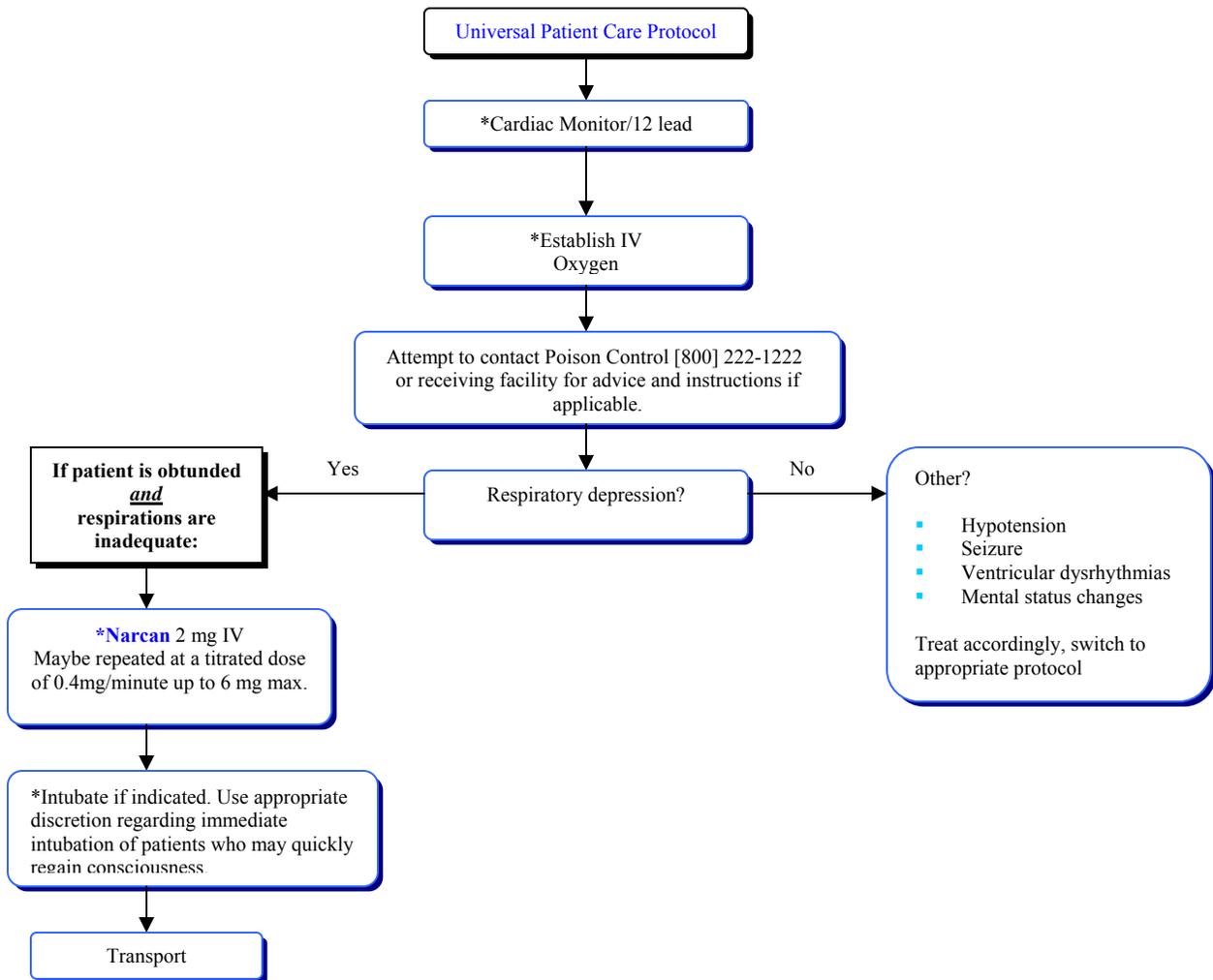
HYPOTENSION/SHOCK

Nontrauma



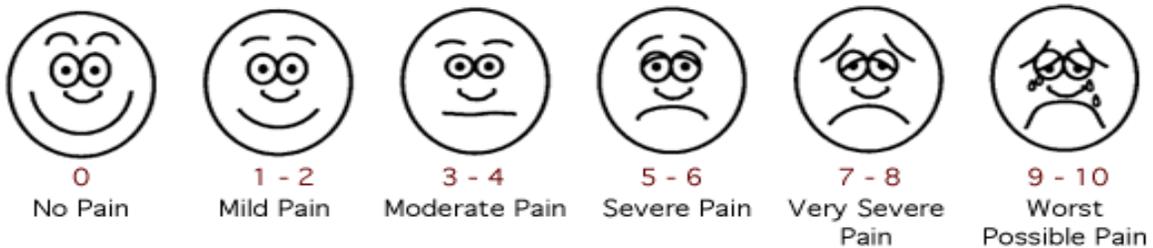
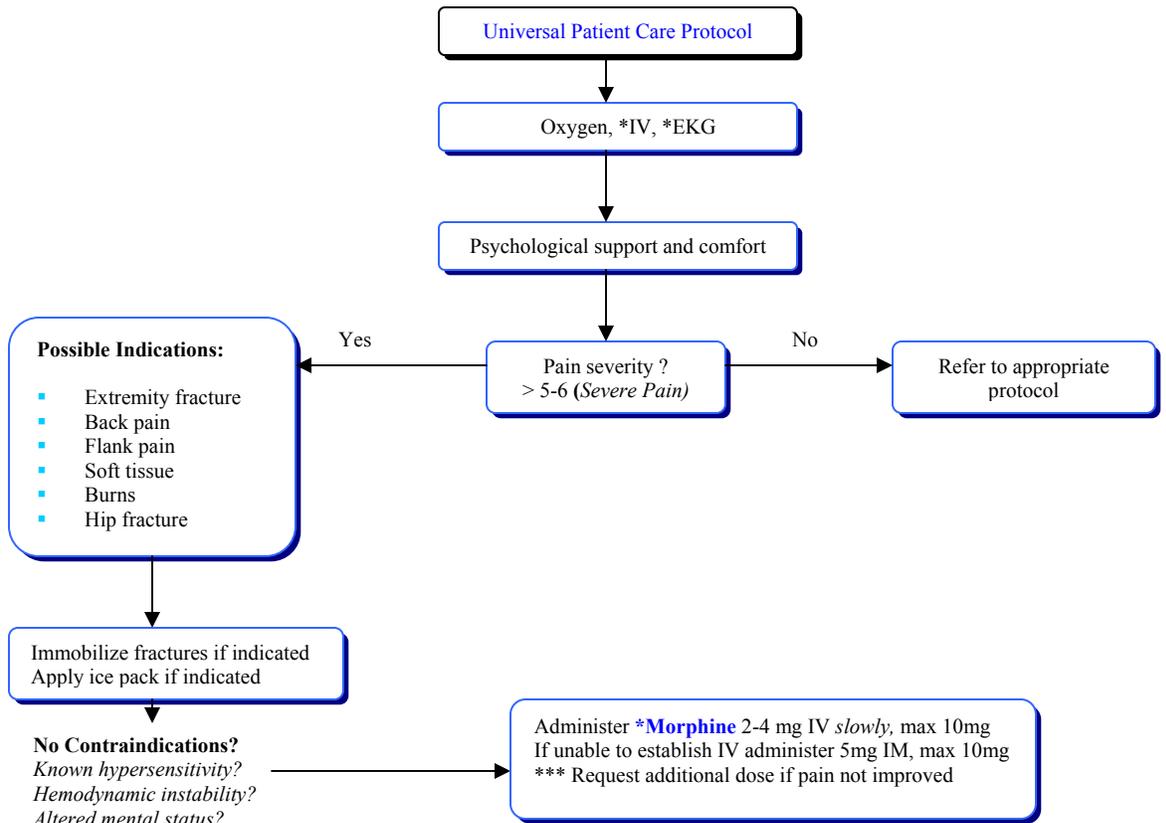
Hypotension can be defined as a blood pressure less than 100mmHg
Consider performing orthostatic vital signs on patients in non-trauma situations if suspected blood or fluid loss
Consider all possible causes of shock and treat appropriate protocol
Be alert to the possibility of tachycardia necessitating the discontinuation of dopamine

NARCOTIC OVERDOSE



Do not rely on patient history of ingestion, especially in suicide attempts
Bring bottles, contents, and emesis to ER.
Document substance taken, method of administration, amount, and time

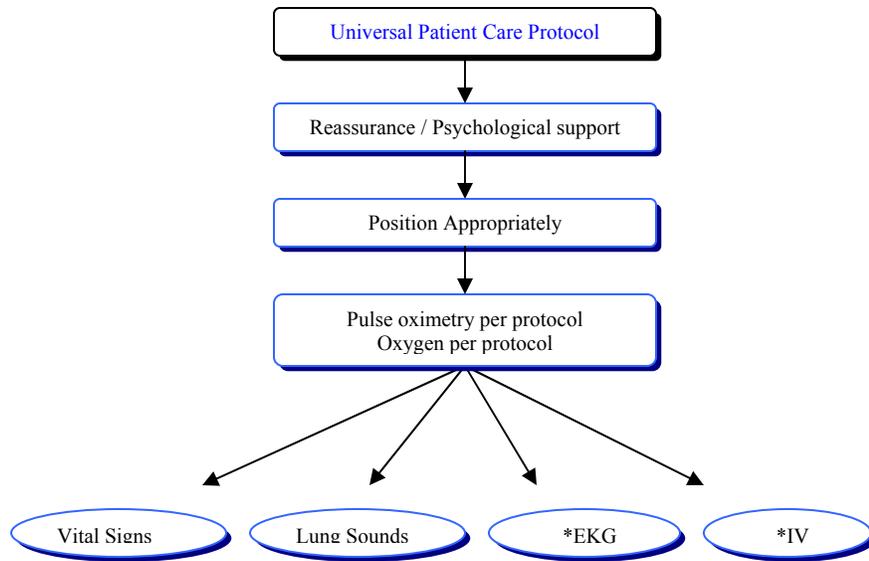
PAIN MANAGEMENT



Pain is the unpleasant sensory experience arising from tissue damage. It is a complex and multidimensional phenomenon. Patient self-reporting is the most reliable indicator of the existence and intensity of pain.

All patients should have drug allergies documented prior to medication administration
 Pain severity 0-10 should be recorded pre and post treatment
 Other signs and symptoms associated with pain are; *increased HR, increased BP, Pupillary dilation, Palmar sweating, Hyperventilation, Hypermotility, Escape behavior, Anxiety state, Guarding, Shallow breathing, and Splinting*

RESPIRATORY DISTRESS



Signs and Symptoms of Respiratory Distress

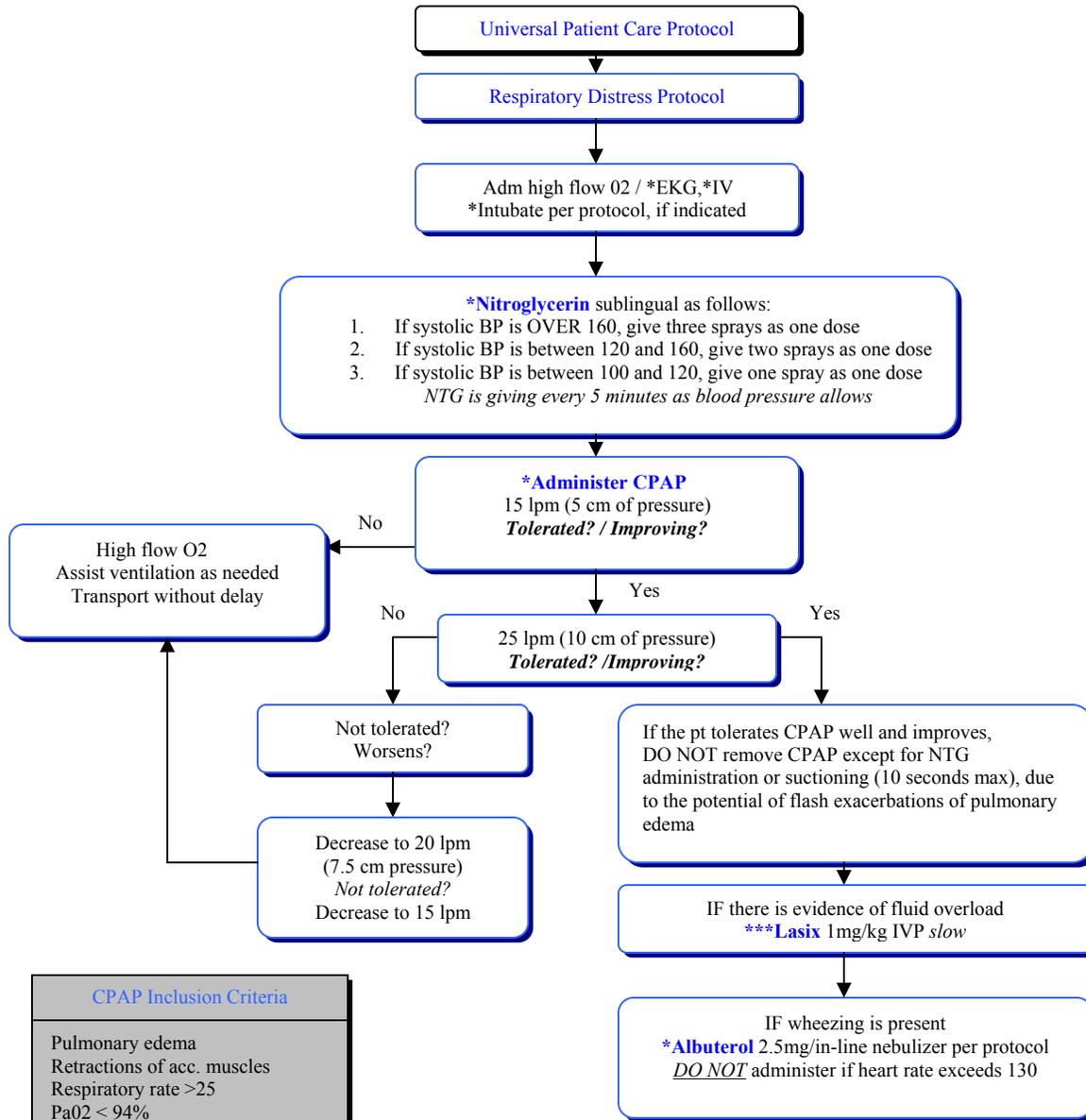
- Shortness of breath
- Pursed lip breathing
- Decreased ability to speak
- Increased respiratory rate and effort
- Wheezing, rhonchi
- Use of accessory muscles
- Fever, cough
- Tachycardia

Differential

- Asthma
- Anaphylaxis
- Aspiration
- COPD
- Pleural effusion
- Pneumonia
- Pulmonary embolus
- Pneumothorax
- Cardiac
- Pericardial tamponade
- Hyperventilation
- Inhaled toxins

RESPIRATORY FAILURE

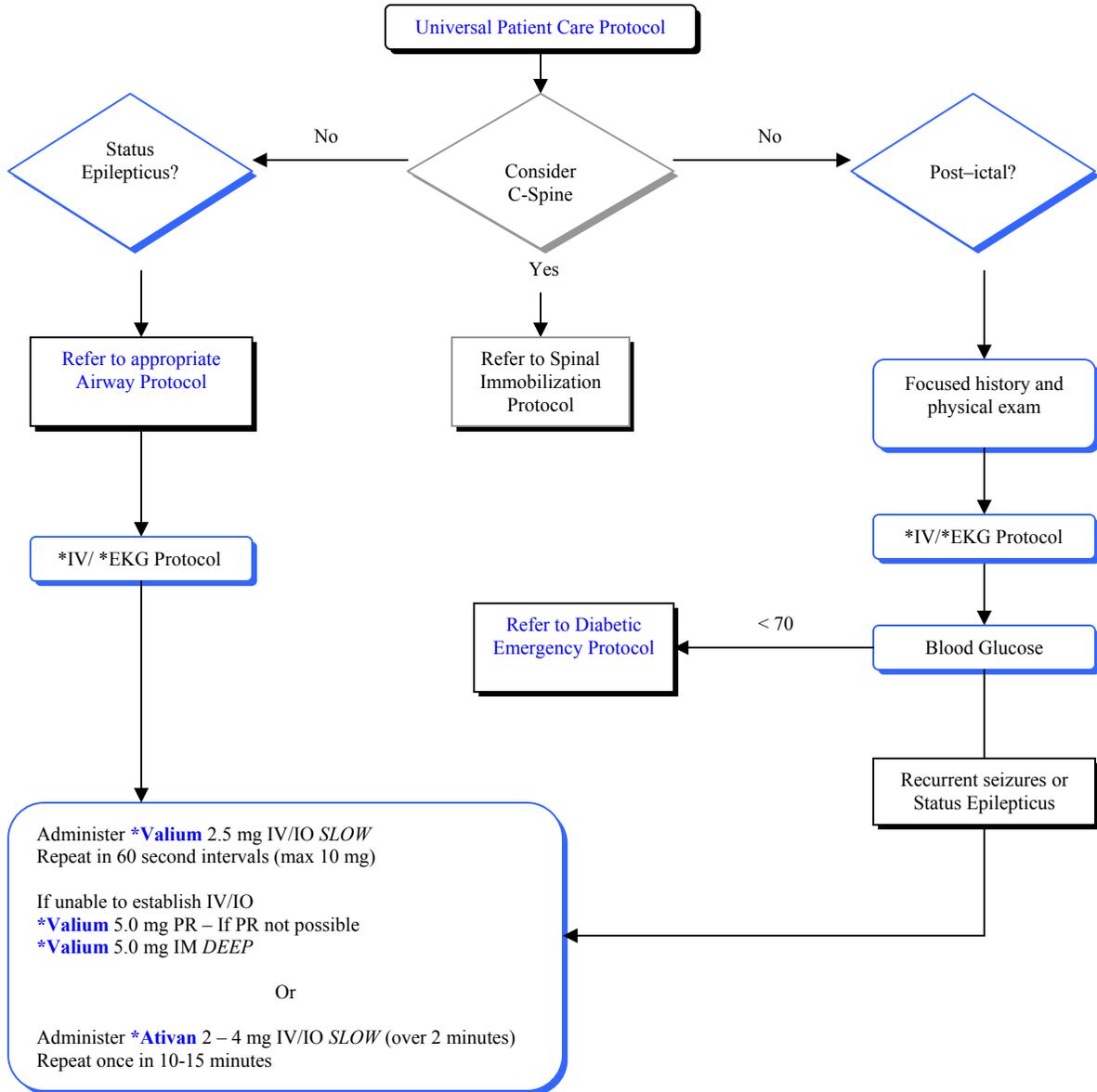
Pulmonary Edema / CHF



CPAP Inclusion Criteria
Pulmonary edema Retractions of acc. muscles Respiratory rate >25 PaO2 < 94%
Indications for CPAP
Acute CHF
Patients Excluded
Respiratory/cardiac arrest BP < 90 mmHg Unresponsive to speech Inability to maintain own airway Active vomiting Major trauma Pneumothorax

**If pt continues to decompensate begin
BVM ventilations and intubate**

SEIZURE



- Status epilepticus is a true emergency requiring rapid airway control, treatment and transport
- Be prepared for airway problems and continued seizures
- Assess possibility of occult trauma and substance abuse

STROKE /CVA ALERT

Universal Patient Care Protocol

*Establish IV
Blood Glucose
Bilateral Blood pressures

Negative Positive

Cincinnati Pre Hospital Stroke Scale

Other causes can mimic an acute stroke and should be identified and treated:

1. Hypoglycemia
2. Hypoxia
3. Drug Abuse
4. Head Trauma

If 1 or more **abnormal C.S.S** are observed
AND
If **hypoxia** and **hypoglycemia** are observed
And corrected, and the symptoms continue
AND
If the abnormal symptoms are **NOT** likely due to a recent head injury.
AND
If the **known time** between the new onset of abnormal symptoms to the arrival at a Stroke Center would be **less than 5 hours**:

THEN, a Stroke Alert should be called and the patient should be expeditiously transported to a Stroke Center, EITHER:

1. By **ground** rescue unit if travel time will be **less than 30 minutes**, OR
2. **Helicopter** if ground travel time will be **greater than 30 minutes**.
3. If a helicopter is not available, the patient should be transported to the nearest Stroke Center, if the time between onset and arrival at a Stroke Center would be less than 5 hours.

Maintain airway

Semi-fowler position with
30 degree elevation

Oxygen 2 lpm, unless hypoxic,
then high flow

*IV reseat; a second IV if
accessible

*EKG-12 lead

Hypotensive < 90mm, administer 250 ml bolus of NS,
unless there is evidence of fluid overload

*** If diastolic pressure is greater than 120,
request *****Labetalol** 0.25 mg/kg.

Secondary assessment findings

- Vision loss
- Ataxia
- Seizure at Onset
- Anticoagulant Use
- Obvious Hemorrhage
- Bleeding Disorder
- Trauma, Surgery last 2 weeks
- Invasive Procedure last 2 weeks
- Explosive Headache
- Vomiting
- Neck Stiffness
- Altered Mentation

Most, if not all, the patients who will be receiving invasive stroke therapy are unable to adequately communicate their wishes; a consenting party should be transported with the patient if their arrival at the ED/Stroke Center will be delayed. At the minimum, a name of a witness, close relative; cell and home phone numbers will be documented.

NAUSEA AND VOMITING

Universal Patient
Care Protocol

Vitals, Pulse Oximetry
Oxygen
*IV Access, * EKG, Blood Glucose
Psychological Support

Consider
*Zofran
4mg slow IV/IM
Over 2-5 minutes

*Complete 12 lead EKG for patients > 35 y/o and/or who have a cardiac history
Consider atypical or "silent MI"

Position Appropriately
Treat Underlying Cause

PALLIATIVE CARE

Universal Patient Care Protocol

MVC, Medical or Multi Patient Incident?

Refer to appropriate Protocol

Original DNRO, or a high quality copy on yellow paper and patient identification available?

Attempt to verify that a valid DNRO exists and if unavailable then refer to appropriate protocol
NOTE: Living Will not applicable to EMS

Assess ABC's
Pulse Oximetry
Vitals
Psychological Support

Cardiac Arrest

Respiratory Distress

External Bleeding

Fractures

Pain or other associated Symptoms

NO
CPR
NOT INDICATED

Supplemental O2
Suction as needed
Position of comfort

NO
VENTILATION
ASSISTANCE
NOT INDICATED

Standard Treatment for Hemorrhage Control

NO
IV FLUID REPLACEMENT
NOT INDICATED

Standard Treatment for fractures

Family or caregivers
May administer patients prescribed medications

If patient does not have oral pain medication, refer to Pain Management protocol and administer via IM route

Transport to hospice even if during transport patient condition decreases or death occurs.

PEDIATRICS



PASCO COUNTY MEDICAL PROTOCOL 2012

PEDIATRIC PATIENT

Children are not simply smaller versions of adult patients. Children are different, and children are different from each other. The infant is different from the toddler who is different from the preschooler. Aside from the obvious difference in size, children have their own unique illnesses. A child's response to an illness, an injury, and a care-giver will change as they grow; and, as they change, so will the equipment, the drug dosages, and the approach to the pediatric patient.

Statistically, we do not treat a large number of children in the prehospital setting. There is a relatively low incidence of seriously ill or fatal pediatric patient encounters, as compared with the adult population; and, as previously stated, children do have their own unique diseases and specialized needs. This lack of exposure contributes to a decline in skill maintenance and to a heightened level of provider anxiety. But, the demographics of our community are changing as is the frequency of the use of our service by a younger population.

These Protocols are not designed to be a textbook on prehospital pediatric care; nor do they address every possible situation the EMT or paramedic may encounter. All previously detailed Protocols not addressed in this special section on Pediatrics will remain in effect. The purpose of this section is to inform the employees of the Pasco County Emergency Services Department on the policies and procedures to be followed on pediatric rescue calls.

ANY AND ALL DEVIATIONS MUST BE EXPLAINED IN WRITING

The asterisk system, as previously explained, for the three levels of paramedic procedures continues in effect throughout these Protocols. The Broselow Tape will be used for estimating the child's weight in kilograms (kg) for the appropriate sizes of equipment, defibrillation settings, and fluid boluses. The Broselow Tape will be used for calculating resuscitative drug dosages. Appropriate dosages of other drugs used in the treatment of children will be specified in the following Protocols.

GENERAL APPROACH TO THE PEDIATRIC PATIENT

Children are different. The adult is usually reassured by the arrival of the EMS personnel, but the child is most likely to experience increased fear in response to a "stranger", particularly a "stranger" who is touching him/her, coming between him/her and other family members, removing his/her clothes, and trying to suffocate him/her with that big green mask.

The keys to an accurate assessment of a pediatric patient are:

1. Critically evaluating an infant or child's "general appearance" from across the room BEFORE approaching the child to make more specific observations.
2. Vary your approach in accordance with the age of the pediatric patient.
3. Utilize the patient's parent(s) to assist with assessment, reassurance, communication, procedures, and transport.
4. Substituting for vital signs (often difficult parameters to measure in an infant or child), respiratory effort and peripheral circulatory signs to assess a pediatric patient's ventilation and circulation.
5. Carefully observing the child's environment, including the interactions among the family members.

DEFINITIONS

Premature child: a child born before 38 weeks of gestational age.

Neonate: birth to one month of age.

Infant: one month to 12 months of age.

Toddler: one to three years of age.

Preschooler: three to five years of age.

Child: less than eight years of age.

School age: five to 12 years of age.

Adolescence: 12 to 18 years of age.

Severe cardio-respiratory compromise: Poor perfusion or hypotension or respiratory difficulty.

PPV: Positive pressure ventilation; in children, this refers to the use of a BVM to assist in ventilating a distressed patient.

PEDIATRIC ABC'S AND LIFE SUPPORT

Basic Life Support (BLS) should follow the most current standards of the American Heart Association and the American Red Cross BLS for Professional rescuers. The chart below summarizes the 2010 guidelines for infants, children, and neonates

MANEUVER	INFANT (< 1 yr)	CHILD (1 to onset of puberty)
Airway		
	Neutral/ Head tilt (unless trauma present)	Head tilt-chin lift (unless trauma present)
	Jaw thrust (1 attempt; if unsuccessful, head tilt)	Jaw thrust (1 attempt; if unsuccessful, head tilt)
Breathing		
Initial	2 breaths at 1 sec/breath	2 breaths at 1 sec/breath
Subsequent	1 breath every 3 seconds	1 breath every 3-5 seconds
Circulation		
Pulse Check	Brachial	Carotid
Compression area	Below nipple line	Nipple line
Compression with	2 fingers or 2 thumbs with encircling hands for 2 rescuers	1 or 2 hands
Depth	1/3-1/2 depth of chest	1/3 the depth of chest / 2 inches
Rate	100/min	100/min
Compression– Ventilation	30:2 (one rescuer) 15:2 (two rescuers)	30:2 (one rescuer) 15:2 (two rescuers)
Foreign-body airway Obstruction		
	Back slaps/chest compressions	Abdominal thrusts

NEONATES = Newborns to 28 Days Old

Airway – same as above

Breathing – 40 to 60 breaths/min

Circulation

Pulse check: Apical

Compression area: lower third of sternum

Compression with: (1) both thumbs (with fingers encircling chest) OR
(2) middle 2 fingers of 1 hand with second hand under back

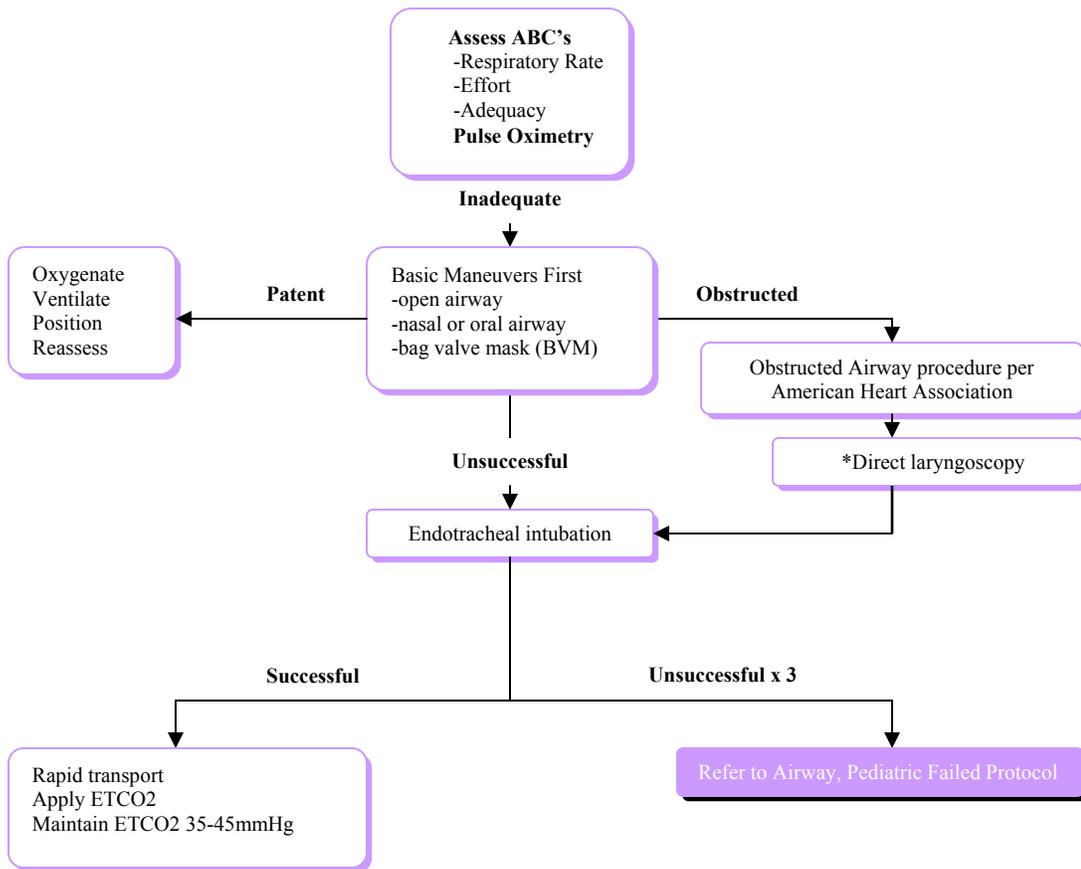
Depth: 1/3 depth

Rate: 120 events per minute (90 compressions/30 ventilations)

Compression-to-ventilations: 3:1

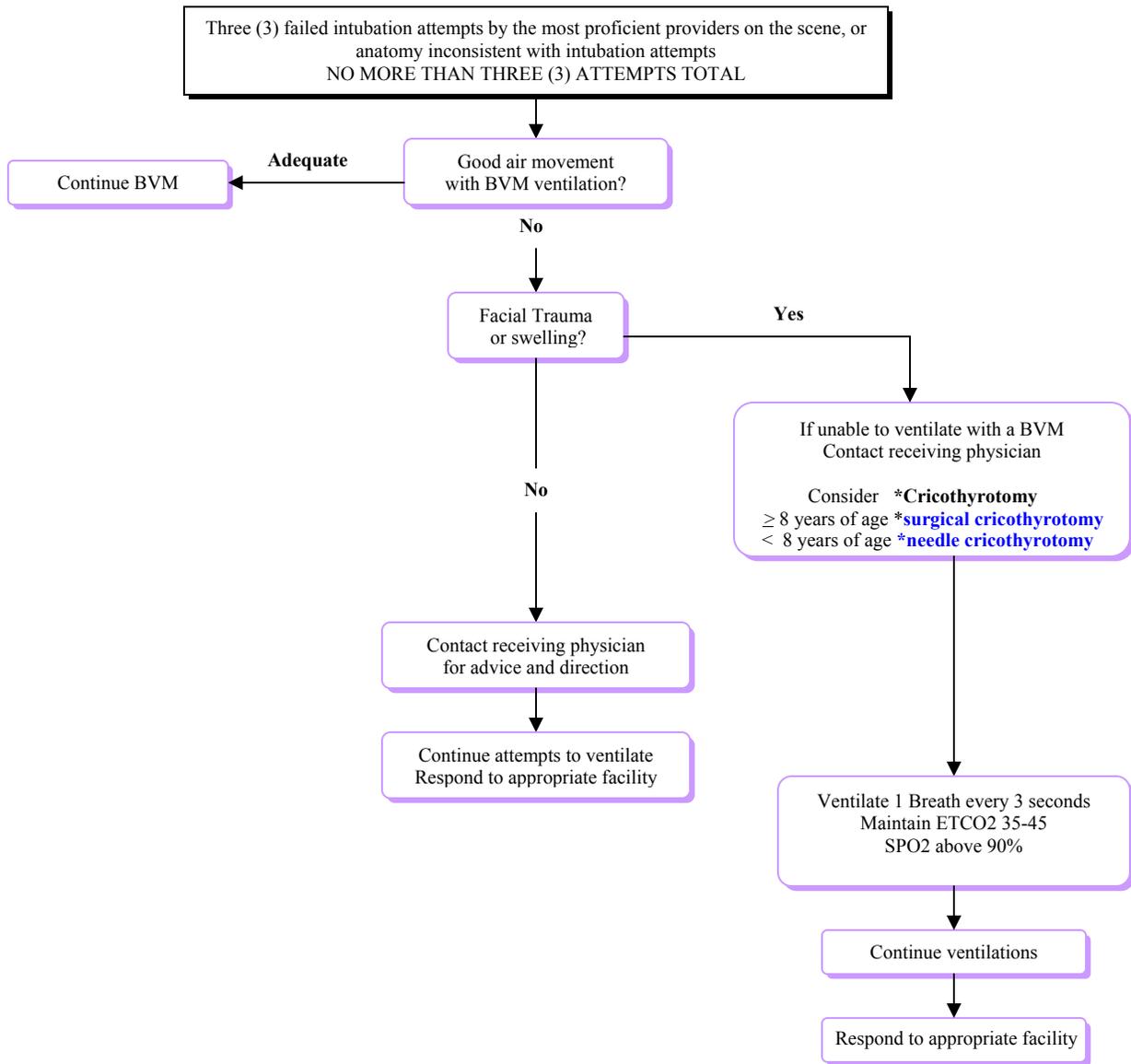
Foreign-body airway obstruction: back slaps/chest compressions

AIRWAY, PEDIATRIC



- Capnography is mandatory with all methods of intubation. Document results.
- ETCO2 should be utilized to monitor ventilations with the BVM.
- Maintain C-spine immobilization for patients with suspected spinal injury.
- Ventilation Rate should be between 12-20 breaths per minute to maintain ETCO2 35-45 (avoid hyperventilation).
- Continuous pulse oximetry should be utilized in all patients with an inadequate respiratory function.
- It is important to secure the endotracheal tube well to maintain ETT placement.
- Gastric tube placement should be considered in all intubated patients once primary treatments have been completed.

AIRWAY, PEDIATRIC-FAILED



- Capnography is mandatory with all methods of intubation. Document results.
- ETCO2 should be utilized to monitor ventilations with the BVM.
- Maintain C-spine immobilization for patients with suspected spinal injury.
- Ventilation Rate should be between 12-20 breaths per minute to maintain EtCO2 35-45 (avoid hyperventilation).
- Continuous pulse oximetry should be utilized in all patients with an inadequate respiratory function.
- It is important to have a well secured endotracheal tube to maintain ETT placement.
- Gastric tube placement should be considered in all intubated patients once primary treatments have been completed.

PEDIATRIC AIRWAY, (RSI) RAPID SEQUENCE INDUCTION

Assess ABC's
IV (preferably 2 sites)
Pre-oxygenate 100% O2 via BVM
Pulse Oximetry
Multi-function Pedi Padz applied monitored in PADS mode

Refer to [Pediatric Airway](#)

Patient requires [RSI](#)—per protocol and 2 paramedics on scene

Have contingency plans and have the appropriate equipment readily available for maintaining the airway in case of unsuccessful procedure, including but not limited to bougie, camera, King airway and [cricothyrotomy](#)

Sedation
Etomidate per Broselow tape
Paralysis
Succinylcholine per Broselow tape

Intubate
Placement verified and continuous capnography

If unsuccessful after 2 attempts refer to [Airway, Pediatric—failed](#)

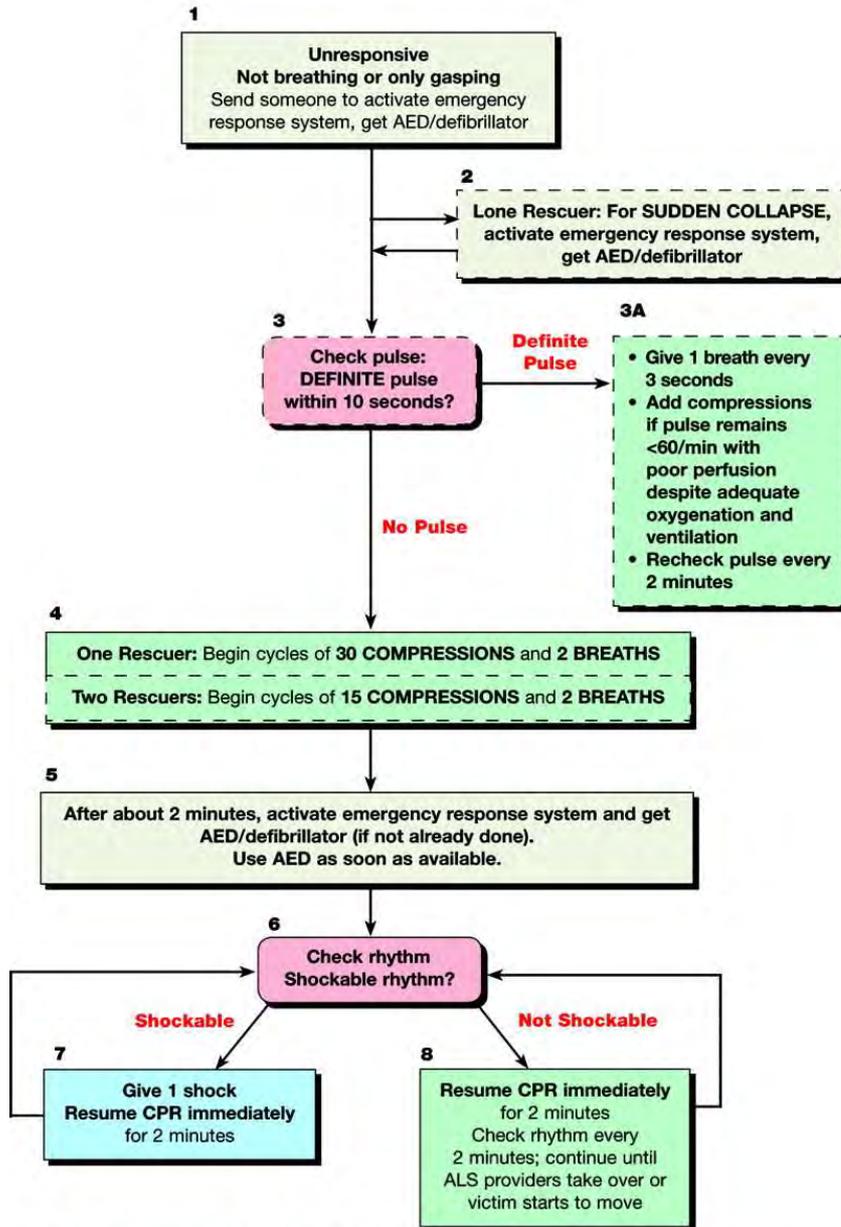
Post Procedure Sedation
Versed per Broselow tape
-OR-
Fentanyl per Broselow tape

Post Procedure Paralysis
Rocuronium per Broselow tape
-OR-
consider if > 45 min ground transport
Vecuronium per Broselow tape

- Abort RSI if patient is considered “difficult airway” candidate and you are unsure of your ability to intubate prior to administering “RSI”
- Monitor Vital signs q 5 minutes
- Special attention should be paid to any problem or complication
- Document all assessment findings, interventions and responses to “RSI”

PEDIATRIC BASIC LIFE SUPPORT

Pediatric BLS Healthcare Providers



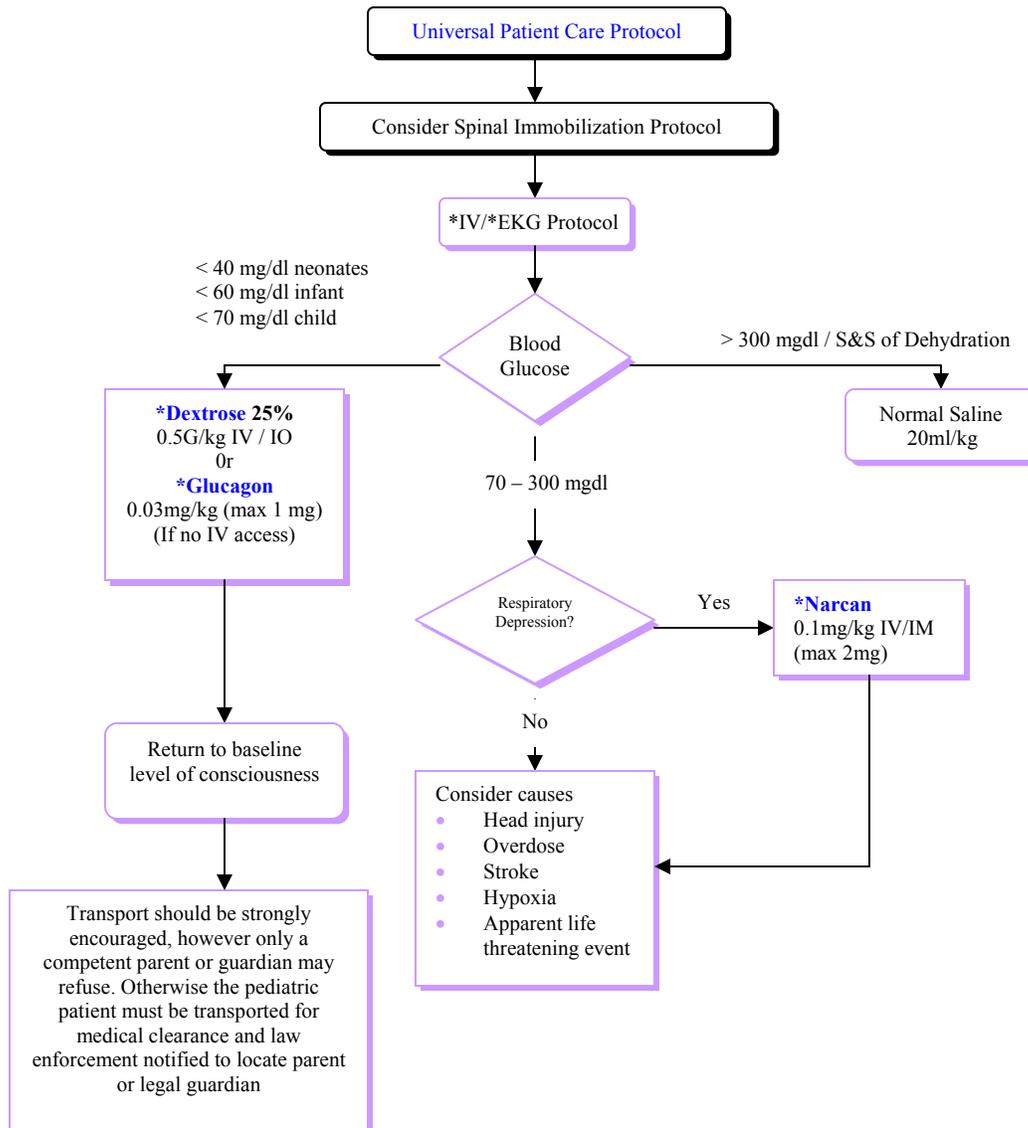
High-Quality CPR

- Rate at least 100/min
- Compression depth to at least $\frac{1}{3}$ anterior-posterior diameter of chest, about 1½ inches (4 cm) in infants and 2 inches (5 cm) in children
- Allow complete chest recoil after each compression
- Minimize interruptions in chest compressions
- Avoid excessive ventilation

Note: The boxes bordered with dashed lines are performed by healthcare providers and not by lay rescuers

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PEDIATRIC ALTERED MENTAL STATUS

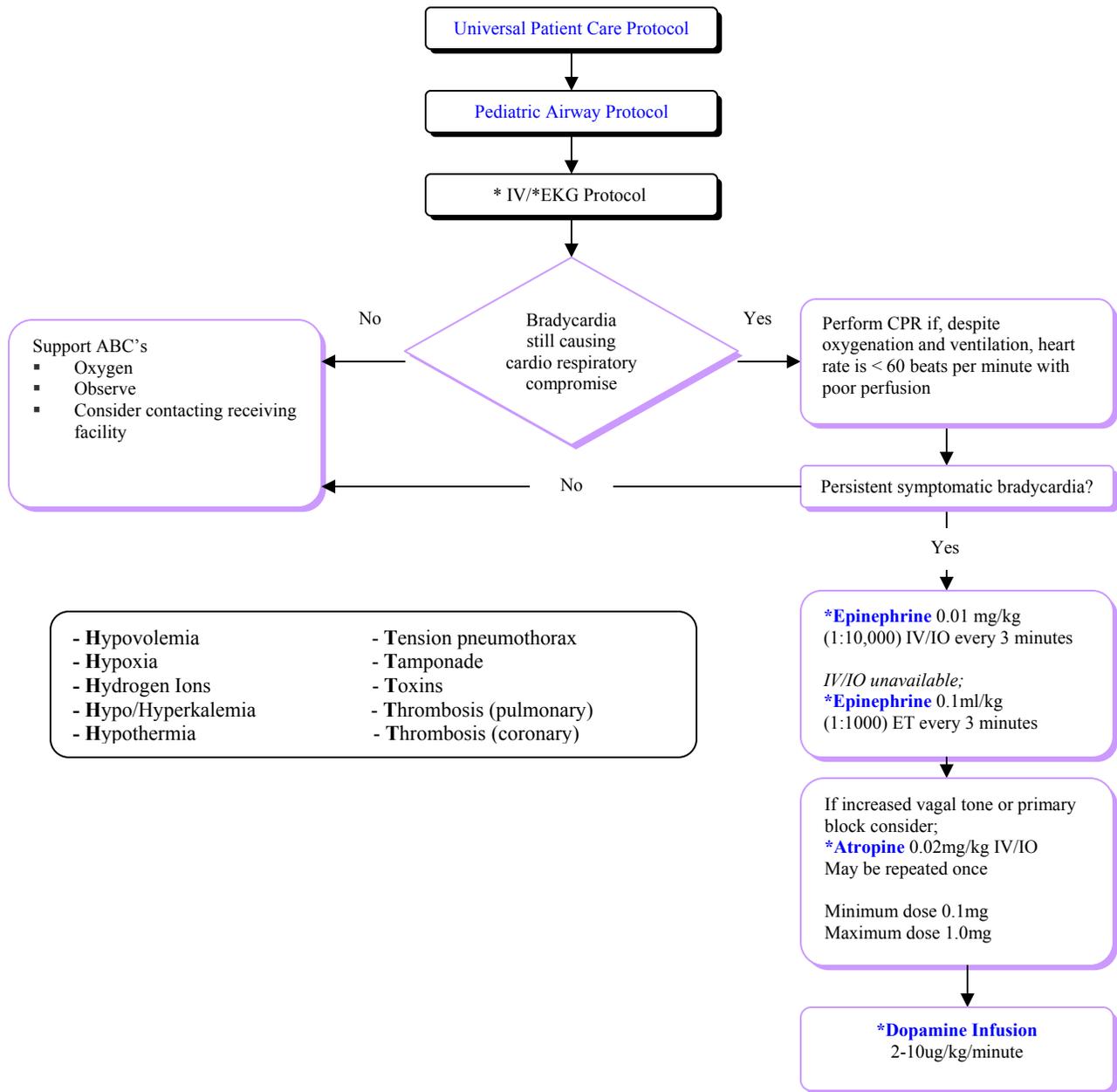


NOTE: 1.) Oral glucose 0.5 G/kg may be administered to children who are conscious and have an intact gag reflex prior to IV or IM medications.

2.) To dilute D50 to D25 expel 25 ml of medication and replace with sterile water.

It is safer to assume hypoglycemia than hyperglycemia, if doubt exists. Recheck blood glucose.

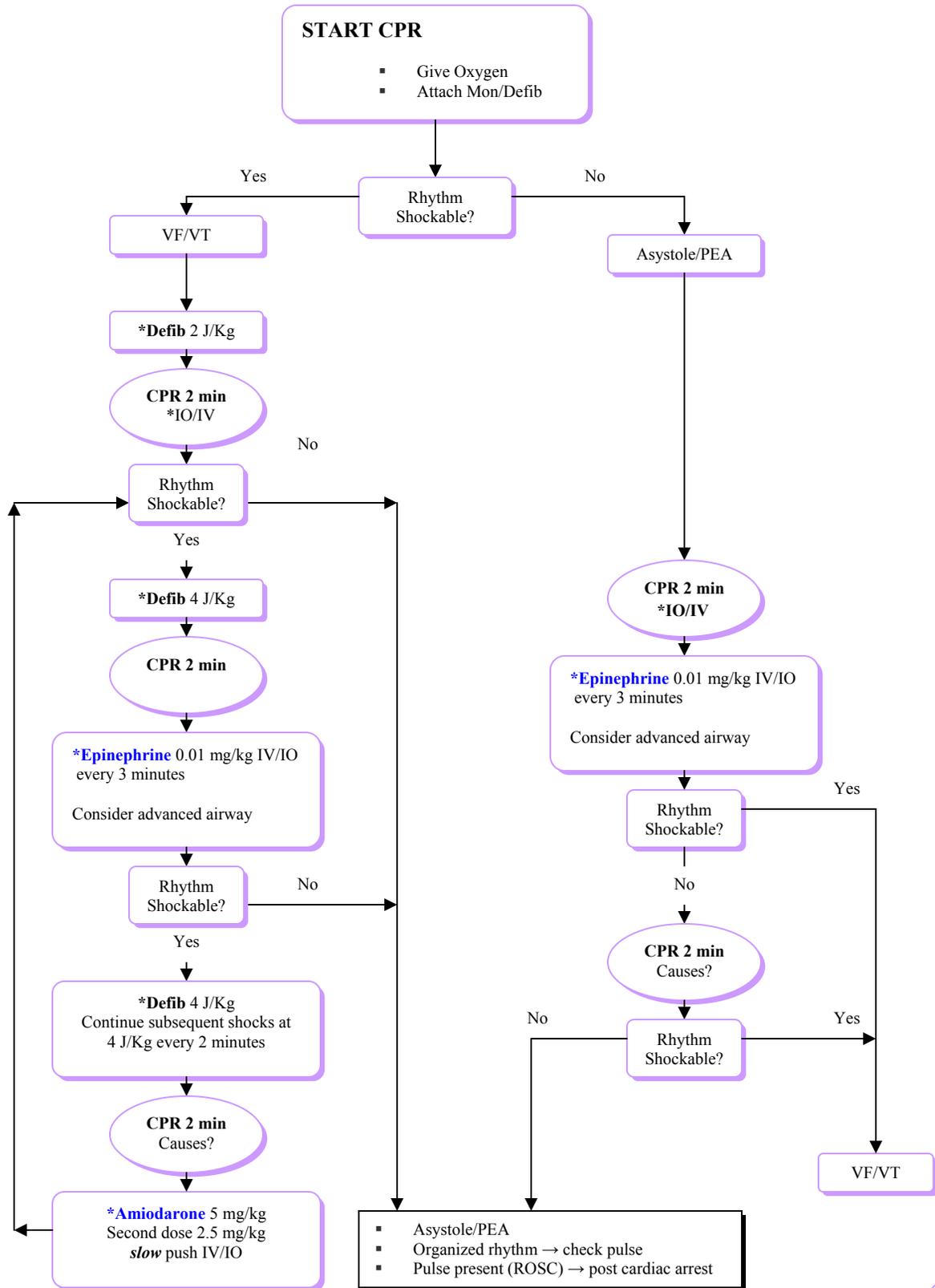
PEDIATRIC BRADYCARDIA



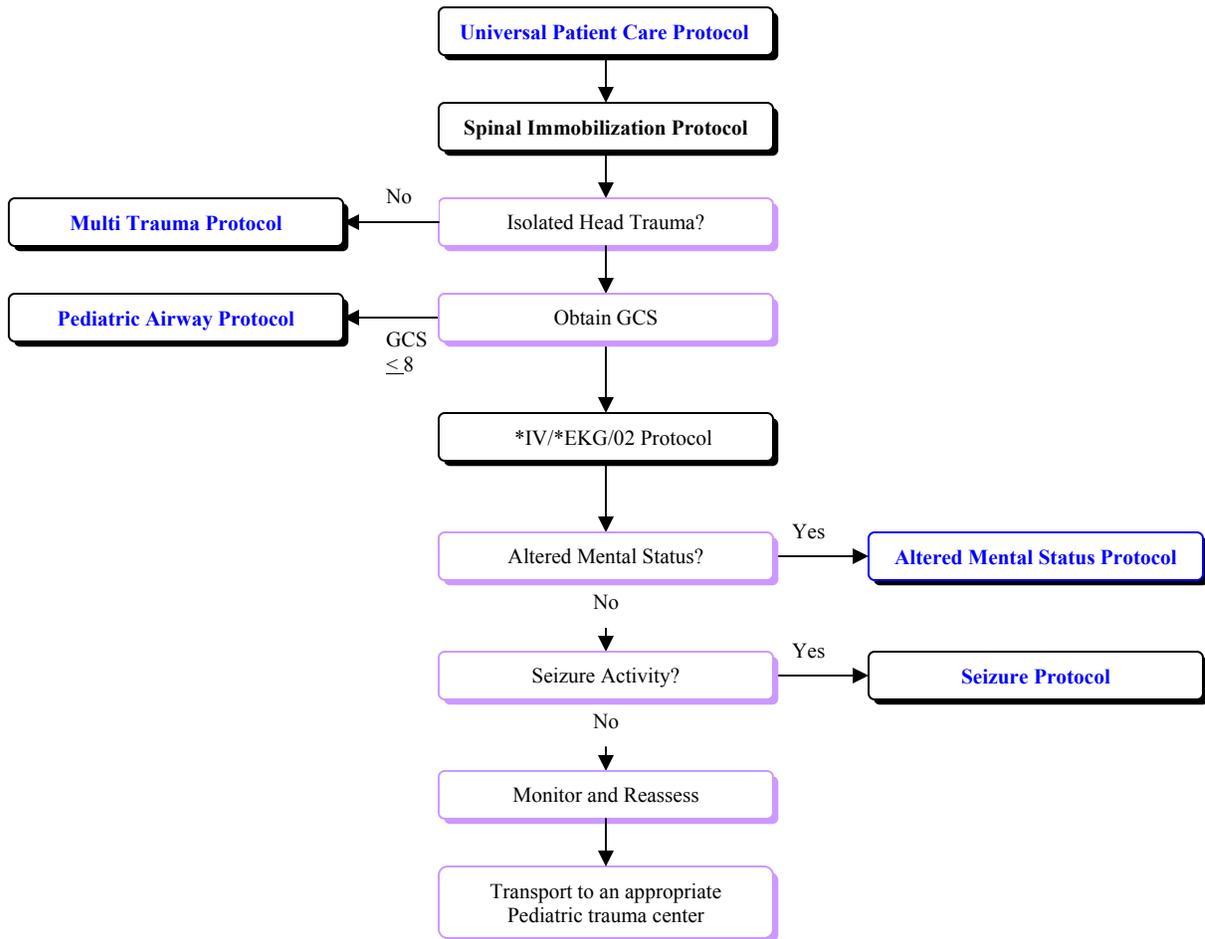
The majority of pediatric arrests are due to airway problems
 Most maternal medication pass through breast milk
 Hypoglycemia, severe dehydration, and narcotic effects may produce bradycardia
 Refer to weight based tape (Broselow) for detailed information

PEDIATRIC CARDIAC ARREST

VF/VT – Asystole/PEA



PEDIATRIC HEAD TRAUMA



- If GCS ≤ 12 consider rapid transport and or helicopter. If GCS is ≤ 8 , the patient should be intubated
- Increased intracranial pressure may cause hypertension and bradycardia (Cushing's Response)
- Hypotension usually indicate injury or shock unrelated to the head injury and should be aggressively treated
- **Limit IV fluids unless patient is hypotensive**
- The most important item to monitor and document is a change in level of consciousness

PEDIATRIC IV PROTOCOL

IV Protocol

Obtaining rapid intravenous access in the pediatric patient can be difficult. Children are different. The veins are smaller, the IV devices are smaller, and the anxiety levels are obviously higher. Although the trend is changing, most paramedics received limited practical experience in establishing IVs in children during their initial training. A vast majority of the paramedics will have even less opportunities to practice this skill once they get in the field. Fortunately, most of the situations paramedics face involving children will not require obtaining IV access.

"Routine" IVs are not to be initiated on pediatric patients under the age of 12. IVs are established on pediatric patients only when the patient requires immediate and emergent treatment to stabilize their condition or to resuscitate them. As with adults, peripheral veins provide a satisfactory route for administration of drugs and fluid.

Initial attempts to obtain IV access should begin with peripheral veins. These include the veins in the hand, arm, foot, leg, and external jugular. Scalp veins are also acceptable peripheral sites, but experience demonstrates that these veins are difficult to access during resuscitation and difficult to stabilize, especially if a "butterfly" device is used. Once a peripheral site has been successfully established, special care must be taken to adequately stabilize the site to prevent the device from being dislodged.

IO vascular access should be established if reliable IV access cannot be achieved within three attempts or 90 seconds, whichever comes first. All resuscitative drugs and fluids (including blood) can be safely administered by the IO route. Adenosine cannot be administered via the IO. When giving a fluid bolus, a pressure device may be needed in order to overcome the resistance of emissary veins. These can be done either by inflating a BP cuff around the IV bag or by drawing the fluid into a large syringe and injecting it through the stopcock.

In the newborn, vascular access can be obtained through the umbilical vein. Peripheral veins can be used, but will be more difficult to cannulate.

Buretrol administration sets will be used on all children under the age of three.

PEDIATRIC POST RESUSCITATION

Assess respiratory status and ensure adequate oxygenation and ventilation are maintained as necessary

Monitor *EKG, pulses, capillary refill, and blood pressure

↓ Cardiac output or shock is to be treated with NS bolus at 20ml/kg, repeated once

***Contact receiving hospital for orders for vasoactive agent (Dopamine)

Preparing a Dopamine infusion:

Equipment needed: Bag of NS.

Buretrol infusion set.

PFS of Dopamine (200 mg/5 ml = 1 mg/0.025 ml).

1 ml and 3 ml syringes.

Several needles and alcohol preps.

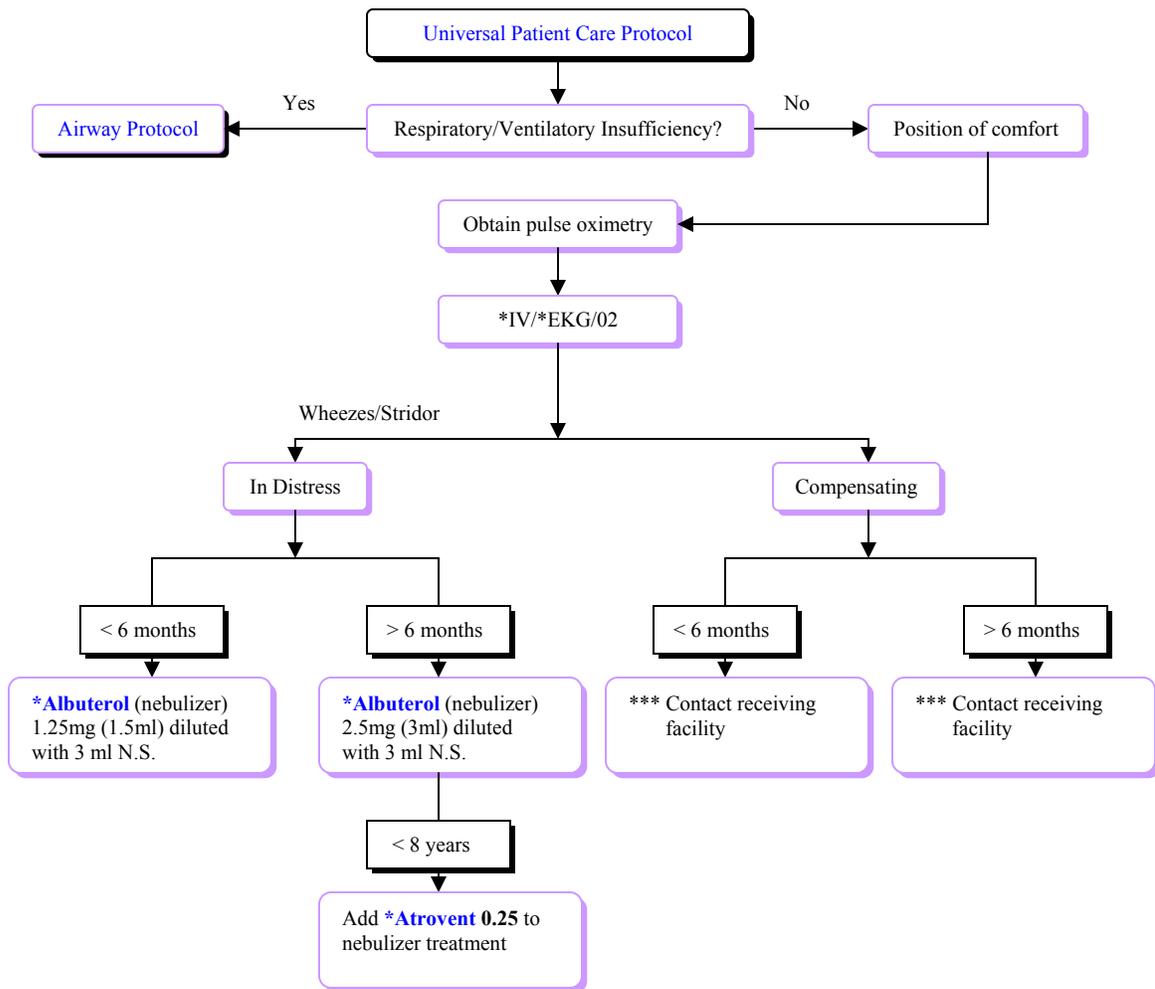
- a. Connect Buretrol to NS.
- b. Fill chamber to 50 ml, but **do not** flush tubing.
- c. Calculate $6 \times \text{pt wt (kg)}$. This will equal the mg to add to Buretrol.
[Example: pt wt of 10 kg. $6 \times 10 = 60 \text{ mg} = 1.5 \text{ ml of Dopamine.}$]
- d. Use either the 1 ml or the 3 ml syringe to accurately draw up the calculated dose of dopamine.
- e. Add the Dopamine to the 50 ml in the Buretrol chamber.
- f. Fill the chamber with NS to the 100 ml mark.
- g. Flush the tubing.
- h. Connect to the primary IV or IO line.

Infusing this mixture at 1 ml/h (or 1 ugtt/min) will deliver 1 ug/kg/min.

The dosage range for Dopamine is 2–20 ug/kg/min

Example: 10 kg pt. $6 \times 10 = 60 \text{ mg} = 1.5 \text{ ml of Dopamine}$ to be added to the Buretrol, then diluted to 100 ml of NS. Starting the drip at 5 ug/kg/min will be 5 uggtt/min (or 1 gtt every 12 seconds).

PEDIATRIC RESPIRATORY DISTRESS (Bronchospasm, Reactive Airway Disease)



- **Do not** force a child into a position; they will protect their airway by their body position
- The most important component of respiratory distress is airway control
- Epiglottitis typically affects children > 2 years of age. It is bacterial, with fever, rapid onset, possible stridor, patient wants to sit up to keep airway open, and drooling is common. Airway manipulation may worsen the condition.

PEDIATRIC TRANSPORT SAFETY PROTOCOL

Newborn, Infant and Child Transport Safety Protocols

Ambulances are designed to transport sick and injured patients while delivering emergency medical care en route. When children are involved in the rescue incident and their adult caregiver is being transported, we should make every effort to locate another responsible adult who can transport the child via a private owner's vehicle.

If that is not possible, you should make every attempt, using whatever equipment is available, to secure the child for transport in our rescue units.

Transporting pediatric patients or passengers on the adult patients' or parents' laps will not be permitted.

Securing a pediatric rider using a single seatbelt is a minimal procedure. Transporting the pediatric patient or rider in their car safety seat secured to the ambulance cot or the captain seat is the recommended means of transport.

Any restraints used should not interfere with necessary assessment and treatment protocols.

Pasco County Fire Rescue Pediatric Transport Tools Available:

1. *Ferno Pedi Mate*: For children between 10-40 pounds. Refer to Manufacturer's User Manual for detailed instructions. This requires the use of the ambulance cot and can not be used for newborns.
2. *LSP Infant/Pediatric Immobilization Board*: A total body immobilization device. For newborns and children up to 75 pounds.
3. *Infant Car Bed*: For newborns and young children up to 20 pounds. These are stored at Stations 10, 11, 23, 24, and. Refer to the Manufacturer's User Manual prior to use.
4. *Convertible Infant/Child Safety Seat*: For children between 5-40 pounds. Refer to the Manufacturer's User Manual for detailed instructions.
5. *Hi-Bac Child Safety Seat*: Hi-Bac Child Safety Seat for un-injured children between 20-50, (1580 Seat) 5-point belting for an uninjured child.

Note: The 1850 seat is for children that weigh between 20 and 50 pounds and are 28 to 47 inches tall and capable of sitting upright alone. IMPORTANT! This is NOT AN INFANT SEAT! It is NOT for use by children less than 1-year old or those that do NOT meet the weight, height, and capability requirements.

PEDIATRIC SEDATION

As with any patient, some emergent and life saving procedures applied to the pediatric patient may be noxious and untowardly stimulating. It may be necessary to control the pediatric patient's response and reaction to these procedures in order to insure their timely and successful application.

Indications:

1. Cardioversion of a conscious child.
2. Endotracheal intubation of a semiconscious and/or agitated child needing emergent airway control.
3. Manipulation of a severely angulated extremity fracture in order to apply an appropriated splint.

NOTE: Versed (midazolam) will not be administered to neonates.

How Supplied:

Versed (midazolam) comes in a 1 ml vial containing 5 mg. This equals 1 mg per 0.2 ml.

Dosage:

0.1 mg/kg IV/IO/PR over two minutes.

Examples: 15 kg child $15 \text{ kg} \times 0.1 \text{ mg/kg} = 1.5 \text{ mg}$

$1.5 \text{ mg} = 0.3 \text{ ml}$

25 kg child $25 \text{ kg} \times 0.1 \text{ mg/kg} = 2.5 \text{ mg}$

$2.5 \text{ mg} = 0.5 \text{ ml}$

Procedure:

1. Patient's weight will be estimated through use of the Broselow Tape.
2. Pulse oximeter and EKG monitors will be attached to the patient.
3. Baseline vitals (BP, P, R, EKG, and SaO₂) will be recorded.
4. IV access will be established as per protocol if not previously done.
5. Airway and ventilatory maintenance equipment will be made ready.
6. All equipment necessary for the special procedure will be made ready.
7. The dosage of Versed (midazolam) will be calculated.
8. The dosage of Versed (midazolam) will be drawn into a syringe.
9. The Versed (midazolam) will be administered IV slowly over two minutes.
10. Once the signs of sedation are observed the procedure should be performed without delay.
11. The patient must be monitored closely for signs of respiratory depression and appropriate interventions taken to ensure adequate ventilation and vitals are maintained.

Vital signs are to be obtained and recorded every five minutes while the patient shows signs of sedation.

PEDIATRIC FEVER

Universal Patient Care Protocol

Obtain history from parent. Make note of recent onset of cold or flu-like symptoms. Get a description of the seizure (duration, movements, etc.). Ask the parent if he/she has taken the child's temperature with a thermometer (when, where, and what was it)? Is the child on any medication, etc? **Document the amount of Acetaminophen and/or Ibuprofen in the last five hours and the last 24 hours.**

Keep in mind, many parents will report that their child has a fever when in fact they are going by their sense of touch and have not used a thermometer. Most parents obtain axillary temperatures on infants and toddlers, Remember, axillary temperatures are two degrees less than the child's rectal temperature, a more accurate measure of the core temperature.

If the child feels unusually warm to you, take the temperature. Any child that presents with a high body temperature and has been reported to have seized should have their temperature taken.

Children with temperatures are very often under-medicated by parents with antipyretics. The most common antipyretics now used are **Acetaminophen** (Tylenol, Tempra, Datriol, etc.) and **Ibuprofen** (Pediaprofen, Children's Motrin).

Remove all clothing except diaper or underwear, but prevent child from chilling. If the child chills, this causes shivering which increases body temperature

Cool the child with tepid (lukewarm) sponge baths. Prevent the child from chilling by covering the parts of the body not being sponged lightly

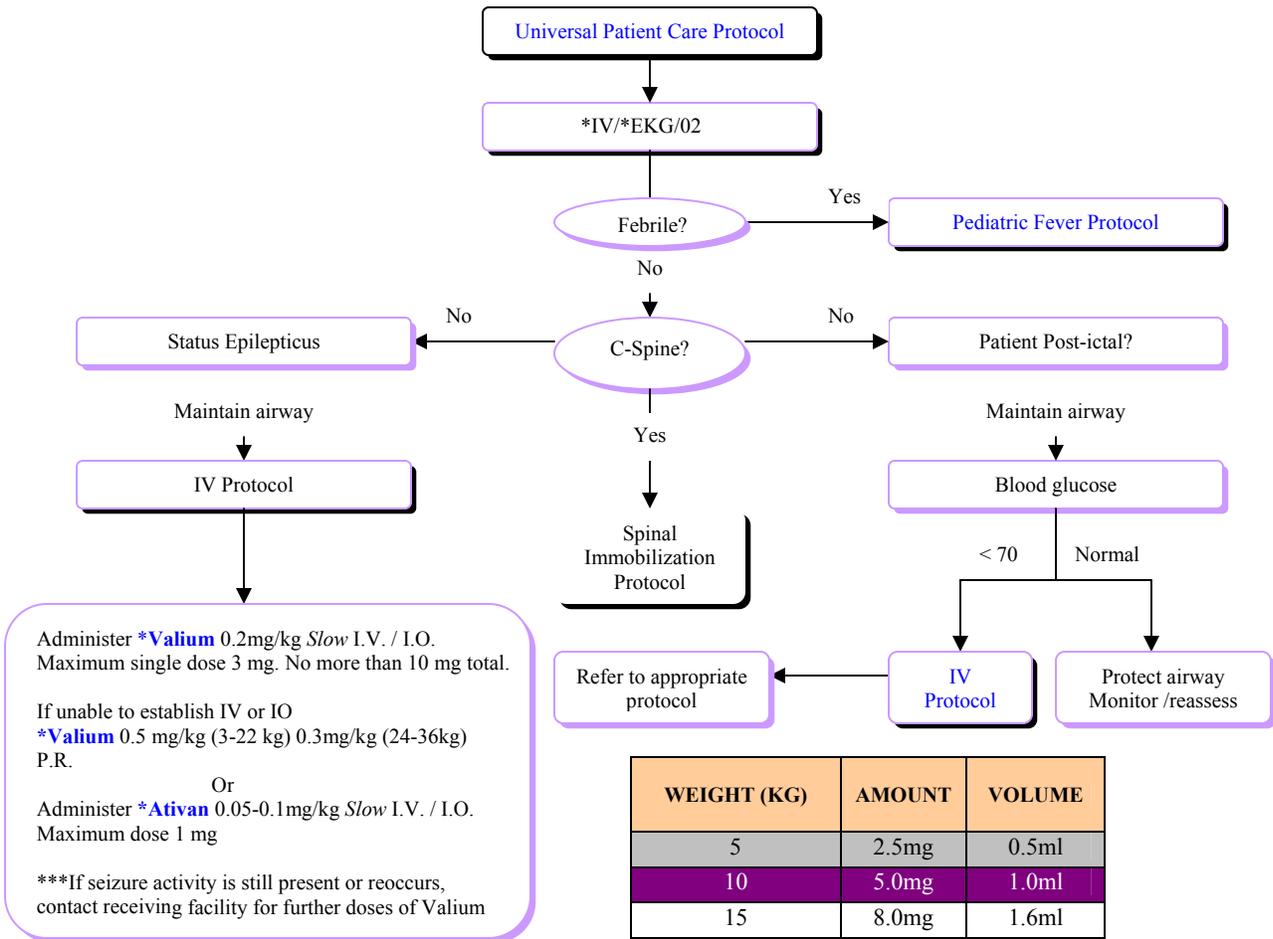
Transport quietly and recheck temperature.

≥ 101.4 F orally

If patient has not received Acetaminophen at ≥ 75 mg/kg in the last 24 hours or ≥ 15 mg/kg in the last 4 hours and no recent history of vomiting.

Administer ***Tylenol** (acetaminophen) 15 mg/kg P.O./Rectally

PEDIATRIC SEIZURE



WEIGHT (KG)	AMOUNT	VOLUME
5	2.5mg	0.5ml
10	5.0mg	1.0ml
15	8.0mg	1.6ml
20	10mg	2.0ml

Valium (10mg/2ml) Dose 0.5mg/kg PR

WEIGHT (KG)	AMOUNT	VOLUME
5	1.0mg	0.2ml
10	2.0mg	0.4ml
15	3.0mg	0.6ml
20	4.0mg	0.8ml

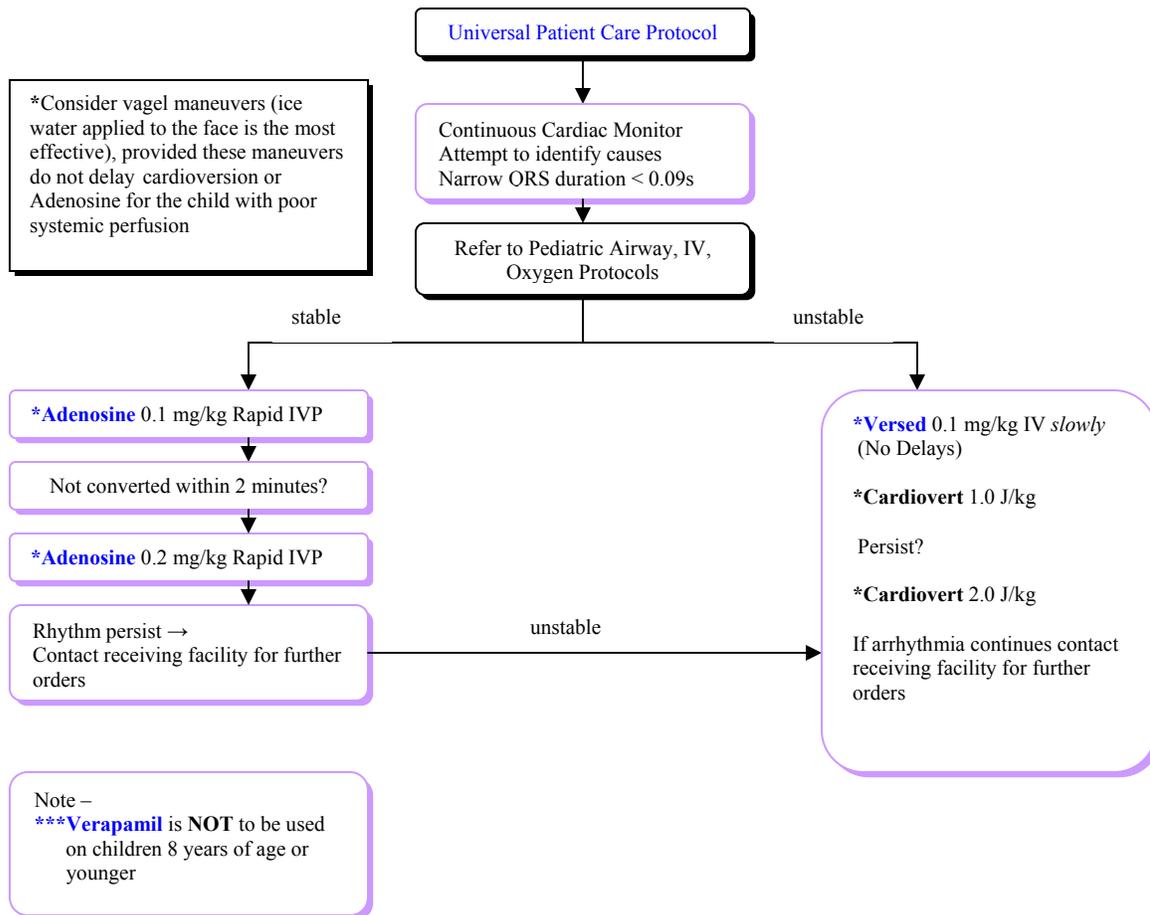
Valium (10mg/2ml) Dose 0.2mg/kg IV

WEIGHT (KG)	AMOUNT	VOLUME
5	0.5mg	0.25ml
10	1.0mg	0.5ml
15	.5mg	.75ml
20	2.0mg	1.0ml

Ativan (2mg/ml) Dose 0.1mg/kg IV

- Refer to weight-base resuscitation tape (Broselow) for more details
- Anticipate and prepare for respiratory depression following administration of Valium and Ativan
- Valium is a caustic medication that precipitates when mixed with other medications, use caution during administration

PEDIATRIC SUPRAVENTRICULAR TACHYCARDIA



Supraventricular tachycardia (SVT) is the most common arrhythmia producing cardiovascular instability during infancy, and it can occur throughout the pediatric years. Narrow QRS complexes with rates above 220/min. in a symptomatic patient is considered SVT

PEDIATRIC VITALS

PEDIATRIC VITAL SIGNS—for the healthy at rest child:

Age	Pulse	Resp. Rate	Normal Systolic BP	Hypotensive Systolic BP
Newborn	120–180	30–50	60– 80	<60
1 month	100–160	25–35	75–100	<70
6 months	100–160	20–30	75–100	<70
1–3 y/o	100–130	20–25	75–100	<70 + 2 times their age
4–5 y/o	80–120	15–25	80–110	<70 + 2 times their age
6–9 y/o	55–100	12–20	80–120	<70 + 2 times their age
≥ 10 y/o	60–100	12–16	90–120	<90

ESTIMATION OF WEIGHT BASED ON AGE:

Newborn	3 kg	3 y/o	15 kg	12 y/o	40 kg
3 mo.	6 kg	5 y/o	20 kg	14 y/o	50 kg
6 mo.	7 kg	8 y/o	25 kg		
12 mo.	10 kg	10 y/o	30 kg		

For the pediatric patient over the age of two, the standard Glasgow Coma Scale can be used. For the child younger than two, use the modified format listed below. Record the assessed number values in the run report as usual

Best eye response: (E)

1. No eye opening
2. Eye opening to pain
3. Eye opening to speech
4. Eyes opening spontaneously

Best verbal response: (V)

1. No verbal response
2. Infant moans to pain
3. Infant cries to pain
4. Infant is irritable and continually cries
5. Infant coos or babbles (normal activity)

Best motor responses: (M)

1. No motor response
2. Extension to pain (decerebrate response)
3. Abnormal flexion to pain for an infant (decorticate response)
4. Infant withdraws from pain
5. Infant withdraws from touch
6. Infant moves spontaneously or purposefully

CHILDBIRTH / LABOR

Rapid initial assessment

It is very important to evaluate, stabilize, and transport as soon as possible.

Position of comfort

Visually inspect the perineum for crowning

Prepare for delivery
IV KVO

1. Due date?
2. First day of last menstrual period?
3. Any prenatal care?
4. Previa and gravida? Complications?
5. Any pre-arrangements? What facility?
6. Note frequency and duration of contractions.
7. Attempt to record fetal heart rate.
8. Estimate and control blood loss.

Figure 1: APGAR Scoring

SIGN/SCORE	0	1	2
Appearance	Blue/pale	Body pink, extremities blue	Pink
Pulse Rate	None	< 100	> 100
Grimace	None	Grimace	Cries
Activity	Limp	Some	Active
Respiration	Absent	Slow/irregular	Strong cry

Not evident

Position the patient
left lateral recumbent

Transport to the most appropriate
OB facility

Imminent

- Control presenting part DO NOT push or pull
- Upon delivery of head, clear airway with bulb syringe, check for cord constriction around fetus' neck and relieve pressure.
- After cord pulsations stop, place clamps 3-4 inches from abdomen, 1 inch apart, and cut cord.
- Assess and record APGAR 1 & 5 minutes
- Keep infant warm
- Allow infant to nurse
- Monitor mom for bleeding
- Deliver the placenta
- Perform gentle uterine massage to control bleeding.
- After placenta is expelled, place in container and transport to hospital

*Unless child or mother requires resuscitation
transport infant and mother together*

When the infant has been delivered, and before going any further, STOP and evaluate the infant (based on the APGAR Rating System) at one and five minutes postpartum. This system analyzes the infants condition and dictates what additional aid is necessary.

BE PREPARED TO RELAY THE APGAR RATINGS TO THE SUPERVISING PHYSICIAN

All field deliveries or active labor patients not in distress should be taken to the most appropriate O/B facility
Any patient 20 weeks or greater will be delivered to the OB department.

CHILDBIRTH EMERGENCY (Abnormal)

Rapid patient assessment
ABC'S
02,* IV, *EKG per protocol

Visually inspect perineum for crowning

ABNORMAL PRESENTATION

- < 36 weeks gestation
- Severe bleeding
- Multiple Gestation
- Prolapsed umbilical cord

If prolapsed cord

The baby's supply will be compromised therefore immediately insert a gloved hand into the vagina and lift the baby's head off of the umbilical cord.

If breech presentation

Support the newborn's trunk as it delivers. If the head does not follow immediately, Make an airway for the baby by inserting a gloved hand into the vagina and lifting the baby's face from the floor of the birth canal.

If suspected placenta previa or abruptio placenta

Maintaining the mother's vital signs is the only real chance for survival of the baby

If premature delivery

Maintain body temperature and prepare for resuscitation

Rapid Transport

- Document all times (delivery, contractions, and length)
- Record APGAR at 1 and 5 minutes after birth
- After delivery, massaging the lower abdomen will promote uterine contraction and help to control post-partum bleeding
- If maternal seizure occurs contact receiving hospital

Unless child or mother requires resuscitation transport infant and mother together
(Consider 2nd Paramedic or Rescue if needed for multiple patients)

COMMON PEDIATRIC DRUG CALCULATIONS

WEIGHT (KG)	AMOUNT	VOLUME
5	0.5mg	0.25ml
10	1.0mg	0.5ml
15	1.5mg	0.75ml
20	2.0mg	1.0ml

Ativan (2mg/ml) Dose 0.1mg/kg IV

WEIGHT (KG)	AMOUNT	VOLUME
5	1.0mg	0.2ml
10	2.0mg	0.4ml
15	3.0mg	0.6ml
20	4.0mg	0.8ml

Valium (10mg/2ml) Dose 0.2mg/kg IV

Pediatric Pulseless Arrest (Amiodarone)			
Amiodarone 50mg/ml ONLY	Weight (kg)	Dose (5mg/kg)	Volume (cc)
	5	25	0.5
	10	50	1
	15	75	1.5
	20	100	2
	25	125	2.5
	30	150	3
	35	175	3.5
	40	200	4
	45	225	4.5
	50	250	5
	55	275	5.5
60+	300	6	

Pediatric Dopamine Infusion 2-20mcg/kg/min (using a 60gtt set) 1600mcg/ml												
mcg/kg/min	2.5	5	10	20	30	40	50	60	70	80	90	100
2mcg	*	*	*	1.5	2	3	4	5	5	6	7	8
5mcg	*	1	2	4	6	8	9	11	13	15	17	19
10mcg	1	2	4	8	11	15	19	23	26	30	34	38
15mcg	1.4	3	6	11	17	23	28	34	39	45	51	56
20mcg	2	4	8	15	23	30	38	45	53	60	68	75

FOR 800MG/ML CONCENTRATION MULTIPLY X 2

Pediatric Tylenol Dosing Chart

Wt (kg)	Dosage
5	75mg / 2.3ml
10	150mg / 4.7ml
15	225mg / 7.0ml
20	300mg / 9.3ml
25	375mg / 11.7ml
30	450mg / 14 ml

(Rectal Dose)

PT WEIGHT (KG)	AMOUNT	VOLUME
5	2.5mg	0.5ml
10	5.0mg	1.0ml
15	8.0mg	1.6ml
20	10mg	2.0ml

Valium (10mg/2ml) Dose 0.5mg/kg PR

PEDIATRIC NAUSEA AND VOMITING

Universal Patient Care Protocol

Vitals, Pulse Oximetry,
*EKG
Psychological Support

< 40 mg/dl neonates
< 60 mg/dl infant
< 70 mg/dl child

Blood Glucose

> 300 mg/dl / S&S of Dehydration

*IV
*Dextrose 25% 0.5G/kg IV/IO
Or
*Glucagon 0.03mg/kg (max 1 mg)
(If not IV access)

*IV, Normal Saline
20ml/kg

Normal

Severe nausea and/or vomiting

YES

NO

*IV, Consider Zofran 0.1mg/kg slow IV push

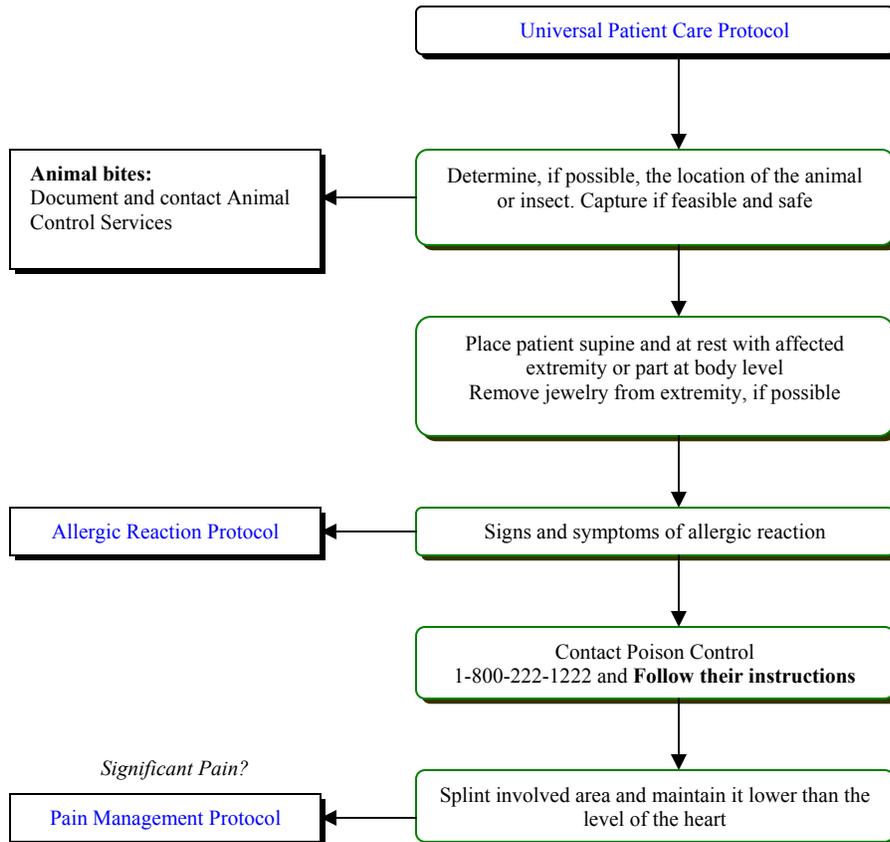
Transport if required

ENVIRONMENTAL



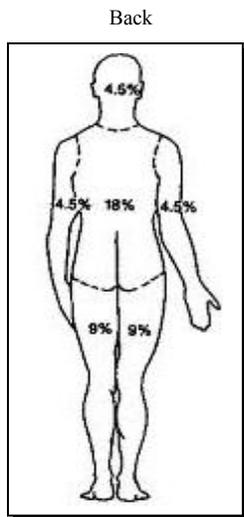
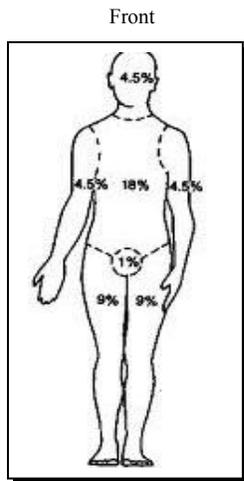
BITES/ENVENOMATIONS

Animals - Reptiles - Insects



Human bites are much worse than animal bites due to mouth bacteria
 Carnivore bites are more likely to become infected and have a risk of rabies exposure
 Cat bites may progress to infection rapidly due to a specific bacteria (*Pasteurella multocoda*)
 Coral snake bites are rare, but extremely toxic. *Red on yellow kills a fella, Red on black safe for jack.*
 Amount of envenomation is variable
 Black Widow essentially painless, but developing abdominal and muscular pain within hours of envenomation
 Brown Recluse essentially painless, but tissue necrosis develops over the next few days
 If no pain envenomation is unlikely
 Evidence of infection: swelling, redness, drainage, fever, red streaks proximal to the wound

THERMAL BURNS



Rule of nines

Universal Patient Care Protocol

Assure that the burning process has stopped;

1. Remove clothing that may be smoldering
2. Remove jewelry that may constrict circulation
3. Cover wounds with sterile dressings
4. Wrap patient in clean dry sheets
5. Cover with a blanket

Assess the extent of Body Surface Area (BSA) using the rule of nines.

Note: When calculating and reporting percent (%) BSA, only calculate second and third degree for assessment of severity purposes.



3rd degree/full thickness

2nd degree/partial thickness

1st degree/superficial

>10%

≥ 15%

Airway Protocol

Cover with dry sterile sheets or dressings

Establish *IV/*EKG

Pain Management Protocol

Transport ASAP

Cool the wound with Normal Saline and cover with a dry sterile dressing

Transport

Criteria for Helicopter Transport

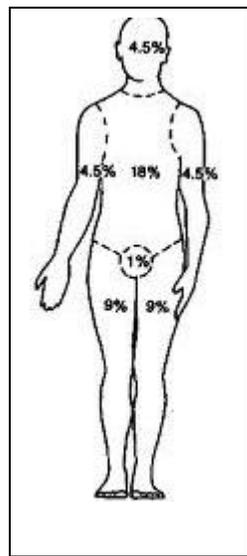
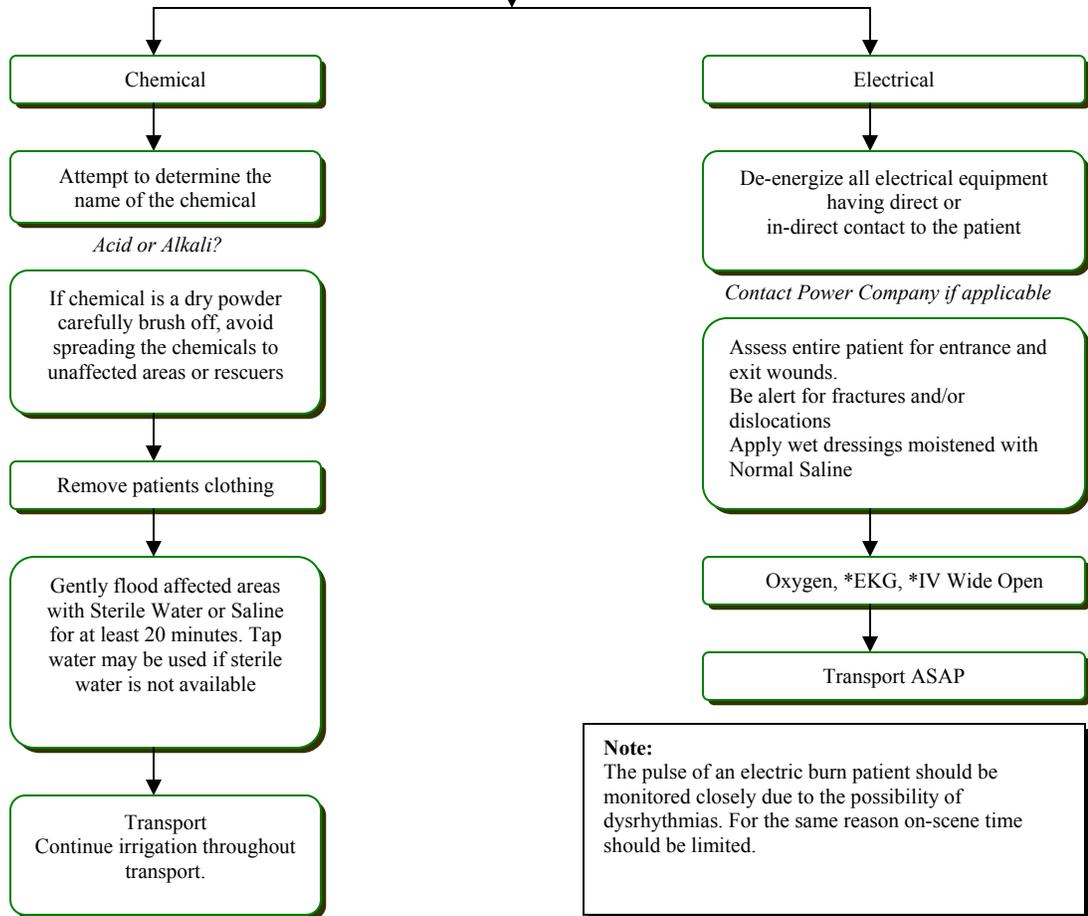
1. 2nd and 3rd degree >15%
2. 3rd degree >10%
3. Burns involving the respiratory tract
4. High voltage electrical injury
5. Compromising preexisting condition
6. Burns complicated w/major trauma

Critical Burns: > 25% BSA, 3^o burns >10% BSA, 3^o burns to face, eyes, hands, feet, electrical burns, respiratory burns, deep chemical burns, burns to geriatric patients or patients with chronic diseases, Burns associated with major trauma.

Hypovolemia and reduced LOC are rarely caused by burn injuries initially. Consider other causes. Do Not overlook the possibility of multi-system trauma.

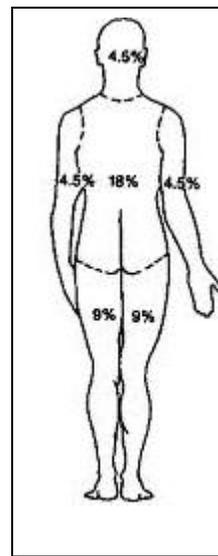
NONTHERMAL BURNS CHEMICAL/ELECTRICAL

Universal Patient Care Protocol



Front

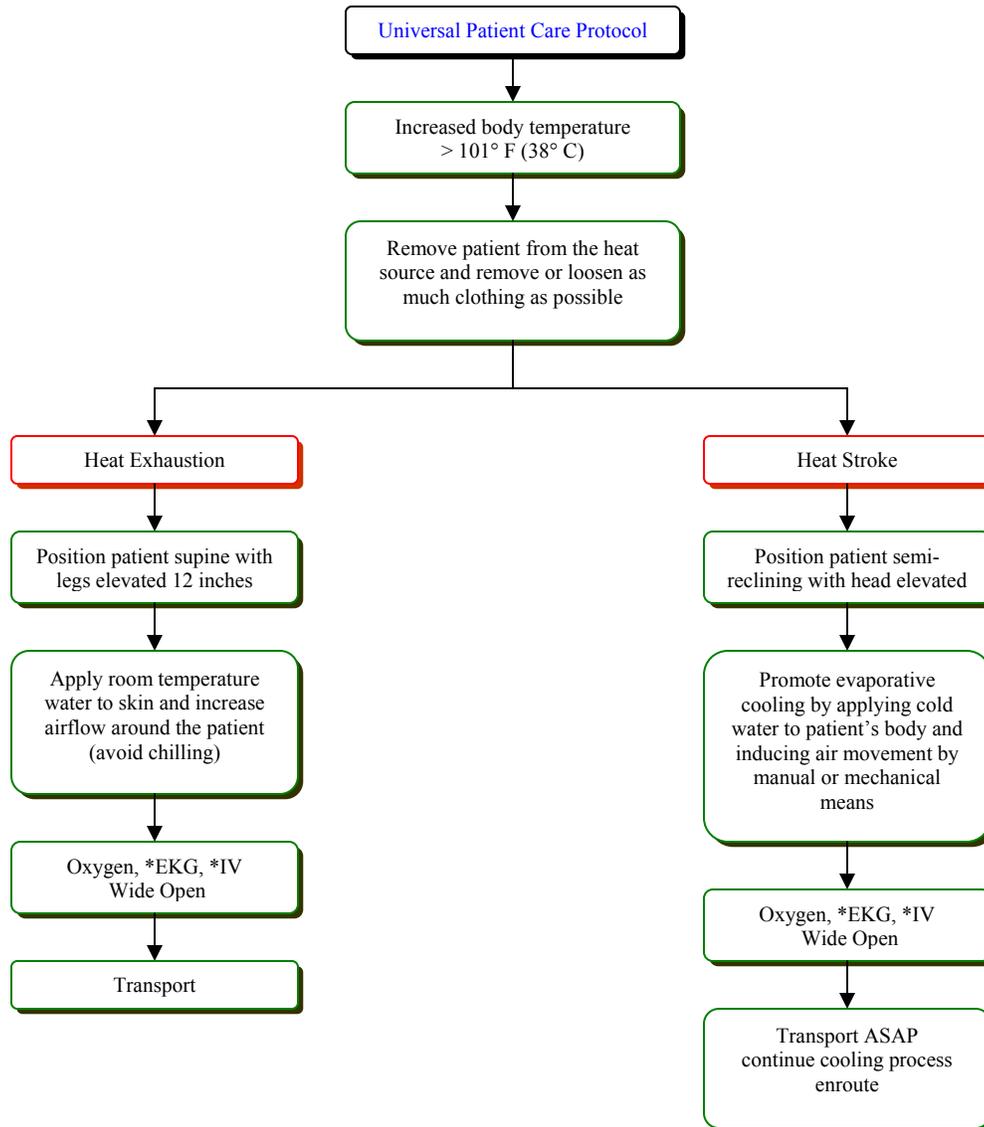
Rule of Nines



Back

HYPERTHERMIA

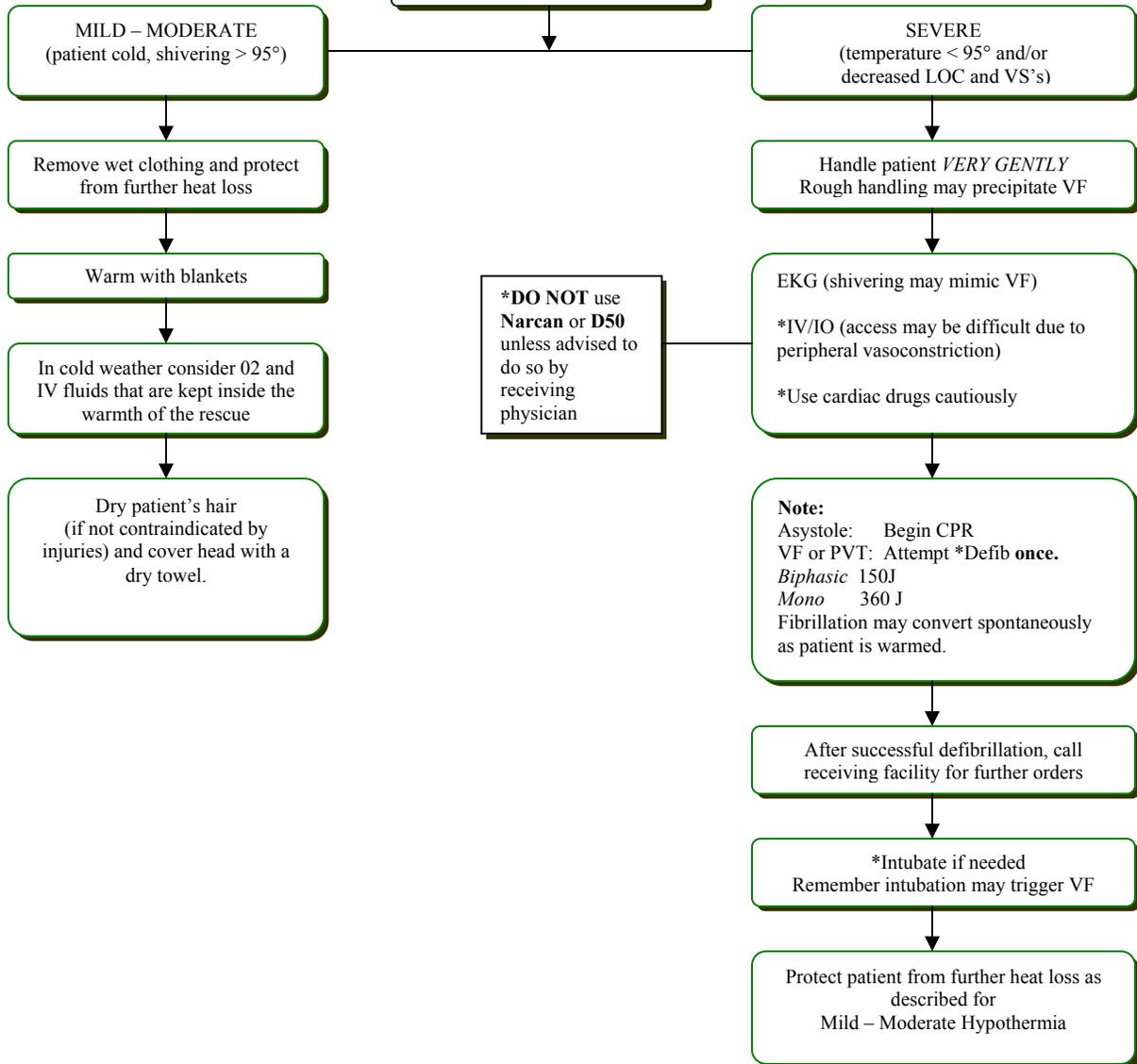
Heat Exhaustion/Heat Stroke



Heat Cramps are benign muscle cramping secondary to dehydration and is not associated with an elevated temperature
Heat Exhaustion is caused by loss of body fluid and salt from sweating and decreased circulation to the brain and other vital organs.
Heat Stroke is caused by failure of the body's temperature regulating mechanisms, (>104° F)
 Extremes in age are more prone to heat emergencies (i.e. young and old)
 Predisposed by use of: tricyclic antidepressants, phenothiazines, anticholinergic medications, and alcohol
 Cocaine, Amphetamines, and Salicylates may elevate body temperature
 Sweating generally disappears as body temperature rises above 104°F

HYPOTHERMIA

Universal Patient Care Protocol



NO PATIENT IS DEAD UNTIL THEY ARE WARM AND DEAD

Hypothermia is defined as a core temperature $\leq 95^\circ\text{F}$ (35°C)

Shivering stops below 90°F (32°C)

Hypothermia may produce severe hypotension

If available hot packs should be placed in the armpits and groin areas (do not place directly on the skin)

With temperatures below 88°F (31°C) VF is a common cause of death. Handling patients gently may prevent this.

Hypothermic induced VF rarely responds to defibrillation

POISONING/OD

Ingestion

Universal Patient Care Protocol

Determine and record:

1. What is the substance?
2. How much was ingested?
3. When was it ingested?
4. Was it ingested with alcohol?
5. Did the patient vomit?
6. Was ingestion intentional?
7. Patient weight or estimate?

Oxygen, *IV, *EKG

Contact Poison Control
1-800-222-1222 for definitive
recommendations and follow their
advice. If unable to make contact,
notify the receiving hospital

Transport

In Organophosphate Poisoning

If symptomatic,

Administer ***Atropine** 2.0mg IV; repeat dose as
needed to slow secretions

Do not rely on patient history of ingestion, especially in suicide attempts
Bring bottles, contents, and emesis to ER.
Document substance taken, method of administration, amount, and time

CARBON MONOXIDE POISONING

Carbon monoxide poisoning is a dangerous condition that can be encountered in many environments throughout the year. Though it cannot be definitively diagnosed in the field, it should be considered when encountering the symptoms whether or not there is a readily identifiable source of CO emissions.

It should be noted that some individuals will have greater susceptibility to CO poisoning and should be considered particularly “at risk” when being evaluated. Such individuals include: pregnant women, infants or children under the age of 6 years, and individuals with a history of chronic heart disease, anemia, or respiratory problems (e.g., angina, COPD, etc.).

Additionally, consideration should be given to the fact that smokers routinely have elevated baseline blood CO levels. This factor can vary widely from one individual to another; a margin of 4% should be allowed for smokers as reflected in the following guidelines.

Treatment & Transport

All patients with probable or suspect CO poisoning should be transported to the nearest appropriate hospital facility based on their presenting signs/symptoms. Any signs or symptoms (e.g., chest pain, altered mental status) should be assessed and treated according to applicable Pasco County Protocols and Standing Orders.

Suspected or probable CO poisoning patients should receive oxygen via the highest flow device tolerated.

PROBABLE CASE

- Any patient (non-smoker) having a SpCO \geq 9%, regardless of symptoms
- Any patient (smoker) having a SpCO \geq 12%, regardless of symptoms
- Any “at risk” patient (non-smoker) having a SpCO \geq 4%, regardless of symptoms
- Any “at risk” patient (smoker) having a SpCO \geq 8%, regardless of symptoms
- Any patient with CO symptoms and a confirmed environmental source of CO exposure
- Any patient with signs/symptoms and history consistent with CO poisoning, with or without a confirmed environmental source of CO exposure
 1. Post structure fire victims
 2. Toxic inhalations
 3. Burns
 4. Smoke inhalation
 5. Firefighter rehabilitation
 6. Unconscious/Unknown etiology
 7. Paramedic discretion

Symptoms of severe CO poisoning include malaise, shortness of breath, headache, nausea, chest pain, irritability, ataxia, altered mental status, other neurologic symptoms, loss of consciousness, coma, and death; signs include tachycardia, tachypnea, hypotension, various neurologic findings including impaired memory, cognitive and sensory disturbances; metabolic acidosis, arrhythmias, myocardial ischemia or infarction, and non cardiogenic pulmonary edema, although any organ system might be involved.

SCUBA RELATED

Universal Patient Care Protocol

Trauma and Hypovolemic Supportive Care

Oxygen 15 lpm NRB
EKG, IV KVO

Consider Hypothermic Protocol

Cold Patient?

Bring patient's dive log, dive equipment
(including air tanks for analysis), and diving
buddy
(for details and possibly treatment)

Positioning of the injured diver:

1. The diver with mild symptoms, who is fully alert and in no distress, should be kept horizontal in a comfortable position.
2. The diver with serious symptoms, such as severe fatigue, headache, severe pain, weakness, paralysis, or altered mentation, requires a more controlled position

The position of choice is the recovery position.
Place the diver on his/or hers left side

Document:

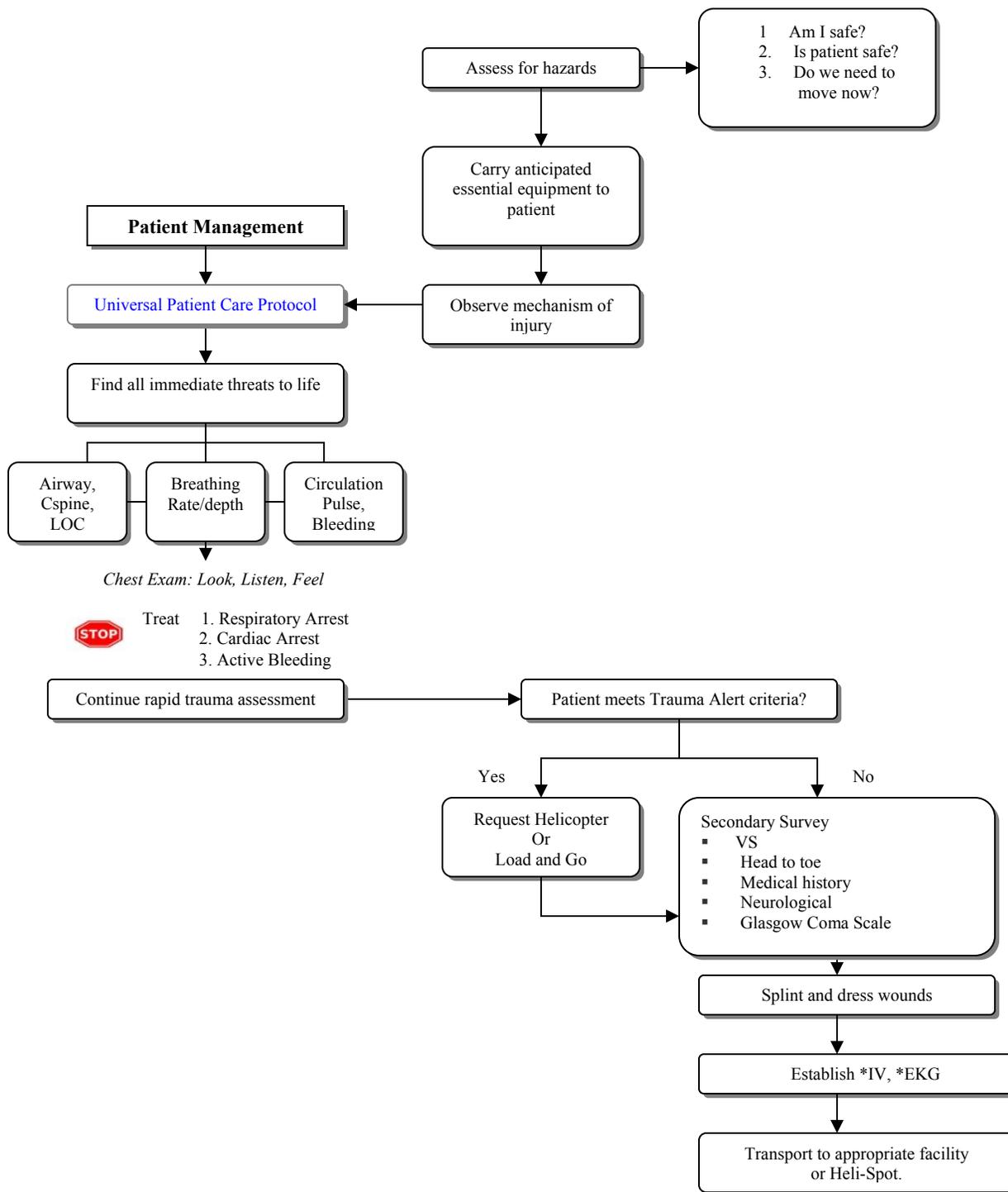
- Number of dives over the last two (2) days
- Air travel within the last day
- Maximum depth of each dive (dive computer, buddy)
- Total time under water (dive computer, buddy)
- Mixture of compressed gases used
- Bring diver computer and buddy with the patient, if possible

The closest hospital that will accept patients needing emergency hyperbaric therapy is Florida Hospital in Orlando, Florida. Numerous regional hyperbaric facilities are available, but are not manned 24 hours a day. Because of distance and travel time it would be in the best interest of the patient to be transported by helicopter and the destination decision would then be transferred to the flight crew.

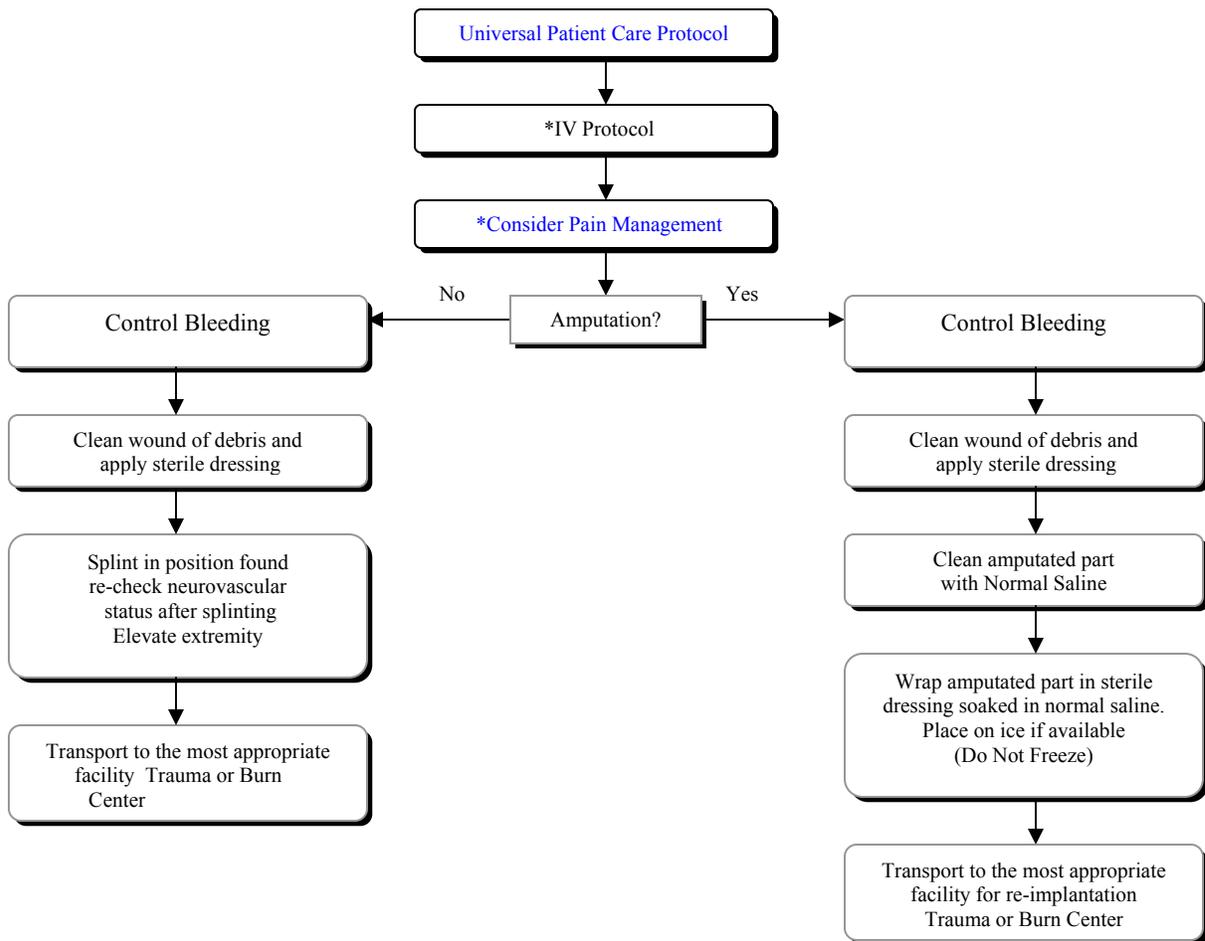
TRAUMA



TRAUMA ASSESSMENT

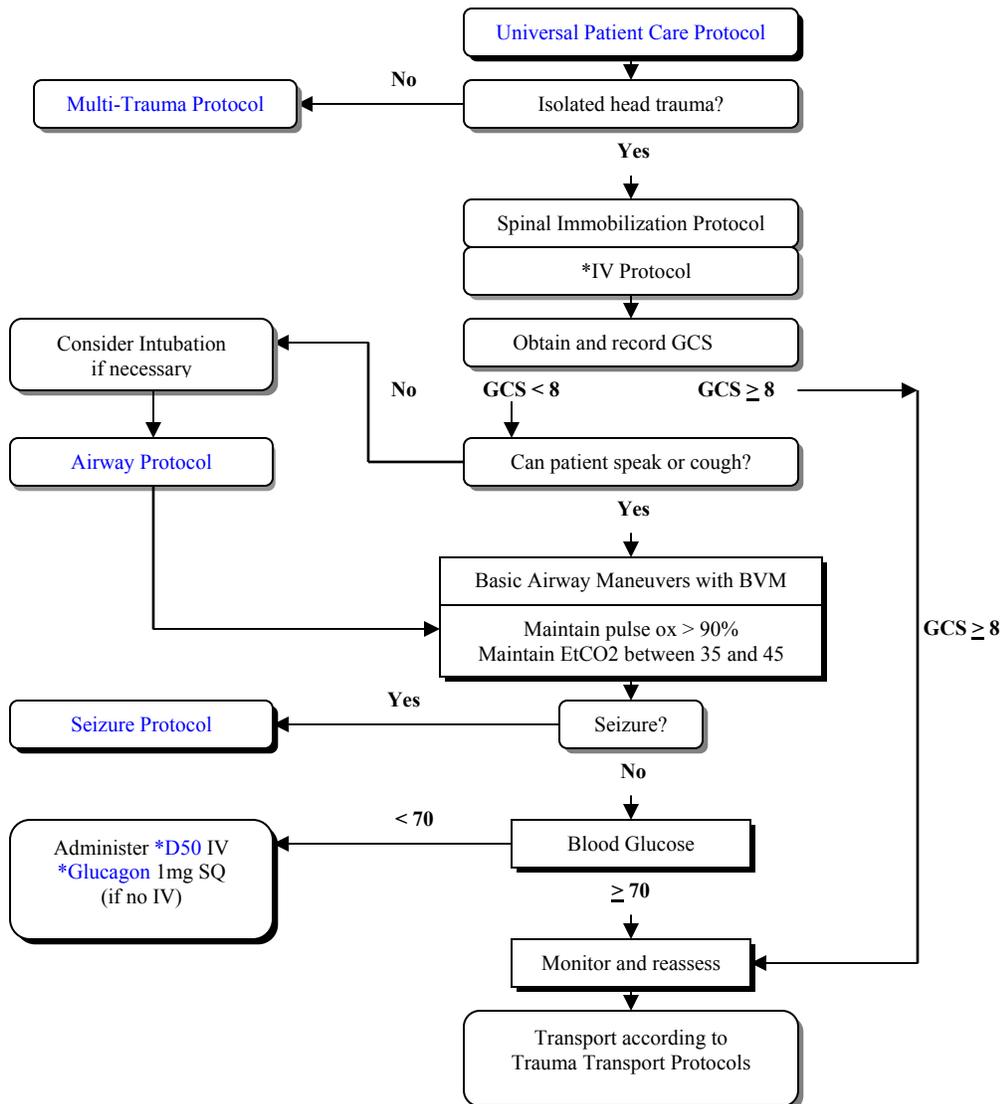


EXTREMITY TRAUMA



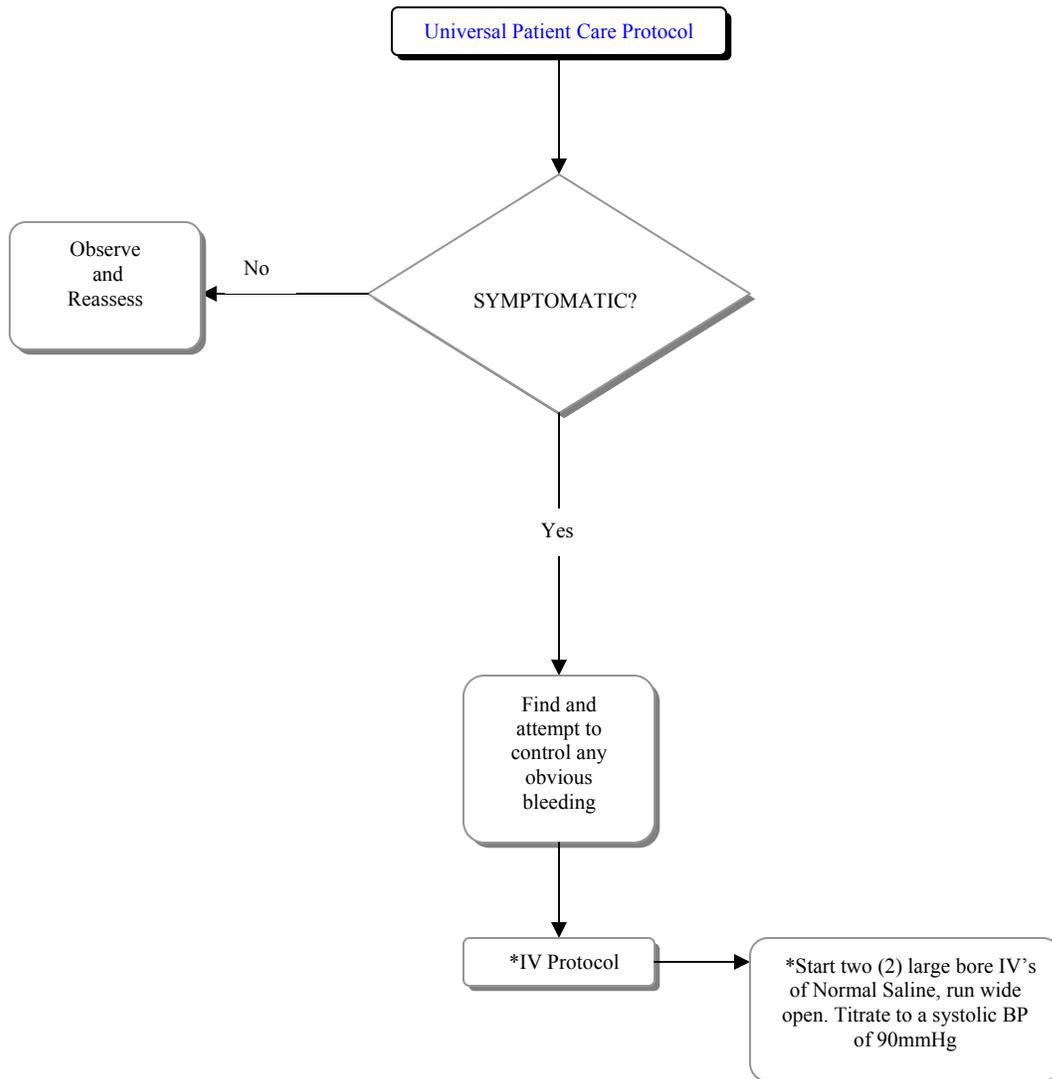
- With amputations, time is critical. Transport and notify receiving hospital immediately
- Hip dislocations and knee and elbow fractures/dislocations have a high incidence of vascular compromise
- Consider Traction Splint for Femur fractures
- Urgently transport any injury with vascular compromise
- Blood loss may be concealed or not apparent with extremity injuries
- Use of a tourniquet is painful, consider pain management, if appropriate
- A tourniquet may be left in place for up to 2 hours with little risk of permanent ischemic injury.
- Document and relay the time a tourniquet has been applied

HEAD TRAUMA



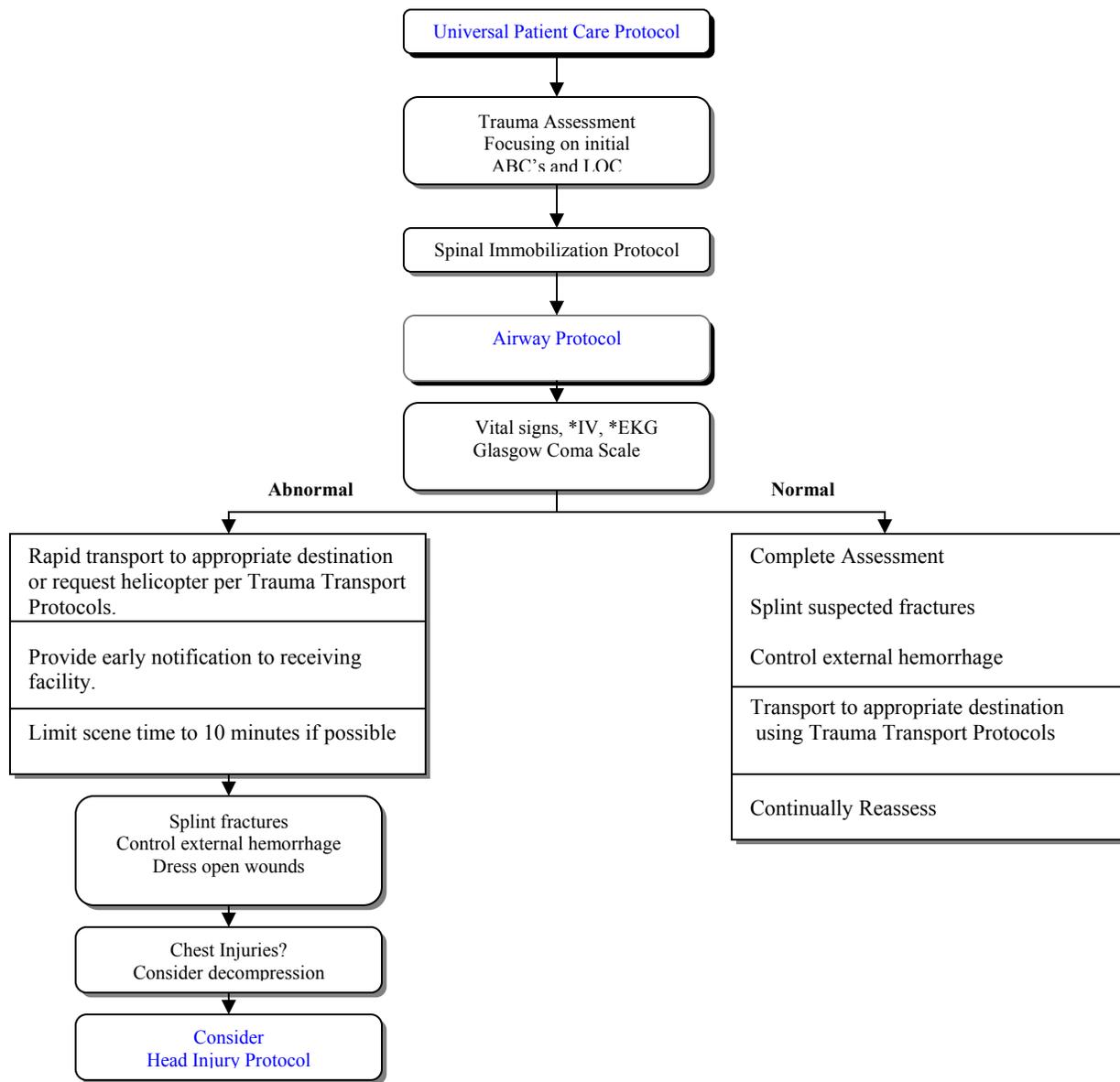
- The most important item to monitor and document is a change in level of consciousness
- Increased intracranial pressure may cause hypertension and bradycardia (Cushing's Response)
- Limit IV fluids unless patient is hypotensive
- Hypotension usually indicate injury or shock unrelated to the head injury and should be aggressively treated

HYPOTENSION / SHOCK TRAUMA



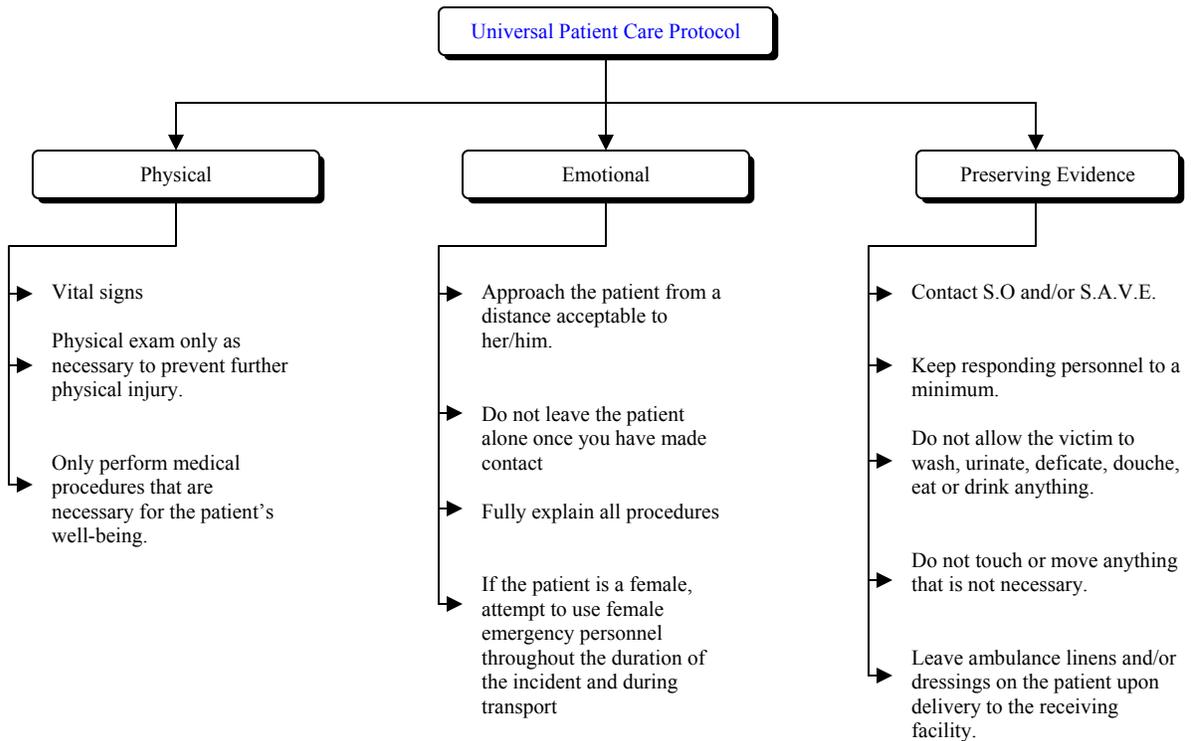
- Hypotension can be defined as a systolic blood pressure less than 100mmHg
- Consider all possible causes of shock and treat per appropriate protocol

MULTI-TRAUMA



Transport destination is based on Trauma Transport Protocols
Geriatric patients should be evaluated with a high index of suspicion. Often occult injuries are more difficult to recognized and patients can decompensate rapidly without warning

SEXUAL ASSAULT



Any case involving sexual assault allegations with a minor child (age 17 years or younger) must be reported to the State Abuse Hotline (1-800-96-ABUSE), Forensic sexual abuse exams for children less than 13 years of age are not completed by the S.A.V.E. team, they are completed the Child Protection Team. Law enforcement can not be excluded from any sexual abuse investigation for a victim under 18 years of age.

Any case involving sexual assault allegations with a vulnerable adult must be reported to the state abuse hotline (1-800-96-ABUSE). Examples of a vulnerable adult are someone over the age of 18 who is mentally disabled or an elderly person who is confused. Law enforcement can not be excluded from any sexual abuse investigation involving a victim who is a vulnerable adult.

SPINAL INJURY CONSIDERATIONS

Due to the high potential for permanent disability or death, great emphasis must be placed on competent spinal immobilization in the prehospital setting. The EMT/Paramedic must suspect spinal injury in many instances due to the frequent lack of signs and symptoms of spinal injury in patients with spinal injury. Deciding whether or not to immobilize is a decision based on history of the injury, physical findings, and judgment. There are guidelines on when to suspect spinal injuries. They are:

1. Motorcycle or vehicle accidents.
2. Fall from a height.
3. Diving injuries.
4. Unconscious patient of unknown etiology, whose body positioning suggests a mechanism by which a spinal injury may have occurred; i.e., a fall.
5. Head and facial injuries.
6. Cave-ins; explosions.
7. High energy impact.
8. Penetrating neck, chest, or abdominal trauma.
9. Electrocutions.
10. Mechanism of injury.

In making your decision of whether to immobilize or not, consider these points:

1. High energy forces are not needed to fracture the spine.
2. Many spinal injury patients do not complain of pain.
3. Patients who do not exhibit signs of paralysis or amnesia may still have spinal injuries. Paralysis, altered, or loss of sensation are signs of cord damage or pressure. Vertebrae damage may be present without cord damage. Vertebrae damage can become cord damage easily if the head and neck are not immobilized.
4. The patient who is walking and moving their arms and legs upon arrival on the scene may still have a spinal injury.
5. Injuries to the spinal cord occur in over 10 percent of all multiple trauma patients and in 15 percent to 20 percent of all serious head injury patients.

The decision of whether or not to immobilize the spine must be made immediately as the initial effort to open the airway usually manipulates the spine. When you suspect a spinal injury, you must immobilize according to Protocol. The mere application of a cervical collar does not immobilize the cervical spine. Applying a cervical collar suggests that a cervical injury is suspected even if the possibility is remote. If the EMT/ Paramedic does not follow through with complete immobilization, (s)he is not adequately splinting an injury that (s)he suggested has occurred.

SPINAL INJURY CONSIDERATIONS

It is difficult to take into consideration every possible position a patient can be found and who might need spinal immobilization. Although the process of immobilization may differ from patient to patient, there are still general guidelines to follow:

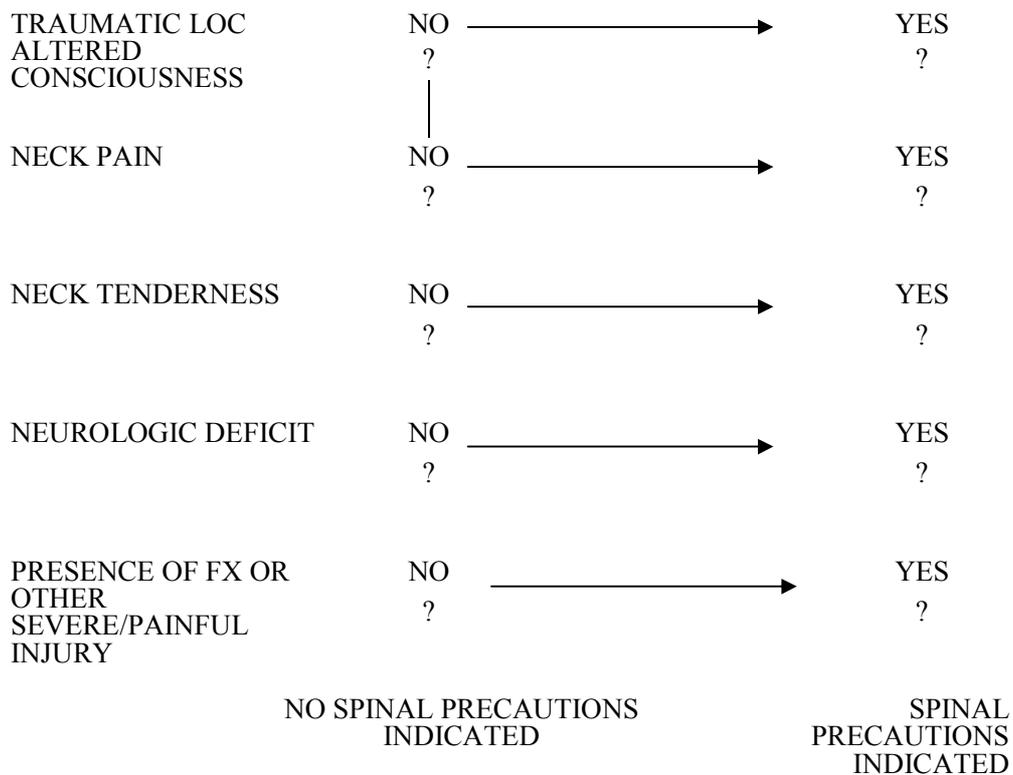
1. The neck should be examined prior to covering it with a cervical collar.
2. To adequately immobilize the cervical spine, the head must be secured to the back board (or scoop stretcher) and the torso must be strapped to the back board. This immobilization of "above and below" the injury prevents the cervical spine from movement.
3. Patients found with a deformed or angulated c-spine should be immobilized as close to the position found as possible. The only movements acceptable are those to align the head in the neutral position if the airway appears compromised.

We **Xc** bch position the head to fit the cervical collar. Avoid manipulating the patient's spine so you can immobilize it.

4. Fill the voids behind the neck, lower back, and knees with a soft cushion; i.e. towel. Pad bony areas resting on hard surfaces, if practical.
5. Strap the chest, hips, and knees and then the head. Fill the voids, and secure the hands.

SPINAL IMMOBILIZATION CRITERIA

The following decision tree is derived from "high yield" and "low risk" criterion as presented in the included references.



EMT—Paramedic discretion.

This is to be used as a guideline in deciding whether or not to immobilize a patient.

PROCEDURES



KING LTS-D AIRWAY

King LTS-D™ AIRWAY

Description:

The King LTS-D™ Supraglottic Airway is an airway adjunct for rapid, blind insertion into the esophagus for airway control and to facilitate ventilation. This device incorporates dual lumens. The primary lumen facilitates ventilation and the second is designed for passage of a gastric tube. The airway incorporates two balloon cuffs accessed by a single, inflation valve. The distal cuff isolates the laryngopharynx from the esophagus and the proximal balloon (larger balloon) isolates the laryngopharynx from the oropharynx and the nasopharynx.

Three sizes of the King LTS-D™ airway will be available:

1. Size 3 for patients between 4-5 feet tall (yellow connector).
2. Size 4 for patients 5-6 feet tall (red connector).
3. Size 5 for patients greater than 6 feet tall (purple connector).

King LTS-D™ Size	Patient Size (Height)	Connector Color	Outer Diameter	Inner Diameter	Gastric Tube Size	Inflation Volume
3	4-5 Feet	Yellow	18 mm	10 mm	18 Fr	45-60 ml
4	5-6 Feet	Red	18 mm	10 mm	18 Fr	60-80 ml
5	>6 feet	Purple	18 mm	10 mm	18 Fr	70-90 ml

Indication:

To be used as an airway adjunct for unconscious, apneic patients when:

1. To facilitate ventilation and/or for control of the airway in the critically ill or injured patient who cannot be easily or quickly intubated with an endotracheal tube.
2. A paramedic is not available and an EMT deems its use is appropriate for airway control and/or ventilation in the critically ill or injured patient.

Contraindications:

1. Patients under the age of 13 years.
2. Patients under four feet tall.
3. Patients with intact gag reflex.
4. Patients with esophageal disease.
5. Patients with caustic substance ingestion.

Procedure:

1. Ventilate the patient prior to insertion. Use cricoid pressure to prevent gastric insufflation prior to insertion.
2. Test the balloon cuffs prior to insertion.
3. Apply a water-based lubricant to the beveled distal tip and posterior aspect of the tube, taking care to avoid introduction of lubricant in or near the ventilatory openings. The oral cavity should be cleared of dentures, **broken teeth**, emesis, and foreign objects prior to insertion.

KING LTS-D AIRWAY

1. The ideal position for insertion is the “sniffing position”. The neutral position with the tongue and jaw elevated using the jaw lift maneuver may be used.
2. Hold the King LTS-D™ at the color connector in the dominate hand. With nondominant hand, hold the mouth open and apply the chin lift, unless contraindicated by C-spine precautions or patient position.
3. With the King LTS-D™ rotated laterally 45-90° such that the blue orientation line is touching the corner of the mouth, introduce the tip into the mouth and advance behind the base of the tongue. Never force the tube into position.
4. As the tube tip passes under tongue, rotate the tube back to midline (blue orientation line faces chin).
5. Without exerting excessive force, advance the King LTS- D™ until the base of the connector aligns with the teeth or gums.
6. Fully inflate the cuffs using the maximum volume of the syringe included in the King LTS-D™ kit. Refer to the sizing chart for balloon inflation volumes.
7. Attach the BVM to the 15 mm color connector of the King LTS-D™. While gently bagging the patient to assess ventilation, simultaneously withdraw the airway until ventilation is easy and free flowing (large tidal volume with minimal airway pressure).
8. Depth markings are provided at the proximal end of the King LTS-D™ which refers to the distance from the distal ventilatory openings. When properly placed with the distal tip and cuff in the upper esophagus and the ventilatory openings aligned with the opening to the larynx, the depth markings give an indication of the distance, in cm, to the vocal cords.
9. Confirm proper position by auscultation, chest movement, and verification of CO2 by capnography.
10. Readjust the cuff inflation to 60 cm H2O (or to just seal volume).
11. Secure the King LTS-D™ to the patient using tape or department issued device. A bite block can also be used, if desired. **DO NOT COVER THE PROXIMAL OPENING OF THE GASTRIC ACCESS LUMEN OF THE KING LTS-D™ .**
12. *The gastric access lumen allows the insertion of the 18 Fr diameter gastric tube into the esophagus and stomach. Lubricate the gastric tube prior to insertion.
13. For EMTs or when the gastric tube is not inserted, the inflation valve tip can be inserted into the gastric access lumen to prevent leakage of gastric contents.

NOTE: The King LTS-D™ is not designed to facilitate the placing of an ET tube while the King LTS-D™ is in place. It will not be attempted in the prehospital setting.

KING LTS-D AIRWAY

Removal:

Once it is in the correct position, the King LTS-D™ is well tolerated until the return of protective reflexes. Removal in the prehospital setting should only be done when the resuscitated patient can not tolerate the King LTS-D™.

1. King LTS-D™ removal should always be carried out in an area where suction equipment and the ability for rapid intubations are present.
2. For King LTS-D™ removal, it is important that both cuffs are completely deflated.

King LTS-D™ Exchange for an ET Tube:

The exchange of the King LTS-D with an ET tube will not be done in the prehospital setting.

A.E.D. (Philips FRX)

BLS - Automatic External Defibrillator (AED) (Philips™ FRX in the Red Case)

QUICKLY ASSESS THE PATIENT.

UNRESPONSIVE ADULT/CHILD?

Airway: Shake and Shout
Head Tilt-Chin Lift
Check Respirations

Adult Breathing? Follow Unresponsive Protocol.

NOT Breathing? Attempt two ventilations (one second each); chest rises visibly.

Circulation: Check pulse; no longer than ten seconds.

Pulse Present? Follow "Rescue Breathing Protocol" [LS-1 "Respiratory Arrest."](#)

No Pulse: **Witnessed** Cardiac Arrest; apply AED immediately.

No Pulse: **NOT witnessed** arrest -
Perform CPR and prepare to attach the AED.
After approximate five cycles of CPR:

Power "ON" the AED.

Open the carry case and press the green button.

Follow the voice prompts of the AED.

Place the pads on the victim according to the pictures on the AED and the electrode pads themselves.

For a child (child being one year old to no more than 55 pounds), utilize the PINK key and placement of the pads are front to back.

This is displayed on the key itself; it does not matter which pad is front or back.

"CLEAR" your victim so it can analyze. Do not move the patient.

If the AED advises "SHOCK," "CLEAR" the victim again and then firmly press the flashing "ORANGE" button. There will only be ONE shock delivered

After the shock button has been pressed, wait to hear "RESUME CPR;" immediately start compressions if there are no signs of life.

Ratio: 30 compressions to 2 breaths.

The AED will prompt you to "STOP" CPR after about a two-minute timeframe, so that it may analyze the victim again and shock accordingly.

A.E.D. (Philips FRX)

BLS - Automatic External Defibrillator (AED) (Philips™ FRX in the Red Case)

Repeat treatments (1 shock/2 minutes of CPR) until ALS personnel have taken over patient care.

At this time, use the grey adaptor under the front flap of the AED; plug the pads connector into the adaptor and then the adaptor into the Zoll Monitoring System.

Use of the AED must be documented on the run report and the Combat Incident Report.

Please send to Rescue Chief to set up a time to have the AED read, so that we may have a record of the event for State tracking purposes.

Contraindications:

DO NOT use on "infants." Infants are patients less than one year of age.

Special Conditions:

Pacemakers: Place several inches away from the pacemaker or internal defibrillator

Nitro Patch: Remove and wipe the area clean with a towel

Wet Chest: Dry with a towel

Pregnant: Apply pads as shown on diagram

Children: Use the adult electrode pads and plug in the "PINK" pediatric key (sticking out of the inside flap) where indicated for patients one year old and under 55 pounds body weight.

Note:

This AED does not use a data card; it is infrared.

This AED does not use separate pediatric pads; use the adult pads and plug in the pediatric key

The pediatric key lowers the joules from 150 to 50 joules

Ventilator

Revel Automatic Transport Ventilators

Description:

The CareFusion ReVel is a high performance portable critical care ventilator. The ventilator delivers blended gases from an internal oxygen blender. It is powered by external DC power or a removable battery pack, depending on its need.



Indications:

For ALS transports that require ventilators.

Warnings:

1. When not in use, always turn off the gas supply and the power.
2. An alternative means of ventilating the patient must be available in case of a power failure.
3. During use, the patient must not be left unattended.
4. The use of this device in areas where the ambient air may be hazardous or explosive should be avoided as entrapment of ambient air during the use of the air mix mode will permit the patient to inhale atmospheric gas.

Ventilator

Revel Automatic Transport Ventilators

Procedure:

1. When assigned an ALS transport requiring a ventilator. Stop at one of three assigned stations (16, 19, and 22) closest to the facility requesting the transport and pick up the ReVel ventilator. Make sure the following equipment is present before leaving the station:
 - a. Supply hose.
 - b. Two single use transport ventilation circuits.
 - c. Portable regulator with a high pressure port.
 - d. On-board O2 adapter
 - e. Bacterial/Viral filter
 - f. Capnography Adaptor
 - g. User Manual
 - h. Vent Logbook (To be completed when unit is returned)

Note: Always keep an Ambu-Bag on your stretcher when using the ventilator.

Also, Pulse Oximeter on Zoll monitor must be used.

2. Upon arrival at the patient's location, have a nurse page the Respiratory Department to obtain a report on the patient's respiratory status from a Respiratory Therapist (RT). Wait until an RT arrives before setting the ventilator's settings. Remember, an RT is a well-educated professional that specializes in all aspects of the respiratory system, so work closely with them while setting the ventilator.
3. Connect the supply hose to the portable regulator with a high pressure port and connect the transport ventilation circuit onto the vent. Turn the oxygen on. Connect the bacterial/viral filter to the Patient Connection Port of the ventilation circuit. The bacterial/viral filter can become clogged with heavy secretions. It may need to be changed as necessary.
4. Turn on the ventilator. Perform a "Circuit Test" to verify the integrity of the patient circuit.
5. Scroll to "New Patient" and press select. Scroll to "Patient size" and press select. Then select "Adult" or "Pediatric" and press select. Next is "Intubated" or "NPPV", select intubated. The vent now turns on and defaults to preset settings.
6. Clear the alarms by pressing the reset button. Enter the "Breath Rate", "Inspiration Time", Tidal Volume", "PEEP", "Oxygen concentration", "Sensitivity", "Low Peak Pressure", "High Pressure Limit", and "Low Minute Volume".
7. With the Vent set, if you are not ready to hook up to patient, clear any alarms and hold the select button for 3 seconds. This will ask if you want to go into "Standby", press select, it will then ask you to "Confirm", press select. Press the "Exit" button to return to ventilation mode.

Ventilator

ReVel Automatic Transport Ventilators

Procedure:

8. Have RT double check all vent settings and complete and sign the Vent settings checklist. Monitor the patient for five minutes, assessing lung sounds and making sure SpO₂ stays in the range that is normal for this patient and the patient is in no added distress. (Remember some vented patients' SpO₂ only run in the low 90s. Confirm SpO₂ levels with RN/RT prior to transport.)
9. Assess vital signs q 5 minutes, keeping the patient on continuous pulse oximeter.
10. If patient's SpO₂ continuously drops and shows no improvement, increase oxygen concentration to 100 percent for 3 minutes by holding down the oxygen level button for 3 seconds. If this does not work, bag patient with 100 percent oxygen and discontinue the use of the ventilator. **Never** try to adjust Breath Rate, Tidal Volume, and PEEP settings differently from those received from RT
11. Return ventilator to its assigned station and clean it properly (making sure all equipment is present and operational and the logbook is completed).

Visual Alarm Displays

There are multiple components to the visual display portion of an alarm condition.

1. Alarm messages are displayed flashing off and on in the Display Window near the top of the front panel. When multiple alarms are occurring, only the alarm with highest priority is displayed until it has been resolved and/or reset. Once the highest priority alarm has been resolved, the others are displayed in order of importance
2. To help identify alarm priorities, active high priority alarm messages displayed are preceded by three (3) exclamation points (!!!), active Medium priority alarm messages are preceded by two (2) exclamation points (!!), and active Low priority alarm messages are preceded by one (1) exclamation point (!).
3. The set/displayed values of associated front panel adjustable alarm or ventilation controls (if any flash)

Ventilator

ReVel Automatic Transport Ventilators

Audible Alarms:

Alarm	Range
Apnea (interval)	10 to 60 sec
High pres.	5 to 100 cmH2O
High PEEP	3 to 40 cmH2O, or "--" (off)
Low FiO2	"- -" (off), or 18 to 95%
Low min vol	"- -" (off), or 0.1 to 99 L
Low pk pres.	"- -" (off), or 1 to 60 cmH2O
Low PEEP	"- -" (off), or 1 to 20 cmH2O

The alarms are displayed in order of the severity of the alarms. The following is a list of importance of the alarms:

- Vent Inop alarm:** A continuously repeated group of 8, pulsed tones Sounds at fixed volume of 80 ± 5 dBA
- High Priority alarm:** Continuously repeated groups of 10, pulsed tones (3-2-3-2)28 Sounds between >45 Ba and 80 ± 5 dBA, and is automatically adjusted to a higher audible volume level than that of Low Priority alarms
- Medium Priority alarm:** A continuously repeated group of 3, pulsed tones
- Low Priority alarm:** A continuously repeated group of 2, pulsed tones Sounds between >45 dBA and $<80 \pm 5$ dBA, and is automatically adjusted to a lower audible volume level than that of High and Medium Priority alarms
- Accessory Attach signal:** A group of 2, ascending pitch, pulsed tones
- Key Click signal:** A single medium frequency note
- Battery Use alarm:** A periodic audible tone, once per minute Sounds at set Battery Use Tone volume

ReVel® Maintenance:

The assigned rescue crews at Stations 16, 19, and 22 are to ensure that the unit and supplies are accounted for after each use, supplies are reordered, and all vent functions are working properly. The unit is to be checked every morning to make sure all alarms and lights work and filters are clean and not damaged. The Ventilator Testing worksheet will be completed the first Thursday of every month and sent to the Training Center, care of the Rescue Training Captain.

SURGICAL CRICOTHYROTOMY

>8 YEARS OF AGE

Cricothyrotomy is a temporary, life-saving emergency procedure involving incising or puncturing the Cricothyroid membrane to gain access to an obstructed airway. This procedure should only be used when all other methods to open the airway have failed and you are unable to ventilate using a BVM. This procedure is not without considerable hazards. The Cricothyroid membrane must be correctly identified to prevent uncontrollable bleeding and iatrogenic injury to surrounding respiratory structures. Only paramedics who have completed the department's Cricothyroidotomy in-service may perform these procedures.

Surgical Cricothyrotomy (Indicated for Patients Eight Years of Age and Older)

Procedure:

1. Stabilize the patient's head in a neutral way.
2. Identify the location of the Cricothyroid membrane.
3. Stabilize the Cricoid and Thyroid cartilages with the nondominant hand.
4. Prep the area with Betadine.
5. Make a vertical incision approximately 3-5 cm. through the full thickness of the skin. (You can expect local bleeding depending on the patient's perfusion status.)
6. Identify the Cricoid membrane, with the nondominant hand, stabilize the trachea.
7. Use the tip of the scalpel blade to create a horizontal incision through the Cricoid membrane into the trachea. Avoid inserting the blade too deeply, which can injure the posterior wall of the trachea or the esophagus.
8. Use a sterile gloved finger to open the incision.
9. Insert a cuffed endotracheal tube (ETT) caudally until the balloon has passed through the opening. Do not cut the ETT for any reason. Select an ETT one size smaller than you would select for oral intubation. Maximum size 7.0.
10. Inflate the ETT and secure using two Veni-Guard IV occlusive dressings.

Assess breath sounds, hemodynamic, and ventilatory status. Document assessment findings, interventions, and treatment outcomes.

NEEDLE CRICOTHYROTOMY <8 YEARS OF AGE

Procedure:

1. Stabilize the patient's head in a neutral position.
2. Identify the Cricothyroid membrane. Stabilize with the nondominant hand.

Prep the area with Betadine

3. Insert a 14G angiocath while attached to a 10 cc syringe through the skin and Cricothyroid membrane into the trachea. Direct the needle at a 45° angle caudally. When the needle penetrates the trachea, a "pop" will be felt.
4. Aspirate with the syringe. If air is returned easily, the needle is in the trachea.
5. Withdraw the stylet while gently advancing the catheter downward into position.
6. Attach the 15 mm adapter from a 3.0 ETT to the needle.
7. Ventilate the patient with a bag-valve unit at the highest available oxygen concentration.

Assess breath sounds, hemodynamic, and ventilatory status. Document assessment findings, Interventions, and treatment outcomes.

END-TIDAL CO₂ MONITORING

PROCEDURE GUIDELINES ZOLL M/E SERIES CAPNOSTAT 3 CO₂ SENSOR (EtCO₂) END-TIDAL CO₂ MONITORING/CAPNOGRAPHY

DESCRIPTION: A device which allows for continuous, noninvasive monitoring of End-Tidal CO₂ and respiratory rate in patients requiring ventilatory support.

INDICATIONS: All Intubated patients will have this capnography procedure initiated and documented.

Intubated Applications

- Verification of ETT placement.
- ETT surveillance during transport.
- CPR: compression efficacy.
- Optimize ventilation of patients.
- Capnography is required on all Intubated patients.

PROCEDURE:

- Attach the Capnostat 3 sensor cable into the back of the M Series unit—yellow to yellow. E Series will remain attached at all times.
- Select EtCO₂ setting on monitor if not set to default.
- Zero the mainstream sensor/airway, if required.
- Attach the airway adapter to the airway circuit.
- Ensure sensor to ET tube is correctly placed.
- "Oxygen compensation" should be selected when oxygen is added to ventilation circuit in excess of 60 percent. Current default.
- Check for wave forms. Select wave 2.
- Record wave form.
- Capnography device should remain in place for continuous monitoring, with frequent checks to ascertain that the tube does not migrate.
- At hospital, record wave form again.

DOCUMENTATION:

- Upon confirmation of successful endotracheal intubation (positive wave form), print a strip and document the initial reading.
- Document any airway or pharmacologic interventions based on capnography readings.
- Upon arrival to the emergency department and **AFTER** transferring the patient to the hospital's bed/gurney, obtain a second strip demonstrating a continued positive wave form.
- Transfer the capnography reading into *TabletPCR* for the call.

Print copies of both readings for the emergency department prior to leaving.

END-TIDAL CO2 MONITORING

CAPNOGRAPHY WAVE FORM ANALYSIS:

NORMAL: 35-45 mm Hg

MANAGEMENT: Monitor



DISLODGED ETT: Loss of wave form, loss of Et

MANAGEMENT: Replace ETT



ESOPHAGEAL INTUBATION: Absence of wave form

MANAGEMENT: Reintubate



HYPOVENTILATION: ↓RR, EtCO₂ >45 mm Hg

MANAGEMENT: Assist/increase ventilations



HYPERVENTILATION: ↑RR, EtCO₂ <35 mm Hg

MANAGEMENT: ↓Ventilations



BRONCHOSPASM: "Shark fin"

MANAGEMENT: Bronchodilators



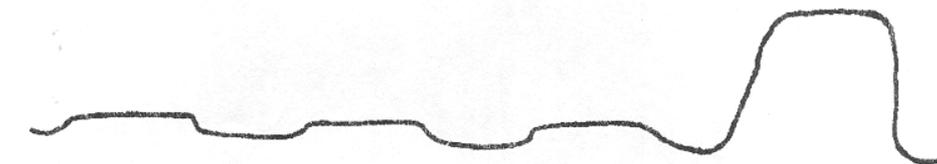
ASSESS CPR COMPRESSIONS

MANAGEMENT: Monitor/adjust compression depth



DETECT ROSC

MANAGEMENT: Check for B/P and signs of circulation



HELMET REMOVAL

Procedures to Remove a Helmet from a Patient with a Possible Cervical Spine Injury

1. The first rescuer positions himself above or behind the victim, places his hands on each side of the helmet, and applies in-line stabilization of the spine. He should grasp the patient at the angles of his mandible.
2. The second rescuer positions himself to the side of the victim and removes or cuts the chin strap.
3. The second rescuer then assumes the in-line stabilization on the spine by placing one hand under the neck at the occiput and the other hand on the anterior neck with the thumb pressing on one angle of the mandible and the index and middle fingers pressing on the other angle of the mandible. The first rescuer releases his hands and holds the helmet only.
4. The first rescuer now removes the helmet by pulling out laterally on each side to clear the ears and then up to remove. Full face helmets will have to be tilted back to clear the nose (tilt the helmet, not the head). If the victim has glasses on, the first rescuer should remove them through the visual opening before removing the full face helmet. The second rescuer maintains steady stabilization during this procedure.
5. After removal of the helmet, the first rescuer takes over the cervical stabilization again by grasping the head on either side with his fingers holding the angle of the jaw and occiput.
6. The second rescuer now applies a suitable cervical immobilization device .

INTRAOSSUEOUS INFUSION (I.O.)

Definition: Vascular access through bone marrow cannulation.

Indications: Patients who require emergent drug or fluid therapy and in whom venous access is not readily obtainable, i.e., two failed attempts, and are:

1. Deeply unconscious and/or in
2. Profound shock and/or in
3. Cardiac arrest.

IOs are NOT intended to replace IVs for routine vascular access.

IOs are for the critically ill or injured patient that needs emergent, life-saving venous access.

Contraindications:

1. Extremity with prior IO in the last 24 hours.
2. Suspected fracture in the IO site limb.
3. Inability to locate landmarks or excessive tissue at the IO site.
4. Prior orthopedic surgery (i.e., total knee replacement, etc.).
5. Infection at the IO site.

Use Caution:

1. Monitor closely the amount of fluids you are infusing into your pediatric patient.
2. Do not attach an infusion bag larger than 250 ml for pediatric patients.
3. Consider IO pain management, if indicated.

Lidocaine: Adult - 20 mg IO, slowly; may be repeated once.
Pediatric - 0.5 mg/kg IO, slowly; maximum of 20 mg.

IO Sites: (Refer to EZ-IO Training Program CD-ROM for detailed instructions.)

1. **Proximal Tibia**
2. **Distal Tibia**
3. **Proximal Humerus**

Procedure:

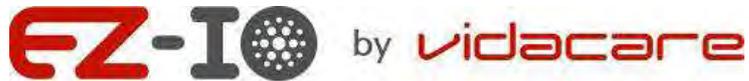
1. BSI.
2. Determine if the patient is an IO candidate.
3. Rule out contraindications.
4. Locate the IO site and prep with Betadine swab.
5. Prepare the driver and select the appropriate size needle.
6. Stabilize the limb and insert the needle (caution: do not apply extreme force on the driver).
7. Remove the driver while stabilizing the catheter hub (should feel firmly set in the bone).
8. Continue to hold the catheter hub while removing the stylet from the catheter.
9. Place the used needle in an appropriate receptacle.
10. Connect an NS-primed EZ Connect or standard IV tubing.
11. To additionally confirm placement, aspirate a small amount of marrow, if possible.
12. Attach the syringe and flush IO with 5-10 ml of saline.
13. Secure the IO infusion tubing.
14. Label; then attach a completed EZ-IO wristband with the Rescue number, date, and time.

IO Needle Set Sizes:

1. Patients between **3 and 39 Kg** EZ-IO **PD**
(If too much tissue, consider using AD needle-set.)
2. Patients **40 Kg and greater** EZ-IO **AD**
3. Illinois Sternal/Iliac Aspiration needles may be used if EZ-IO needles are unavailable.

Once Fire Rescue establishes an IO access, it will only be removed by the receiving hospital staff.

INTRASOSEOUS INFUSION (I.O.)



Pearls of IO Access

If you encounter any problems with the EZ-IO® call the
24 hour EMERGENCY HOTLINE 1-800-680-4911

Driver

- Drivers are sealed. *Please don't try to open them!*
- Batteries are not replaceable (*Drivers are designed for 1,000 insertions*).
- Daily testing is not necessary or recommended
- Follow the Driver's "instructions for use" when cleaning. Ensure that you clean the entire driver (*including the drive shaft tip*)
- Remember, the driver is rugged – *but not indestructible*
- An IO Insertion is a medical procedure – *not a construction project, BE GENTLE. LET THE RPMs DO THE WORK*

Needle Set

- Single use only
- One size does not fit all! Consider the patient first.
- **PD (Pink)** Needle Sets are for patients 3-39 kg
- **AD (Blue)** Needle Sets are for patients 40 kg and greater
- Use WEIGHT and SIZE - NOT AGE as the decision tool
- Insert manual (if needed) – *let the tip do the work – avoid excessive force!*
- **Red** Needle Sets are for **Training only** and are **NOT STERILE!**
- Remember "Easy Does It" - don't use excessive insertion forces. Glide the needle set into place.



Removal



- Stabilize extremity
- Connect sterile Luer lock syringe (*if available*)
- Rotate clockwise a few rotations and continue to rotate while gently pulling
- Place removed catheter in biohazard container

Usage Tips

- Consider 2% *preservative free* Lidocaine for alert patients
 - 20 – 40 mg for adult patients
 - 0.5 mg / kg for pediatric patients up to 39kg
- 10 ml syringe flushing (*bolus*) of normal saline clears the pathway for medications and fluids
- If flow rate slows – REFLUSH with syringe and 10 ml of normal saline
- Pressure improves flow – Regulate Pediatric Infusions
- One size does not fit all – *select the most appropriate needle set for the patient based on weight and amount of tissue.*

NO FLUSH = NO FLOW

ENDOTRACHEAL INTUBATION

Description: Endotracheal intubation is the passage of a tube directly into the trachea.

- Indications:
1. GCS \leq 8 unless due to rapidly reversible causes such as hypoglycemia or narcotic overdose
 2. Inability to protect airway (decreased or no gag reflex or extensive blood/secretions).
 3. Airway trauma with potential for early airway compromise (smoke Inhalation, severe facial or neck trauma, etc.).
 4. Oxygen saturation of $<$ 90% on high flow oxygen with either a respiratory rate $<$ 10 or $>$ 30 for adults or $<$ 12 or $>$ 60 for children or a change in level of consciousness.

Contraindications: No specific contraindications

- Complications:
1. Trauma during intubation
 2. Pharyngeal or tracheal laceration by stylet
 3. Broken teeth
 4. Esophageal intubation

- Equipment:
1. Laryngoscope.
 2. Blade of choice (Miller or McIntosh).
 3. Endotracheal tube (ETT).
 4. Stylet

Additional Equipment: 10ml syringe, Magill Forceps, water soluble lubricant, suction, capnometer and contingency equipment (Bougie, King Airway, Cricothyrotomy kit, etc.)

Technique: After checking all equipment and selection of the proper sized tube;

1. Place patient on cardiac monitor, SAO2 monitor, and determine baseline neurological status
2. RSI as per protocol if indicated (LS 3.1)
3. Ensure pre-oxygenation

ENDOTRACHEAL INTUBATION

Technique:

4. Lubricate the end of the tube.
5. Properly position the head, either head extended with neck flexed or in neutral position if spinal injury suspected.
6. Hold laryngoscope in the left hand, insert in the mouth displacing the tongue to the left side.
7. Lift upwards on the laryngoscope handle until you are able to visualize the glottis opening.
8. Insert the ETT in the right side of the mouth, with direct visualization, through the vocal cords and advance the tube approximately 1-2 cm. further into the trachea.
9. Remove the stylet.
10. Inflate bulb with 10cc of air.
11. Observe the chest for rise and fall with ventilation and listen for lung sounds in all fields and negative epigastric sounds.
12. Confirm placement with secondary device; EDD, end tidal CO2 detector
13. Secure the ETT using ETT holder.
14. Attach and monitor capnography.
15. If unsuccessful within 20-30 seconds, stop attempt and oxygenate patient with BVM for 30-60 seconds before subsequent attempts.
16. If unable to intubate, see # 19
17. Reassess and record patient status frequently, with special attention to ETT placement following any patient movement.
18. Consider spinal motion restriction including CID for patients not already immobilized (For tube security reasons).
19. If unable to intubate:
 1. Adult and child ≥ 8 years of age:

Options include BVM ventilation with OPA/NPA, Nasotracheal Intubation, King Airway (≥ 13 y/o) and surgical cricothyrotomy. Choice of intervention is dependent upon individual circumstances and clinical judgment.
 2. Child < 8 years of age:

Options include BVM ventilation with OPA/NPA, Nasotracheal Intubation or needle cricothyrotomy. Choice of intervention is dependent upon individual circumstances and clinical judgment.

ENDOTRACHEAL INTUBATION

- Documentation:
1. Indication for intubation
 2. Preoxygenation prior to intubation, along with baseline vital signs, including pulse oximetry reading.
 3. Route(s) of intubation attempts.
 4. Number of attempts at procedure and any difficulty or complications encountered.
 5. Document identity of crew member(s) making successful and unsuccessful attempts.
 6. Document spinal immobilization maintained during procedure when indicated.
 7. Method of confirmation of ETT placement. Documentation of multiple methods is v mandatory.
 8. ETT size and cm. secured at gum/teeth line.
 9. SAO2 and ETCO2 readings q 5 minutes.
 10. NGT insertion
 11. Method and rate of ventilation.
 12. Time and dose of any medications given, along with the identity of crewmember administering and any complications or positive results.
 13. Vital signs, SAO2, ETCO2, and ETT placement at time of patient transfer at destination facility or helicopter.

INTUBATION INTRODUCER “BOUGIE”

Description: Pediatric 10 fr—used with Endotracheal tubes 4—6mm

Adult 15 fr—used with Endotracheal tubes 6-11mm

Indications: Used as a tool for endotracheal intubation when visualization of the vocal cords is obstructed.

Procedure:

1. Lubricate Bougie with water-based lubricant
2. Using a laryngoscope (Macintosh or Miller blade) and standard ETT intubation techniques, attempt to visualize the vocal cords.
3. If the vocal cords are visualized, pass the Bougie through the cords while attempting to feel the signs of tracheal placement (see below). The Bougie is advanced until the black line on the Bougie reaches the lip line.
4. If the vocal cords are not visualized, pass the Bougie behind the epiglottis, guiding the tip of the Bougie anteriorly towards the trachea, and assess for signs of tracheal placement (see below).
5. With the laryngoscope still in place, have an assistant load the ETT over the Bougie and slide it to the level of the lip line.
6. Advance the ETT over the Bougie, rotating the ETT about 1/4 turn counterclockwise so that the bevel is oriented vertically as the ETT passes through the vocal cords. This maneuver allows the bevel to gently spread the arytenoids with a minimum of force, counterclockwise direction, and advance the tube again. Advance the tube to lip-line of 24 cm in an adult male, and 22 cm in an adult female.
7. Holding the ETT firmly in place, remove the Bougie.
8. Continue Endotracheal Intubation starting with Technique #7 of [Pro 9](#)

Signs of Placement:

1. The Bougie is felt to stop or get “caught up” as the airway narrows and is unable to be advanced further. This is the most reliable sign of proper Bougie placement. If the Bougie enters the esophagus, it will continue to advance without resistance.
2. It may be possible to feel the tactile sensation of “clicking” as the Bougie tip is advanced downward over the rigid cartilaginous tracheal rings.
3. The Bougie can be felt to rotate as it enters a mainstem bronchus. Usually it is a clockwise rotation as the Bougie enters the right mainstem bronchus, but occasionally it will rotate counterclockwise if the Bougie enters the left mainstem bronchus.

NASOTRACHEAL INTUBATION

Description: Nasotracheal intubation is intubation of the trachea via the nose.

Indications: Nasotracheal intubation may be done whenever tracheal intubation is indicated in the spontaneously breathing patient and is an alternative to orotracheal intubation in patient with intact gag reflex.

EXAMPLES: 1. Prolonged seizures.
 2. Clenched teeth.
 3. Facial trauma.

Relative Contraindications: Mid-face fractures with distorted anatomy.

Use with Caution: 1. Patient's taking anticoagulants.
 2. Suspected cervical spine injury.

Complications: 1. Esophageal intubation.
 2. Epistaxis.
 3. Retropharyngeal perforation.

Procedures:

1. Lubricate the tube.
2. Pass the tube through one nostril parallel to the hard palate.
3. Place patient's head in the neutral position.
4. Once the tube reaches the pharynx, listen for airflow noise (inspiratory) and guide the tube through the larynx into the trachea.
5. Inflate the cuff once breath sounds are auscultated.
6. If air is not heard through the tube, you may have the tube in the esophagus.
7. Before securing the tube with tape, check the position of the tube by listening for breath sounds as the patient is ventilated. Observe the chest for rise and fall with ventilations. Check both sides of the chest to be sure the tube is not too far down and possibly in the right mainstem bronchus. Also, listen over the stomach to check that the tube is not in the esophagus.
8. Reconfirm placement with end tidal CO₂ detector.
9. Securely tape the tube in place.
10. Attach and monitor capnography.
11. Ventilate the patient appropriately.

IV PROTOCOL

The following types of patients will receive a peripheral intravenous lifeline:

1. Cardiac arrest.
2. Respiratory Failure.
3. Symptomatic M.I.
4. Hypertensive Emergency.
5. Altered Mental Status
6. Anaphylaxis.
7. Narcotic overdose (OD).
8. Paramedic judgment.

If the paramedic determines that a patient is unstable or potentially unstable and may require IV medication while en route to the hospital, an IV may be initiated.

The paramedic may elect to withhold the establishment of an IV:

- a. The patient's particular condition warrants immediate transport without delay which is not offset by an established IV.
 - b. Immediate drug therapy not indicated.
 - c. Drug(s) required not available.
 - d. Peripheral IV access is not available.
9. "Routine" IVs shall not be started on pediatric patients.

All Protocols for site preparations and actual skills are according to current American Heart Association A.C.L.S. standards.

Patients suspected of being hypovolemic will receive an IV infusion of Normal Saline connected to tubing with a stopcock using a large bore cathlon. This IV can be kept at a KVO rate for the potentially unstable trauma victim, or can be used for rapid fluid infusion in the unstable patient.

IV PROTOCOL

Clinical Indications

Any patient where intravenous access is indicated (significant trauma or mechanism, emergent or potentially emergent medical condition)

Procedure

1. Saline locks may be used as an alternative to an IV tubing and IV fluid at the discretion of the Paramedic as long as no immediate medications are required.
2. Paramedics can use intraosseous access where a threat to life exists.
3. Use the largest catheter bore necessary based on patient condition and vein size
4. Fluid and setup is preferably:
 - Normal Saline with macro drip (10gtt/ml) for trauma or hypovolemia
 - Normal Saline with macro drip (10gtt/ml) for medical conditions
 - Normal Saline with micro drip (60gtt/ml) for medication infusions
5. Inspect the IV solution for expiration date, cloudiness, discoloration, leaks, or the presence of particles
6. Connect IV tubing to the solution in a sterile manner. Fill the drip chamber half full and then flush the tubing bleeding all air bubbles from the line.
7. Place tourniquet around the patient's extremity to restrict venous flow.
8. Select a vein and an appropriate gauge catheter for the vein and patient's condition
9. Prep the skin with an antiseptic solution
10. Insert the needle with the bevel up into the skin in a steady, deliberate motion until the bloody flashback is visualized in the catheter
11. Advance the catheter into the vein. **Never** reinsert the needle into the catheter, dispose of needle appropriately
12. Remove tourniquet and connect the IV tubing or saline lock
13. Open the IV to assure free flow of the fluid and then adjust the flow rate as per protocol or as clinically indicated

Rates are preferably

- Adult: KVO 60ml/hr (1 gtt/6 sec for a macro drip set)
- Pediatric: KVO 30ml/hr (1 gtt/ 2 sec for a mini drip set)

If shock is present

- Adult: 250 ml fluid boluses repeated as long as lungs are dry and BP < 90. Consider a 2nd IV line.
- Pediatric: 20 ml/kg boluses repeated as needed for poor perfusion

14. Cover the site with a sterile dressing and secure
15. Label and document the procedure time, result, gauge, name

IV RESEAL

Description and Indications

The reseal adapter may be used for venous access of a patient who does meet the guidelines for intravenous fluid replacement, fluid bolus, or medication administration.

Reseal Procedures

1. Assemble all necessary equipment:

- 1 – IV Needle Angiocath
- 1 – Reseal Luer Adapter
- 1 – 10 ml pre-filled syringe of 0.9% Sodium Chloride (saline)

Miscellaneous: Alcohol-Prep Pads, Tape, Constriction Band

2. Assemble syringe and needle. Inject approximately 2 ml of air into Sodium Chloride (saline) vial and withdraw approximately 2–3 ml of solution.
3. Clean reseal diaphragm with alcohol pad and flush adapter with approximately 0.5 cc of saline. Leave syringe/needle setup in Luer Adapter hub.
4. Select venous site and perform aseptic venipuncture.
5. Connect and secure Luer Adapter to IV plastic catheter hub. Flush IV catheter with Luer Adapter in place and withdraw syringe/needle setup while flushing. (Note: Catheter may be floated in with syringe/ needle setup in place.)
6. Secure IV catheter and Luer Adapter using tape, or other appropriate method.
7. Label venipuncture site with paramedic initials, date, time, and angiocath size.

Procedures for IV Fluid and Medication Administration, Using a Reseal

1. Assemble appropriate administration set and extension set to fluid bag and Flush line.
2. Clean Luer Adapter hub with alcohol-prep pad and connect IV setup. Secure tubing with tape to patient.
3. Administer fluids or medications in usual manner.

**** All I.V. medication must be given through I.V. tubing with fluids running. At no point should medications be given directly through a reseal. ****

MERCURY CPAP

Mercury CPAP System

The Mercury Continuous Positive Airway Pressure (CPAP) System is a lightweight, disposable, single-use system for administering CPAP to a patient in respiratory distress. While most CPAP devices attach to the high-pressure side of the regulator, the Mercury attaches to the low-pressure side. The Mercury CPAP System is fitted with a manometer on each device to provide the caregiver with the constant feedback as to the pressure being delivered to the patient's airway.

Indications:

A patient who is in respiratory distress with signs and symptoms consistent with congestive heart failure, pulmonary edema, and who is:

- Awake and able to follow commands;
- Has the ability to maintain an open airway;
- And exhibits two or more of the following:
 - Respiratory rate greater than 25 breaths per minute.
 - SaO₂ of less than 94 percent at any time.
 - Retraction of accessory muscles.

Contraindications:

- Respiratory arrest or is a patient that is unable to maintain their own airway.
- Not alert enough to follow directions.
- Systolic BP <90 mm Hg with other signs of poor perfusion.
- Suspected of having a pneumothorax or has suffered major trauma to the head or face.
 - Possible increased intracranial pressure.
 - Unstable facial injuries.
 - Signs and symptoms of pulmonary infection.
- Tracheostomy.
- Actively vomiting.
- Suspected primary asthma or chronic obstructive pulmonary disease etiology or signs of bronchospasms on capnography.

MERCURY CPAP

Application:

- Attach tubing to regulator low-flow adaptor.
- Attach the end of the tubing to the mask.
- Select the appropriate-sized mask for your patient. The Mercury kit comes in two sizes. The following is mask-size guidelines.
 - Regular adult mask (for small adults and children).
 - Large adult mask.
 - Explain to the patient how the CPAP mask will help their breathing.
- Gently position the face mask on the patient ensuring a good seal.
 - Initially, hold the mask manually.
 - Consider letting the patient hold the mask.
- Turn on the flow-control device and adjust the flow to obtain the necessary CPAP settings per protocol:
 - 15 LPM = 3.0-4.0 cm of water pressure.
 - 20 LPM = 6.0-7.0 cm of water pressure.
 - 25 LPM = 8.5-10 cm of water pressure.

Unlike other mask-based systems, the oxygen flow rates are adjusted to obtain and maintain the CPAP range.

- Coach the patient to breath and not fight the mask (patient may panic).
- Gradually adjust the flow to achieve the desired level of CPAP.
- As the patient becomes comfortable, apply a head strap.
- Check for leaks around the mask and adjust the mask and/or head strap accordingly.
- If the patient requires suctioning of the oral cavity, insert the catheter through the open end of the mask-based CPAP System. This will not affect CPAP pressure.
- CO2 can be monitored with the in-line CO2 adapter.
- Once inside the unit, transfer the oxygen-deliver tubing to the on-board flow meter. This will conserve oxygen in the portable tank for transfer of the patient into the ED.
- It is important to notify the receiving ED that you have a patient on the CPAP mask prior to arrival. This will help ensure a smooth transfer of patient care.

MERCURY CPAP

Common Complications with CPAP:

- Gastric distention.
- Pulmonary barotraumas.
- Reduced cardiac output.
- Hypoventilation.
- Fluid retention.

Oxygen Usage:

An astute awareness of the oxygen demand of the Mercury CPAP System must be maintained. Keep an eye on portable “D” and “E” tank pressures.

D Tank PSI	15 LPM	20 LPM	25 LPM
2,200	21 min.	16 min.	12 min.
1,500	13 min.	10 min.	8 min.
1,000	8 min.	6 min.	5 min.

Duration of Cylinder Flow Formula:

[(gauge psi-200 psi) x cylinder factor] divided by Flow in LPM.

Cylinder Factors: D = 0.16; E = 0.28; H or K = 3.14; M = 1.56

Transport and Transfer of Care:

Patients are to be moved to the on-board oxygen system during transport. This provides time to change the stretcher "D" tank as necessary en route to the ED. It will ensure that there is enough oxygen in the "D" tank for continuation of CPAP upon arrival at the ED. All patients that have benefitted from CPAP will have CPAP continued during the transfer of care in the ED. The supply tubing will be transferred to the ED wall-mounted flow meter and treatment continued. Diligence has been made in preparing and training all area EDs on the mask-based CPAP Systems. It is imperative that the healthcare professional receiving the patient knows and understands the mask-based CPAP System.

NASOGASTRIC TUBE

Gastric insufflation in the apneic and/or pulseless patient is an unfortunate side effect of BVM ventilation, even in the most experienced of hands. Gastric distention should be avoided since it predisposes the patient to regurgitation and aspiration of stomach contents AND it may prevent adequate ventilation by limiting downward displacement of the diaphragm. Unfortunately, bystander CPR, First Responder PPV, and our own initial attempts to ventilate the patient prior to intubation of the trachea can cause and/or contribute to this problem.

Gastric inflation can be minimized by application of cricoid pressure (Sellick Maneuver) during ventilation prior to endotracheal intubation. Excessive pressure should be avoided because it may produce tracheal compression and obstruction. Distention should be anticipated, recognized, and relieved as part of our comprehensive treatment of the patient being ventilated by mouth-to-mouth, mouth-to-mask, or by BVM. Insertion of a nasogastric (NG) tube will accomplish this goal.

When

Only after the airway has been secured, peripheral vascular access has been obtained, and the initial resuscitative measures have begun (fluid bolus, cardiac drugs, defibrillation, etc.) should an NG tube be inserted in the apneic and/or pulseless patient. The only exception to this is in cases of profound gastric distention where the distention interferes with adequate ventilation even after an ET tube has been successfully inserted. DO NOT delay transport or other emergent treatments in order to pass an NG tube.

Equipment

NG Tube (size appropriate to patient)	Adhesive Tape
KY Gel	Basin
Stethoscope	Towel
Tomey-Tip Syringe	Plug for NG Tube
Adaptor for Suction Supply Tube	

Measuring Length of Insertion

Using the NG tube, measure from the tip of the nose to the ear to a point midway between the xiphoid process and the umbilicus. Mark this point with a piece of tape. This is how far to insert the NG tube.

Insertion

With the patient supine and the head in a neutral position, quickly and gently insert the lubricated tube through one nostril to the tape marker. Slight forward and downward—tilting of the head can aid in passage of the tube into the esophagus. Care must be taken to minimize damage to the tissues of the nasopharynx. If resistance is encountered, remove the NG tube and try insertion via the other nostril.

NASOGASTRIC TUBE

Confirming Placement

Attach the Tomey syringe to the NG tube and gently aspirate. You should obtain air and/or stomach contents. Gently inject 5 to 8 ml of air while listening with a stethoscope over the stomach. You should hear the air bubbling in the stomach. If correct tube placement is in question, remove the NG tube and reinsert. DO NOT delay transport or other emergent treatments in order to pass an NG tube.

Deflating the Stomach

Once correct placement is confirmed, secure the tube at the tape mark to the patient's face level with the nose. Connect the tube to the Tomey syringe and aspirate the gastric contents (air and/or food) until the distention is relieved.

If deflation of the stomach is required again during the time the patient is in your care disconnect the plug, attach the Tomey syringe and aspirate. Remember to reattach the plug after the stomach has been deflated.

Procedure for Use with Suction Units

Use adapter to connect the NG tube to the suction tubing. Suction intermittently only until distention is relieved and/or there is no return of stomach contents. Replace the plug after suctioning. Repeat the process only on an as-needed basis.

Document the procedure on the run report.

PORTABLE PULSE OXIMETRY

Description:

The pulse oximeter is a photoelectric device that monitors the amount of O₂ in the blood. The unit consists of a portable monitor and sensing probe. (A portable pediatric probe is also available.) The screen displays the pulse rate and percentage measurement of oxygen saturation. This procedure can be initiated by an EMT or paramedic.

Indications for Use:

1. Any patient complaining of, or exhibiting signs of respiratory or circulatory problems.
2. Any patient whose condition indicates the need for oxygen.
3. Paramedic or EMT discretion.

IF APPROPRIATE FOR PATIENT CARE, apply the oximeter and obtain a baseline reading prior to initiating oxygen.

NOTE: DO NOT DELAY ANY PART OF THE PRIMARY SURVEY TO APPLY THE PULSE OXIMETER. IF IMMEDIATE INTERVENTION IS REQUIRED, DO NOT DELAY.

Interpreting the Results:

1. A normally oxygenated, normally perfused patient should have oxygen saturation between 97 percent and 99 percent.
2. A reading below 94 percent indicates respiratory compromise; oxygen therapy is indicated.
3. A reading below 91 percent signals a need for aggressive oxygen therapy.
4. If, after treatment, the oxygen saturation continues to be below 94 percent, you need to consider more aggressive therapy than you are currently delivering (i.e., increase oxygen, assist ventilation with a BVM, intubation, etc.).

REMEMBER—the pulse oximeter is just another tool designed to help us validate our findings. Do not rely on it solely for indications of the patient's condition. TREAT THE PATIENT, NOT THE MACHINE.

PORTABLE PULSE OXIMETRY

Cautions:

1. Hypothermia and shock may produce inaccurate readings.
2. Exposure to carbon monoxide will produce falsely high readings.
3. Chronic smokers may present higher than normal readings.
4. Nail polish may produce false readings. Remove or try turning probe sideways.
5. High intensity lighting may lead to abnormally high readings.

Contraindications:

1. Do not use in the presence of MRI equipment.
2. Do not use to assess ET placement.

Procedures (Adult):

1. Attach the finger sensor. Be sure to fully insert the patient's finger into the sensor.
2. To begin measuring the patient's SpO₂ and pulse rate, press the "I" key. After a few seconds, the percentage SpO₂ value, pulse rate, and pulse strength bar graph should be shown.

NOTE: The low battery indicator will light at the far left of the bar graph when two hours of battery time remain. The oximeter will continue to operate normally until the batteries no longer have sufficient power to operate. At that point, the oximeter automatically turns off.

3. To turn off the oximeter, press "O." The oximeter will also automatically turn off two minutes after the sensor is removed from the patient or the sensor is disconnected from the unit.

Cleaning the Sensor:

Clean and disinfect the reusable finger sensor before attaching to a new patient.

DO NOT IMMERSE THE SENSOR IN LIQUID.

Clean with a soft cloth moistened in water or a mild soap solution.

To disinfect, wipe with isopropyl alcohol.

Failure to clean and maintain the device (particularly the probe) properly may result in false readings.

PORTABLE PULSE OXIMETRY

Pediatric Use: (Patient 15-45 kg.)

1. Attach sensor probe to unit.
2. Remove adhesive cover from the disposable sensor.
3. Sensor may be applied to patient's finger or toe. The preferred application sites are the forefinger or thumb.
4. Position the cable so it runs along the palm or bottom of foot.
5. Place the patient's digit in the sensor, nail side up, lining the digit's pad over the detector.
6. Wrap the bottom adhesive around the digit, being careful not to cover the nail.
7. Fold the top of the sensor down over the digit, making sure the light source is directly in line over the detector.
8. Wrap adhesive around the finger or toe to secure.
9. Secure the cable with tape, if necessary.

Infant Use: (Patient 3-15 kg.)

Use pediatric disposable probe applied to the great toe in the manner described in pediatric use.

RAPID SEQUENCE INDUCTION

“RSI”

Description: A process that involves pharmacologically inducing unconsciousness and paralyzing the patient in a manner that facilitates tracheal intubation. “Rapid sequence” refers to the fact that the induction agent and the neuromuscular blocker are given in quick succession, and are not titrated to effect.

Indications:

1. Need for intubation with the jaw clenching, preventing oral intubation and nasal intubation is contraindicated or not desirable.
2. GCS < 8 unless due to a rapidly reversible cause such as hypoglycemia or narcotic overdose.
3. Need for rapid airway control in a medical patient who will not otherwise tolerate oral or nasal intubation.
4. For control of combativeness secondary to traumatic injury, medical or respiratory compromise which may compromise the patient’s airway, neurological status

Complications: Failures, two (2) attempts at intubation, arrhythmias

Procedure:

1. Follow all general procedures described in Endotracheal Intubation PRO 9
2. Have contingency plans and have the appropriate equipment readily available for maintaining the airway in case of unsuccessful procedure, including but not limited to bougie, camera , King Airway and cricothyrotomy.
3. Pre-paralytic and sedative medications per [Adult Airway, RSI or Pediatric Airway, RSI](#)
4. Perform endotracheal intubation per [Intubation Procedure](#)

ADULT RAPID SEQUENCE INDUCTION “RSI”

- Procedure:
5. Post Procedure Medications per [Adult Airway, RSI](#) or [Pediatric Airway, RSI](#)
 6. Monitor Vital signs carefully when administering these drugs.

- Documentation:
1. Refer to Intubation Procedure (pro 9). Special attention should be paid to any problems or complications.
 2. Document all assessment findings, interventions and responses to the interventions

SPINAL IMMOBILIZATION

1. Assess scene. Note possible mechanism of injury. Suspect spinal injury, if indicated.
2. Apply manual stabilization to the head and neck. Perform a primary survey. Control active bleeding. Maintain manual immobilization until the entire process is completed.
3. Conduct a brief exam for open wounds and/or fractures that may need splinting before the patient is moved.
4. Examine the entire spine before it is covered. If patient is in a sitting position:
 - a. Apply a cervical collar if it can be applied without manipulating the neck. Slowly guide the patient back against the K.E.D. or short board. Secure the head with the head strap, two-inch tape, or bandage. Secure patient to short board or K.E.D. with straps. Tie the arms, knees, and ankles. Rotate onto long board.

If patient is found supine:
 - b. Apply a cervical collar if it can be applied without manipulating the neck. Assemble long board, scoop, or auxiliary stretcher. Perform a trauma assessment.

If patient is found prone, semiprone:
 - c. While maintaining in-line cervical support, have at least one person assist you in turning the patient as a unit. Consider having the long board in position so that the patient may be laid directly onto the long board and, thus, only moved once.
5. Secure the patient to the back board, scoop, or auxiliary stretcher with straps. Any method may be used to secure the torso i.e. cross straps or "X" technique. An additional 2 straps must be used to secure the hips and legs.

The head must be secured using the Ferno-Washington head immobilizer, or equivalent if unavailable; i.e., blanket roll.

MANAGEMENT OF TENSION PNEUMOTHORAX

Indications: This procedure is only for a patient with a tension pneumothorax and whose condition is rapidly deteriorating.

Procedures:

1. Assess the patient to be sure the condition is due to tension pneumothorax. Signs and symptoms will include some or all of the following:
 - a. Poor ventilation.
 - b. Neck vein distention.
 - c. Absent or decreased breath sounds on the affected side.
 - d. Hyperresonance to percussion on the affected side.
 - e. Shock.
 - f. Tracheal deviation away from the affected side may be present. Remember this is a late sign and is often hard to detect.
2. Give the patient high flow oxygen at 10–15 LPM via nonrebreather mask or assist respirations via BVM with supplemental oxygen.
3. Identify the second intercostal space (ICS) in the midclavicular line (MCL) on the same side as the pneumothorax.
4. Quickly prepare the area with an antiseptic solution.
5. Insert a 14-gauge, catheter-over-the-needle device into the ICS in the MCL over the top of the third rib.
6. Remove needle; leave catheter in place.
7. Continue to monitor the patient closely for redevelopment of the tension pneumothorax. Remember: Even with the catheter left in, this may occur.

Notify the receiving facility. Document your invasive procedure on your run report

COMBAT APPLICATION TOURNIQUET (C.A.T.)

Indication: Patients who require application of a tourniquet as a last resort to control hemorrhage in an extremity after all other methods to control hemorrhage have failed.

Contraindications:

1. Non-Extremity Hemorrhage
2. Proximal extremity location where tourniquet application is not practical

Procedure:

- A. Establish a need for a tourniquet meeting the above criteria
- B. Remove the C.A.T. from the trauma bag and carrying pouch.
- C. Open the C.A.T. completely and apply to injured extremity following the below steps:

- STEP 1: Route the self-adhering band around the injured extremity and pass the free running end of the band through the inside slit of the friction adaptor buckle.
- STEP 2: Pass the band through the outside slit of the buckle utilizing the friction adaptor buckle which will lock the band in place.
- STEP 3: Position the C.A.T. about the wound: leave at least 2 inches of uninjured skin between the C.A.T. and the wound.
- STEP 4: Pull the free running end of the Self-Adhering Band tight and securely fasten it back on itself (if applying to an arm wound). Do not adhere the band past the Windlass Clip. If applying to leg wound, the Self-Adhering Band must be routed through both sides of the friction adaptor buckler and fastened back on itself. This will prevent it from loosening when twisting the Windlass Clip.
- STEP 5: Twist the Rod until bright red bleeding has stopped. When the tactical situation permits insure the distal pulse is no longer palpable.
- STEP 6: Lock the rod in place with the Windlass Clip.
- STEP 7: Secure the rod with the strap, grasp the Windlass Strap, pull it tight and adhere it to the opposite hook on the Windlass Clip.
- STEP 8: Must note the time applied and communicate it with the receiving facility upon arrival.
- STEP 9: Dress wounds per protocol
- STEP 10: If for uncontrollable reason tourniquet will be applied for longer than 2 hours attempts should be made to remove the tourniquet after attempts at more aggressive hemorrhage control by loosening tourniquet 1/2 a turn every 2 minutes.

VIVID TRAC

Description:

The VividTrac is a Single Use, USB video Intubation device that works on many computer systems equipped with USB II port as a standard USB Video Camera. This is an added tool for use in difficult airway.



Indication:

For difficult or anterior airways that use of a standard laryngoscope blade is not effective.

Warnings:

1. Do not sterilize the VividTrac
2. Do not submerge in liquids
3. Do not put pressure on the teeth with this device
4. Do not force the VividTrac into the upper airway

Procedure:

1. Connection of Device—Connect the USB cord of the VividTrac to the USB port of display computer or tablet confirming that live video from VividTrac is displayed and the device illumination LED is turned on. Optionally a USB extension cord can be utilized.

2. Preload ETT into the VividTrac Tube Channel - Preload a lubricated ETT from the Proximal end (Top) of the VividTrac tube channel NOTE: Lubricate the ETT especially around the cuff area. NOTE: To avoid the ETT from slipping out of the channel during loading, load it with the natural curvature of the tube facing inward in the channel Insert ETT to where the ETT distal tip is just visible on the right side of the video image

3. Holding of Device- Gently hold the proximal end of the VividTrac using only your fingertips (right hand or left hand), with the index finger on the top flat surface of the device (next to the preloaded ETT and USB cord), and your thumb and middle finger on either side of the device .

4. VividTrac Insertion—While looking inside the patient’s mouth, with the VividTrac body horizontal and the Metal Blade Tip facing directly downward, insert the VividTrac blade midline into the mouth, until the VividTrac body rests horizontally on the chin of the patient. NOTE: If required use your free hand’s thumb to open the mouth and lift the tongue out of the way. NOTE: Do not insert the VividTrac into the airway if liquid or blood is present (use suction before using the VividTrac). With the VividTrac resting on the patient’s chin and the blade tip positioned below the tongue, look at the video image and gently start advancing the VividTrac body further into the oral cavity. Make sure the VividTrac blade stays midline, picking up the tongue as it reaches the epiglottis. This movement is accomplished by lightly pressing the proximal end of the device towards you and continuing with the insertion until the device body is positioned nearly vertical. NOTE: Make adjustments during insertion to assure the blade tip sweeps under the tongue. NOTE: Suction can be applied concurrently if necessary from the right side of the VividTrac device during the insertion Once the VividTrac body is near the vertical position the patient’s airway should come into view.

VIVID TRAC

Procedure Continued:

5. Alignment and ETT Placement—VividTrac will align itself (with image of airway at the center of the display), when the blade tip is placed centrally under the epiglottis (similar to a Miller blade), or when placed in the vallecula (similar to a MAC blade). To obtain a full view of the airway it is recommended to hold the body of the device close to the vertical position. NOTE: Do not “Lift Up” with the VividTrac to gain better visual access to the airway, as you would with a Direct Laryngoscope. Alignment and placement of ETT is a concurrent two handed operation, by holding the VividTrac with the left hand and manipulating the ETT with the right hand. Start advancing the tube with your right hand as soon as the airway comes into view, while using your left hand to align the VividTrac device. Maintain a generous amount of space in front of the camera for the ETT to approach the airway from the right side of the image directly towards the vocal cords. NOTE: Do not press or position the VividTrac metal tip too close to the vocal cords at any time. NOTE: Hold VividTrac back from the airway, and maintain a position where the Epiglottis, Vestibular fold, and esophagus are all fully visualized within the image. NOTE: Insert the VividTrac body deeper into the oral cavity for larger size patients and more anterior airways.

6. VividTrac Check, Secure and Removal—Once the ETT cuff is visualized passing through the vocal cords, separate the ETT from the top of VividTrac tube channel, by pushing the proximal end of the tube forward and to the right. Securely hold ETT at the corner of the mouth with the right hand. Using the left hand gently reverse the path of insertion by withdrawing the VividTrac out of the oral cavity midline. NOTE: VividTrac metal tip is withdrawn when the device body is brought back to horizontal position and parallel to the patient’s neck, similar to the position at the start. Inflate the cuff, secure the airway and mark the tube position. NOTE: In cases where ETT placement needs reconfirmation, move the ETT to the left corner of the mouth, and re-insert VividTrac midline to once again visualize the vocal cords and the ETT placement.

After Use Care:

The VividTrac is a one-time use disposable item. Disconnect it from the Toughbook and place into a red bag.

ZOLL E/M SERIES 12 LEAD

Capabilities:

1. 4-Lead EKG monitoring.
2. Defibrillation (biphasic).
3. Cardioversion.
4. Transcutaneous pacing.
5. Diagnostic/Interpretive 12-Lead EKG.

Monitoring:

Patients can be monitored using either multifunction pads or by using the four-lead patient cables.

Application/Use:

1. Multifunction pads:
 - a. Turn the power on by moving selector switch to the MONITOR position.
 - b. Press the LEAD button until PADS is displayed.
 - c. Check expiration date on package.
 - d. Pad position if anterior/posterior.
 - e. Attach pad connector wires to the defib/pacer cable.
 - f. Dry patient's chest.
 - g. Peel off protective backing.
 - h. Press the pads firmly onto the patient's chest and back in instructed position.
2. Using four-lead patient cables:
 - a. Turn the power on by moving selector switch to the MONITOR position.
 - b. Attach electrodes to patient using standard method.
 - c. Select the lead you wish to monitor in (I, II, III, aVR, aVL, aVF).

The Zoll will display in the lead selected and will print either Lead I, II, III, or aVR, aVL, aVF.

ZOLL E/M SERIES 12 LEAD

Recording selected leads:

1. Pressing the button labeled RECORDER starts the printer.
2. Pressing the RECORDER button a second time stops the printer.

Defibrillation:

1. Multifunction pads:
 - a. Ensure defibrillation pads are in place.
 - b. Move selector switch to DEFIB position.
 - c. Select desired energy level on ENERGY SELECT buttons (defaults to 120 joules).
 - d. If unsure if rhythm is shockable, press the red-lettered ANALYZE button. Screen will then advise if it is a shockable rhythm.
 - e. Press the red-lettered CHARGE button.
 - f. The Zoll will indicate charging with an audible beep and the screen will state charging to XXX JOULES. When the unit has reached the selected energy level, the beeping will become continuous and the SHOCK button will light up red until the energy is delivered. The screen will show DEFIB XXX JOULES READY.
 - g. After assuring the patient is clear, press the lighted SHOCK button.
2. Manual defib with paddles:
 - a. Select DEFIB.
 - b. Set energy level using ENERGY SELECT. Apply conductive paste to paddles. Place firmly the sternum and apex paddles in their proper position.
 - c. Press CHARGE and wait for ready display/tone.
 - d. **STAND CLEAR OF PATIENT**; press and hold both SHOCK buttons.

Synchronized Cardioversion:

Caution: The SYNC button must be pressed after each defib attempt to reactivate the SYNC function.

Application/Use:

1. Connect both the four-lead patient cables and the defibrillation cables with pads to the patient as described in the monitoring section.

Move selector to DEFIB position.

ZOLL E/M SERIES 12 LEAD

2. Select the desired energy level.
3. Press the SYNC softkey. An arrow will appear above each detected "R" wave.
4. Charge the defibrillator.
5. When the unit is charged and the SHOCK button is lit, press the SHOCK button to deliver the shock.
6. Repeat as required.

Pacing:

The Zoll uses a demand pacemaker.

Application/Use:

1. Place both the multifunction pads and patient electrodes on patient as previously described.
2. Turn the selector switch to PACER.
3. Set Pacer output to OmA (will automatically default to this setting if Pacer has just been selected).
4. Set Pacer rate 10-20 ppm higher than the patient's intrinsic rate (auto defaults to 70 ppm).
5. Set output mA. Increase until capture.
6. **4:1 mode:** Pressing and holding this button withholds pacing to one-quarter of set ppm so that the underlying rhythm can be seen.

Running a Diagnostic 12-Lead EKG:

1. Connect the 12-lead V1-V6 wires into the four-lead wire port.
2. Press the 12-lead soft key.
3. Prepare the patient, refer to the **12-lead procedural guideline**.
4. Press the ACQUIRE soft key and the message ACQUIRING DATA will appear on the screen.
5. The Zoll will automatically acquire, analyze, and print the 12-lead EKG without any further action on the operator's part. **Do not** switch from the 12-lead mode until you are completely finished with 12-lead operations.

Procedure: 12-Lead EKG (if unit is equipped with a 12-lead monitor)

The purpose of this protocol is to identify AMI (STEMI and NSTEMI). An EKG must be accurate and free of artifact. Early identification of infarction is crucial because the benefits of hospital thrombolytic therapy are time dependent. Acquisition goals of a proper 12-Lead EKG are to be **clear, accurate, and fast**.

ZOLL E/M SERIES 12 LEAD

Indications : For obtaining 12-lead EKG

1. Chest pain/palpitations.
2. Cardiac dysrhythmia.
3. Heart rate less than 50 BPM or greater than 150 BPM.
4. Severe indigestion/nausea >35-year-old.
5. Epigastric pain unless evidence of GI bleeding.
6. Thoracic back pain without trauma.
7. Diaphoresis not explained by fever or environment.
8. Syncope or near syncope.
9. Dyspnea.
10. CVA/TIA.
11. OD, especially with tricyclic antidepressants, cocaine, and other known substances that may cause irregularity.
12. Allergic reaction.
13. Paramedic discretion.

Electrode Placement Procedure:

1. Place electrodes on the patient (remember modesty especially with female patients). All electrodes must be connected. Proper skin preparation and use of proper electrodes are very important for a good signal quality. If necessary, prepare the patient's skin for electrode placement by:
 - a. Shave chest area, if needed, being careful not to cause laceration.
 - b. Cleaning oily skin with alcohol pad.
 - c. Briskly rub dry.
2. When acquiring 12-lead EKG, place patient in position of comfort (supine preferred). This reduces muscle tension.
3. Have the patient rest their arms/hands on their torso rather than firmly grasping the stretcher rail.
4. Assure patient is warm and free of shivering.
5. Cables should have enough "slack" to avoid tugging on the electrodes.

Be aware of electromagnetic interference (i.e., cellular telephones, radios, most electrical devices).

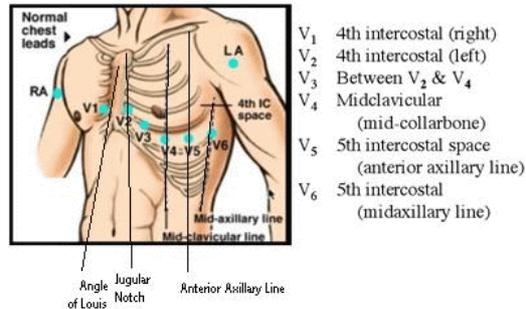
ZOLL E/M SERIES 12 LEAD

6. Accuracy of the EKG depends on the proper placement of the electrodes.
- a. Limb leads are I, II, III, aVR, aVL, and aVF and should be placed on the deltoid muscles for the upper limbs and below the level of the umbilicus for the lower limbs.
Hint: "P" wave in Lead I is always positive; aVR is always negative. If either of these results is different, check limb leads for misplacement.
 - b. For chest lead placement, always remember the following key landmarks:
 - (1) Angle of Louis.
 - (2) Mid-clavicular line (MCL).
 - (3) Anterior axillary line (AAL).
 - (4) Axillary line (MAL).
 - c. Proper placement is as follows:
 - (1) **V1** = Fourth ICS, right of the sternum. Find the angle of Louis, which is in the line with the second rib. Below that is the second ICS. Counting down from that, find the fourth ICS.
 - (2) **V2** = Fourth ICS, left of the sternum.
 - (3) **V4** = Fifth ICS in mid-clavicular line (place it before V3).
 - (4) **V3** = Place it between V2 and V4.
 - (5) **V5** = Fifth ICS in anterior axillary line.
 - (6) **V6** = Fifth ICS in mid-axillary line.
Note: V4, V5, V6 MUST BE LEVEL with each other in a straight line—NOT CURVED.
 - (7) **VR4** = Fifth ICS, right mid-clavicular line (see below for explanation).

Note: Right Ventricle Infarctions (RVI) complicates inferior wall infarctions because it indicates a larger infarction and involves both ventricles. Obtain lead V4R whenever ST elevation is noted in Leads II, III, or aVF. This is done by moving V4 to the opposite side of the chest and running an additional 12-lead printout looking for ST elevation in V4R. In addition to EKG evidence, certain clinical signs also support the suspicion of RVI. The clinical evidence of RVI involves three components; hypotension, jugular vein distention, and dyspnea with dry lung sounds.

ZOLL E/M SERIES 12 LEAD

Precordial or Chest Leads



System setup and calibration:

1. Proper calibration is also important. Calibration standard is 1.0 Mv=10 mm (two big squares on the EKG paper). This is shown on the bottom of the EKG strip.
2. Paper speed is another item that plays a role in the correct acquisition of the EKG. The standard speed is 25 mm/sec. This is shown on the bottom of the EKG strip.

Systematic analysis for infarct recognition:

1. Rate and rhythm:
 - a. Treat life-threatening arrhythmias.
2. Acute infarction:
 - a. Presence of indicative changes/reciprocal changes.
 - b. Localize.
 - c. Coronary artery involved.
3. Miscellaneous conditions:
 - a. LBBB.
 - b. Ventricular rhythms.
 - c. LVH.
 - d. Pericarditis.
 - e. Early repolarization.

ZOLL E/M SERIES 12 LEAD

4. Clinical presentation:
 - a. Maintain a high index of suspicion, especially with diabetes and the elderly as they often experience no pain during an AMI.
 - b. Remember females infarct.
5. Acute infarction:
 - a. Early notification of cardiac alert to the receiving hospital.
 - b. Anticipate complications.
 - c. Develop treatment plan.

<u>Location of Infarction</u>	<u>Leads</u>	<u>Coronary Artery</u>
Septal Wall	V1 and V2	Left
Anterior Wall	V3 and V4	Left
Lateral Wall	V5 and V6, I, and aVL	Left
Inferior Wall	II, III, and aVF	Right
Right Ventricle	V4R, V5R, and V6R	Right

Reciprocal Changes

When ST elevation is present, ST depression usually appears as well. The depression typically shows up in opposing leads. Opposing leads are positioned at the opposite side of the heart from where the acute infarct is located. ST depression occurring in opposing leads is called reciprocal depression.

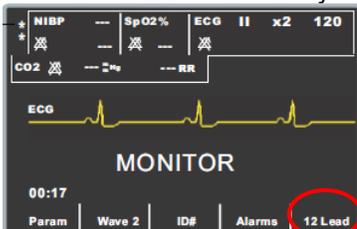
<u>Typical Reciprocation</u>		
Inferior Leads: II, III, and aVF	<----- >	Greater Anterior Leads: V1-V6, I, and aVL
Septal Leads: V1, V2	<----- >	Lateral Leads: V5, V6, I, and aVL
Early Anterior Leads: V1-V3	<----- >	Posterior Leads: V7-V9

TRANSMITTING 12 LEAD

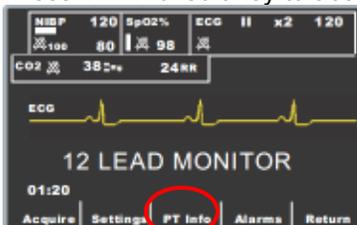
12-LEAD EKG TRANSMISSION TO THE HOSPITAL

There are two components to the transmission of EKG's to the hospital. Both must be configured properly in order to send a 12-lead EKG. The first component involves setting up the Zoll Monitor and the second involves setting up the Toughbook. Both procedures are outlined in detail AND IN ORDER below.

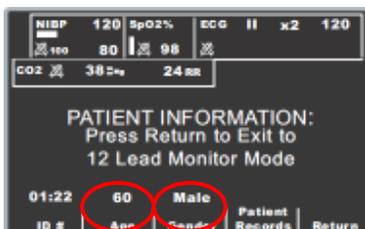
- 1) Press the '12 Lead' soft key



- 2) Press 'PT Info' soft key to access the patient information sub-menu.



- 3) Press the 'Age' and the 'Gender' soft keys to change the age and gender of the patient using the arrow keys on the top of the monitor to navigate. Press the 'Return' soft key when done.



- 4) Press 'Xmit Now' (E-Series) OR 'Dial Phone #' (M-Series).



ZOLL E/M SERIES NIBP/CO MONITORING

NIBP “E” SERIES

To Display the NIBP Menu:

1. Press the Param soft key
2. Press the select soft key until NIBP is highlighted
3. Press the Enter soft key
4. Press the NIBP Auto soft key

To Adjust Auto Intervals:

1. Press the Auto Interval soft key
2. Press the Inc or Dec to desired setting

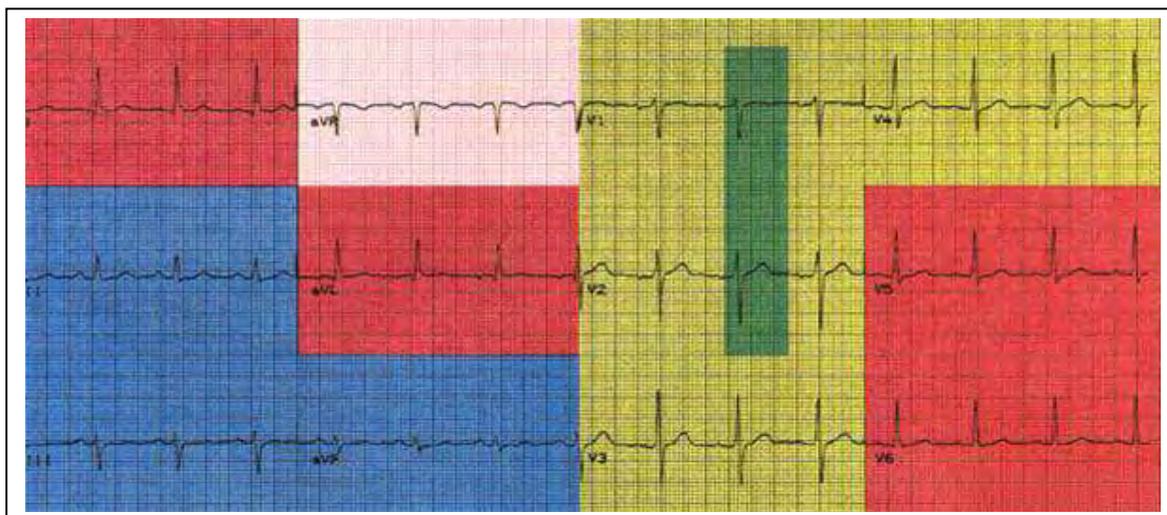
CO (Rainbow Technology) “E” Series Monitor

CO-oximetry data field will alternate between the SpO₂ and SpCO measurements. SpO₂ will display (blue) for 20 seconds, followed by SpO₂ and SpCO for 10 seconds (red). If this does not occur, the steps below should be followed.

1. Press the Param soft key
2. Press the Select soft key until CO-Oxim is highlighted
3. Press the Enter soft key
4. Press the Enable Auto disp soft key
 - a. This will display the alternating pattern between SpO₂ and SpCO

NOTE: LNCS Pdx disposable SpO₂ sensor is only capable of measuring SpO₂ only.

M.I. RECOGNITION



1, avl, v5, v6

Lateral wall involvement/MI

2, 3, avf

Inferior wall involvement/MI

v1, v2, v3, v4

Anterior/Septal wall involvement/MI

v1, v2,

ST depression – Posterior involvement/MI

POLICIES



PASCO COUNTY MEDICAL PROTOCOL 2012

AMBULANCE DIVERSION/BYPASS GUIDELINES

PURPOSE:

To establish clear and concise guidelines for bypass activation for all hospitals with emergency rooms in Pasco County.

DEFINITION:

Ambulance diversion/bypass is a temporary status reflecting an emergency department's inability to provide appropriate patient care of a specific category.

POLICY:

1. Once the Pasco County Emergency Services Department has been notified of a hospital's bypass status, we will make every effort to honor that status.
2. If the patient being transported by a Pasco County Emergency Services Department ambulance adamantly insists on being taken to a facility despite being notified of its inability to care for him/her, the Pasco County Emergency Services Department unit will notify the facility of the patient's decision and transport as requested. This will be clearly documented in the Narrative section of the Pasco County Emergency Services Department's patient care report.
3. Critical patients will be transported to the closest facility regardless of "diversion" or "bypass" status. Examples of critical care patients include, but are not limited to:
 - a. Cardiac and/or respiratory arrest.
 - b. Severe respiratory distress, including pulmonary edema, bronchospasm, and anaphylaxis.
 - c. Childbirth – eminent or complicated delivery.
 - d. Suspected cardiac related pain – symptomatic or asymptomatic
 - e. Status epilepticus – unresolved.
 - f. Severe hypotension.
 - g. Severe, symptomatic hypertension.
 - h. Unstable cardiac dysrhythmia.
 - i. Unstable or unconscious overdose.
 - j. Unstable or unconscious diabetic emergency.

The final decision regarding whether a patient is critical and in need of emergency stabilization at the closest facility will be made by the most senior paramedic on an ALS ambulance.

TRIAGE INITIATION OF AMBULANCE PATIENTS:

While it is understood that the hospital on bypass is extremely busy, the Pasco County Emergency Services Department, as the sole provider of ALS services in this County, has an obligation to many patients who request our services. Holding an ambulance for an extended period of time in the emergency department places a tremendous strain on our system. With this in mind, we recommend the following guidelines be followed:

1. Hospital personnel will initiate triage of all ambulance patients within five minutes of their arrival in the emergency department.
2. Patients not requiring immediate stretcher placement will be put into wheelchairs and placed with walk-in patients in the waiting area

AMBULANCE DIVERSION/BYPASS GUIDELINES

CATEGORIES OF DIVERSION/BYPASS:

1. Total Bypass

This means that the ED is closed to all EMS activity, both medical and trauma related. There are no further stretchers, monitors, nurses, or physicians available to render emergency patient care. This status may also be invoked following an internal disaster within the hospital.

2. Neuro Bypass

This would include all patients in need of or with the potential need for immediate neurodiagnostic intervention. It would include equipment failure (e.g. CAT scan).

3. EMS Activated Bypass

This is a total bypass of the hospital initiated by the Pasco County Emergency Services Department following notification and verification that a crew had been holding a patient on their stretcher at the emergency room for 30 minutes (see ER Ambulance Patients).

BYPASS ACTIVATION NOTIFICATION:

A hospital that finds that diversion is the only immediate solution to a temporary inability to accept additional patients to its emergency department will follow the steps outlined below:

1. A person designated by the hospital will call the Emergency Communications Center (727-847-8102 or 727-847-8105), providing the dispatcher with the following information:
 - Name of the hospital.
 - Category of patients to be diverted (from the list above).
 - Caller's name and title.
2. The Emergency Communications Center dispatcher will notify via radio all Pasco County Emergency Services Department ambulances that the hospital is on bypass for the particular category of the patient. They will then notify all other County hospitals of the same via an alpha numeric paging system as soon as practical.
3. The Emergency Communications Center will send a CAD printout to the rescue stations affected by the bypass.
4. The Emergency Communications Division will notify the appropriate Battalion Chief.
5. When the hospital comes off diversionary/bypass status, the designated person will again call the Emergency Communications Center, identifying himself/herself and stating that the hospital is off diversion/bypass.
6. The Emergency Communications Center will notify via radio and pager the change in diversionary status as soon as possible.

AMBULANCE DIVERSION/BYPASS GUIDELINES

EMERGENCY ROOM AMBULANCE PATIENTS:

Ambulance patients that arrive at hospitals and are not removed from the ambulance stretcher within 30 minutes will result in the emergency room being placed on EMS Activated Bypass.

The lead or senior crew member on the ambulance will notify the emergency room charge nurse when a patient has been waiting at the hospital on the ambulance stretcher for 15 minutes.

The emergency room charge nurse, now aware of the potential for the hospital being placed on a total bypass situation by the Pasco County Emergency Services Department, will investigate possible solutions. (i.e. the need for more staff or beds, etc.)

If the patient has not been removed from the ambulance stretcher within 30 minutes, the lead or senior crew member will again make contact with the emergency room charge nurse to advise him/her of the bypass status and obtain an estimated length of time for the patient to be removed.

The lead or senior crew member will notify the Emergency Communications Center of their status and the estimated length of time before they will be in service.

The Emergency Communications Center supervisor will verify a 30-minute holding status and place the hospital on EMS Activated Bypass for all incoming ambulances. All area hospitals will be notified by alpha pager as soon as time permits.

The bypass status will remain in effect until all ambulances are in service from the hospital and the emergency room staff has notified the Emergency Communications Center that the emergency room is again able to accept ambulance patients.

DURATION OF BYPASS:

A hospital may cancel bypass at any point in time that their operations capabilities return to normal. Typically, ambulance diversion/bypass is expected to last no longer than four hours. Should the hospital fail to contact the Emergency Communications Center at the end of the four-hour period, the hospital will automatically be taken off bypass status. If additional time is needed, the hospital designee will notify the Emergency Communications Center that an extension is requested.

OTHER GENERAL PROVISIONS:

During ambulance diversion/bypass, the hospital staff will actively work to reopen the emergency department.

Should two or more hospitals in the same immediate geographical area request bypass of the same type, bypass status will be automatically canceled for those hospitals.

Each hospital administrator and emergency room director will receive a Bypass Activity Report monthly from the Pasco County Emergency Services Department.

Decisions regarding a patient's request to be transported to a hospital in an adjacent county will be based on the patient's condition.

The Pasco County Emergency Services Department personnel will not contact nor request that an Emergency Communications Center dispatcher contacts an emergency department to inquire as to the availability of "on-call" specialty services at a hospital. This includes, but is not limited to, orthopedic, plastics, hand, or neurosurgical "on-call" physician coverage.

THERMOMETER

EXERGEN Temporal Artery Thermometer (TAT) Temporal Scanner™ TAT-2000C or TAT-5000

ARTERIAL THERMOMETER BACKGROUND:

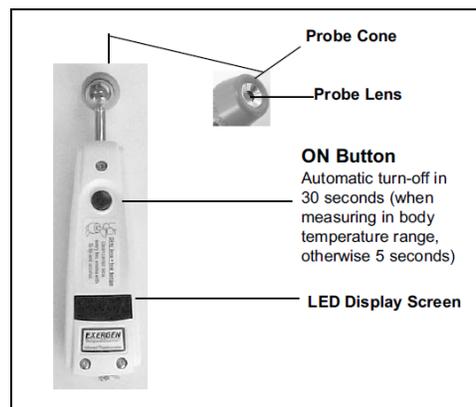
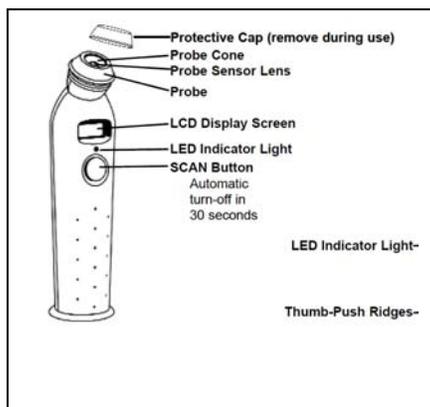
The temporal artery is connected to the heart via the carotid artery, directly leading from the aorta. It is the only such artery positioned close enough to the skin surface to provide the access needed to take an accurate measurement.

The temporal artery is located at the front portion of the forehead. As you gently slide the thermometer across the forehead, crossing over the temporal artery, the sensor performs the following functions:

- It captures naturally emitted infrared heat from the arterial blood supply at about 1,000 times per second, locking in the reading for the highest temperature it senses.
- It measures the ambient temperature of the area where the temperature is being taken. "Arterial heat balance" software synthesizes the two separate readings to accurately determine and display body temperature.

PRECAUTIONS:

- The operating environmental range temperature range for this product is 60-104°F (15.5-40°C).
- Always store this thermometer in a clean, dry place where it will not become excessively cold (-4°F/-20°C) or excessively hot (122°F/50°C).
- Do not drop thermometer or expose it to electrical shocks.
- This thermometer is not intended to be sterile.



THERMOMETER

CARE AND MAINTENANCE:

- Probe lens and cone should be shiny clean; if not, clean with alcohol wipe.
- Probe lens and cone should be cleaned with alcohol wipe after each use.
- **A dirty lens = low temperatures.** Clean the lens weekly with a Q-tip dipped in alcohol.
- The main part of the thermometer can be cleaned with any type of disinfectant, including bleach. Do not use bleach or disinfectants other than alcohol on the lens.
- Do not hold the thermometer under the faucet or submerge in water. It is not water proof.
- For the TAT-2000C: A blinking battery icon will show on the display when the battery is low, but will still operate. When the blinking battery icon is on the display, along with two dashes where the temperature reading is normally displayed, there is not enough energy in the battery to measure a correct temperature.
 - o Remove the battery compartment door by pushing down on the ridges with your thumb and pushing away as indicated.
 - o Remove the old battery and discard appropriately.
 - o Insert an alkaline 9 -volt battery with the positive (small terminal) always on the right.
 - o Replace the compartment door.
- For the TAT-5000: “bAtt” on the display indicates a low battery.
 - o To replace, loosen the single screw at the bottom of the instrument and remove the battery cover.
 - o Remove the old battery and discard appropriately.
 - o Insert an alkaline 9-volt battery.
 - o Replace the compartment door and tighten the screw.

BEHAVIORAL EMERGENCIES

1. Guiding Principles:

- a. Respect the dignity of the patient.
- b. Assure physical safety of patient and EMS personnel.
- c. Diagnose and treat organic causes of behavioral disturbances such as hypoglycemia, hypoxia, or poisoning.
- d. Use reasonable physical restraint **only** if attempts to verbally control the incident are unsuccessful. Every attempt should be made to avoid injury to the patient when using physical restraint.
- e. Teamwork between EMS personnel and law enforcement will improve patient care and outcome.

2. Prior to Patient Contact:

Upon being dispatched to any emergency situation which may involve a violent or hostile patient; i.e., an individual presenting with a behavioral dysfunction or that has a known psychiatric disorder, is apparently intoxicated or under the influence of drugs, ascertain as much pertinent information as possible from our communications center.

Should there be an indication of a potential violent encounter, law enforcement should be requested, if not already dispatched. The ranking officer responding should consider staging fire rescue units until law enforcement arrives on the scene and gives notification that it is clear for entry. Should there be a delay in law enforcement response, the ranking officer from our department should consider the following guidelines when determining whether our personnel should make contact with the patient:

- a. Determine scene safety by communicating with Dispatch, available family members, friends, or bystanders.
- b. Utilizing the above sources, determine if there could be weapons on the scene.
- c. Utilizing the above sources, attempt to determine the patient's possible mental and physical status.

3. Patient Contact:

Once on scene, try to establish a rapport with the patient, taking caution not to further upset him or her. The verbiage you use in the conversation is critical to the outcome. Other general rules to remember are:

- a. Identify yourself and your purpose for being there.
- b. If there is a possibility of a traumatic injury or an underlying medical problem, try to determine if this may be the cause of the patient's behavioral difficulties. Follow the established medical protocol for our department in this situation.
- c. Listen to the patient. You can show you are listening by repeating part of what the patient says back to him.
- d. Use positive body language and good eye contact. Avoid crossing your arms or looking uninterested.
- e. Try not to enter the patient's personal space. Making the patient feel closed in may cause an emotional outburst. Avoid unnecessary physical contact and quick movements.
- f. If possible, remove loose objects from the immediate patient care area to prevent them from becoming possible weapons for the patient.

BEHAVIORAL EMERGENCIES

In examining and treating a person who is apparently intoxicated, under the influence of drugs, or otherwise incapable of providing informed consent, the EMT or paramedic shall proceed wherever possible with the treatment of the person. If the person appears to be incapacitated and/or refuses his consent, and the situation is such that under the same set of circumstances the person would undergo such examination, treatment, or procedure if he or she were advised to do so by the EMT or paramedic, **the person may be examined, treated, or taken to a hospital without his consent**, but unreasonable force may not be used. **Examination and treatment shall be limited to what is necessary to determine the medical condition of the patient and to what is necessary to alleviate the emergency medical condition or stabilize the patient.** (This is per Florida Statutes 401.445, 766.103, and 394.463.)

Should your patient forcefully resist your efforts to examine and/or treat him/her, wait for law enforcement to arrive on the scene to evaluate the patient for possible Baker Act. Consider retreating from the scene should your presence continue to agitate the patient.

If the patient should become violent prior to loading for transport, enlist the assistance of the patient's family or friends in an effort to calm the patient. Due care should be observed so as not to place Pasco County fire/rescue personnel or others in harm's way. If efforts to calm the patient are unsuccessful, consideration should be given to retreating from the scene until law enforcement arrives to provide assistance. **Any use of force should be left to law enforcement personnel.** The decision to intervene and subdue a patient should only be considered when there is a possibility that the patient could become seriously injured should no intervention take place. For example, if the patient should run into traffic, etc. Careful consideration must be given to each situation as it arises; therefore, the decision to intervene must be at the discretion of the fire/rescue personnel involved.

4. Patient Transport:

The transportation of a patient with psychiatric or behavioral disorders should only be executed if the patient has a medical-related complaint that requires admittance to an emergency room.

BEHAVIORAL EMERGENCIES

Once the determination has been made to transport, the following guidelines should be considered:

- a. The hostile patient should never be transported by fire/rescue personnel without the patient being restrained utilizing, at a minimum, the soft mechanical restraints.
- b. Never try to restrain a patient unless there are sufficient personnel on the scene to do the job. You must be able to ensure your safety and that of your patient.
- c. Never "hog tie" the patient or restrain the patient in any other manner that could impair his breathing. Never use any form of "sleeper" hold that may interfere with the patient's circulation.
- d. Never place your patient in a prone position. Studies indicate prone-position restraint increases the risk of positional asphyxia, a risk that increases for people with heart problems or a history of drug or alcohol abuse.
- e. Law enforcement should accompany the patient in our unit, or follow in close proximity behind the ambulance. A third rescue/firefighter should accompany the patient to the hospital as a safety factor. Ideally, five people should be present to safely apply physical restraints to a violent patient. This allows for control of the head and each limb.
- f. If the patient is spitting, place a surgical mask on the patient if he has no breathing difficulty or likelihood of vomiting. All personnel should wear protective masks, eye wear, and protective clothing per SOG.
- g. Remember, this type of patient requires constant supervision. Do not let your guard down at any time during the transport. Some patients have the presence of mind to appear nonviolent, and may try to convince you to remove the restraints. DO NOT DO SO. Assure the patient you are following departmental procedures.
- h. If your patient is unrestrained and becomes violent during transport, and your efforts to calm and/or restrain the patient are unsuccessful, the driver should stop the ambulance immediately and request law enforcement intervention—Priority 1. Abandoning the unit and removing the ignition key is an option if there is a delay in law enforcement's intervention.

5. Chemical Restraint:

If a patient presents as a possible danger to himself or others, or if you feel the patient cannot otherwise be handled, consider the use of [Valium](#) per Medical Protocol.

6. Restraint Guidelines:

Restraint is defined as any mechanism that physically restricts a person's freedom of movement, physical activity, or normal access to his body. Physical restraints are a last resort. All possible means of verbal persuasion should be attempted first. A restraint has the potential to produce serious consequences such as physical and psychological harm, loss of dignity, violation of the individual rights and even death.

BEHAVIORAL EMERGENCIES

If at all possible, have a law enforcement official on scene prior to any physical restraint procedure and do not hesitate to back off and wait for law enforcement as necessary.

a. Purpose:

To prevent harm to patient and/or others.

b. Indications for use:

The application of mechanical restraints is allowed only when all less restrictive measures of control have failed, (e.g., verbal de-escalation), and the patients behavior continues to pose a threat to himself or others. The application of restraints should always be done out of necessity, to ensure patient or provider safety; never as a matter of convenience.

c. Procedure:

- (1) Request law enforcement at the earliest opportunity.
- (2) Advise dispatch to contact Battalion Chief.
- (3) Ensure the presence of sufficient personnel to safely apply restraints.
- (4) Explain to the patient and family why restraints are necessary.
- (5) Apply restraints in a humane manner, affording as much dignity as possible.
- (6) Use the least restrictive method of restraint necessary to protect the patient and still ensure provider safety during transport.
- (7) The only acceptable position for restraint is supine. A patient must never be hobbled, "hog-tied" (arms and legs tied together behind the back), or restrained to a stretcher in a prone position neither on the scene nor during transport.
- (8) Upon the arrival of fire rescue personnel on scene, if a patient is already found restrained in a prone or hobbled position, immediately place patient into a supine position.
- (9) Document time when restraints were initiated.

BEHAVIORAL EMERGENCIES

All cases of restraint will go to the medical director for quality assurance. The following must be documented on the EMS run report.

- The " emergency that existed."
 - That the need for treatment was explained to the patient.
 - That the patient refused treatment or was unable to consent (i.e. unconscious, incompetent, intoxicated by alcohol or drugs).
 - Evidence of the patient's incompetence to refuse treatment.
 - The failure of less restrictive methods.
 - The restraints were for the patient's safety.
 - The reasons for the restraint were explained to the patient.
 - The type of restraint used.
 - The limbs that were restrained.
 - Circulation and respiratory status every three to five minutes.
 - The time restraints were initiated.
- a. Types of Restraints:
- (1) Hard Restraints (leather).

Choose slot on the ankle/wrist cuff, allowing one to two fingers to be passed between skin and cuff. Always keep the key nearby if restraints are being used.
 - (2) Soft restraints (small towels, sheets, cravats, triangular bandages, and manufactured soft restraints).

Do not use a knot that may tighten and restrict patient circulation distal to wrist/ankle.
- b. Methods of Restraints:
- (1) Partial Restraint:
 - (a) Patient supine on stretcher.
 - (b) Secure stretcher straps.
 - (c) If necessary, secure wrists and ankles on ipsilateral side of stretcher frame (not side rail)

BEHAVIORAL EMERGENCIES

(2) Full Restraint.

- (a) Patient supine on stretcher.
- (b) Secure stretcher straps.
- (c) Secure wrist with one arm on ipsilateral side and the other above head on stretcher frame (not side rails).
- (d) Secure ankles on ipsilateral side of the stretcher frame (not side rails).
- (e) Continually ensure and monitor patient's circulatory and ventilatory effort.
- (f) **Beware of positional asphyxia.**

- Do not allow any form of restraint, including handcuffs or shackles, placed on your patients by law enforcement to interfere in any way with necessary medical treatment, assessment, or monitoring.
- Law enforcement should be in contact or control of every patient that is in their custody, whenever possible.
- All individuals being transported only for psychological evaluation under the premise of the Baker Act should be accompanied by a law enforcement officer. The paramedic in charge shall determine whether the law enforcement officer will ride in the back or follow behind the rescue unit.

CANCELING RESPONSE

Pasco County Emergency Services Department rescue units responding to emergency or nonemergency medical calls may only be canceled prior to their arrival on the scene, and prior to making patient contact, by a full-time, paid career fire department that maintains a minimum response staffing level of EMT'S. In all other incidents, the responding rescue company officer may downgrade the response when sufficient on-scene information has been provided, but the rescue crew is not permitted to cancel prior to making patient contact.

Current career departments that meet these requirements:

- New Port Richey Fire Department
- Zephyrhills Fire Department
- Port Richey Fire Department

CARDIAC ALERT CHECKLIST

PASCO COUNTY FIRE RESCUE CARDIAC ALERT CHECKLIST

Patient Name: _____ Age: _____ Date: ____
 Rescue No.: _____ Control No.: _____ Arrival Time: ____
 History: _____
 Allergies: _____

CHEST PAIN INFORMATION

Provocation: _____ Quality: _____
 Region: _____ Radiation: _____
 Relief: _____ Severity: 1-10 (Circle) 1 2 3 4 5 6 7 8 9 10
 Time of Symptom Onset: _____ Other Symptoms: _____

RESPONSE TO TREATMENT (Circle Appropriate Response)

Nitroglycerin	No Relief	Partial Relief (1-10)	Complete Relief	Not Given
Aspirin	Yes/Amount Given _____		If no, reason withheld: _____	
Morphine	No Relief	Partial Relief (1-10)	Complete Relief	Not Given

12-LEAD ANALYSIS (Circle Leads with ST Segment Evaluation)

ST segment elevation of 1 mm or greater, in two or more anatomically contiguous leads is enough evidence to suspect a myocardial infarction.

This patient should be transported to the nearest Cardiac Center. The paramedic should contact the receiving emergency department as soon as possible and notify them of the impending arrival of a Cardiac Alert patient.

Right Coronary Artery Leads

II III aVF RV4
(Inferior)

Left Coronary Artery Leads

VI V2 V3 V4 V5 V6 I aVL
(Septal) (Anterior) (Lateral Leads)

Fibrinolytic Therapy: Contraindications and Cautions Patient Survey

Active Peptic Ulcer	Yes	No
Active or Known Bleeding Problem	Yes	No
CVA or TIA Within the Past Six Months	Yes	No
Brain or Spinal Surgery, Brain Tumor, or Aneurysm	Yes	No
Recent Surgery or Trauma, Organ Biopsy (within two weeks)	Yes	No
Severe Hypertension >220/110	Yes	No
Active Use of an Anticoagulant	Yes	No
Jaundice, Hepatitis, or Kidney Failure	Yes	No
Pregnancy, Menses	Yes	No
Prolonged CPR >10 Minutes	Yes	No
Closed Head Injury/Facial Trauma <3 Months	Yes	No

A Cardiac Intervention Center is a facility with emergency cardiac surgical capabilities. Currently, Regional Medical Center/Bayonet Point, Florida Hospital/Zephyrhills, University Community at Fletcher, and Helen Ellis are considered Cardiac Centers

DELTA RESPIRATORS

Description:

The Delta N95 Respirator is a respiratory protection that provides personal protection as well as meeting regulatory standards. The N95 is resistant to moisture and also hypo-allergenic. The respirator may reduce, but does not eliminate, the risk of exposure to disease or infection. The respirator is a one-time use item available in four sizes to obtain proper fitness. The respirator is NIOSH-approved.

Indication:

Required use as personal protection equipment when the potential exists for airborne communicable diseases, including but not limited to:

1. Intubation/nasal or tracheal
2. Nebulizer administration.
3. Patient contact with confirmed airborne disease.
4. Patients with a cough over one week.
5. COPD patients.
6. Patient with meningitis/suspected meningitis.
7. HIV patients.
8. TB patients.
9. Childbirth (impending).
10. Patient vomiting/spitting/combatative.
11. Paramedic/EMT discretion.

Reminder: Alpha-Pro Shield Mate and/or goggles can be used for eye protection.

Contraindications:

No specific contraindications.

Procedures for Donning:

1. Hold the respirator in its flat format. Keeping the respirator closed, bend the nose clip around your finger to form a shape that form-fits on your nose. Then, bend the ends of the nose clip so they have a slight upward flare. Open the respirator carefully so there is minimal handling inside the respirator.
2. Pull the lower portion of the headband strap so that it hangs longer than the upper portion of the strap. The upper portion of the strap should be against the nose clip. Remove any twists in the strap. Hook the respirator under your chin and stretch the lower portion over your head. Position the strap around your neck.
3. Pull the portion of the strap that is against the nose clip over your head. Position it high on your head above your ears. Adjust the straps so there is equal tension on all four straps.

DELTA RESPIRATORS

4. Using your fingers, shape the nose clip so that the respirator seals over your nose. Ensure the respirator fits comfortable and seals against your face, then perform a negative or positive pressure fit check.
5. Cover the respirator with your hands; exhale forcefully. A positive pressure should be felt inside the respirator. If air leaks at the respirator edges, adjust the straps to obtain a better fit.

Cautions:

1. If the respirator is damaged or torn, do not use it.
2. Certain facial characteristics, including but not limited to: hollow cheeks, missing teeth, and facial hair may interfere with face-to-respirator sealing surface.
3. In the event breathing resistance becomes excessive or uncomfortable, leave the contaminated environment immediately. Remove the respirator, discard it, and don a new respirator before reentering the area.
4. Confirm tight facial fit of the respirator before entering a contaminated atmosphere.
5. Misuse may result in sickness or death.
6. Read directions prior to donning.

DISCONTINUING CPR

If CPR has been established prior to your arrival by First Responders or the general public, and the patient shows obvious signs of mortal injury due to massive trauma or obvious death (rigor, lividity, etc.), you have the option of **STOPPING CPR**. The paramedic **MAY** elect to transport the patient or contact a physician via radio and allow them to make the decision. Make sure that the run report is documented accordingly.

DO NOT RESUSCITATE DNR/NO CODE

An EMT or paramedic will withhold or withdraw CPR:

1. Upon the presentation of an original or completed copy of the Department of Health's Form 1896; or
2. Upon the presentation or observation on the patient of a Do Not Resuscitate Order (DNRO) patient identification device; or
3. When given an in-person, verbal order from an attending physician; or
4. When the patient is under hospice care and there is no request from any family member to resuscitate the patient. The shade of yellow does not have to be an exact duplicate.

The DNRO presented to the EMT or paramedic will be printed on yellow paper and have the words "DO NOT RESUSCITATE ORDER" printed in black and displayed across the top of the form. The form may be duplicated provided that the content of the form is unaltered, the reproduction is of good quality, and it is duplicated on yellow paper.

The DNRO patient identification device is a miniature version of the Department of Health's Form 1896 and is incorporated at the bottom of the form. Use of the device is voluntary. It may be separated from the rest of the form at the dotted line, and when signed, is intended to travel on or with the patient as a convenient and portable DNRO.

Both DNRO form and patient identification device must be signed by the patient's physician and the patient. If the patient is incapable of providing informed consent, the patient's health care surrogate or proxy, court-appointed guardian, or person acting pursuant to a durable power of attorney must sign.

In all situations, verification as to the identity of the patient shall be obtained from the patient's driver's license, photo identification, or a witness in the presence of the patient.

A copy of the DNRO form or the patient identification device will accompany the patient during each transport (this copy has to be on yellow paper). The EMT or paramedic will, upon request, provide comforting, pain-relieving, or any other medically indicated care, short of respiratory or cardiac resuscitation.

A decision to not resuscitate may be revoked at any time by the patient, the patient's health care surrogate or proxy, court-appointed guardian, or person acting pursuant to a durable power of attorney.

If the preceding conditions are not met, the BLS measures will be promptly instituted and the closest emergency department physician will be consulted for further orders. If, after you have instituted BLS and appropriate DNRO is produced, BLS may be withdrawn.

All members of this department are legally obligated to provide the level of care commensurate with the situation, based on their knowledge that the patient is in need of such care.

DETERMINATION OF DEATH

Determination of Death in the Field

Resuscitation efforts are to be withheld if patient is obviously dead or has a valid Florida DNR (Do not resuscitate) form present.

Indications:

One or more of the following should be present in determining Death in the Field:

1. Rigor mortis
2. Lividity
3. Body decomposition
4. Devastating, clearly not survivable injury/injuries suitable for life examples – decapitation, burned beyond recognition, traumatic head/chest injury/injuries
5. Valid Florida DNR present during Cardiac Arrest
6. Extensive down time with Asystole present in at least two leads.

Procedure:

1. Confirm Death in the field
 - a. Effort should be made to capture an EKG strip for patients confirmed Dead in the field
2. Notify Dispatch of confirmed Signal 7
3. If crime scene is suspected, preserve the scene. Limited personnel near/in the room of the patient.
4. Attempt to gather patient information without contaminating the scene
5. Await law enforcement agency.
6. Provide law enforcement agency with the following:
 - a. Control #
 - b. Time confirmed signal 7
 - c. Unit/Shift
 - d. Name of crew member who pronounced and additional crew members

STATE OF FLORIDA DNR



State of Florida DO NOT RESUSCITATE ORDER

(please use ink)

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

PATIENT'S STATEMENT

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

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

(Applicable Signature) (Print or Type Name)

PHYSICIAN'S STATEMENT

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

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

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

DNR Form 1866, Revised December 2002

PHYSICIAN'S STATEMENT

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

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

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

DNR Form 1866, Revised December 2002



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)

DOCUMENTATION OF VITALS

In accordance with Section 64E-2.013 of the Florida Administrative Code, the first set of vitals documented in the "Patient Assessment" portion of the run report must be taken by the unit completing the report. At least one additional set of vitals must be taken during patient transport.

NOTE: All initial blood pressure's will be manually auscultated prior to the initiation of Zoll's automated BP feature.

*Every 5 minutes while on an emergency call
Every 15 min on a non-emergency transport*

If you wish to document vitals taken by other responding agencies, or nontransporting units prior to your arrival on the scene, they are to be entered in the narrative portion of the report or "Assisting Agency" section of the pen base unit.

EMT ATTENDING

EMTs may attend to a patient during transport in an ALS permitted ambulance under the following conditions:

1. The paramedic has completed his/her assessment and determined that the patient's condition will not require ALS care, monitoring, or treatment while en route to the receiving facility.
 - a. The patient does not require continuous cardiac monitoring as described in Medical Protocol Policy 12.
 - b. The patient has not had an IV line or reseat established outside the hospital environment.
 - c. The patient has not been given any ALS medication.
2. The EMT attending the patient will document and identify in the run report the paramedic that did the initial survey.
3. Responsibility and accountability for the quality of any patient care ultimately remains with the paramedic. Should the EMT feel at any time that the patient's condition has deteriorated, he is to notify the paramedic immediately.
4. After the paramedic reviews the completed run report, they will write in their bunker number above the EMT's bunker number and will initial above the EMT's signature.

EKG PROTOCOL

The following types of patients will receive cardiac monitoring:

1. Cardiac arrest.
2. Symptomatic M.I. (STEMI or NSTEMI), chest pain, and/or angina.
3. Respiratory distress, difficulty in breathing, COPD, and/or wheezing.
4. Dysrhythmia.
5. Unconscious/unresponsive.
6. Hypertension.
7. Hypotension.
8. Chest trauma
9. Electrocutation.
10. Patients receiving IV drugs.
11. Paramedic's discretion.

INTERFACILITY TRANSPORTS

Whenever the paramedic feels that it would not be in the patient's best interest to be transported by our agency, the following procedure will apply:

1. The paramedic will contact their battalion chief and advise him/her of the situation.
2. The battalion chief will make contact with the facility and express the concerns, offering the possibility of transporting by alternate service of All Children's transport or helicopter.

OR

The facility providing assistance during the transport.

3. The goal is to resolve the situation with the transferring facility in the best interests of the patient.
4. The Pasco County Fire Rescue rescue units are not permitted to participate in the interfacility transport of patients less than 28 days old or 5 kg in weight.
 - a. An exception to this policy is as follows:
 - (1) Newborn patients birthed in an emergency department in a facility that does not have obstetric services. Example: Regional Medical Center/Bayonet Point; Northbay.
 - (2) Request for transport to a facility with obstetric capabilities.
 - (3) Delivery was without complications.
 - (4) Patient is stable and in no distress.
 - (5) Necessary medical interventions are not expected.
 - (6) Weighs greater than five pounds.
 - (7) If the patient's mother is also transported, a second "attendant" (preferable staff from the sending hospital), will accompany the transport.
 - (8) Transport in an approved infant care safety seat, either provided by the sending facility, the patient's family, or our service.
5. The Pasco County Fire Rescue cannot transport a patient with blood or blood products infusing without the sending facility's RN in attendance.

INTERFACILITY TRANSPORTS

Interfacility Transports: Hospital Personnel Accompanying Patient Protocol

Whenever hospital personnel accompany patients on interfacility transports for the purpose of rendering specific care, the following policy will apply. The patient is the joint responsibility of the transferring facility and fire/rescue.

1. Transferring hospital will provide written physician's order as to their staff's responsibility.

Examples:

"RN to accompany patient. Titrate gtts to maintain BP 90."

"PCT to accompany patient to assist in maintenance of patient safety and prevention of elopement."

"RT to accompany patient to assist in airway and ventilator management."

In the event that the patient's condition deteriorates beyond the scope of the physician's orders, the paramedic will follow Pasco County Fire Rescue Medical Protocol for treatment, and the patient will be transferred to the nearest facility.

INTERFACILITY TRANSPORTS

Guidelines for Managing Interfacility IV Medications and IV Pumps

ALS transports with intravenous (IV) medications will be managed according to the following guidelines:

- When the patient is on a hospital IV pump and the paramedic is not familiar with the specific pump, the paramedic will request an in-service from the hospital staff prior to transporting the patient. The required functions to know on these pumps are, the **ON**, **OFF**, **RESET**, and **START** buttons.
- All paramedics are to review and understand Medication Infusion pages of the medical protocol that relate to maintenance care of Tridel/Nitro and Heparin. These three medications are most commonly used during interfacility transports.
- If the patient is *unstable*, or an *unfamiliar* medication is infusing, which may require higher skill training or equipment that is not available to our service, the paramedic shall request a staff member from the sending hospital to ride along. If the sending hospital's charge nurse refuses to send a staff member when requested, contact your Battalion Chief for further guidance.
- If the IV pump fails, the paramedic shall contact the sending hospital for further orders. **NEVER** run the IV medicine without a pump.
- When transporting a patient with IV medications and/or cardiac monitoring, our paramedics can only transfer the patient to a staff member of the receiving hospital or facility with equal or higher training and capabilities. The receiving hospital staff or ride-along staff member will discontinue the IV medication to switch over to the receiving facility's IV pump. If the transport is to a MRI or CAT scan facility, the paramedic will have our Dispatch Center call the receiving facility to confirm there is somebody of equal or higher in training to discontinue the pump prior to the procedure and place the pump back in-service after the procedure. If there is no one at the receiving facility to accomplish this, request a ride-along staff member from the sending facility. If the sending facility's charge nurse refuses to send a staff member when requested, contact your Battalion Chief for further guidance.

On all wait and return interfacility transports, the crew will notify their Battalion Chief of the wait time.

INTERFACILITY TRANSPORT CODEHEART

"CODE HEART" STAT Interfacility Transport Protocol

Purpose:

To provide Pasco County Fire Rescue personnel with procedures for the safe and efficient completion of an emergent (STAT) ALS interfacility transport of a high-risk, cardiac patient from a cardiac catheterization lab in a local hospital to the cardiovascular surgical area of an interventional cardiac center.

This protocol was formulated in conjunction with the Cardiac Centers within Pasco County. It was designed and has been tested to meet the 60-minute timeframe required by the hospitals' certification for the transportation of an emergent cardiac patient from the Emergency PCI Cardiac Center to the interventional Cardiac Center.

Statement of Policy:

"Code Heart" is the term that will be used for a STAT interfacility transport of a high-risk cardiac patient from the cardiac catheterization lab of an in-County hospital directly to the cardiovascular surgical area of an in-County interventional cardiac center.

There are two interventional cardiac centers within Pasco County: Regional Medical Center at Bayonet Point and Florida Hospital Zephyrhills.

Pasco County Fire Rescue (PCFR) will only transport Code Heart patients to these two facilities from the three other hospitals within Pasco County. Any deviation from this policy will require the permission of the Rescue Chief or the Administrative Chief on call.

Origin of Call:

Requests for a "Code Heart" will originate from the cardiac catheterization lab of the sending hospital.

Code Heart Requests:

Requests for a "Code Heart" will be received by the Pasco County E-911 Communications Center on one of the two, seven-digit telephone lines.

(Refer to Emergency Communications SOGs for processing procedures.)

Response and Actions at Pick up and During Transport:

1. Rescue units assigned a "Code Heart" will respond in the RED to the sending hospital.
2. Upon arrival, the crew will report directly to the cardiac catheterization lab, unless otherwise advised.
3. PCFR personnel will assist hospital personnel in the transfer of the patient from the catheterization table onto their stretcher.
4. PCFR personnel will assist in moving the balloon pump, along with the patient, from the catheterization lab to the rescue unit.

INTERFACILITY TRANSPORT CODEHEART

1. The sending hospital will provide the appropriately-trained and necessary personnel to facilitate the movement of the patient and equipment to the rescue unit.
2. The sending hospital will provide the appropriately-trained and necessary personnel to ensure the continuity of patient care.
3. At no time will PCFR personnel operate or adjust the settings on a balloon pump.
4. PCFR personnel will provide the assistance necessary to safely move the patient and the balloon pump into the rescue unit.
5. PCFR will provide oxygen and electrical power as necessary to operate hospital equipment for the duration of the transport.
6. PCFR will respond in the RED to the receiving hospital. It is imperative that the vehicle driver remain aware of the patient, personnel, and equipment being transported and exercise due caution when responding.
7. PCFR personnel will actively participate in patient care and treatment for the duration of the transport.
8. In the event of a cardiac arrest during the transport and in the absence of an accompanying physician, PCFR personnel will lead the resuscitation of the patient in accordance with our medical protocols.

Radio Communications:

1. Approximately five minutes prior to arrival, the PCFR paramedic will contact the receiving hospital's emergency department (ED) by Med Radio.
2. The paramedic will advise the ED, "We have a five-minute ETA with a Code Heart. Please notify the Cardiovascular OR and have manpower standing by on the ED ramp."

Actions Upon Arrival at Receiving Hospital:

1. Upon arrival at the receiving hospital, PCFR will provide the assistance necessary to safely move the patient and the balloon pump from the rescue unit.
2. The receiving hospital will provide the appropriately-trained and necessary personnel to facilitate the movement of the patient and equipment from the rescue unit to the Cardiovascular OR.
3. PCFR personnel will assist hospital personnel in the transfer of the patient from the ambulance stretcher to the OR stretcher.
4. PCFR personnel will not proceed into the designated sterile area unless directed so by the OR personnel.

INTERFACILITY TRANSPORT CODEHEART

Return of Personnel and Equipment:

1. PCFR will return the personnel and equipment to the sending facility in a timely manner.
2. If the rescue unit is only returning personnel to the sending facility, it will be available for an emergency call.
3. The Communications Center will facilitate the timely return of the hospital personnel.
4. Due to the critical nature of the balloon pump's availability at the sending facility; the rescue unit will be out of service until this piece of equipment has been returned.

Patient Care Reports:

All current PCFR policies and procedures will be followed for the completion of a patient care report. This includes, but is not limited to, obtaining the transfer form from the sending hospital, documentation of interventions and vital signs, and the recording of EKG strips.

IV PROTOCOL FOR EMT'S

Training in initiation of IVs has been mandated by the Medical Director for all Pasco County fire/rescue EMTs.

IV initiation will remain in Medical Protocol as a "*" procedure due to the fact that:

EMTs WILL ONLY START AN IV AT THE DIRECTION OF THE ON-SCENE PARAMEDIC.

Other guidelines to be followed:

1. No EMT may start an IV without being approved by the Training Section as having completed Pasco County's IV Training Program.
2. The on-scene paramedic directing the EMT to start the IV must be a Pasco County fire/rescue paramedic.
3. The IV must be unmedicated fluid or reseal only.
4. Cannulation sites to be utilized by the EMT are limited to the following peripheral sites: hand, wrist, forearm, leg, foot, and scalp (in pediatric patients only).
5. EMTs are not permitted to attempt intraosseous cannulation.
6. The EMT will abandon his attempt to establish an IV if one cannot be secured with one or two attempts.

MULTI CASUALTY MANAGEMENT (S.T.A.R.T.)

All victims of a multicasualty incident (MCI) will be assessed and triaged according to the START (Simple Triage and Rapid Treatment) method.

1. Assessment will be based on:

Respiratory Status
Perfusion Status
Neurological Status

2. Each victim will be given one of the following priority levels:

PRIORITY	COLOR	CONDITION
1	Red	Life-Threatening (immediate treatment/transport)
2	Yellow	Serious (delayed treatment/transport)
3	Green	Ambulatory (minor injuries)
0	Black	Dead (nonsalvagable)

Status	Priority 1	Priority 2	Priority 3	Priority 0
Respiratory	<12 or >30	within norms	within norms	none
Perfusion	no radial pulse or capillary refill >2 secs.	capillary refill 2 secs. or less	capillary refill 2 secs. or less	no life signs
Neurological	unconscious, disoriented, cannot follow commands	can follow simple commands only	alert and oriented	N/A

3. Whenever a status fits the Priority 1 criteria, stop the assessment process and tag the victim as Priority 1. Move on to the next victim.
4. If there is a borderline decision encountered as to the priority of the victim, always triage up to the higher priority.
5. Triage and tagging of each victim should be done in 60 seconds or less.
6. Tags are to be tied to an upper extremity in a visible location (wrist if possible).
7. Triage Tarps and Triage Flags may be deployed when a Triage Sector has been established. The colors of the Tarps are used to coincide with the priority colors. A set of Triage Tarps and Flags are assigned to the following units: B/C 1, B/C 2, B/C 3, B/C 4, E-10, E-16, E-17, E-20, E-23, E-27, and E-32.

MULTI CASUALTY MANAGEMENT (S.T.A.R.T.)

CLASSIFICATIONS OF THE MCI

The first arriving unit(s) will classify the MCI according to the number of victims noted during the initial size-up of the scene. This is to be done prior to the triage.

Levels of response will be in addition to the units already on scene (the initial response would normally be one rescue and one engine). Responding units will report to the staging area unless otherwise directed by Command. A predetermined level of response is as follows:

MCI Level 1 - 5-10 ALS Patients (Victims Given a Priority 1 or Priority 2 Rating)

Four ALS Transport Units
Two Suppression Units
One Battalion Chief
Notification of:
Emergency Services Director
Assistant Chief
Rescue Chief
Two Closest Hospitals
Closest Trauma Center
Office of Emergency Management

MCI Level 2 - 11-20 Victims (Regardless of Priority)

Six ALS Transport Units
Three Suppression Units
Two Battalion Chiefs
Notification of:
Emergency Services Director
Assistant Chief
Rescue Chief
Training Chief
Medical Director
Three Closest Hospitals
Two Closest Trauma Centers
Office of Emergency Management

MCI Level 3 - (21-100 Victims)

Emergency Services Director
Assistant Chief
Rescue Chief
Training Chief
Eight ALS Transport Units
Five Suppression Units
Three Battalion Chiefs
Notification of:
Emergency Services Director
Medical Director
Four Closest Hospitals
Two Closest Trauma Centers
Office of Emergency Management
Fire Rescue Supply Supervisor

MULTI CASUALTY MANAGEMENT (S.T.A.R.T.)

MCI Level 4 - (101-1,000 Victims)

- 15 ALS Units
- 10 Suppression units
- 10 BLS Units
- 2 Mass Transit Buses
- 1 Communications Trailer
- 4 Battalion Chiefs
- Emergency Services Director
- Rescue Chief
- Training Chief
- Assistant Chief
- Administrative Services Manager

Notification of:

- 10 Closest Hospitals
- 5 Closest Trauma Centers
- Office of Emergency Management
- Fire Rescue Supply Supervisor
- Medical Director

MCI Level 5 -(Over 1,000 Victims)

- 25 ALS Units
- 20 Suppression Units
- 20 BLS Units
- 4 Mass Transit Buses
- 1 Communications Trailer
- 8 Battalion Chiefs
- Emergency Services Director
- Rescue Chief
- Training Chief
- Assistant Chief
- Administrative Services Manager

Notification of:

- 20 Closest Hospitals
- 10 Closest Trauma Centers
- Office of Emergency Management
- Fire Rescue Supply Supervisor
- Medical Director

MULTIFUNCTION PADS

Multifunction electrodes may be utilized at paramedic discretion on patients with the following conditions:

1. Symptomatic bradycardia.
2. Unstable paroxysmal supraventricular tachycardia.
3. Unstable ventricular tachycardia.
4. Unstable wide-complex tachycardia.
5. Ventricular fibrillation.
6. Asystole.

Multifunction electrodes should not be utilized for routine monitoring of patients requiring EKG.

PATIENT'S DRUG ADMINISTRATION

Paramedics are not to administer a patient's drug unless specifically authorized by the Medical Director utilizing the Special Patient Information form. The list of patients with these forms is located in the S:\Firerescue\specialpatientinformation, access is only visible utilizing rescue patient care Toughbooks.

PEDIATRIC REFUSAL

The purpose of the following protocol is to protect the health and welfare of minors who are present on rescue scenes without legal guardians on these scenes. If the child has sustained a possible injury where a delay in treatment could have an adverse effect on the recovery from an injury or illness, the Pasco County Emergency Services Department will treat and transport the patient under the assumptive authorization of "implied consent." This consent assumes that if the parent or guardian knew that his/her minor was injured or ill, it would be expected that he/she would request treatment and/or transport to an emergency department. Every reasonable attempt to contact the minor's parent or legal guardian should also be made during the treatment phase of the call.

If the minor's injuries will allow for a delay in treatment or transport, every attempt should be made to contact a parent or legal guardian as soon as possible.

If you are unable to contact a parent or legal guardian, the following two options are available:

1. Complete a rescue run report and transfer the custody of the minor to a law enforcement officer. Document the name of the officer.
2. If a law enforcement officer is unavailable or unwilling to accept custody of the minor, the Pasco County Emergency Services Department should treat this patient as if the delay in treatment would cause further injury. Every attempt should be made to obtain contact with a parent or guardian. If you are unable to obtain contact with a parent or guardian, the Pasco County Emergency Services Department should treat and transport as if "consent" was given.

If the mechanism for injury has occurred, but the minor does **not** present with any injuries at all, the Pasco County Emergency Services Department employee should consult the following treatment modalities to resolve this case:

1. Make every attempt to contact a parent or guardian.
2. Transfer the custody to a law enforcement officer.
3. If you are unable to contact a parent or guardian or transfer custody to a law enforcement officer, the Pasco County Emergency Services Department should treat and/or transport as if "consent" was given for injuries or illness that may have occurred.

Rescue Incident Involving Minor Students

1. If the rescue incident is on school property, a school bus, or off campus at an official school function, the highest ranking school officer should be contacted and their assistance requested.
2. Since all Pasco County students' parents or legal guardians have signed a Medical Permission Authorization for their children, school officials can be asked to give permission to treat or transport, or sign a refusal for service, if we are unable to contact the parent or legal guardian in a timely manner.
3. School officials will respond to a rescue incident involving their students with a roster and with this roster they can:
 - a. Identify students and give demographics about them.
 - b. Convey any reported prior medical conditions.
 - c. Accept custody of uninjured students.

Sign a Pasco County Fire Rescue Refusal of Treatment and/or Transport Form for students with minor injuries not requiring medical treatment.

PHYSICIAN ONSCENE

A properly identified M.D. or D.O. may take command of the patient care at the scene. If the senior crew member has already received orders from the radio physician, the on-scene physician will immediately be put in contact with the radio physician.

If the senior crew member has not initiated radio or telephone communications with the radio physician, he/she will do the following:

1. Advise the on-scene physician that once he/she takes command of patient care, they are committed to riding to the hospital with the patient in the ambulance.
2. Follow the on-scene physician's orders unless:
 - a. The physician refuses to accompany the patient to the hospital and assume full responsibilities.
 - b. The orders are beyond the scope of the EMT or paramedic's level of training.
 - c. The senior crew member feels that the physician's order substantially represents a drastic departure from the medical Protocols of Pasco County Emergency Services Department and would thus adversely affect the patient. If this does occur, a detailed incident report should accompany the run report and the on-duty district chief should be notified.
 - d. The identity of the individual presenting him/herself as a physician is questionable. In this case, the individual will be politely advised that without proper identification we cannot allow them to assume command of the patient's medical care.

PHYSICIAN'S OFFICE

When called to respond to a physician's office. Upon arrival at the office:

1. Obtain a report on patient's condition.
2. Ask the physician if he/she has any orders to be performed prior to transport. If so, follow orders.
3. Assemble pertinent patient information for chart.
4. Ascertain whether or not the patient is a direct admit. Load the patient on the stretcher.
5. Ask the physician if he/she has any orders to be performed while en route to the hospital.
6. Transport as soon as possible.

At no time, will an ambulance crew exchange supplies with a physician at his office.

Note:

If the patient's condition changes or worsens while en route, the attending paramedic should revert to using standing orders and then contact the radio physician if additional orders are needed.

REFUSALS

This protocol describes how to help a patient (or patients) make an informed decision for a refusal of care, transport, or a recommended procedure. The following information will be documented on the run report when a refusal is obtained:

1. Chief complaint.
2. Patient's condition.
3. Patient's signs and symptoms.
4. Pertinent medical history.
5. Current medications.
6. Mechanism of injury (if applicable).
7. Vital signs.
8. Physical exam.

All "refusal" run reports will be completed and signed by a paramedic.

Considerations in obtaining a refusal:

1. Helping patients make an informed decision for a refusal – When a patient states they do not wish to accept evaluation, treatment, or transport, a paramedic should advise the patient:
 - a. Why the paramedic feels the evaluation, treatment, or transport is needed or appropriate.
 - b. The potential health risks if transport is refused.

Note: Review of these potential risks should include the "worst case" for potential consequences of refusal, such as serious complications or death.
2. Assessing a patient for competency to make an informed refusal – There are three situations in which it may be necessary to reject a patient's request to refuse care:
 - a. The patient is not of legal age to make decisions about their healthcare (unless the child is emancipated by the courts).
 - b. Mechanism of injury, situation, or circumstances on the scene unquestionably places the patient's judgment in question.
 - c. The patient is unable to give adequate responses to questions that attempt to establish reasonable understanding of the potential risks of refusal.
3. Establishing a patient's competency to refuse treatment:
 - a. If a patient is able to fully understand and repeat back all possible risks of refusal of treatment, as well as accurately answer field mental check questions.
 - (1) Name
 - (2) Address
 - (3) Date of Birth
 - (4) Month
 - (5) Year
 - (6) U.S. President

Note: If a patient is found to be competent and the above refusal protocol has been complied with, have the patient sign the refusal form in the presence of witnesses (witnesses can be fire/rescue personnel, law enforcement officers, healthcare professionals, or family members). If the patient is found to be incompetent and does not have a court-appointed health surrogate or power of attorney to sign a refusal form, have law enforcement en route for a possible Baker Act. If you feel the patient is competent, but requires treatment and transport, and you are unable to persuade the patient to seek appropriate care, contact Central Dispatch via land line and put the patient's own voice on tape as additional documentation of our sincere efforts to treat and transport.

REPORTING SUSPECTED CASES OF CHILD/ADULT ABUSE OR NEGLECT

EMTs and Paramedics are professionally mandated reporters of suspected abuse or neglect. This legal responsibility can not be fulfilled by simply passing on the information to hospital or law enforcement personnel. The information must be submitted to the Florida Abuse Hotline in order to meet your legal obligation.

For children, the abuse hotline should be notified when:

There is reasonable cause to suspect that a child

- has been harmed or is believed to be threatened with harm...
- ...by a parent, legal custodian, caregiver, or other person responsible for the child's welfare.

For adults, the abuse hotline should be notified when:

There is reasonable cause to suspect that a vulnerable adult*:

- is believed to be neglected or abused by a caregiver in Florida,
- is suffering from the ill effects of neglect by self and is in need of service, or
- is being exploited by any person who stands in a position of trust of confidence, or any person who knows or should know that a vulnerable adult lacks capacity to consent and who obtains or uses assets or property.

* Definition of vulnerable adult = a person 18 years of age or older whose ability to perform the normal activities of daily living or to provide his or her own care or protection is impaired due to disability, brain damage, or the infirmities of aging.

To make a report:

1. Reports to the abuse hotline are anonymous. You are not required to have authorization from your chain of command in order to file a report.
2. Gather the following information (if available): victim name, alleged perpetrator name, complete addresses for all involved persons, telephone numbers, estimated or actual dates of birth, a brief description of your concern, names of other residents in the victim's home, a description of the victim's disability or infirmity (if applicable), and the relationship of the perpetrator to the child (if known), any hazards in the household such as large dogs, weapons, etc. If you do not have all of this information, the hotline will still take the report.
3. Be prepared to be placed on hold (usually about 10 minutes). If possible, advise dispatch that you will be unavailable for a short period of time.
4. At the end of the call, the operator will provide you with an operator ID. It is strongly suggested that you document in the narrative of your report that you contacted the abuse hotline and spoke with operator ____ to file a report.
5. Ensure that the possible victim is left in a safe place, such as a medical facility or with law enforcement on scene. Cases involving suspected abuse or neglect in which the victim is not transported (i.e. refusal) and is likely to have contact with the abuser, law enforcement should be contacted immediately.

REQUESTING ALS

There are occasions that a BLS ambulance is dispatched to an ALS call. It is also possible for a BLS unit to respond to what appears to be a BLS call or routine transport only to find a patient who requires advanced life support. When they do occur, ALS backup may be requested. The following Protocol will be used to request ALS backup:

1. Determine that ALS backup is required. Is the patient in need of immediate ALS care? The senior ambulance crew member must determine if the patient is unstable or potentially unstable enough to warrant this action.
2. Contact Dispatch. Advise them of the status of your patient and request the location of the closest in-service ALS unit. This should be done while you are packaging the patient.
3. Determine the distance to the closest hospital. If the hospital is closer to you than the nearest ALS ambulance, then transport the patient immediately in the red to the hospital. If the closest ALS ambulance is closer than the hospital you should still continue to package, load, and transport the patient if possible. Do not wait on the scene with a critical patient for an ALS backup unit. Remember, the backup unit will have to package the patient if you do not and then begin to transport.
4. Notify dispatch of your route to the hospital. Dispatch can then notify your backup unit so they may intercept you while en route to the hospital. The patient will then be transferred to the ALS vehicle for the continuation of the transport and the application of ALS procedures. Be prepared to give a complete report to the paramedic so he/she may be updated on patient status. Keep in mind that the main objective is to get the patient to the closest ALS care possible whether it is at the hospital or from a backup ALS unit. There may not be an ALS unit available for backup and that may be why a BLS unit was dispatched. Much time can be lost waiting on the scene with a critical patient for an ALS backup unit that will take too long to get there.

REQUESTING ORDERS

When contacting a receiving facility for permission to proceed with a double asterisk (**) or triple asterisk (***) procedure, the paramedic should:

1. Give the patient report, including all procedures performed up to that point.
2. Advise the receiving facility, "At this point, I am required by my Medical Protocol to obtain the doctor's orders for _____. Please advise for permission to proceed."
3. Confirm permission to proceed (or permission denied) by stating, "I acknowledge the doctor's orders of _____." (Repeat orders given.)
4. Document on the patient care report (PCR) the doctor's orders that were given in the radio communication. Documentation on the PCR will include the ordering physician's name and their signature. Record this information per the department's current PCR User's Guide.

STANDARD OF CARE

Standard of Care If within the scope of his or her level of training, any PCFR paramedic or EMT witnesses care being given to or denied a patient in a manner that he or she believes is contrary to PCFR medical protocols, the officer in charge is to be informed immediately of the concern. The paramedic or EMT will then take control of the patient care and continue care until arriving at the receiving facility. **AT NO TIME WILL THERE BE A DEBATE OF THE ISSUE WHILE ON THE SCENE.** The officer in charge will notify the on duty BC immediately, and supplemental reports will be filled out and forwarded to the Rescue Chief.

PHARMACOLOGY INDEX



PASCO COUNTY MEDICAL PROTOCOL 2012

PHARMACOLOGY INDEX

DRUG NAME	INDICATION	ADULT DOSAGE	PEDIATRIC DOSAGE
Adenocard Adenosine Tachycardia SVT	<ul style="list-style-type: none"> PSVT 	<p style="text-align: center;">6 mg RAPID IVP</p> <ul style="list-style-type: none"> Repeat dose of 12mg rapid IVP if needed, after 2-3 minutes 	<p>0.1mg/kg Rapid IVP/IO</p> <ul style="list-style-type: none"> Max 1st dose of 6 mg If no response, double the original dose and repeat once in 2 minutes
Albuterol Abuterol Sulfate Allergic Reaction Bronchospasm Respiratory Failure Respiratory Distress	<ul style="list-style-type: none"> Bronchospasm secondary to asthma, COPD, allergic reaction 	<p style="text-align: center;">2.5 – 5.0 mg in 3-6 ml of NS</p> <ul style="list-style-type: none"> Via nebulizer Contact receiving facility for further doses 	<p style="text-align: center;">< 6 months 1.25 mg/3ml NS</p> <p style="text-align: center;">>6 months 2.5mg/3ml NS</p>
Aspirin Chest Pain	<ul style="list-style-type: none"> M.I. patients Cardiac related chest pain 	<p>324 mg (chewable) PO</p>	<p>NOT INDICATED</p>
Ativan Lorazepam Seizures Seizures	<ul style="list-style-type: none"> Continuous or multiple seizures Muscle relaxant Shivering associated with hyperthermia 	<p style="text-align: center;">>18 years of age</p> <p style="text-align: center;">Seizure activity 2-4 mg IV or IO SLOW push, (2mg/min) May repeat once in 10 – 15 minutes</p>	<p style="text-align: center;"><18 years of age</p> <p style="text-align: center;">Seizure activity 0.05-0.1mg/kg Slow IV or IO (max dose 1.0 mg)</p>
Atropine Bradycardia Bradycardia Poisoning	<ul style="list-style-type: none"> Symptomatic bradycardia Organophosphate poisoning 	<p style="text-align: center;">0.5 – 1.0 mg IVP, RAPID</p> <ul style="list-style-type: none"> May repeat every 3 -5 minutes Max dose is 0 .04 mg/kg <p style="text-align: center;">2.0 mg IV</p> <ul style="list-style-type: none"> May repeat dose as needed to slow secretions 	<p style="text-align: center;">Bradycardia 0.02 mg/kg IVP/IO</p> <ul style="list-style-type: none"> Minimum dose 0.1mg Maximum single dose of 0.5mg in children and 1.0 mg in adolescents

PHARMACOLOGY INDEX

DRUG NAME	INDICATION	ADULT DOSAGE	PEDIATRIC DOSAGE
<p>Atrovent Ipratropium Bromide</p> <p>Allergic Reaction Bronchospasm Respiratory Failure Respiratory Failure</p>	<ul style="list-style-type: none"> Bronchospasm associated with COPD, emphysema, bronchitis, asthma That is unresponsive to Albuterol alone 	<p>0.5 mg in addition to the standard dose of Albuterol</p>	<p>< 8 years of age 0.25 mg in addition to the standard dose of pediatric Albuterol</p>
<p>Benadryl Diphenhydramine Hydrochloride</p> <p>Allergic Reaction</p>	<ul style="list-style-type: none"> Anaphylaxis Mild to moderate allergic reactions Extrapyramidal reactions to phenothiazines 	<p>25 – 50 mg IVP / Deep IM</p>	<p>1mg/kg IV/IO/IM (max dose 25 mg) Do not give in infants < 3 months</p>
<p>Calcium Chloride</p>	<ul style="list-style-type: none"> Hypocalcemia Hyperkalemia Calcium channel blocker toxicity Magnesium Sulfate overdose 	<p>2-4 mg/kg of 10% solution IVP SLOW</p> <ul style="list-style-type: none"> Over 2 minutes 	<p>Refer to Broselow Tape</p>
<p>Cordarone Amiodarone</p> <p>Pulseless Shockable Tachycardia Post Resuscitation Chest Pain Cardiac Arrest</p>	<ul style="list-style-type: none"> Ventricular fibrillation Ventricular tachycardia Stable VT 	<p>VF/Pulseless VT 300 mg IV/IO In 3-5 minutes</p> <p>If refractory 150 mg IV/IO</p> <p>Stable VT/Ventricular ectopy 150 mg SLOW over 10 minutes</p> <p>Note: Using a MACRODRIP administration set add 150mg of drug to 150 ml of D5W and infuse at 2gtts/sec</p>	<p>VF/Pulseless VT 5 mg/kg IV/IO</p> <ul style="list-style-type: none"> Repeat up to 15 mg/kg Max dose 300mg

PHARMACOLOGY INDEX

DRUG NAME	INDICATION	ADULT DOSAGE	PEDIATRIC DOSAGE
Dextrose AMS Diabetic AMS	<ul style="list-style-type: none"> ▪ Hypoglycemia ▪ Altered LOC 	25 grams IV <i>SLOW</i>	0.5 g/kg of D25 IV/IO <i>SLOW</i> Note: Must dilute D50 1:1 with sterile water
Dopamine Bradycardia Post-Resus Hypotension Bradycardia Post-Resus	<ul style="list-style-type: none"> ▪ Cardiogenic shock ▪ Hypotension ROSC 	<u>Dopaminergic</u> 2-4 mcg/kg/min <u>Beta-adrenergic</u> 5-10 mcg/kg/min <u>Alpha-adrenergic</u> 10-20 mcg/kg/min	Same as Adult Dose
Epinephrine Pulseless Nonshock Pulseless Shock Allergic Reaction Bronchospasm Bradycardia Cardiac Arrest	<ul style="list-style-type: none"> ▪ Asystole ▪ Vfib ▪ Pulseless VT ▪ PEA ▪ Acute Bronchospasm from asthma or COPD ▪ Anaphylaxis 	<u>Cardiac Arrest</u> 1mg(1:10,000) IV/IO every 3 min <u>Anaphylaxis</u> 0.3 - 0.5 mg 1:1000 SQ .1 mg (1:10,000) <u>Bronchospasm</u> 0.3 – 0.5 mg 1:1000 SQ	<u>Cardiac Arrest</u> 0.01 mg/kg 1:10,000 IV/IO every 3-5 minutes <u>Anaphylaxis</u> 0.01 ml/kg SQ <u>Bronchospasm</u> 0.01 ml/kg SQ
Glucagon AMS Diabetic AMS	<ul style="list-style-type: none"> ▪ Hypoglycemia 	0.5 – 1.0 mg IV/IM/SQ	0.03 mg/kg IV/IM/SQ Max of 1 mg
Gluco Burst	<ul style="list-style-type: none"> ▪ Hypoglycemia 	15 G May be repeated x1	0.5G/KG
Labetalol Hypertensive CVA	<ul style="list-style-type: none"> ▪ Hypertension 	0.25 mg/kg (20 mg for a 80 kg patient) May request a second dose in 10 minutes	Safety not established <i>NOT</i> <i>INDICATED</i>

PHARMACOLOGY INDEX

DRUG NAME	INDICATION	ADULT DOSAGE	PEDIATRIC DOSAGE
<p>Lasix Furosemide</p> <p>Respiratory Failure</p>	<ul style="list-style-type: none"> ▪ Pulmonary edema ▪ CHF ▪ Hypertension 	<p>1mg/kg IV/IO, <i>SLOW</i></p>	<p>Same as Adult</p>
<p>Lidocaine</p> <p>PVC'S I.O. Pain</p>	<ul style="list-style-type: none"> ▪ PVC's ▪ VTach ▪ VFib ▪ I.O. Pain 	<p>1.0 – 1.5 mg/kg May repeat at 0.5 – 0.75 mg/kg Every 8 – 10 minutes to a total dose of 3 mg/kg</p> <p>20 mg I.O. pain</p>	<p>Refer to Broselow</p>
<p>Morphine Sulfate</p> <p>Pain-Pacing Chest Pain Pain Management</p>	<ul style="list-style-type: none"> ▪ Cardiac chest pain ▪ Pain management 	<p><u>Cardiac chest pain</u> 1 -5 mg <i>SLOW IV</i> over 5 mg over 15 mg</p> <p><u>Non-cardiac pain control</u> 2 – 4 mg IV/IO Max of 10 mg (5 mg IM)</p> <p>Additional doses</p>	<p>0.05 – 0.1 mg/kg IV/IO <i>SLOW</i> max IV dose of 5 mg</p> <p>0.1 mg/kg IM (if no IV access)</p> <p>Additional doses</p>
<p>Narcan Naloxone Hydrochloride</p> <p>AMS Narcotic OD</p>	<ul style="list-style-type: none"> ▪ Acute CNS depression from opiate overdose ▪ Altered LOC of unknown etiology 	<p>2.0 mg IV/IO/IM</p> <p>May be repeated at 0.4 mg/minute (max 6.0 mg)</p>	<p>0.1 mg/kg IV/IO/IM</p> <p>(max of 2.0 mg)</p>
<p>Nitroglycerine Nitrostat</p> <p>Chest Pain Respiratory Failure</p>	<ul style="list-style-type: none"> ▪ Ischemic chest pain ▪ Hypertension ▪ CHF 	<p><u>Cardiac chest pain</u> 0.4 mg metered spray sublingual May be repeated x 3 after 3-5 minutes</p> <p><u>CHF</u> BP > 160 <u>3</u> sprays as 1 dose BP 120 – 160 <u>2</u> sprays as 1 dose BP 100 - 120 <u>1</u> spray as 1 dose</p>	<p>NOT INDICATED</p>

PHARMACOLOGY INDEX

DRUG NAME	INDICATION	ADULT DOSAGE	PEDIATRIC DOSAGE
Oxygen	<ul style="list-style-type: none"> ◆ Hypoxia of any cause ◆ MI ◆ Trauma ◆ Shock ◆ Cardiopulmonary Arrest 	<p style="text-align: center;"><u>ANC</u> 2-6 lpm</p> <p style="text-align: center;"><u>NRB</u> 10-15 lpm</p>	Same as Adult
Sodium Bicarbonate	<ul style="list-style-type: none"> ◆ Metabolic acidosis ◆ Hyperkalemia ◆ Tricyclic antidepressant overdose 	1.0 meq/kg IVP May be repeated after 10 minutes at 0.5meq/kg	Same as Adults Neonates: should use half strength
Valium Diazepam Seizure Seizure Behaviorial	<ul style="list-style-type: none"> ◆ Status epilepticus ◆ Hysteria/anxiety ◆ Acute alcohol withdraw ◆ To induce amnesia during cardioversion 	<p style="text-align: center;"><u>Seizure Activity</u></p> <p>2.5 mg IV/IO Slow IM/PR if unable to access IV. Repeat in 60 second intervals (max of 10mg)</p>	<p style="text-align: center;"><u>Seizure Activity</u></p> <p>0.2 mg/kg IV slow (over 2 minutes) Max of 10mg IM/PR if unable to access IV</p>
Verapamil Tachycardia	<ul style="list-style-type: none"> ◆ SVT ◆ ↓ rate in Afib 	2.5—5.0 mg SLOW IV	NOT to be used on children 8 years of age or younger
Versed Midazolam Electrical Therapy Tachycardia Sedation Tachycardia	<ul style="list-style-type: none"> ◆ Sedation for cardioversion ◆ Sedation for difficult intubation ◆ Premedication for pacing 	2.5-5 mg SLOW (1.0 mg/minute) Titrate to desired effect	0.1 mg/kg IV/IO (over 2 minutes) Note: Not for neonate administration
Zofran Ondansetron N/V N/V	<ul style="list-style-type: none"> ◆ Nausea/Vomiting ◆ Prophylactic pain management 	4 mg slow IV push over 2-5 minutes or 4 mg IM	0.1 mg/kg (up to 4 mg) slow IV push over 2-5 minutes IM not indicated

PHARMACOLOGY INDEX

DRUG NAME	INDICATION	ADULT DOSAGE	PEDIATRIC DOSAGE
Etomidate Amidate Adult,RSI Pedi RSI	Rapid Sequence Induction	0.3 mg/kg IV/IO	Refer to Broselow
Fentanyl Sublimaze Adult,RSI Pedi RSI	Rapid Sequence Induction	50 mcg q 5-10 minutes IV/IO Max dose 250mcg	Refer to Broselow
Rocuronium Zemeron Adult,RSI Pedi RSI	Rapid Sequence Induction	0.5mg/kg IV/IO	Refer to Broselow
Succinylcholine Anectine Adult,RSI Pedi RSI	Rapid Sequence Induction	1.5mg/kg IV/IO	Refer to Broselow
Vecuronium Norcuron Adult,RSI Pedi RSI	Paralysis post intubation	0.1mg/kg IV/IO	Refer to Broselow

MEDICATION INFUSION



PASCO COUNTY MEDICAL PROTOCOL 2012

MEDICATION INFUSIONS

Cardene I.V. (Nicardipine Hydrochloride)

1. Description:

Cardene is a calcium ion influx inhibitor—a slow channel blocker or calcium channel-blocker. Cardene is an approved, interfacility medication. The physician who orders the medication, its dosage, concentration, and rate of administration should be documented on the Patient Care Report.

2. Actions:

Cardene inhibits the trans-membrane influx of calcium ions into cardiac muscle and smooth muscle. The effects of Cardene are more selective to smooth muscle than cardiac muscle. Therefore, at therapeutic drug levels, Cardene relaxes coronary vascular smooth muscle with little or no negative inotropic effects.

- a. Decreases systemic vascular resistance.
- b. Increases blood flow.
- c. Improves perfusion and aerobic metabolism in areas of chronic ischemia.
- d. Improves systolic and diastolic left ventricular function.

3. Indications: Rapid-acting, antihypertensive.

4. Adverse Experiences:

- a. Hypotension
- b. Headache
- c. Tachycardia

5. Use with Caution:

- a. May cause a rapid drop in blood pressure.
- b. May exacerbate Angina.
- c. May exacerbate congestive heart failure in a patient who is also taking a beta-blocker.
- d. Continuous, advance life support monitoring is necessary during administration.

6. Contraindications:

- a. Known hypersensitivity.
- b. Advanced aortic stenosis.
- c. I.V. infusion is NOT compatible with Sodium Bicarbonate and Lactate Ringers.

7. Overdose Management:

- a. Discontinue infusion of medication.
- b. Reposition to avoid cerebral anoxia.
- c. Consider a vasopressor or calcium gluconate for profound hypotension.

8. Dosage: Titrated to clinical presentation and individual patient response.
25 mg (1 ampule) diluted in 250 ml D5W = 0.1 mg/ml.
Starting Dose = 5.0 mg/hour; increase 2.5 mg/hour until the desired effect.

MEDICATION INFUSIONS

Heparin Infusion

1. Action:
 - a. Accelerates formation of Antithrombin III.
 - b. Prevents conversion of fibrinogen to fibrin.
 - c. Its dosage is measured by USP units. Its chief use is an anticoagulant. It may be given subcutaneously or IV (either as a bolus injection or as a drip).

2. Indications:
 - a. Deep venous thrombosis.
 - b. Pulmonary embolism.
 - c. Post thrombolytic therapy.
 - d. Myocardial Infarction.

3. Contraindications:
 - a. Active bleeding.
 - b. Bleeding disorders.

4. Adverse Effects:
 - a. Increased bleeding.
 - b. Uncontrolled bleeding.

5. Precautions:
 - a. Continually assess for increased or uncontrolled bleeding.

6. Dosage:
 - a. Dosage will be per patient's physician's orders. **Never titrate (raise or lower) the infusion rate.** The usual dosage is 1,000 units per hour.

7. Guidelines:
 - a. **Heparin will not be started in the field:**
 - (1) It may be infused under physician's orders in which the amount of Heparin, its dilution, and the specific drip rate is specified (*copy of the physician's order will be attached to run report*). Get the sending nurse's extension number so if a complication arises, they can make contact with the patient's physician for further orders.
 - (2) If unfamiliar with the IV pump, always ask for an in-service on the pump. The required functions to know are the **ON, OFF, RESET** and **START** buttons.
 - (3) Heparin will **always** be titrated by IV pump.
 - (4) Assess vital signs every 10 minutes (B/P, HP, respirations).
 - (5) If IV pump fails, turn pump off, clamp off the IV tubing, put reseal hub on the IV catheter, and flush reseal. **Never** run Heparin without an IV pump. Contact the sending hospital for further orders.

 - b. Heparin drip may be discontinued under the following circumstances:
 - (1) If abnormal bleeding occurs.
 - (2) If there is a change in the patient's clinical symptomatology after discussion with sending hospital.
 - (3) Paramedic discretion

MEDICATION INFUSIONS

Nitroglycerin (Tridil) Infusion

1. Action:
 - a. Nitroglycerin is a chemical substance used for control of unstable angina through the relaxation of vascular smooth muscle and subsequent dilation of peripheral arteries and veins.
2. Indications:
 - a. For treatment of elevated high blood pressure/CHF in the setting of AMI.
 - b. For the treatment of angina pectoris in patients who have not responded to sublingual Nitroglycerin or Beta Blockers.
3. Complications/Adverse Affects:
 - a. Hypotension.
 - b. Syncope.
4. Dosage:
 - a. Dosage will be per patient's physician's orders. **Never titrate (raise or lower) the infusion rate.** The usual dosage is 5 mcg/minute delivered by precise infusion pump. May be increased by 5 mcg/minute q 3-5 minutes until response is seen. If no response seen at 20 mcg/min, dose can be increased by 10-20 mcg/minute q 3-5 minutes (dosing determined by hemodynamic parameters).
5. Guidelines:
 - a. IV Nitroglycerin will not be started in the field:
 - (1) It may be infused under physician's orders in which the amount of Nitroglycerin, its dilution, and the specific drip rate is specified (*copy of the physician's order will be attached to run report*). Get the sending nurse's extension number so if a complication arises, they can make contact with the patient's physician for further orders.
 - (2) If unfamiliar with the IV pump, always ask for an in-service on the pump. The required functions to know are the **ON, OFF, RESET** and **START** buttons.
 - (3) IV Nitroglycerin will **always** be titrated by IV pump.
 - (4) Assess vital signs every 10 minutes (B/P, HP, respirations).
 - (5) If IV pump fails, turn pump off, clamp off the IV tubing, put reseal hub on the IV catheter, and flush reseal. **Never** run Nitroglycerin without an IV pump. Contact the sending hospital for further orders.
 - b. Nitroglycerin drip may be discontinued under the following circumstances:
 - (1) Any of the above adverse affects begin to appear.
 - (2) If there is a change in the patient's clinical symptomatology after discussion with sending hospital.
 - (3) Paramedic discretion

DRUG REFERENCE



PASCO COUNTY MEDICAL PROTOCOL 2012

ADENOCARD

Adenosine (Adenocard)

1. Action: An endogenous nucleoside occurring in the cells of the body contains 3 mg Adenosine and 9 mg sodium chloride in water. The pH of the solution is between 5.5 and 7.5.
 - a. Slows conduction time through the A-V node.
 - b. Can interrupt the reentry pathways through the A-V node.
 - c. Can restore NSR in patients with PSVT, including patients with PSVT associated with Wolff-Parkinson-White Syndrome.
2. Indications:
 - a. To convert a paroxysmal supraventricular tachycardia (PSVT) to a sinus rhythm.
3. Average Dose:
 - a. Initial dose, 6 mg given as a rapid IV bolus (one to two seconds).
 - b. Second dose: 12 mg bolus should be administered as a second dose if first bolus does not eliminate PSVT within one to two minutes.

NOTE: The half life of Adenocard is less than ten seconds. To be certain that the solution reaches the systemic circulation, IV initiation should be antecubital or above. The bolus administration should be rapid followed by a rapid saline flush. Do not refrigerate, crystallization may occur. The solution must be clear at the time of use.

4. Side Effects/Warnings/Precautions:
 - a. Short lasting heart block or transient asystole may occur, but is usually self-limiting.
 - b. With methylxanthines (e.g., theophylline), larger doses may be required or Adenosine may not be effective.
 - c. With dipyridamole, smaller doses of Adenocard may be effective.
 - d. With carbamazepine, high degrees of heart block may be produced.
 - e. Facial flushing/headache.
 - f. Shortness of breath/dyspnea/hyperventilation.
 - g. Hypotension/chest pain/chest pressure.
5. Contraindications:
 - a. Second or third degree block.
 - b. Sick Sinus Syndrome (except in patients with a functioning artificial pacemaker).
Known hypersensitivity to Adenosine

ALBUTEROL

Description: Albuterol is a solution for inhalation that is relatively selective beta 2—adrenergic bronchodilator.

Actions: Relaxes bronchial smooth muscle, onset of improved pulmonary function is within five minutes. Maximum average effect is one hour and may be therapeutically effective up to five hours.

Indication: For relief of bronchospasm in patients with reversible obstructive airway disease and acute attacks of bronchospasm.

Contraindications: Patients with a history of hypersensitivity to any of its components.

Warning: As with other inhaled beta-adrenergic agonists, Proventil Solution for inhalation can produce paradoxical bronchospasm, which can be life threatening. Stop administration immediately upon worsening symptoms.

Use with Caution: May worsen these conditions:

1. Cardiovascular disease (angina).
2. Cardiac arrhythmias.
3. Hypertension.
4. Convulsive disorders.
5. Hyperthyroidism.
6. Diabetes mellitus.
7. Concurrent use of inhalation bronchodilators within last 30 minutes.

Side Effects: Most commonly tremors, nausea, and dizziness.

Albuterol is generally a safe and well-tolerated drug, but as with all medications, awareness of potential adverse effects is necessary.

Dosage:

Adult: Add 2.5mg(3ml) to a nebulizer 6-8 LPM O2

Pedi: < 6 months 1.25mg/3ml NS
> 6 months 2.5/3ml NS

AMIODARONE

Amiodarone Hydrochloride (Cordarone™)

Description: A Class III antiarrhythmic.

Action: Prolongation of action potential.
Noncompetitive alpha and beta sympathetic blocker.
Calcium channel blocker.

Indications:

1. Ventricular fibrillation and pulseless Ventricular Tachycardia.
2. Atrial fibrillation with uncontrolled rate.
3. Miscellaneous malignant Tachycardias.

Contraindications: Second/third-degree heart block.
Medication induced Ventricular Dysrhythmias.
Hypotension.
Bradycardia.
Torsades de Pointes.

DrugInteraction: Incompatible with Sodium Bicarbonate.

Dosage:

First Dose: 300 mg IV/IO *slow* over one minute.
Second Dose: 150 mg IV/IO *slow* over one minute;
(three minutes after the initial dose.)

IV/I.O. Bolus : 150 mg over 10 minutes – EXAMPLE
Using a **MACRODRIP** Set
Add drug to 150 ml of D5W and infuse at 2gtts/second

IV/I.O. Maintenance infusion: 1.0 mg a minute - Using a **MICRODRIP** Set
Add 150 mg Amiodarone to 150 ml of D5W bag
and infuse at 1 gtt/second

ASPIRIN

Aspirin:

1. Actions: Decreases adhesiveness of platelets. Anticoagulant (class).
2. Indications: Any incident where patient is experiencing cardiac pain or when M.I. is suspected.
3. Contraindications: Hypersensitivity or allergy to aspirin (patients with asthma tend to be more likely to have allergy to aspirin); recent GI bleeding; recent or active hemorrhagic CVA, hemophilia or other bleeding disorders; patients who have taken ASA in the last six hours.
4. Precautions: Avoid use with pregnant women during the last three months of pregnancy to avoid problems with the fetus or complications during delivery.
5. Adverse Reactions: Dizziness, pruritus, vomiting, vertigo, tinnitus, or other hearing impairment.
6. Side Effects: Drowsiness, dyspepsia, nausea.
7. Routes of Administration: Oral.
8. Dosages: Adults—Four tablets or 324 mg P.O.
9. Techniques for Administration: Instruct patient to chew tablets prior to swallowing to increase speed of absorption; may be given prior to establishing an IV.
10. How Supplied: 81 mg tablets.

ATIVAN

Ativan—Lorazepam

1. Actions:

- a. Anti-anxiety
- b. Sedative
- c. Anti-convulsant
- d. Muscle relaxant

2. Indications:

- a. Continuous or multiple seizures
- b. Muscle relaxant
- c. Shivering or seizure activity associated with hyperthermia
- d. Relief of acute anxiety, excluding trauma alert patients

3. Routes of administration:

- a. IV/IO
- b. IM , if unable to obtain peripheral site
(poor and erratic absorption and response)

4. Average dose:

Seizure activity

Adult (>18 years of age)

2-4 mg IV or IO *SLOW* (2mg/min)
May be repeated once after 10-15 min

Pediatric (<18 years of age)

0.05 – 0.1 mg/kg *SLOW* up to 4.0 mg total dose diluted 1:1 in NS

ATIVAN

Sedation prior to cardioversion and pacing

Adult

0.05 mg/kg IV push

Anxiety

Adult

0.05mg/kg up to 4 mg total

5. Contraindications:

- a. Hypersensitivity to benzodiazepines or its vehicle (polyethylene glycol, propylene glycol and benzyl alcohol)
- b. Patients with known acute narrow-angle glaucoma
- c. Patients with sleep apnea syndrome
- d. COPD
- e. Safety in pregnancy has not been established. Administration should be avoided except in cases of extreme emergencies

6. Precautions:

Respiratory depression and over-sedation are more pronounced when a patient has ingested alcohol or CNS depressive agents (phenothiazines, barbiturates, antidepressants or narcotics)

7. Adverse reactions:

- a. Dizziness
- b. Headache
- c. Respiratory depression
- d. Drowsiness or confusion
- e. Orthostatic hypotension
ECG changes or tachycardia

WARNINGS

Respiratory depression due to depressant effect on the respiratory centre, and cardiovascular collapse may occur following intravenous and intramuscular administration.

ATROPINE

Atropine Sulfate – AtroPen

1. Actions:
 - a. Parasympatholytic agent; blocks vagal effects allowing increased firing rate of the SA node.
 - b. Reduces secretions in the oral and respiratory passages, relieves spasms and constriction of respiratory passages, and may reduce the paralysis of respiration from actions of the toxic agent on the central nervous system.
2. Indications:
 - a. Symptomatic bradycardia.
 - b. Sinus bradycardia with hypotension or PVC'S.
 - c. Organophosphate/Nerve toxin poisoning.
3. Average Dose:
 - a. Cardiac patients:
 - (1) 0.5-1.0 mg IV bolus; may be repeated every five minutes for a total of 3 mg.
 - b. Organophosphate/Nerve toxin poisoning:
 - (1) Pediatric < eight years of age (follow Broselow Tape).
 - (2) Pediatric > eight years of age.
2.0 mg up to three doses IV, titrate to signs and symptoms.
 - (3) Adult > 18 years of age. 2.0 mg up to three doses IV, titrate to signs and symptoms.
4. Side Effects:
 - a. Dry mouth.
 - b. Blurred vision.
 - c. Increases intraocular pressure.
 - d. Tachydysrhythmias; angina if severe.
 - e. Dysurea (in older males).
5. Contraindications:
 - a. Atrial flutter or fibrillation with rapid ventricular response.
NONE with nerve agent toxin poisoning

ATROVENT

Ipratropium Bromide - Atrovent

Actions: Ipratropium Bromide is an anticholinergic agent which causes localized bronchodilation.

Indications: Bronchospasms associated with COPD, including emphysema, chronic bronchitis, and asthma that may be unresponsive to Albuterol alone.

Contraindications:

1. Hypersensitivity to Atropine, Ipratropium or its derivatives.
2. Atrovent or Tiotropium/Spiriva treatment within the last three hours.

Adverse Reactions/Side Effects:

Respiratory: Cough; exacerbation of symptoms.

CNS: Nervousness; dizziness; headache.

Cardiovascular: Palpitations.

GI: Nausea; vomiting; GI distress.

Other: Tremor; dry mouth; blurred vision.

DOSAGE

ADULT: Add **0.5mg** (2.5 ml) to a nebulizer (in addition to the standard dose of Albuterol) 6-8 LPM O₂.

ADVISORY: Albuterol should not be administered to a patient who has self-administered Albuterol within the last 30 minutes. If Atrovent is indicated, this patient should be administered Atrovent alone without Albuterol.

PEDIATRIC : Less than eight years old, add 0.25 mg in addition to the pediatric dose of Albuterol to a nebulizer and flow at 6-8 LPM.

BENADRYL

Benadryl: A potent antihistamine that blocks H₁ and H₂ histamine receptors.

1. Actions: Prevents (but does not reverse) histamine effects on smooth muscle:
 - a. Antihistamine—binds to histamine receptor sites to prevent further action.
 - b. Antiemetic.
 - c. Mild central nervous system depressant.
 - d. Reverses actions of phenothiazines.

2. Indications:
 - a. Anaphylaxis/allergic reaction:
 - (1) Preferred before encountering allergen to keep reaction from occurring.
 - (2) Will not reverse effects of histamine once histamine is active in system, but will keep from further histamine effects.
 - b. Motion sickness.
 - c. Extrapyramidal signs from phenothiazine overdose.

3. Contraindications:
 - a. Hypotension.
 - b. Alcohol intoxication.
 - c. Closed angle glaucoma.
 - d. Ulcer disease with GI obstruction.
 - e. Pregnancy.
 - f. Asthma other than anaphylaxis.
 - g. COPD.
 - h. Neonates.

4. Side Effects:
 - a. Drowsiness.
 - b. Blurring of vision.
 - c. Respiratory depression.
 - d. Dry mouth.
 - e. Wheezing.
 - f. Urinary retention.
 - g. Hypotension.
 - h. Thickens bronchial secretions.
 - i. CNS stimulation in children.
 - j. Tachycardia.

Dosage: 1 mg/kg up to 50 mg. IV/IM

CALCIUM CHLORIDE

Calcium Chloride

1. Actions: Blocks the dysrhythmic effect of hyperkalemia and hypermagnesemia; antagonist effects of calcium channel blocker medications.
2. Indications:
 - a. Asystole or marked bradycardia that occurs following administration of IV Verapamil.
 - b. Hypocalcemia.
 - c. Hyperkalemia.
3. Dose (IV ONLY): Ten percent solution; 2-4 mg/kg slowly. Rapid infusion produces significant bradycardia or asystole; precipitates if bicarbonate is in the line. May be repeated.
4. Side Effects:
 - a. Hypotension if given rapidly.
 - b. May damage vein if given rapidly.
 - c. Asystole—cardiac arrest.
 - d. Hypercalcemia.
 - e. Bradycardia.
5. Contraindication: Use with caution in patient taking digitalis preparations.

DEXTROSE 50%

Fifty Percent Dextrose—D50W

1. Action: Increases blood sugar level; contains 25 grams of dextrose in water.
2. Indications:
 - a. Hypoglycemia.
 - b. Altered or impaired level of consciousness.
 - c. Status epilepticus of unknown etiology.
3. Average Dose:
 - a. One amp IVP (25 grams) may be repeated if blood sugar remains < or equal to 70.
 - b. Pediatrics - Refer to Broselow tape. Dilute 1:1 with sterile water (D25W).
4. Side Effects:
 - a. Hyperglycemia.
 - b. Metabolic acidosis in poorly nourished alcoholics.
 - c. Local tissue irritation, neurosis, phlebitis.
5. Contraindications:
 - a. Known hyperglycemia.
 - b. Intracranial hemorrhage.
 - c. Known alcoholics with history of poor nutrition, especially those who may be thiamine deficient.

DOPAMINE

Dopamine Hydrochloride (Intropin)

1. Action: Alpha, beta, and dopaminergic drug—catecholamine neurotransmitter.
 - a. Initially stimulates beta and dopaminergic receptors, causing an increase in cardiac force of contraction and a dilation of renal and mesenteric arteries.
 - b. Higher doses cause increased heart rate.
 - c. Maximum dose causes vasoconstriction and decreased renal flow.
2. Indications:
 - a. Post resuscitation management of hypotension.
 - b. Hypotension associated with cardiogenic shock.
 - c. Symptomatic bradycardia with hypotension refractory to atropine.
3. Average Dose:
 - a. By IV infusion only.
 - b. Mix 200 mg in 250 ml of Normal Saline.
 - c. Initial dosage 2 to 20 ug/kg/minutes.
4. Side Effects:
 - a. Over-correction of blood pressure.
 - b. Tachydysrhythmias.
 - c. Dyspnea.
 - d. Angina.
 - e. Headache.
 - f. Nausea.
 - g. Ectopic beats.
5. Contraindications:
 - a. Hypovolemia.
 - b. Known pheochromocytoma (tumor secreting catecholamine).
 - c. Ventricular dysrhythmias.
 - d. Tachydysrhythmias.
 - e. Ventricular fibrillation

EPINEPHRINE

Epinephrine

1. Action: Alpha and beta sympathomimetic drug—catecholamine.
 - a. Increases heart rate.
 - b. Increases contractible state of heart.
 - c. Bronchodilates.
 - d. Vasoconstricts.
 - e. Increases blood pressure.
 - f. Enhances cardiac and cerebral blood flow during CPR.

2. Indications:
 - a. Cardiac arrest.
 - (1) Ventricular fibrillation.
 - (2) Asystole.
 - (3) Pulseless dysrhythmia.
 - b. Asthma—bronchospasm.
 - c. Anaphylaxis/allergic reaction.

3. Average Dose:
 - a. Cardiac arrest.
 - (1) 1.0 mg of a 1:10,000 concentration IV.
 - (2) Repeated every three to five minutes if indicated.
 - b. Asthma.
 - (1) 0.3 mg of 1:1,000 concentration SQ.
 - (2) May be repeated every ten minutes as necessary.
 - c. Anaphylaxis/ Allergic reaction.
 - (1) 0.01 mg/kg of a 1:1,000 concentration SQ. Adult dose 0.3mg
Repeat in 3 to 5 minutes if no response.
 - (2) Anaphylaxis with shock 0.1 mg of 1:10,000 solution slowly IV
Maximum dose 5ml to 10ml of 1:10,000 solution. May be repeated in 5 minutes.

EPINEPHRINE (con't)

Epinephrine

4. Side Effects:

- a. Ventricular dysrhythmias.
- b. Angina.
- c. Hypertension.
- d. Ectopic beats.
- e. Nausea.
- f. Dilated pupils.

5. Contraindications:

- a. Angina.
- b. Hypertension.
- c. Hyperthyroidism.
- d. No contraindications for patients in cardiac arrest or anaphylaxis.

ETOMIDATE

Etomidate (Amidate)

Class: Ultra-short acting imidazole (nonbarbiturate) sedative hypnotic

Actions: It is a sedative-hypnotic agent with no analgesic or amnestic properties. It has minimal cardiovascular and respiratory depressant effects.

Indications: Sedation as part of rapid sequence or facilitated intubation procedures

Contraindications: Known sensitivity to the drug

Dosage: Sedation as part of RSI or facilitated intubation procedure:

Adults or children > 40kg: 0.3mg/kg IV over 30-60 seconds

Pediatrics—refer to Broselow tape

Side Effects:

- Skeletal muscle: Myoclonic skeletal muscle movements, tonic movements.
- Respiratory: Apnea of short duration, hyperventilation or hypoventilation,, Laryngospasm
- CV: Either hypertension or hypotension, tachycardia or bradycardia: arrhythmias
- GI: nausea and vomiting
- Miscellaneous: Eye movements, averting movements, hiccoughs, snoring
- Pediatrics: Although there is no specific information comparing use of etomidate in children with use in other age groups, this medicine is not expected to cause different side effects or problems in children than it does in adults

FENTANYL

Fentanyl (Sublimaze)

Class: Narcotic agonist

Actions: Inhibits ascending pain pathways in CNS.

Indications: Part of rapid sequence intubation protocol, sedation.

Contraindications: Hypersensitivity to drug.

Dosage: Adult or Children > 40kg : 50 mcg q 5-10 minutes max dose 250mcg
Pediatrics—refer to broselow tape

Side Effects: Skeletal and thoracic muscle rigidity or twitching, especially after rapid IV administration, emesis, hypotension, bradycardia, respiratory suppression

Precautions: Use with caution and at reduced dosage in poor-risk clients, children, elderly and when other CNS depressants are used

GLUCAGON

Glucagon USP (Glucagon)

1. Actions:
 - a. Causes an increase in blood glucose concentration.
 - b. Acts on liver glycogen.
2. Indications:
 - a. Counteracting severe hypoglycemic reaction.
 - b. As a diagnostic aid in radiological examination of the stomach, duodenum, small bowel, and colon.
3. Average Dose:
 - a. Dissolve the lyophilized Glucagon in the accompanying diluent.
 - b. Should not be used at concentrations greater than 1 mg (1 unit/mL).
 - c. Solutions should not be used unless they are clear and of a water-like consistency.
 - d. Give 0.5 to 1.0 mg (0.5 to 1 unit) by subcutaneous, intramuscular, to buttock, arm, or thigh, or intravenously. Single dose; should not be repeated.
 - e. Has a very short half-life (three to six minutes); patient should awaken within 15 minutes.
4. Side Effects:
 - a. Relatively free of adverse reactions.
 - b. Nausea; vomiting.
5. Contraindications:
 - a. Known hypersensitivity to Glucagon.
 - b. Patients with pheochromocytoma.
6. Warnings, Precautions:
 - a. Caution in patients with history suggestive of insulinoma and/or pheochromocytoma.
 - b. In hypoglycemia, Glucagon is helpful only if liver glycon is available. Glucagon is of little help in states of starvation, adrenal insufficiency, or chronic hypoglycemia.

GLUCO BURST

Oral Glucose – Insta-Glucose, Gluco Burst

1. Actions:

After absorption from the GI tract, glucose is distributed in the tissues and provides a prompt increase in circulating blood sugar

2. Indications:

Hypoglycemia

3. Routes of administration:

P.O. (orally)

6. Average dose:

Adult:

15 Grams (may be repeated x1) PO for patients with an intact gag reflex and who are able to handle their own secretions.

Pedi:

0.5G/KG PO for patients with an intact gag reflex and who are able to handle their own secretions.

7. Precautions:

Altered LOC

Ascertain the patient's ability to swallow an oral preparation of glucose without airway compromise.

Must be swallowed, not absorbed sublingually

8. Contraindications:

None

LABETALOL

LABETALOL HYDROCHLORIDE/Trandate/Normodyne

Actions: Labetalol combines both selective, competitive, alpha-adrenergic blocking and nonselective, competitive, beta-adrenergic blocking activity in a single substance. These actions decrease blood pressure without reflex tachycardia and without significant reduction in heart rate.

Warning: Blood pressure management in the presence of stroke symptoms must be approached carefully. Precipitous lowering of blood pressure with stroke patients can be a contributing factor to a poor neurological outcome and even death.

Cautions: Pediatric use/safety not established.

Indications: Control of blood pressure in severe hypertension.
Systolic > 220 and
Diastolic >120

Absolute Contraindications:

1. Bronchial asthma.
2. Cardiac failure.
3. Cardiogenic shock.
4. Greater than first-degree heart block.
5. Bradycardia < 50.

Relative Contraindications:

1. Pediatric patient.
2. Liver failure.
3. Cimetadine.
4. Tricyclic antidepressants.
5. Bronchodilators.

Adverse Reactions/Side Effects:

Cardiovascular: Postural hypotension; ventricular dysrhythmia; syncope; bradycardia, heart block.

CNS: Vertigo; numbness; tingling of scalp/skin.

Respiratory: Wheezing.

GI: Nausea/vomiting.

Dosage: 0.25 mg/kg IV over two minutes (20 mg IV for a 80 Kg patient).

If indicated, request a second dose after ten minutes.

LASIX

Furosemide (Lasix)

1. Actions: Loop diuretic—sulfonamide.
 - a. Potent diuretic—increases release of sodium and water by kidneys.
 - b. Mild vasodilator.
2. Indications:
 - a. Pulmonary edema from congestive heart failure.
 - b. Hypertensive emergency.
3. Dosage: 1 mg/kg slowly.
4. Side Effects:
 - a. Hypotension.
 - b. Hyponatremia.
 - c. Hypokalemia.
 - d. Dehydration.
 - e. Deafness if given rapidly IV.
 - f. Electrolyte imbalance, leading to dysrhythmias.
5. Contraindications:
 - a. Pregnancy.
 - b. Hypokalemia.
 - c. Pulmonary edema from causes other than CHF.
 - d. Hypotension.

Warning: Patients allergic to Sulfa may suffer anaphylactic shock after administration of Furosemide. However, do not withhold administration of Lasix because of this. Observe patient closely and treat appropriately if patient suffers an allergic reaction.

Caution: Be sure to determine that patient is having a reaction versus cardiogenic shock.

LIDOCAINE

Lidocaine HCl (Xylocaine)

1. Actions: Antiarrhythmic.
 - a. Decreases irritability of myocardium.
 - b. Affects phase four depolarization.
 - c. Raises fibrillation threshold.
 - d. Suppresses ectopic foci.

2. Indications:
 - a. PVCs.
 - (1) More than five per minute.
 - (2) Two or more in a row.
 - (3) Short bursts of ventricular tachycardia.
 - (4) Multifocal.
 - (5) R on T phenomenon.
 - b. Ventricular tachycardia.
 - (1) If patient is conscious (asymptomatic).
 - (2) During cardioversion if initial cardioversion attempt unsuccessful in converting.
 - c. Ventricular fibrillation.
 - (1) If patient does not respond to defibrillation.
 - (2) After successful defibrillation to guard against recurrence of fibrillation.

3. Average Dose:
 - a. IV/IO.
 - (1) 1.0 to 1.5 mg/kg of body weight IV bolus (may repeat at 0.5 to 0.75 mg/kg every eight to ten minutes up to a total of 3 mg/kg).
 - (2) Followed by IV infusion of 1-4 mg/minutes.
 - (3) Consider second bolus of .5 mg/kg in ten minutes to maintain therapeutic blood level.

4. Side Effects:
 - a. Early S/S twitching, anxiety, euphoria, or nausea.
 - b. Dizziness.
 - c. Drowsiness.

LIDOCAINE (con't)

- a. Numbness.
- b. Tremors.
- c. Confusion or psychotic-like behavior.
- d. Bradycardias.
- e. Hypotension.
- f. Seizures.
- g. Coma.

2. Contraindications:

- a. Known sensitivity to Lidocaine—can be used if patient is allergic to Novacane.
- b. High degree AV block.
- c. Sinus arrest or sick sinus syndrome.
- d. Idioventricular rhythm.
- e. PVCs due to bradycardic rate.
- f. Use with caution in CHF patients; use half dosage with known liver disease or geriatric patients (over 70).

MORPHINE

Morphine Sulfate

Actions: Potent analgesic.

Indications: Relief of moderate to severe pain in myocardial infarction and other selected conditions.

1. Back pain.
2. Flank pain.
3. Soft tissue injury.
4. Second and third-degree burns.
5. Fractures.
6. Cardiac chest pain which is not relieved by Nitroglycerin.
7. Cardiac pacing/TCP

Contraindication: Known hypersensitivity.

Relative Contraindications:

1. Hemodynamic instability, blood pressure < 100 mm Hg.
2. Respiratory depression.
3. Depressed level of consciousness.
4. Head injury.
5. **Undiagnosed** abdominal pain.
6. Labor.

Adverse Reactions:

1. Hypotension.
2. Bradycardia/cardiac arrest.
3. Respiratory depression/arrest.
4. Nausea and vomiting.
5. Urinary retention.
6. CNS depression.

Most adverse reactions can be reversed with Narcan

Dosage:

Adult - 2-4 mg IV *slowly* q three minutes, maximum 10 mg.

5 mg IM if no IV site available.

Request additional dose if pain not improved.

Pediatric - 0.05-0.1 mg/kg, IV *slowly*; maximum IV dose 5 mg.

0.1 mg/kg IM if no IV site available.

Request additional dose if pain has not improved.

NARCAN

Naloxone Hydrochloride (Narcan)

1. Action: Narcotic antagonist; blocks the effects of narcotics on the central nervous system.
2. Indications: Primarily for unconscious or obtunded patients suspected of opiate overdose who are in respiratory distress.
 - a. Common opiates and opioids:
 - Morphine
 - Heroin
 - Codeine
 - Darvon
 - Lomotil
 - Percodan
 - Methadone
 - Also synthetic opiate-opiod:
 - Nubain
 - b. Coma of unknown etiology.
3. Dosage: 2.0 mg initially, IV or E.T.; repeat at 0.4 mg increments to maintain patient's respiratory rate and depth.
4. Side Effects:
 - a. May precipitate withdrawal in patients who are addicted to narcotics.
 - b. If patient is a suspected opioid addict, the administration of Naloxone should be titrated (e.g. 0.4 mg/minute) to increase respirations to normal levels without fully awakening patient to prevent withdrawal symptoms, including hostile and confrontational events.
 - c. Naloxone may need to be repeated in 20-30 minutes to maintain effect.
5. Contraindications: None.

NITROGLYCERIN

Nitroglycerin (Nitrostat)

1. Actions:

- a. Vasodilator—dilates both arteries and veins.
- b. Reduces cardiac workload.
 - (1) Reduces preload.
 - (2) Reduces afterload.
- c. Reduces oxygen demand of myocardium.

2. Indications:

- a. Chest pain.
- b. Hypertension with chest pain.
- c. Pulmonary edema.

3. Average Dose:

- a. Cardiac Chest pain - 0.4 mg SL Q5 minutes up to three doses.
- b. Hypertension with chest pain - 0.4 mg SL Q5 minutes up to three doses .
- c. Pulmonary edema -
 - (1) Systolic BP > 160: three sprays (as one dose) 1.2 mg NTG SL.
 - (2) Systolic BP between 120 and 160: two sprays (as one dose) 0.8 mg NTG SL.
 - (3) Systolic BP between 100 and 120: one spray (as one dose) 0.4mg NTG SL.

The above doses may be repeated Q5 minutes until BP approaches 100, or patient otherwise significantly improves.

4. Side Effects:

- a. Headache.
- b. Burning under the tongue.
- c. Hypotension.
- d. Weakness.
- e. Dizziness.

5. Contraindications:

- a. Myocardial infarction with hypotension.
- b. Hypotension.
- c. Increased intracranial pressure.
- d. Glaucoma (uncontrolled).

***Patients taking Viagra and similar medications (i.e. Cialis, Levitra) within 24 hours should not be administered Nitroglycerine and the ER physician should be notified.

OXYGEN

Oxygen

1. Actions:

- a. Increased arterial oxygen tension.
- b. Increased hemoglobin saturation.
- c. Increased oxygen delivery to tissues.

2. Indications:

- a. Hypoxemia of any cause.
- b. Acute myocardial infarction.
- c. Trauma.
- d. Shock.
- e. Cardiopulmonary arrest.

3. Average Dose:

- a. Nasal cannula—2-6 liters per minute.
- b. Nonrebreather mask with reservoir bag—sufficient amount to prevent the reservoir bag from collapsing; minimum 12 liters per minute for a 70 kg patient.

4. Side Effects:

- a. No side effects when given in high concentrations over short periods of time.
- b. Drying of mucous membranes if not humidified.
- c. Decreased rate and depth of ventilations if patient has COPD.

Contraindications: None.

ROCURONIUM

Rocuronium (Zemeron®)

Class: Non-depolarizing, neuromuscular blocking agent

Actions: Blocks acetylcholine from binding to receptors on motor endplate inhibiting depolarization.

Indications: Facilitate rapid sequence intubation by inducing skeletal muscle relaxation.

Contraindications: Hypersensitivity to drug, other neuromuscular-blocking agents.

Dosage: Adults or Children >40 kg

0.5 mg/kg IV only

Pediatrics—Refer to the Broselow tape

Side Effects: Abnormal EKG, anaphylactoid reaction, anaphylaxis, arrhythmias, bronchospasm, injection site edema, hiccups, pruritus, nausea, pulmonary vascular resistance (increase), rash, rhonchi, shock, tachycardia, vomiting, wheezing.

Adverse Reactions: Hypertension in 2% and transient hypotension <2%

SODIUM BICARBONATE

Sodium Bicarbonate

1. Actions:
 - a. Supplement the patient's bicarbonate buffer system.
 - b. Correct metabolic acidosis.
2. Indications:
 - a. Metabolic acidosis caused by anaerobic glycolysis. For example: shock.
 - b. Hyperkalemia.
 - c. Barbiturate poisoning.
3. Average Dose:
 - a. Cardiopulmonary arrest.
 - (1) 1 mEq/kg of body weight IV bolus.
 - (2) 0.5 mEq/kg of body weight for repeat doses (may be repeated every ten minutes).
 - b. Other conditions—0.5 mEq/kg of body weight (e.g., tricyclic antidepressant overdoses).
4. Side Effects:
 - a. Hyponatremia.
 - b. Hyperosmolarity.
 - c. Fluid overload.
 - d. Pulmonary edema.
 - e. Metabolic alkalosis.
 - f. Cerebral spinal acidosis.
5. Contraindications:

Metabolic alkalosis.

SUCCINYLCHOLINE

Succinylcholine (Anectine)

Class: Depolarizing neuromuscular blocking agent

Actions: Competitive blocker of acetylcholine at the neuromuscular junction.

Indications: RSI Rapid sequence intubation

Contraindications: Known personal or family history of malignant hyperthermia: patients with known hyperkalemia, known chronic neuromuscular disorders of duration between one week and six months (if disorder is stable) and crush > 8hours or burn injuries > 24 hours, penetrating eye injury, narrow angle glaucoma, spinal cord injury > 3 days.

Dosage: Adults or children > 40kg:

1.5 mg/kg IV/IO

Pediatrics refer to Broselow tape

Side Effects: Muscle fasciculation's, arrhythmia, malignant hyperthermia, muscle rigidity (especially of the jaw), bradycardia (especially in children with repeated doses), and increased secretions

Precautions: Bradycardia

Additional Information: Always have rescue airway equipment available when using paralytics

TYLENOL

ACETAMINOPHEN/TYLENOL ORAL SUSPENSION

Actions: 1 - Blocks generating pain impulses.
2 - Reduces fever.

Indications: Pediatrics
1 - Fever equal or greater than 101.4°F. oral or 99.4°F. axillary or a temporal artery temperature above the following age normals:

<u>Age</u>	<u>Upper Limit of Normal Temperature</u>
0- 2 Months	100.7°F (38.1°C)
3- 47 Months	100.3°F (37.9°C)
4-9 Years	100.1°F (37.8°C)

Adverse Warning: Severe liver damage can occur following toxic doses. Do not contribute to a toxic dose by administering Acetaminophen if the patient has received **75 mg/kg in the last 24 hours or 15 mg/kg in the last four hours.**

Contraindications: 1 - Anemia.
2 - Renal disease.
3 - Hepatic disease.

Dosage: 15 mg/Kg PO/Rectally

Use Cautiously: For patients with a history of chronic alcohol abuse.

Warning: The patient should be NPO (this includes withholding oral Tylenol) if the current illness includes multiple episodes of vomiting.

VALIUM

Diazepam—Valium

1. Actions:

- a. Minor tranquilizer.
- b. CNS depressant.
- c. Anticonvulsant.
- d. Muscle relaxer.

2. Indications:

- a. Status epilepticus.
- b. Hysteria/anxiety.
- c. Acute alcohol withdrawal.
- d. To induce amnesia during cardioversion.
- e. Severe exposure to nerve agent toxins.

3. Routes of Administration:

- a. IV.
 - (1) Preferred route for medication administration.
 - (2) Slow administration through most proximal port.
- b. PR. (Per Rectal)
 - (1) Use if unable to initiate IV site.
 - (2) Slower effectiveness than IV route.
- c. IM.
 - (1) Variable outcome of dosage absorption/reaction time.
 - (2) Very painful injection/alkalotic solution/caustic.
 - (3) Only to be used as last resort for Valium administration.

VALIUM (con't)

Diazepam—Valium

4. Average Dose:

a. **Status Epilepticus/Behavior Disorder (adult patients):**

(1) Administer 2.5 mg IV slowly. Repeat if seizure activity is still present in 60-second intervals to a maximum dose 10 mg.

(a) If unable to start IV, administer 5 mg PR.

If unable to start IV or use PR, administer 5 mg IM, deep muscle

Status Epilepticus/Behavior Disorder (pediatric patients):

(2) Administer 0.2 mg/kg IV slowly over two minutes. Repeat dose if seizure activity is still present and respiratory status is stable; maximum 10 mg.

(3) If unable to initiate IV, administer 0.5 mg/kg PR(3-22 kg) 0.3 mg/kg PR(24-36)

(4) If unable to start IV or use PR, administer 0.3 mg/kg IM, deep muscle.

5. Contraindications (none in severe Nerve Toxin Exposure):

- a. Known hypersensitivity to this drug.
- b. Hypotension.
- c. Pregnancy (except for status epilepticus).
- d. Alcohol intoxication with depressed vital signs.
- e. Respiratory insufficiency.
- f. Acute asthmatic exacerbation.
- g. Narrow angle glaucoma.
- h. Shock.
- i. Coma.

VALIUM (con't)

Diazepam—Valium

6. Precautions:

Respiratory depressant effects are more pronounced when patient has ingested alcohol or CNS depressant agents (phenothiazine, barbiturates, antidepressants, narcotics, or MAO inhibitors).

7. Adverse Reactions:

- a. Respiratory depression.
- b. CNS depression.
- c. Vomiting.
- d. Bradycardia.
- e. Hypotension

8. Side Effects:

- a. Phlebitis.
- b. Drowsiness.
- c. Ataxia.
- d. Confusion.
- e. Double vision.
- f. Headache.
- g. Incontinence.
- h. Tremor.
- i. Vertigo.
- j. Hallucination.
- k. Rage.

Diazepam is a caustic medication that precipitates when mixed with any other medication. IV administration is to be done slowly using the most proximal port on the IV line. Due to possible local irritation and/or possible thrombosis, Diazepam should not be administered into small veins such as the dorsum of the hand

VECURONIUM

Vecuronium bromide (Norcuron)

Class: Non-depolarizing neuromuscular blocking agent

Actions: Non-depolarizing paralytic agent that prevents acetylcholine from binding to receptors on the motor end plate, thus blocking neuromuscular transmission.

Indications: Continue paralysis after intubation

Contraindications: Hypersensitivity to drug or bromides

Dosage: Adults and Children >40 kg
0.1 mg/kg IV/IO
Pediatrics—refer to Broselow tape

Side Effects: Anaphylaxis, hypotension, bronchospasm and other
histamine release-mediated symptoms

Additional Information: The onset of action usually is from 1.5 to 2 minutes, while the duration of action is 30-90 minutes.

VERAPAMIL

Verapamil Hydrochloride (Calan, Isoptin)

1. Actions:
 - a. Calcium channel blocker.
 - b. Delays conduction through AV node.
 - c. Relaxes cardiac vasospasms.
 - d. Dilates peripheral vessels; decreases afterload.
2. Indications:
 - a. Supraventricular tachydysrhythmias.
 - b. To reduce ventricular rate in atrial flutter and fibrillation.
 - c. Acute myocardial infarction from vasospasm.
 - d. Angina.
3. Initial Dose: 2.5 to 5 mg IV slowly.
4. Side Effects:
 - a. Hypotension.
 - b. High degree AV block.
 - c. Cardiopulmonary arrest.
 - d. Heart failure.
 - e. Cardiac standstill if given too rapidly.
5. Contraindications:
 - a. Cardiogenic shock.
 - b. CHF.
 - c. Sinus arrest or sick sinus syndrome.
 - d. High degree AV block.
 - e. Hypotension from other than tachydysrhythmias.
 - f. Patient taking beta blockers (Inderal) or disopyramide (Norpace) which may cause heart failure; use half dose and monitor if necessary.

Wolff-Parkinson-White (WPW) syndromes complicated by atrial fib or flutter may respond with an increase in ventricular response.

VERSED

Midazolam (Versed)

1. Actions:

- a. Potent short acting benzodiazepine CNS depressant with strong hypnotic and amnestic properties.
- b. Three-four times more potent than diazepam.
- c. Onset is 1.5 minutes when administered intravenously.

2. Indications:

- a. Sedation of the combative patient secondary to a traumatic event.
- b. Sedation of a patient (medical or trauma) to facilitate oral intubation.
- c. Premedication before cardioversion.
- d. Premedication before cardiac pacing.

3. Contraindications:

- a. Known hypersensitivity.
- b. Glaucoma.
- c. Hypotension (< 100 mm Hg).
- d. Alcoholic coma.

4. Adverse Reactions:

- a. Laryngospasm.
- b. Bronchospasm.
- c. Dyspnea.
- d. Respiratory depression.
- e. Respiratory arrest.
- f. Drowsiness.
- g. Cardiac dysrhythmias.
- h. Altered mental status.

5. Average Dosage:

- a. 2.5-5.0 mg. (no more than 1.0 mg/min. slow IVP). Wait two minutes between 1.0 mg doses for evaluation of patient status. Slowly titrate to desired effect. Refer to [Pediatric Sedation](#)

Precautions:

- a. Be prepared for respiratory depression.
- b. Monitor O2 Sats

ZOFRAN

Ondansetron (Zofran)

1. Actions: Blocks the effects of serotonin located in vagal nerve terminals and the chemoreceptor trigger zone in the central nervous system.
2. Indications:
 - A. Treatment of undifferentiated nausea and vomiting.
 - B. Prophylactic use prior to administration of pain management medication.
 - C. Severe nausea in the immobilized patient.
3. Contraindications: Hypersensitivity
4. Dosage:

Adult > 40 kg
4 mg slow IV/IM push over 2-5 minutes

Pediatric ≤ 40 kg
0.1 mg/kg (up to 4 mg) slow IV push over 2-5 minutes – no IM dosing
5. Side Effects:
Headache, drowsiness, weakness, dizziness, abdominal pain, dry mouth
6. Precautions:
use caution in pregnancy
may mask symptoms of bowel obstruction
use caution in patient that is taking medications that prolong QT segments

FORMS



PASCO COUNTY FIRE RESCUE CARDIAC ALERT CHECKLIST

Patient Name: _____ Age: _____ Date: _____
 Rescue No.: _____ Control No.: _____ Arrival Time: _____
 History: _____ Allergies: _____

CHEST PAIN INFORMATION

Provocation: _____ Quality: _____
 Region: _____
 Radiation: _____
 Relief: _____ Severity: _____
 Time of Symptom Onset: _____ Other Symptoms: _____

RESPONSE TO TREATMENT (Check Appropriate Response)

Nitroglycerin	No Relief	Relief	Complete Relief	Not Given
Aspirin	Yes/Amount Given _____		If no, reason withheld: _____	
Morphine	No Relief	Relief	Complete Relief	Not Given

12-LEAD ANALYSIS (Check Leads with ST Segment Evaluation)

ST segment elevation of 2 mm or greater, in two or more anatomically contiguous leads is enough evidence to suspect a myocardial infarction.

This patient should be transported to the nearest Cardiac Center. The paramedic should contact the receiving emergency department as soon as possible and notify them of the impending arrival of a Cardiac Alert patient.

<u>Right Coronary Artery Leads</u>				<u>Left Coronary Artery Leads</u>							
II	III	aVF	RV4	VI	V2	V3	V4	V5	V6	I	aVL
		(Inferior)		(Septal)			(Anterior)		(Lateral Leads)		

Fibrinolytic Therapy: Contraindications and Cautions Patient Survey

Active Peptic Ulcer	Yes	No
Active or Known Bleeding Problem	Yes	No
CVA or TIA Within the Past Six Months	Yes	No
Brain or Spinal Surgery, Brain Tumor, or Aneurysm	Yes	No
Recent Surgery or Trauma, Organ Biopsy (within two weeks)	Yes	No
Severe Hypertension >220\110	Yes	No
Active Use of an Anticoagulant	Yes	No
Jaundice, Hepatitis, or Kidney Failure	Yes	No
Pregnancy, Menses	Yes	No
Prolonged CPR >10 Minutes	Yes	No
Closed Head Injury/Facial Trauma <3 Months	Yes	No

A Cardiac Intervention Center is a facility with emergency cardiac surgical capabilities. Currently, Regional Medical Center/Bayonet Point, Florida Hospital/Zephyrhills, University Community at Fletcher, and Helen Ellis are considered Cardiac Centers.

PASCO COUNTY EMERGENCY SERVICES DEPARTMENT STROKE ALERT CHECKLIST

Patient Name _____ Age _____ Rescue Run # _____ Rescue # _____ Paramedic Bunker _____

Date:	Dispatch Time:	EMS Arrival Time:	EMS Departure Time:	ED Arrival Time:
-------	----------------	-------------------	---------------------	------------------

Witness Name _____ Cell # _____ Home # _____

Closest Relative _____ Cell # _____ Home # _____

A consenting party should be transported with the patient if their arrival at the ED/Stroke Center will be delayed.

Complete the Cincinnati Stroke Scale (C.S.S.) - F.A.S.T.

Check Abnormal Findings

1.	F (Face) - Facial Droop A (Arm) - Motor Weakness S (Speech)	Have patient smile or show teeth, look for symmetry. Arm drift; ask patient to close eyes; extend arms with palms down. Ask patient to repeat the phrase, "You can't teach an old dog a new trick."
----	--	---

2.	T (Time) - Time of Symptom Onset _____ Or Time Last Seen Without Symptoms _____
----	--

If treatment of hypoxia and/or hypoglycemia does not reverse the above abnormal signs and symptoms, continue with the stroke checklist.

Check YES or NO for each question.

1.	One or more abnormal C.S.S. findings from Box 1.	YES	NO
	AND		
2.	The known time between the onset of abnormal symptoms to arrival at a Stroke Center would be less than <u>five</u> hours.	YES	NO
	AND		
3.	Abnormal symptoms are NOT likely due to a recent head injury.	YES	NO

If all three of the above questions are answered YES, then a Stroke Alert should be called and the patient should be expeditiously transported to a Stroke Center:

By **ambulance**: if ground travel time will be less than 30 minutes.

OR

By **helicopter**: if ground travel time will be greater than 30 minutes.

Note: If the helicopter is not available and the onset of stroke symptoms to arrival at a Stroke Center is less than **five** hours, transport by ambulance to the nearest appropriate Stroke Center.

If none of the above is applicable, transport to the nearest emergency department.

Stroke Center _____ Time Center Notified _____ Stroke Center Contact _____

Sa O2 _____ % Glucose _____ mg/dl BP Left Arm _____ BP Right Arm _____ HR _____ RR _____

Secondary Assessment - circle all that are present:

- | | | | |
|---------------------|-------------------|----------------|-----------------------------|
| Visual Disturbances | Anticoagulant Use | Ataxia | Severe "Explosive" Headache |
| Obvious Hemorrhage | Bleeding Disorder | Vomiting | Trauma, Surgery, Invasive |
| Seizure at Onset | Light Intolerance | Neck Stiffness | Altered Mentation |

**PASCO COUNTY FIRE RESCUE
ADULT TRAUMA TRIAGE CRITERIA**

The EMT or paramedic will assess the condition of those injured individuals with anatomical and physiological characteristics of a person 16 years of age or older as described below.

Patient will be transported as a "trauma alert" if:

- Glasgow coma score of 12 or less
- Trauma score of two or greater, or
- Trauma scores less than two, but transported as a "trauma alert" based on EMT/paramedic judgment. (Document reason below.)

	ADULT SCORECARD METHODOLOGY: (check each box that applies)	
COMPONENT	1	2
AIRWAY	Respiratory rate of 30 or greater	Active airway assistance ¹
CIRCULATION	Sustained HR of 120 beats per minute or more	Lack of radial pulse with sustained HR 120 or greater or BP <90 mmHg.
BEST MOTOR RESPONSE	BMR = 5	BMR = 4 or less Presence of paralysis Suspicion of spinal cord injury Loss of sensation
CUTANEOUS	Soft tissue loss ² or GSW to the extremities	2nd° or 3rd° burns to 15% or more TBSA or Amputation proximal to wrist or ankle, any penetrating injury to head, neck, or torso ³
LONG-BONE FRACTURE ⁴	Single long-bone Fx due to MVA or fall of 10' or more	Fx of two or more long bones
AGE	55 years or older	
MECHANISM OF INJURY	Ejection from vehicle ⁵ or Deformed steering wheel ⁶	
COLUMN TOTALS	ANY TWO CHECKED— TRANSPORT AS "TRAUMA ALERT"	ANY ONE CHECKED— TRANSPORT AS "TRAUMA ALERT"

- 1 Airway assistance beyond administration of oxygen.
- 2 Major degloving injuries or flap avulsion (>5 inches).
- 3 Excluding superficial wounds in which the depth of the wound can be determined
- 4 Long bone (includes humerus [radius, ulna], femur [tibia or fibula]).
- 5 Excluding motorcycle, moped, all terrain vehicle, bicycle, or open body of pickup truck.
- 6 Only applies to driver of vehicle

Trauma Transfer Checklist

Rescue _____ Lead Paramedic _____ Bunker _____ Date _____ Time _____

Chief Complaint/Major Injury _____

Reason for Helicopter Transport _____

Mechanism	
MVC	Burn
Marine Veh	Fall
Bicycle	Environmental
Assault	Haz-Mat
GSW	Heavy Equipment
Stab	Other

Vehicle Deformity	
Dash	Side Window
Windshield	Steering Wheel
	None

Glasgow Coma Scale					
Eyes		Verbal		Motor	
				Obeys	(6)
		Oriented	(5)	Localized	(5)
Spontaneous	(4) 4	Confused	(4)	Withdraws	(4)
To Speech	(3)	Inapprop	(3)	Flexion	(3)
To Pain	(2)	Garbled	(2)	Extension	(2)
None	(1)	None	(1)	None	(1)
Mark Values				GCS: _____	
If GCS <12, then call a Trauma Alert					

Select Protective Device Used

- Lap Belt Shoulder Strap Child Seat
 Helmet Air Bag Personal Flotation Device

Vital Signs: P _____ BP _____ R _____ Sa O₂ _____ BS _____

Treatment (mark): O2 IV Fluid Splinting Intubation Morphine EKG

Patient's Name _____ Age _____

Name/No. to Contact _____ County _____

**Pasco County Fire Rescue
Pediatric Trauma Triage Criteria**

The EMT or Paramedic will assess the condition of those injured individuals with anatomical and physiological characteristics of a person fifteen (15) years of age or younger as described below.

A SCORE OF 2 OR GREATER DETERMINES A TRAUMA ALERT, AND WILL BE TRANSPORTED TO A STATE APPROVED PEDIATRIC TRAUMA REFERRAL CENTER

Patient does not meet any of the trauma criteria listed below, but in the judgment of the EMT or Paramedic should be transported as a trauma alert.

PEDIATRIC TRAUMA SCORECARD METHODOLOGY			
<i>COMPONENT</i>	0	1	2
SIZE	Weighs more than 11Kg.(24lbs)	Weighs 11Kg. or less (24 lbs) or measures 33 inches or less in length	
AIRWAY	Normal or Supplemental O ₂		Assisted ¹ or Intubated
CONSCIOUSNESS	Awake, alert and age appropriate orientation	Amnesia or Reliable Hx. of loss of consciousness	Altered mental status coma ⁵ , or Paralysis, loss of sensation, or Suspected spinal cord Injury
CIRCULATION	Good Peripheral pulses or SBP is greater than or equal to 90 mm Hg	Only carotid or femoral ³ pulses are palpable or SBP is less than 90 mm Hg	Weak or no palpable carotid or femoral SBP is less than 50 mm Hg
FRACTURE	None seen nor suspected	Suspected single closed long bone fracture 6,7	Any open long bone ⁶ fracture or multiple fracture/dislocation sites 8
CUTANEOUS	No visible injury, or Contusion, abrasion, minor laceration		Major tissue disruption ⁴ or Amputation proximal to wrist or ankle, or 2nd or 3rd degree burns to 10% or more of total body surface area, or Penetrating injury to head, neck, or torso

2 = any one checked, transport as trauma alert
1 = any two checked, transport as trauma alert
0 = follow local protocols

- 1 Includes measures such as manual jaw thrust, continuous attempts, and other airway adjuncts.
- 2 As evidenced by sensory or motor finding of weakness, decreased strength or sensation.
- 3 Radial or pedal pulses not palpable.
- 4 Major degloving injuries, major flap avulsions, or major soft tissue disruption.
- 5 Altered mental status includes drowsiness, lethargy, inability to follow commands, unresponsiveness to voice, or totally unresponsive.
- 6 Long bones include the Humerus, radius, ulna, femur, tibia, or fibula.
- 7 Long bone fractures do not include isolated wrist or ankle fractures, or dislocations.
- 8 Suspected fractures involving a joining radius and ulna or tibia and fibula are to be considered only one long-bone fracture.

Pasco County Fire Rescue

Area Hospital Capability Chart

	T	C	S	O	P	B		T	C	S	O	P	B
Bayonet Point:	●	●	●				Lakeland Regional:	●	●	●	●	●	
Medical Center of Trinity:		●	●	●			St. Joseph North:		●	●	●		
North Bay:		●	●				Florida Hosp - Tampa		●	●	●	●	
Bayfront Health Dade City:		●	●				St. Joseph:	●	●	●	●	●	
Florida Hosp - Zephyrhills:		●	●	●			Tampa General:	●	●	●	●	●	●
Bayfront Health St. Pete:	●	●	●	●			Bayfront Health Springhill:			●	●		
All Children's:		●			●		Bayfront Health Brooksville:		●	●	●		
Helen Ellis:		●	●	●			Oak Hill:		●	●			
Mease Countryside:		●	●	●			Florida Hosp - Wesley Chapel		●	●	●		
Mease-Dunedin:		●	●	●									

● Trauma
 ● Cardiac
 ● Stroke
 ● OB
 ● Peds ED
 ● Burns

Quick Links

LIFE SUPPORT	MEDICAL	PEDIATRICS	ENVIRONMENTAL	TRAUMA
Adult BLS	Allergic Reaction	Pediatric Patient	Bites / Envenomations	Assessment Trauma
Airway, Adult	Altered Mental Status	Pediatric Approach	Thermal Burns	Extremity Trauma
Airway, Adult Failed	Bronchospasm	Pediatric ABC	Nonthermal Burns	Head Trauma
Bradycardia	Chest Pain	Pediatric Airway	Heat Related	Hypotension/Shock
Electrical Therapy	Dehydration	Pediatric Airway/Failed	Hypothermia	Multi-Trauma
Post-Resuscitation	Diabetic Emergencies	Pediatric BLS	Poisoning/Overdose	Sexual Assault
Pulseless Nonshockable	Hypertensive	Pediatric AMS	Scuba Related	Spinal Immobilization
Pulseless Shockable	Hyperthermia	Pediatric Bradycardia		Spinal Considerations
Tachycardia	Hypotension/Shock	Pediatric Cardiac Arrest		Spinal Immobilization Criteria
	Narcotic Overdose	Pediatric Head Trauma		
	Pain Management	Pediatric IV		
	Respiratory Distress	Pediatric Post Resus.		
	Respiratory Failure	Pediatric Resp. Distress		
	Seizure	Pediatric Tran. Safety		
	Stroke/CVA	Pediatric Sedation		
	Stroke Alert Checklist	Pediatric Fever		
		Pediatric Seizure		
		Pediatric SVT		
		Pediatric Vitals		
		Childbirth/Labor		
		Childbirth Emergency		
		Pediatric Drug Calculations		

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