

**CITY OF MANSFIELD EMS PROTOCOLS FOR ALL PATIENTS
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CITY OF MANSFIELD EMS PROTOCOLS

INTRODUCTION

The following protocols for guiding out of hospital care by all levels (First Responder, EMT-B/A/I, and Paramedic) of Emergency Medical Service (EMS) providers operating in the City of Mansfield (in Richland County, Ohio). These protocols are to help providers in assessing and treating the patients that they will be called on to care for. They have been written with the knowledge that every situation is different, but that certain basic guidelines must be followed in order to best care for patients. Any variance must be documented (use confidential variance form) and reported to the appropriate supervisor or squad captain and medical director within 24 hours.

These protocols will allow pre-hospital providers and the Emergency Department to work together for the benefit of our patients. Since our knowledge of medicine is constantly changing, these protocols will be updated on a regular basis and remain current with the Ohio recommended minimum EMS guidelines.

I. GENERAL OPERATIONAL PROCEDURES

A. ASSESSMENT

1. Following the Incident Command System (ICS), with initiating patient care only after the scene is determined safe is essential.
2. All patients whom EMS providers have patient contact with must have an assessment performed and documented. A patient has the right to refuse vitals, but the reason for refusing must be documented.
3. Each provider will operate at his or her level of training. The care given will be to the standards expected from the provider with the highest level of training at the scene.

B. DEAD ON ARRIVAL (DOA)

1. DOA is any patient found without vital signs in which either:
 - a. An injury incompatible with life.
 - b. Cardiac arrest, secondary to massive blunt trauma without signs of exsanguinating hemorrhage.
 - c. The victim shows signs of decomposition, rigor mortis, or extremely dependent lividity.
 - d. The patient is an adult with an unwitnessed cardiac arrest, has a history of an absence of vital signs for greater than 20 minutes, and is found in asystole, not secondary to hypothermia or cold water drowning.
 - e. The patient is an infant or child with an unwitnessed cardiac arrest and is found in asystole and not a hypothermic patient with a downtime of less than 30 minutes or a cold water drowning for less than 1 hour.
 - f. Properly identified DNR-CC or DNR-CC-Arrest patient with no respirations and/or no pulse.
2. If any doubt exists that the victim is dead, resuscitation should be started.
3. When a DOA is encountered, the squad members should avoid disturbing the scene or the body as much as possible, unless it is necessary to do so in order to care for and assist other victims.
4. Notify the local law enforcement agency and the coroner.

C. D.N.R. (COMFORT CARE or COMFORT CARE-ARREST) ORDERS

1. Only valid (following OAC 3701-62 and ORC 2133.25) DNR-Comfort Care (DNRCC) orders may be followed by EMS providers without confirming the patient's DNR status with their physician and giving full immunity if followed.
2. To follow DNRCC/DNRCC-A, the **patient must first be identified** by either:
 - a. Driver's License (with picture).
 - b. Family member, caregiver, or friend.
 - c. Personal knowledge of the patient by EMS provider.
 - d. Healthcare facility armband.
 - e. Or passport or other photo identification.
3. The identified patient can then be **confirmed as a DNRCC/DNRCC-A** patient with either a state approved:
 - a. DNR Comfort Care Identification form.
 - b. DNR Comfort Care wallet ID card.
 - c. DNR Hospital type bracelet insert.
 - d. Or DNR Comfort Care bracelet or necklace.
4. The requested DNR-CC or DNRCC-A(rrest) **status** is then determined. This must be confirmed with alert, oriented patients.
5. **DNRCC-A patients will** receive full resuscitative care and treatment **until either they stop (or have agonal) breathing and/or have no pulse. At that point they will be treated the same as a DNRCC patient.**
6. A **DNRCC patient (or a DNRCC-Arrest patient with no pulse and/or agonal respirations) WILL** receive:
 - a. Airway suctioning.
 - b. Oxygen.
 - c. Position of comfort.
 - d. Splinting.
 - e. Control of bleeding.
 - f. Pain management.
 - g. Emotional support
7. They **will NOT** receive:
 - a. Administration of chest compressions or CPR.
 - b. Intubation (ET tube or Combitube) or ventilatory assistance.
 - c. Cardiac monitoring with the intention of treating arrhythmias.
 - d. Administration of cardiac resuscitative drugs.
 - e. Defibrillation.
8. When transporting a DNRCC/DNRCC-A patient, the **EMS provider must:**
 - a. Note DNRCC/DNRCC-A) on the EMS run sheet.
 - b. Note DNR Comfort Care identification seen.
 - c. Document revocation if directly witnessed by EMS personnel
 - d. Bring (copy of) DNR order and ID.

D. DOCUMENTATION

1. All care and procedures provided to any patient EMS comes in contact with (even if not transported) must be documented on the appropriate run sheet(s). If there is an error, use a single line to cross out. If a report can not be left immediately, a copy should be delivered to the receiving facility within one hour of being back in service. Reports can be faxed to Med Central Mansfield (526-8829) or Shelby (342-1775).
2. The run sheet documentation should include no less than:
 - a. TIMES of call, scene arrival, extrication, en route to and arrival at the hospital.
 - b. GENERAL CONDITION of the patient(s) upon arrival.
 - c. TIMED VITAL SIGNS (initial and every 10 to 15 minutes during encounter). Include pulse oximetry when available and applicable.
 - d. Vitals should be documented on all patients including transports and refusal of care unless the patient refuses (document why refusing).
 - e. Patient's MEDICAL HISTORY whenever possible.
 - f. Allergies, current medications, mechanism(s) of injury.
 - g. DNR status (Comfort Care or Comfort Care-Arrest)
 - h. TRAUMA DESIGNATION (alert or eval) and CRITERIA the patient meets.
 - i. Use of DEVICES (collars, monitors, splints, PASG, etc.) with time applied. Include initial airway confirmation and after moving the patient.
 - j. VENIPUNCTURE SITES: IV started. Include time started, type, and all missed sites. (These are particularly important in patients that may receive blood thinners or thrombolytics.)
 - k. All DRUGS given including name, dose, route and time given (or assisted in giving) with provider initials.
 - l. All IV FLUIDS to which medication has been added must be labeled with the name, dose and the time that the medication was added.
 - m. All ORDERS RECEIVED from the ED with the times received and medical control physician.
 - n. LEVEL OF TRAINING and NAMES of all involved in the patient's care.

E. MINORS (PATIENTS 16 years old or less)

1. EMS providers should transport all critically injured minors. If the parent or custodian refuses, law enforcement should be contacted for assistance and the patient transported to the hospital.
2. If a minor or child has a serious or potentially serious injury and refuses care, the EMS provider should contact medical control and law enforcement personnel.
3. If a situation arises where the child has minor or no injuries and a parent or guardian or responsible adult refuse care for the minor, they must sign and receive a copy of the Refusal form.
4. If a parent is only available by phone, verbal consent or refusal may be obtained. Verbal refusal must be confirmed by a second person that also must sign the refusal form.
5. If a stable minor refuses care and a parent or guardian or responsible adult are not available, the EMT should attempt to persuade the child to come to the hospital and notify law enforcement as well as medical control.

F. PHYSICIAN (M.D. or D.O. only) AT THE SCENE

1. GOOD SAMARITAN PHYSICIAN

- a. A physician with no previous relationship to the patient may offer assistance in caring for the patient under the Good Samaritan laws. The following criteria must be met for this physician to assume any responsibility for the care of the patient:
- b. Medical Control must be informed and give approval. This is implied if the physician is familiar to the EMS provider as their medical director or a medical control physician.
- c. The physician must have proof of being licensed (M.D. or D.O.).
- d. The physician must be willing to assume responsibility for the patient until relieved by another physician, usually at the Emergency Department. This usually means the physician will accompany the patient to the hospital unless medical control and the EMS provider are comfortable are comfortable in resuming control, or it is a multiple-casualty incident /disaster situation, and it is deemed necessary to stay at the scene.
- e. The physician must not require the EMT to perform any procedures or institute any treatment that would vary from protocol and/or procedure.
- f. If the physician is not willing or able to comply with all the above requirements, his assistance must be courteously declined.

2. PHYSICIAN IN HIS/HER OFFICE, OR URGENT CARE CENTER

- a. EMS should perform its duties as usual under the supervision of Medical Control or by protocol.
- b. The physician may elect to treat the patient in his office.
- c. The EMT should not provide any treatment under the physician's direction that varies from this protocol. If asked, the EMT should decline until contact is made with Medical Control.
- d. Once the patient has been transferred into the squad, the patient's care comes under Medical Control.

G. RADIO REPORT

1. The main goal of the radio report is to relay enough information to determine what equipment/personnel/bed type will be needed in the ED. Thus, a concise (age, gender, brief complaint/type of call, ALS or BLS run, trauma designation criteria, ETA, special needs on arrival) can be given en route. More details can be given face to face with the ED staff on arrival.
2. When out of HEAR radio range, consider calling in to the ED (526-8599 direct to Mansfield, 342-1790 direct to Shelby, via cell phone or land line from the scene or via dispatch), advising of the chief complaint, age, gender, pertinent vitals, trauma designation criteria, ETA and whether it is an ALS or BLS run. Further details can be called when in HEAR radio range.
3. Try to give early notification (via dispatch or phone) to the receiving Emergency Department when encountering critical or multiple patients. If the patient meets trauma designation criteria, include these. Remember, that these are for determining which patient needs to go to a designated trauma center and to help the hospital determine which resources it will need. The EMS responsibility is to determine and then relay which criteria the patient fulfills.

H. REFUSAL OF CARE

1. A patient can legally refuse treatment provided they are an adult (over 16), not under the influence of alcohol or drugs, and have not sustained a head injury.
2. A patient who refuses treatment and is competent needs to understand, sign, and receive a copy of the Refusal form.
3. A patient who is incompetent and requires medical care may require restraint or possible assistance of law enforcement officers. See restraint policy.
4. EMTs must explain the possible complications that could arise without treatment and / or transport, and document that the patient is competent and not suicidal, homicidal, or under the influence of a mind-altering substance.
5. Competent patients have the right to refuse care by EMS providers. You should contact Medical Control for any competent patient that you are concerned about who is refusing care. Many patients change their mind after speaking with a physician.
6. Refusal may **not** be made by a patient (or by a family member) that is incompetent. If an incompetent (possibly intoxicated or under the influence of mind-altering substances, a minor, head injury, suicidal, danger to themselves or others, etc.) patient is refusing evaluation or treatment, you **must contact Medical Control**. Many patients change their mind after physician consultation. If this does not work, one should request the appropriate law enforcement authority to assist in taking the patient into custody for his or her own protection.
7. Even if a patient is not transported, EMTs should observe the patient's surroundings for possible abuse or violence or inability to properly care for them self. Suspicions should be reported to the proper authority (Children's or Adult Protective Services, social services, visiting nurse, etc.).
8. A run report should be completed for any patient who refuses care, or for whom no transport or further care is needed.
9. In multiple patient incidents, one run form with the pertinent information regarding several patients may be necessary.
10. See I.E. Minors for specifics in caring for minors.

II. ASSESSMENT OF AND GENERAL ORDERS FOR ALL PATIENTS

A. (SCENE) SAFETY

1. Make sure that the scene is safe before proceeding.
2. Use universal precautions, i.e., gloves, mask and gown as appropriate prior to assessing any patient.

B. PRIMARY SURVEY (includes C-spine protocol)

1. Check AIRWAY to ensure that it is present, adequate, and maintainable, keeping in mind the importance of cervical spine immobilization. Based on your level of training, use the most appropriate device (endotracheal intubation, if possible) to provide a patent airway.
2. Check for the presence and adequacy of BREATHING. Record room air pulse oximetry reading when indicated / available. Ventilate the patient if necessary.
3. Check the presence and strength of CIRCULATION. Skin color, moisture, temperature, and capillary refill will aid in assessing perfusion.
4. Any bleeding should be controlled.
5. DETERMINE the NEUROLOGIC status of the patient:
 - a. A= Alert, eyes open.
 - b. V= Verbal, responds to vocal stimuli.
 - c. P= Painful, responds to painful stimuli.
 - d. U= Unresponsive to voice or pain.
 - e. Record GLASCOW COMA SCALE and REVISED TRAUMA SCORE on trauma patients (see appendices).
6. EXPOSE the patient if suspected trauma.
7. Initiate appropriate life saving measures.
8. Apply OXYGEN if warranted by the condition of the patient.
 - a. Mild hypoxemia (cardiac chest pain, increased respiratory rate). Use nasal cannula at 2 to 6 liters per minute.
 - b. Marked hypoxemia (cyanosis, confusion, CHF, hypotension). Use non-rebreather mask at 10 to 15 liters per minute (sufficient to keep bag inflated). If the patient is home oxygen dependent, try 1 to 3 liters nasal above their baseline flow first.
 - c. Cardiopulmonary arrest use bag mask with oxygen reservoir at 15 liters per minute and advanced airway when possible.
 - d. May use facemask at 6 to 10 liters per minute when the patient is unable to tolerate nasal cannula.
9. **CERVICAL IMMOBILIZATION** should be used if any of following are present:
 - a. The patient complains of neck pain.
 - b. The patient has pain on palpation of the neck.
 - c. The patient complains of neurologic deficits (numbness, tingling, weakness) or is found upon physical exam to have neurologic deficits (loss of or diminished sensation or motor weakness).
 - d. The patient with altered LOC and impaired competence whether from drugs, alcohol or head injury and suggestive mechanism of injury for neck injury.
 - e. The patient with suggestive mechanism of injury for neck injury and the patient also has other major distracting injuries.
 - f. The patient has neck pain with any head motion.

C. SECONDARY SURVEY

1. Note general appearance and level of distress.
2. Take VITAL SIGNS. Vital signs MUST be taken on all patients that are encountered (including refusals and transfers) before loading the patient on the cot, if not a load and go situation. Repeat every 5 to 15 minutes; more frequently if indicated. Include pulse oximetry if indicated and available.
3. Determine CHIEF COMPLAINT and pertinent EVENT HISTORY (nature, time of onset, frequency, duration, self treatment and results, etc.)
 - a. Consider **OPQRST** reminders:
 - i. **O**nset.
 - ii. **P**rovocation.
 - iii. **Q**uality.
 - iv. **R**adiation.
 - v. **S**everity.
 - vi. **T**iming.
 - b. Consider **SAMPLE** reminders:
 - i. **S**igns and **s**ymptoms reported by the patient.
 - ii. **A**llergies.
 - iii. **M**edications.
 - iv. **P**ast medical history.
 - v. **L**ast oral intake.
 - vi. **E**vents leading up to this episode.
4. Determine pertinent MEDICAL HISTORY (medical problems, surgeries, hospitalizations, medications, allergies, last period, pregnancies).
5. Find out DNR-Comfort Care wishes, if appropriate.
6. BRING ALL MEDICATIONS!
7. Determine PHYSICAL FINDINGS. Include chest and lungs, abdomen and pelvis, neurologic, pupils, medical alert tags.
8. Establish cardiac MONITOR (lead II or best to visualize rhythm) when appropriate. Use AED when pulseless.
9. Interpret rhythm according to level of training and certification, treating any arrhythmias and their causes.
10. Perform GLUCOSE assessment if indicated (including qualified EMT-basics).
11. Establish INTRAVENOUS ACCESS as deemed appropriate.
 - a. SALINE LOCK - preferred for cardiac patients if BP > 110 mm Hg. and for stable medical patients. Also isolated head trauma.
 - b. NORMAL SALINE - trauma patients, hypoglycemia, active seizures, labor, overdose, and cardiac patients with BP < 100 mm Hg.
 - c. OTHER per medical control.
12. Whether a patient is transported or not, EMTs should observe the patient's surrounding for possible abuse or violence or inability to properly care for themselves. Suspicions should be reported to the proper authority (Child or Adult Protective Services, social services, visiting nurse, etc.)
13. Transport in position of comfort.

III. MEDICAL EMERGENCIES

A. ALLERGIC REACTION AND ANAPHYLAXIS

1. Follow **Assessment of and General Orders for all Patients**.
2. If LOCAL (edema, itching at site):
 - a. Apply ICE/COOL to site and elevate.
 - b. Remove stinger or other allergen.
3. If SYSTEMIC (Tongue swelling, wheezing, hypotension) AND in distress:
 - a. Administer **EPINEPHRINE 1:1000 (0.01ml/kg to max of) 0.3 ml SQ**.
*CONTACT MEDICAL CONTROL FIRST if age > 50, pregnant, or cardiac history.
 - b. An EMT-Basic or First Responder may assist the patient in using his or her own Epi-Pen.
 - c. Establish **IV ACCESS**.
 - d. Administer **DIPHENHYDRAMINE (0.5 to 1 mg/kg to max of) 50 mg SLOW IVP. May administer IM if cannot obtain IV access.**
 - e. Per Med Control order only, administer **SOLUMEDROL 125 mg IVP**.
4. If the patient is hypotensive:
 - a. Place patient in **Trendelenburg** position if tolerated.
 - b. **NS 20 mg/kg bolus** if patient <50 and no cardiac history.
 - c. If no response, initiate a **DOPAMINE INFUSION** of 400 mg in 250 cc NS at 5 - 20 mcg/kg/min IV. Titrate to maintain a systolic BP of 90 - 100 mmHg.
Note: Dopamine should be used with caution in patients with a heart rate >110, and should be avoided in the presence of significant ventricular ectopy (i.e., > 6 PVCs/min, multifocal PVCs or runs).
 - d. Consider application of MAST.

B. ALTERED LEVEL OF CONSCIOUSNESS / UNCONSCIOUS

1. Follow **Assessment of and General Orders for all Patients**.
2. **CERVICAL SPINE IMMOBILIZATION** if suspect any trauma
3. Apply 100% **OXYGEN** by NRB mask and **EKG monitor**.
4. Establish **IV ACCESS**.
5. **GLUCOSE determination** (Including qualified EMT-Basics).
 - a. If blood glucose is <70 mg/dl, see **HYPOGLYCEMIA** protocol:
 - b. If glucose is >400, see **HYPERGLYCEMIA** protocol.
6. **NALOXONE (NARCAN) 0.4 to 2 mg (0.1 mg / kg / dose to 2 mg max) IVP, IM, ET, nebulized (with Normal Saline) or SL (sublingual)** IF altered / decreased mental status with pupils < 3 mm or respirations < 14 or evidence of narcotic use.
Anticipate a combative response. Dose may be repeated in 5 minutes.
7. Consider **THIAMINE 100 mg IVP** if alcoholic or malnourished.

C. CARDIAC CHEST PAIN (SUSPECTED MYOCARDIAL INFARCTION)

1. Follow **Assessment of and General Orders for all Patients**.
2. Establish **IV ACCESS** (with a double lumen catheter if MI highly suspected).
3. If BP is > 100 mm Hg systolic, administer **NITROGLYCERIN (NITROSTAT) 0.4 mg (1/150 gr.) SL or spray**. May be repeated every 3 to 5 minutes if pain is unrelieved. EMT-Basics may assist the patient in administering their own Nitroglycerin.
4. If chest pain persists and patient is not on anticoagulants, have the patient chew one **325 mg ASPIRIN** tablet, or **four 1-1/4 gr. BABY ASPIRIN** tablets.
5. **If significant pain persists after nitroglycerin and BP is > 100 systolic**, administer **MORPHINE SULFATE 0.05mg / kg (10 mg max) slow IVP or SQ or IM**. May give up to 3 more 0.05 mg / kg doses of MORPHINE every 3 to 5 minutes to a combined maximum total of 10 mg if the criteria are still met. See Morphine Dosing Appendix. Closely monitor BP and respiratory status, and be prepared to reverse with NALOXONE.

D. CARDIAC DYSRHYTHMIA - GENERAL

1. Follow **Assessment of and General Orders for all Patients**.
 - a. Use **QUICK LOOK** paddles or **AED** if the patient is **unconscious**.
 - b. **OXYGEN** at 2 to 6 liters per minute via nasal cannula.
 - c. **MONITOR** in best lead. Print or mark for summary at least every 10 mins.
 - d. **IV** of Normal Saline at KVO or saline lock if stable.
 - e. **NOTIFY MEDICAL CONTROL OF CRITICAL PATIENTS** as early as possible (even if incomplete assessment).
 - f. For **pediatric dosages**, refer to Broselow tape, Pedi-Wheel or equivalent.
2. **ASYSTOLE**
 - a. Follow **Assessment of and General Orders for all Patients**.
 - b. Establish that patient is APNEIC and PULSELESS.
 - c. Secure and maintain AIRWAY with 100% OXYGEN.
 - d. CPR.
 - e. **QUICK LOOK MONITOR** or AED.
 - i. Confirm asystole at least two leads.
 - ii. If possibly fine Ventricular Fibrillation, defibrillate and treat as VF.
 - f. Establish **IV ACCESS** - normal saline at KVO.
 - g. Establish **ADVANCED AIRWAY** if not done so.
 - h. **EPINEPHRINE (1:10,000) 1 to 3 mg (0.01 mg /k kg) IVP**.
 - i. Repeat every 3 to 5 minutes.
 - ii. 2.5 to 5 mg (0.25 mg / kg) via ET if cannot establish IV.
 - iii. May use EPINEPHRINE drip (30 mg in 250 ml at 100 ml / hr).
 - i. **ATROPINE 1 mg (0.02 mg / kg, 0.1 mg min) IVP every 3 to 5 mins to 0.04 mg per kg max total**. (For example, 2 mg for 110 lbs; 4 mg for 220 lbs)
 - j. Consider **BICARBONATE (1 Meq / kg)**.
 - k. Consider **EXTERNAL PACING**.

3. **BRADYCARDIA** (< 60 beats per minute or relative bradycardia for age)
 - a. Follow **Assessment of and General Orders for all Patients**.
 - b. **MONITOR**. Determine and print copy of RHYTHM.
 - c. Determine if SYMPTOMATIC: BP < 90, chest pain, CHF, altered mental status, dyspnea, diaphoresis, PVCs.
 - d. If pulseless, treat as PEA.
 - e. **OXYGEN** per general orders. **Remember that most pediatric bradycardia is from hypoxia.**
 - f. Establish IV normal saline at KVO.
 - g. IF SYMPTOMATIC:
 - i. Place in supine position unless dyspneic.
 - ii. **ATROPINE** 0.5 mg to 1.0 mg (0.02 mg/kg in peds; 0.1 mg min.) IVP. May repeat every 3 to 5 minutes to 0.04 mg / kg total dose.
 - iii. Place external **PACER PADS**. (Place pads if 2^o type II or Complete Heart Block, even if asymptomatic).
 - iv. Initiate **PACING**.
 - v. **DOPAMINE** drip at 5 to 20 μ g / kg / minute.
 - vi. **EPINEPHRINE** drip at 2 to 10 μ g / minute.

4. **PULSELESS ELECTRICAL ACTIVITY (PEA)**
 - a. Follow **Assessment of and General Orders for all Patients**.
 - b. Establish that the patient is **PULSELESS** and **APNEIC**.
 - c. Secure and maintain **AIRWAY** with 100% **OXYGEN**.
 - d. **CPR**.
 - e. **QUICK LOOK MONITOR** or **AED** - confirm **PEA**.
 - f. IV - Normal Saline. Give **FLUID BOLUS** of 500 ml.
 - g. Establish **ADVANCED AIRWAY** if not done so.
 - h. **EPINEPHRINE** (1:10,000) 1 to 3 mg (0.01 mg / kg) IVP.
 - i. Repeat every 3 to 5 minutes.
 - ii. 2.5 to 5 mg (0.025 mg / kg) via ET if cannot establish IV.
 - iii. In adults, may use **EPINEPHRINE** drip(30 mg in 250 ml at 100 ml / hr).
 - i. **IF BRADYCARDIA**, give **ATROPINE** 1 mg (0.02 mg /kg, 0.1 mg min) IVP.
 - i. May repeat every 3 to 5 minutes to 0.04 mg / kg total.
 - j. Determine if history of diabetes, overdose, or trauma. Treat accordingly.
 - k. Consider **SODIUM BICARBONATE** 1 Meq / kg.
 - l. Consider **DOPAMINE** drip wide open to obtain blood pressure.
 - m. Consider Needle **CHEST DECOMPRESSION** if indicated.

5. **TACHYCARDIA - GENERAL**
 - a. Follow **Assessment of and General Orders for all Patients**.
 - b. **MONITOR** and **PRINT** strip in best lead.
 - c. Determine if:
 - i. **STABLE** or **UNSTABLE**.
 - ii. **WIDE** (>.12 msec or 3 small boxes) or **NARROW**
 - iii. **RATE** is >150 or <150.
 - iv. **REGULAR** or **IRREGULAR**.
 - d. If no pulse, treat as **VF** or **PEA**, whichever is most appropriate.
 - e. If a pulse is present, use appropriate **TACHYCARDIA ALGORITHM**.

6. TACHYCARDIA – STABLE NARROW COMPLEX

- a. Follow TACHYCARDIA – GENERAL algorithm.
- b. OXYGEN at 2 to 6 liters per minute via nasal cannula
- c. IV - NS at KVO.
- d. **Frequent vital signs and patient reassessment** (still stable?)
- e. If ATRIAL FIBRILLATION or IRREGULAR, MONITOR patient and do NOT proceed in the algorithm. Treat associated problems (CHF, etc.) and contact Medical Control.
- f. VALSALVA MANEUVER for 5 to 10 seconds. (Record & label strip)
- g. Consider Normal saline FLUID BOLUS if clear lungs.
- h. **ADENOSINE (Adenocard) - FOR ADULTS ONLY**
 - i. **6 mg** fast IV push immediately followed by 20 ml rapid bolus of NS (via syringe, if possible).
 - ii. If rhythm and vitals unchanged after one minute, give **12 mg** fast IV push immediately followed by 20 ml rapid bolus of NS.
- i. **Contact Medical Control if considering VERAPAMIL or DILTIAZEM.**

7. TACHYCARDIA – STABLE WIDE COMPLEX

- a. Follow TACHYCARDIA – GENERAL algorithm.
- b. OXYGEN at 2 to 6 liters per minute via nasal cannula or mask.
- c. IV - normal saline at KVO.
- d. **Frequent vital signs and patient reassessment** (still stable?)
- e. **CHOOSE either LIDOCAINE or PROCAINAMIDE or AMIODARONE.**
- f. LIDOCAINE 1 to 1.5 mg / kg IVP.
 - i. In patients > age 70 or with RENAL problems, use only 1/2 dose.
 - ii. LIDOCAINE 0.5 to 0.75 mg / kg IVP bolus.
 - iii. May repeat boluses if stable every 5 to 10 minutes to 3 mg / kg maximum total dose.
 - iv. LIDOCAINE drip (1 to 4 mg / min) or repeat boluses to 3 mg / kg maximum if rhythm converts.
- g. PROCAINAMIDE IV drip UP to 20 mg/min.
 - i. Stop if hypotension, prolonged QRS > 50% or 17 mg / kg total given.
 - ii. PROCAINAMIDE drip at 1 to 4 mg / min if rhythm converts.
- h. AMIODARONE 150 mg IVP over 2 to 3 minutes.
 - i. Repeat once in 10 minutes if did not convert initially.
- i. **Consider calling Medical Control for MAGNESIUM 1 to 2 grams IVP over 10 to 15 minutes. Especially if the patient is taking diuretics.**

8. TACHYCARDIA – UNSTABLE WIDE OR NARROW COMPLEX

- a. Follow Tachycardia – General algorithm. Determine rate.
- b. OXYGEN at 2 to 6 liters per minute via nasal cannula or mask.
- c. IV - normal saline at KVO. Contact Medical Control if a child.
- d. If rate < 150, brief trial of Lidocaine or Adenosine per "stable" protocol.
- e. Consider DIAZEPAM 1 to 5 mg IVP and / or MORPHINE 1 to 3 mg IVP over 1 to 3 minutes, if possible and BP > 100 systolic.
- f. SYNCHRONIZED CARディオVERSION (or use biphasic equivalents)
 - i. V Tachycardia or Atrial Fibrillation: 100 J, 200 J, 300 J, then 360 J.
 - ii. PSVT or Atrial Flutter = 50 J (or lower), 100 J, 200 J, 300 J, 360 J.

9. **VENTRICULAR FIBRILLATION / TACHYCARDIA (PULSELESS)**
 - a. Follow **Assessment of and General Orders for all Patients**.
 - b. Establish that patient is APNEIC and PULSELESS.
 - c. Secure and maintain AIRWAY with 100% OXYGEN.
 - d. CPR.
 - e. QUICK LOOK MONITOR or AED. Check for loose leads
 - f. DEFIBRILLATE up to 3 times if needed for persistent VF / VT.
 - i. Use 200 Joules, 200-300 J, then 360 J (or biphasic equivalents).
 - ii. Confirm pulselessness and rhythm after each shock, if possible.
 - g. IV - normal saline. Consider fluid bolus of 250 ml.
 - h. Establish ADVANCED AIRWAY if not done so.
 - i. CHOOSE **either** VASOPRESIN (40 units once IV) **or** EPINEPHRINE
 - j. EPINEPHRINE (1:10,000) 1 to 3 mg (0.01 mg / kg) IVP or 2.5 to 5 mg (0.025 mg / kg) ET).
 - i. Repeat every 3 to 5 minutes.
 - ii. May use EPINEPHRINE drip (30 mg in 250 ml at 100 ml / hr).
 - k. DEFIBRILLATE with 360 Joules (4 J / kg) and after each subsequent drug. Check pulse and rhythm after each shock and drug, if possible.
 - l. CHOOSE **either** LIDOCAINE **or** PROCAINAMIDE **or** AMIODARONE.
 - m. LIDOCAINE 1.5 mg / kg IVP (or 4 mg / kg ET).
 - i. May repeat once in 3 to 5 minutes.
 - ii. LIDOCAINE drip (1 to 4 mg / min) if rhythm converts.
 - n. PROCAINAMIDE IV drip UP to 20 mg/min.
 - i. Stop if hypotension, prolonged QRS > 50% or 17 mg / kg total given.
 - ii. PROCAINAMIDE drip at 1 to 4 mg / min if rhythm converts.
 - o. AMIODARONE 150 mg IVP over 2 to 3 minutes.
 - i. Repeat once in 10 minutes if did not convert initially.
 - p. MAGNESIUM 2 grams IV push
 - q. Consider SODIUM BICARBONATE 1 Meq / kg.

E. HYPERGLYCEMIA (GLUCOSE > 400)

1. Administer **250 ml NS bolus** if signs of hypoperfusion.
2. **Repeat** once if still signs of hypoperfusion.
3. **Cardiac Monitoring.**

F. HYPERTENSIVE EMERGENCIES

1. Follow **Assessment of and General Orders for all Patients**.
2. If Diastolic BP \geq 120 and altered mental status, severe headache, etc., keep head elevated, treat per below and contact Medical Control.
3. **Saline Lock.**
4. **Cardiac MONITOR.**
5. Rapidly lowering diastolic BP may cause brain injury.

G. HYPERTHERMIA

HEAT SYNDROMES in General

SIGNS/SYMPATOM	HEAT CRAMPS	HEAT EXHAUSTION	HEAT STROKE
Temperature	Normal	Normal Slightly up/down	Often > 105° F, rapid rise
Blood pressure	Normal	Slight Decreased Mildly up/down	First elevated, then decreased
Respirations	Normal	Rapid	Slow and deep
Pulse	Rapid	Rapid/Weak	Rapid/full, then weak
Skin	Pale, moist, cool	Pale, moist, cool	Flushed then hot/dry
Diaphoresis	Profuse	Profuse	Usually absent
Level of Consciousness	Normal	Stuporous	Early loss of consciousness
Nausea/Vomiting	Mild Nausea	Both	Usually absent
Muscle cramps	Severe Painful	Mild	Severe & Seizures

1. Move the patient away from the heat source and remove tight clothing.
2. Follow **Assessment of and General Orders for all Patients**.
3. If poor perfusion or signs of heat stroke, establish **IV ACCESS** and maintain a systolic BP of at least 100 mm Hg with **NS boluses** (up to 20 mg / kg).
4. If altered level of consciousness (ALC), see ALC protocol and:
 - a. Apply cold packs to axilla, groin, and neck. Avoid shivering.
 - b. Cool with mist, cool wet sheet, fan, open window, air conditioning.

H. HYPOGLYCEMIA (GLUCOSE \leq 70)

1. If conscious with a gag reflex, may (including EMT-Basic) administer 1 tube of **ORAL GLUCOSE**.
2. If altered level of consciousness or no gag reflex, establish IV of NS at kvo and administer **1 ml/kg (to 50 ml, 25 grams max) 50% DEXTROSE IVP. Use 2 ml / kg of 25% DEXTROSE if patient weighs <25 kg.**
3. Repeat glucose determination in **5 minutes** and **repeat DEXTROSE dose IVP** if the blood glucose remains \leq 70 mg/dl and the patient is still symptomatic.
4. If unable to establish IV access, administer **GLUCAGON 1 mg IM in adults. Contact Medical Control if a child.**

I. HYPOTENSION / SHOCK

1. Follow **Assessment of and General Orders for all Patients**.
2. **100% NRB**.
3. **Allergic / Anaphylactic**, see Allergic Reaction and Anaphylaxis protocol.
4. **Cardiogenic / CHF**
 - a. If no response after 5 to 10 minutes, initiate a **DOPAMINE INFUSION** of 400 mg in 250 cc 0.9% Sodium Chloride at 5 - 20 mcg/kg/min IVPB. Titrate to maintain a systolic BP of 90 - 100 mmHg. Note: Dopamine should be used with caution in patients with a heart rate >110, and should be avoided in the presence of significant ventricular ectopy (i.e., >6 PVC /min, multifocal PVC/s, or salvos).
 - b. If cardiogenic shock is suspected and systolic BP <90 mmHg, initiate a **DOBUTAMINE INFUSION** of 250 mg in 250 cc NS at 5 - 20 mcg/kg/min IVPB. Titrate to maintain a systolic BP of 90 - 100 mmHg.
5. **Hypovolemic (Dehydration) / Neurogenic / Septic**
 - a. Careful lung auscultation.
 - b. If clear lungs, administer 20 ml / kg bolus of NS, to 500 ml maximum. Auscultate lungs frequently.
 - c. Second IV line if possible.
 - d. Contact Medical Control for further fluid bolus orders, if felt appropriate.
 - e. Consider **DOPAMINE INFUSION** (per above) for Neurogenic or Septic shock, if adequate fluid status obtained.
6. **Traumatic**, see trauma protocol.

J. HYPOTHERMIA

1. Because of significant cardiac irritability, avoid much handling of the patient and leave most treatment left for the hospital.
2. Localized Hypothermia (Frostbite)
 - a. Protect the injured areas from pressure, trauma, and friction. Remove all covering from injured parts. Do not rub. Do not break blisters.
 - b. Do not allow limb to thaw if there is a chance that limb may refreeze.
 - c. Maintain core temperature by keeping patient warm with blankets, warm fluids, etc.
 - d. Consider pain relief (Pain – Isolated extremity injury protocol).
3. General Hypothermia without Arrest
 - a. Do not initiate CPR if there is any pulse present, no matter how bradycardic.
 - b. Use high flow oxygen. Do not hyperventilate. Do not use adjunctive airway equipment unless absolutely necessary. If necessary, use least intrusive measures that will adequately assure airway and ventilation.
 - c. Avoid rough handling and unnecessary stimulation.
 - d. Gently remove wet clothing. If rewarming is undertaken, rewarm rapidly by applying warm packs or hot water bottles to trunk, neck and groin only.
 - e. Do not allow conscious patients to ambulate, exercise or move about.
4. General Hypothermia with Arrest
 - a. Check for pulse for at least 30 seconds.
 - b. Apply monitor/AED. Treat to maximum of 3 shocks only.
 - c. Advanced airway.
 - d. CPR.
 - e. If BP < 100 systolic, 250 ml NS bolus (warmed, if possible).

K. POISONING / OVERDOSE / TOXIC EXPOSURE

1. Follow **Assessment of and General Orders for all Patients**.
 - a. Assess the environment and protect yourself and others from toxic exposure.
 - b. Bring all bottles/substances found with the patient, even the patient says they did not take/use them.
 - c. Transport all suspected suicide attempts.

2. **Dermal (Skin) Exposure**
 - a. **Remove** clothing and wash skin with copious amounts of water.
 - b. **Identify** substance and notify Medical Control as soon as possible.
 - c. Consider calling **HAZMAT team**.
 - d. **Organophosphate (Pesticide) exposure:**
 - i. Symptoms include (profound) bradycardia, coma, psychosis, dyspnea, seizures, and cyanosis.
 - ii. If symptoms, administer **ATROPINE SULFATE 1-2 mg (0.02 to 0.04 mg / kg, 0.1 mg min) IVP**. May be repeated in 5 minutes until signs of flushing, dry mouth, and dilated pupils appear. Contact Medical Control for further doses and orders.

3. **Ingested Poisons**
 - a. Treat via appropriate algorithm (**altered level of consciousness, hypotension, dysrhythmia, etc.**), if not fully awake and with normal vital signs.
 - b. Call Medical Control with substance information as soon as possible.
 - c. If charcoal administration is indicated, give 1 ml / kg (to 50 grams maximum) of **ACTIVATED CHARCOAL**.
 - d. **Do not induce vomiting with caustic agents or volatile hydrocarbons.**
 - e. **Tricyclic Antidepressants (Elavil, Sinequan, etc.):**
 - i. Cardiac monitoring -- monitor for ventricular ectopy and manage per dysrhythmia protocol. Watch for QRS > .100mseconds (2 and ½ small boxes) as indicator of serious ingestion.
 - ii. Manage seizure activity with **DIAZEPAM** or **LORAZEPAM** per protocol.
 - iii. Contact Medical Control when considering **SODIUM BICARBONATE 1 mEq/kg IVP** for serious ingestion.

4. **Inhalation Exposure**
 - a. **Remove** from toxic area and remove clothing, if appropriate.
 - b. **100 % Oxygen via NRB**.
 - c. **Cyanide exposure:**
 - i. Use **SODIUM THIOSULFATE** in comatose smoke inhalation patients at EMT-Paramedic discretion.
 - ii. Adults 50cc SLOW IVP (12.5 G).
 - iii. Pediatrics 32 cc SLOW IVP (8.0 G).

L. RENAL DIALYSIS PATIENTS

1. Follow **Assessment of and General Orders for all Patients**.
 - a. Careful **universal precautions**.
 - b. **Do not** take BP, start IV, or apply rotating tourniquets on a **limb with shunt or fistula** EXCEPT if rapid deterioration of vital signs and no other venous access available.
 - c. Accidental breakage or rupture of shunts leads to rapid exsanguination. Guard shunts appropriately. Control bleeding by employing standard methods of bleeding control.
2. Treat problems according to **appropriate protocol**, including **Furosemide**, even if no urinary output. Call Medical Control for (possible fluid) orders if hypotensive.
3. **Air embolus**
 - a. Place the patient with left side down and the head down 30 degrees.
 - b. If air embolus causes cardiac arrest, give 6 - 10 chest compressions to attempt to break up air bubble into smaller bubbles.
4. **Hyperkalemia (High Potassium level)**
 - a. Common cause of cardiac arrest, especially if due for dialysis soon.
 - b. Watch cardiac monitor for peaked T waves and widened QRS.
 - c. Contact Medical Control, as **Calcium and Sodium Bicarbonate** may be indicated early.

M. RESPIRATORY DISTRESS

1. Follow **Assessment of and General Orders for all Patients.**
 - a. Obtain a past medical history and a list of medications, including breathing treatments and oxygen use.
 - b. Vitals signs to include pulse oximetry when available and accurate respiratory rate.
 - c. Try to keep the patient in the upright sitting (semi-Fowler's) position.
2. Appropriate **OXYGEN.**
 - a. Mild hypoxemia (Increased respiratory rate, Pulse Oximetry ≥ 92).
Use nasal cannula at 2 to 6 liters per minute.
 - b. Marked hypoxemia (cyanosis, confusion, CHF, O₂ sat ≤ 91).
Use NRB mask at 10 to 15 liters per minute (keep bag inflated).
If the patient is home oxygen dependent, try 1 to 3 liters nasal above their baseline flow first.
 - c. Cardiopulmonary arrest use bag mask with oxygen reservoir at 15 liters per minute and advanced airway when possible.
 - d. May use facemask at 4 to 10 liters per minute when the patient is unable to tolerate nasal cannula.
3. EMT-Basics may assist patient with their prescribed metered-dose inhalers if the patient has one available and has not already exceeded the prescribed dose. If prescribed dose has been exceeded, the Basic should consider contacting Medical Control.
4. Establish **IV ACCESS.**
5. **Cardiac MONITORING** for moderate to severe distress.
6. **Hyperventilation/Anxiety Suspected**
 - a. Suspect **only** after **excluding other causes** (DKA, aspirin or other overdose, airway obstruction, asthma, shock, pneumothorax, etc.).
 - b. Careful lung assessment. Treat accordingly if not clear.
 - c. **Continuous Pulse Oximetry**, if available. Oxygen, as indicated. NEVER use a "brown bag". If the patient is under 35 years of age and $>97\%$ saturation by pulse oximetry, may have patient breath in to a "rebreather" mask (non-rebreather mask with NRB valve removed) with low flow oxygen, watching saturation closely and treating accordingly.
 - d. **Glucose assessment** (hyperglycemia can cause increased respirations) and treat accordingly.

7. **RALES** present:
- a. Treat simultaneous wheezing per wheezing protocol.
 - b. If **no fever and presumptive Pulmonary Edema** / Left Heart Failure:
 - i. If patient in distress and systolic BP is > 100 mmHg, administer **NITROGLYCERIN (NITROSTAT) 0.4 mg (1/150 gr.) SL or spray**. May repeat every 3 to 5 mins (3 doses total) EVEN if no chest pain. EMT-Basics may assist the patient in administering their own Nitroglycerin.
 - ii. If patient remains in distress and systolic BP >100, administer **FUROSEMIDE 40 mg SLOW IVP**. May repeat in 20 minutes.
 - c. If patient still in distress and systolic BP > 100, administer **MORPHINE SULFATE 0.05mg / kg (10 mg max) slow IVP or SQ or IM**. May give up to 3 more 0.05 mg / kg doses of MORPHINE every 3 to 5 minutes to a combined maximum total of 10 mg if the criteria are still met. See Morphine Dosing Appendix.
 - d. If BP remains > 150 mmHg administer and patient remains in distress, consider **further NITROGLYCERIN SL/spray boluses**.
 - e. Consider application of **rotating tourniquets**.
 - f. If BP > 100, transport with head elevated (Semi-Fowler's position).
8. **WHEEZING** present:
- a. Consider causes of wheezing:
 - i. Bronchospasm: Asthma, COPD.
 - ii. Cardiogenic (pulmonary edema).
 - iii. Foreign body.
 - iv. Anaphylaxis. See Allergic Reaction and Anaphylaxis section.
 - b. Remember that a lack of wheezing may indicate a severe asthma attack.
 - c. Administer **ALBUTEROL SULFATE 2.5 mg** via nebulizer using oxygen at 8 LPM. May be repeated every 20 minutes while patient is in distress. Note: **Use Albuterol Sulfate with caution when there has been usage of a bronchodilator within the past two hours.**
 - d. If history of COPD / Emphysema, **simultaneously** mix and administer **IPRATROPIUM (ATROVENT)** via same nebulizer.
 - e. If history of asthma and in severe distress, consider **EPINEPHRINE 1:1000 0.01 mg/kg SQ** if ≤12 years of age.
 - i. Use Epinephrine with caution in any patient who has used a bronchodilator within the past four hours.
 - ii. **Do not use Epinephrine** in any patient who has repeatedly used an aerosol bronchodilator within the past four hours or is > 50, has a cardiac history or is/might be pregnant.
 - f. Consider contacting Medical Control for **SOLUMEDROL 125 mg IVP** if moderate to severe attack.
 - g. Transport in position of comfort; be prepared to support ventilations in COPD and others in severe distress.

9. OBSTRUCTED AIRWAY

- a. Follow the current American Heart Association algorithm for obstructed airway.
- b. If the above attempts are unsuccessful and patient loses consciousness, continue efforts and begin transport. If certified, attempt direct laryngoscopy and use Magill or ring forceps to remove obstruction.
- c. If unable to relieve obstruction by above, consider surgical or needle cricothyroidotomy and hyperventilate with 100% oxygen.

N. SEIZURES

1. Follow **Assessment of and General Orders for all Patients.**
 - a. Include patient and crew protection.
 - b. **GLUCOSE** assessment.
 - c. **OXYGEN** assessment and treatment as indicated.
 - d. **Careful history and medication evaluation. Bring all medications.**
 - e. **Careful trauma evaluation.**
 - f. **Cervical spine immobilization**, if trauma.
 - g. Consider **stroke, poisoning, shock, hypoxia, sepsis, head injury.**
 - h. **Aspiration precautions:**
 - i. Position patient on side, head lowered 15 to 30 degrees, if possible.
 - ii. Suction readily available.
 - iii. If possible, mouth cleared of foreign bodies (dentures, food, gum)
2. Establish **IV ACCESS.**
3. **Cardiac Monitor.**
4. If the patient remains in status epilepticus:
 - a. Administer **DIAZEPAM 2.5 mg (Broselow or 0.1 mg/kg for peds) or LORAZEPAM 0.5 mg (Broselow or 0.025 mg/kg for peds) SLOW IVP.** May be repeated every 3 to 5 minutes until seizure stops or to a maximum dose of 10 mg.
 - b. If unable to establish an IV:
 - i. May administer **DIAZEPAM 5 - 10 mg (0.1 mg/kg to 0.3 mg per kg or per Broselow) via #8 feeding tube into the rectum.** Flush the tube with 5 cc sodium chloride.
 - ii. May administer **LORAZEPAM 0.5 to 1 mg IM (or per Broselow or Medical Control).**

O. STROKE / CVA / TIA

1. Follow **Assessment of and General Orders for all Patients**.
 - a. Include especially **Glucose assessment**, medications, **time of onset**.
 - b. Careful examination for trauma.
 - c. Some patients may not be able to communicate verbally, but can answer yes or no questions or write. Try to communicate to the patient from their unaffected side, as some may not respond to or remember questions when asked from someone on their side of weakness.
2. The signs and symptoms of stroke can improve or worsen quickly, so **careful monitoring and reassessment** is important.
3. **Hypertension** in stroke patients routinely should not be treated, as it is often protective, trying to get blood flow to low flow areas of the brain.
4. New therapies for stroke are now available. However, successful use is only possible if treatment is initiated within 3 hours of symptom onset. Early notification of the receiving hospital and minimizing scene time are important parts of a strategy to treat patients quickly.
5. Establish **IV access**.
6. **Cardiac monitor**.
7. **Oxygen therapy**.
8. Place the patient's affected or paralyzed extremity in a secure and safe position during patient movement and transport. Leave the unaffected side free.

P. SYNCOPE / FAINTING

1. Follow **Assessment of and General Orders for all Patients**.
2. **Oxygen therapy** as needed.
3. Consider **Glucose** assessment.
4. Establish **IV ACCESS**.
5. **Cardiac Monitor**.
6. Treat **hypotension** and **dysrhythmias** per protocol.

Q. VOMITING (Persistent)

1. Follow **Assessment of and General Orders for all Patients.**
2. Consider underlying serious problems that may result in vomiting. These include: Aortic aneurysm, bowel obstruction or perforation, DKA, MI, overdoses, poisons, or stones.
3. For patients with persistent vomiting, may give **Promethazine (Phenergan) 6.25 mg (patient weight 10 to 20 kg), 12.5 mg (20 to 30 kg), 18.75 mg (30 to 40 kg) to 25 mg (> 40 kg) slow** (not more than 25 mg/min) **IVP or IM.**
 - a. Contraindicated if enlarged prostate or narrow angle glaucoma.
 - b. May cause drowsiness.

IV. OBSTETRICAL EMERGENCIES

A. CHILDBIRTH GENERAL PREPARATIONS

1. Follow **Assessment of and General Orders for all Patients.**
 - a. Obtain expected due date (or weeks of gestation), contractions onset and duration, any vaginal bleeding, water broken or not, pre-natal problems, peripheral edema, number of pregnancies.
 - b. Oxygen therapy only if unstable.
2. **Establish IV ACCESS if unstable, shock, excessive bleeding.**
3. If childbirth is imminent, **prepare for delivery** and **provide the necessary supportive care** for the mother and infant. (Refer to Childbirth/Newborn Distress section of pediatric protocol.)
4. Suspect **Ectopic Pregnancy** if hypotensive and in first trimester.

B. ROUTINE DELIVERY

1. Maintain a patent **airway** and effective oxygenation.
2. Assess **circulation**. If the mother is hypovolemic, hypotension is a very late sign and indicates a blood loss in excess of 30 - 35% of the complete blood volume.
3. **If hypovolemia** is present:
 - a. **Establish IV ACCESS x 2** with the largest catheters possible, and **give a rapid fluid challenge of 1 to 2 liters of NS.**
 - b. Apply the MAST garment and inflate the leg compartments as indicated to obtain and maintain a systolic BP of at least 100 mmHg. **Do not inflate the abdominal section.**
 - c. Lay the patient on the left side except as described in the O.B. trauma protocol.
4. Perform the fetal assessment as follows:
 - i. Fetal heart rate (normal 120 - 160).
 - ii. Fetal movement noted?
 - iii. If amniotic fluid is draining, is it clear or meconium stained?

C. PRE - ECLAMPSIA

1. Toxic state that presents during the last half of pregnancy, and up to one week after delivery, where the mother exhibits at least two of the following:
 - a. Hypertension (systolic BP >140 mmHg, diastolic BP >90 mmHg, or an increase of more than 20 mmHg from previous readings.
 - b. Proteinuria (3+, edema); often seen as generalized edema or weight gain >5 lbs in one week.
 - c. Hyperactive reflexes.
2. Follow **Assessment of and General Orders for all Patients.**
3. Establish **IV ACCESS.**
4. Consult Medical Control.
 - a. Be prepared to administer **MAGNESIUM SULFATE slow IVP or IM.**
 - b. **Monitor Blood Pressure and respiratory effort closely.**

D. ECLAMPSIA

1. Eclampsia is the criteria for pre-eclampsia **plus** the mother is actively seizing.
2. Follow **Assessment of and General Orders for all Patients.**
3. Establish **IV ACCESS.**
4. Consult Medical Control. Be prepared to administer the same loading dose of **MAGNESIUM SULFATE as above, but over 5 - 10 minutes.**
5. Consider **endotracheal intubation** early because prolonged hypoxia may prove fatal to the fetus
6. Consider **VALIUM** in 2.5 mg IVP increments to a maximum dose of 10 mg.
7. **MAGNESIUM SULFATE** can cause respiratory depression with cardiovascular collapse. The antidote is 5 - 10 mEq of **CALCIUM Chloride** IVP over 5 minutes.

E. OBSTETRICAL TRAUMA (See Traumatic Emergencies)

V. PEDIATRIC EMERGENCIES

Most pediatric emergencies are covered in the appropriate general section. Doses in general are on a per kilogram basis. **Doses may be given via Broselow tape, Pedi-Wheel (or equivalent) guidelines.** When using the Broselow tape, please inform the receiving Emergency Department of the color that the patient falls in to in order to have the best continuity of care.

VI. TRAUMATIC EMERGENCIES

A. LOAD AND GO SITUATIONS (see Appendix S)

1. At a minimum, any of the following are considered Load and Go situations:
 - a. Penetrating injuries to the neck, chest, or abdomen, or to any extremity with neurovascular compromise.
 - b. > 20 % BSA burn, or any burn with associated blunt or penetrating trauma or inhalation injury.
 - c. Unstable or open pelvic fractures.
 - d. Evidence of spinal cord injury with traumatic paralysis.
 - e. Amputation proximal to wrist or ankle.
 - f. GCS < 10 attributed to trauma.
 - g. Systolic BP < 90 at any time in adult patients, or age-adjusted hypotension in children.
 - h. Respiratory compromise or obstruction, or the need to emergently intubate the trauma patient.
2. As soon as any of the above conditions are recognized, urgent transport should be undertaken to the closest appropriate hospital. Scene times of less than 10 minutes are ideal, if possible. Notify the Emergency Department of trauma criteria that the patient meets as soon as possible.
3. The only treatment to be instituted prior to or during transport (and only if specifically needed) are as follows:
 - a. Airway management with C-spine control.
 - b. Chest wound management (i.e. tension pneumothorax, sucking chest wound, flail chest).
 - c. Basic CPR in cases of trauma arrest (may give **1 mg EPINEPHRINE 1:10,000** or **40 units VASOPRESSIN**, and one attempt at **defibrillation only**). **Prolonged resuscitation should never be attempted at the scene.** (Bilateral chest decompression permitted if breath sounds obscured and trachea is definitely intubated.)
 - d. Perform a MAST survey assessing the abdomen for signs of rigidity, bruising, or guarding. Assess the pelvis for pain or crepitus. Assess the lower extremities for presence of pulse, movement, and sensation. Apply MAST garment and inflate if no signs of pulmonary edema or penetrating injury to the thorax.
 - e. Cervical collar, backboard, and at least 3 backboard straps.
 - f. **Establish IV ACCESS.** (2 IVs optimal) if placed during or within 3 minutes of extrication or during transport. Give only enough IV fluid to maintain good mental status.
 - g. Cardiac monitoring (may be done en route).

B. ABDOMINAL TRAUMA

1. Follow **Assessment of and General Orders for all Patients.**
2. **Do not remove any impaled foreign objects.** Stabilize object securely for transport. Do not apply abdominal section of MAST over impaled objects.
3. If eviscerated bowel is present, cover with saline soaked sterile dressings. **Do not apply abdominal section of MAST over eviscerated organs.**

C. AVULSIONS/AMPUTATIONS

1. Follow **Assessment of and General Orders for all Patients**.
2. Apply sterile dressing to stump.
3. Control bleeding via appropriate measures.
4. Wrap amputated part in a wet sterile dressing and place inside a plastic bag that is then placed on ice.

D. BURNS/SMOKE INHALATION (see Poisonings – Inhalation)

1. **Move** the patient to a safe environment.
2. **Break contact with the causative agent**. The burn surface may be cooled initially with sterile water (avoid prolonged cooling of a BSA greater than 20%). If live power lines involved, do not attempt removal unless rescue personnel are specifically trained in removal of live power lines. Contact utility company to remove lines. If chemical agent involved, irrigate with copious amounts of water for 15 to 30 minutes. Contact poison control center for specific decontamination information.
3. Follow **Assessment of and General Orders for all Patients**.
4. **Anticipate early intubation** in unconscious victims or in conscious victims with significant inhalation injury. Maintain high index of suspicion for inhalation injury in patients with singed nares or eyebrows, mucosal burns, cough, hoarseness or stridor.
5. Treat bronchospasm per **respiratory distress protocol**.
6. Cover the burn with a dry, sterile dressing.
7. **Remove any constricting** jewelry or clothing if possible.
8. **Establish IV ACCESS** and **adjust rate to maintain adequate perfusion**.
9. Cardiac monitor.
10. Consider contacting medical control for using **pain control** per protocol.
11. Document the % of burned tissue and whether it is a full or partial thickness burn. For trauma destination purposes, count only second and third degree burns.

E. CHEST TRAUMA

1. Follow **Assessment of and General Orders for all Patients**.
2. **Flail Chest**
 - a. Stabilize flail segment with bulky dressing if possible.
 - b. Reassess adequacy of ventilation.
 - c. Anticipate intubation if indicated.
3. **Open Chest Wounds**
 - a. Cover sucking wound with a non-porous dressing (Vaseline gauze, jellied defibrillator pad, cellophane) taped over three sides.
 - b. Reassess adequacy of ventilation.
 - c. Anticipate intubation if indicated.
4. **Tension Pneumothorax**
 - a. Insert 14 or 16 gauge angiocath into second or third intercostal space, mid-clavicular line (see Appendix).
 - b. Reassess adequacy of ventilation and perfusion.
 - c. Anticipate intubation if indicated.
 - d. LOAD AND GO situation.
5. Blunt or penetrating injuries to the chest with shock that are not immediately responsive to the above measures should be transported without delay.

F. HEAD TRAUMA

1. Follow **Assessment of and General Orders for all Patients**.
2. **Control severe bleeding**. May apply sterile dressings.
3. **Cervical spine** immobilization with backboard, head immobilizer, and straps. Load and go if necessary.
4. Establish IV ACCESS.
5. If suspected head injury with mildly impaired level of consciousness, **do not hyperventilate** as was previously thought best, unless signs of cerebral herniation present. Ventilate at 10 breaths per minute (BPM) for adults, 20 bpm for children and 25 bpm for infants < 1 year of age. If hyperventilation is necessary, ventilate only at 20 bpm for adults, 30 bpm for children and 35 bpm for infants.
6. **Anticipate neurogenic shock**, i.e. hypotension with bradycardia. If signs of inadequate perfusion, treat with IV fluids, MAST garment, and **DOPAMINE INFUSION IVPB**. (See hypotension protocol)
7. In the head injured patient with signs of shock, look for other sources of bleeding, i.e. chest, abdomen, pelvis, femurs, and treat for hypovolemic shock. Note in hypovolemic patient, the pulse rate is tachycardic.

G. OBSTETRICAL TRAUMA

1. Follow **Assessment of and General Orders for all Patients.**
2. Cervical Spine immobilization per trauma protocol **and also elevate the right hip with blankets or manually displace the uterus off the right side.**
3. Treat for shock as per O.B. routine delivery hypoperfusion protocol.
4. Initiate aggressive resuscitation and CPR if the mother arrests. The fetus may be viable if the uterine height is above the umbilicus.

H. OCULAR TRAUMA

1. **Chemical injuries:** Immediately flush with one liter of NS and continue flushing en route. Consider calling Medical Control for pain control.
2. **Penetrating injuries:**
 - a. Stabilize impaled objects, cover both eyes, and transport.
 - b. Apply metal eye shield if possible.

I. PAIN (ISOLATED EXTREMITY INJURY)

1. Follow **Assessment of and General Orders for all Patients.**
2. Confirm that the patient:
 - a. Is > 17 and < 65 years of age.
 - b. Has only one extremity that is injured.
 - c. Is in significant discomfort.
 - d. Has a systolic BP >110 if male and >100 if female.
 - e. Is not vomiting.
 - f. Is at their normal level of consciousness.
 - g. Has no known renal or liver disease.
 - h. And has not ingested alcohol or narcotics within the past 4 hours.
3. If criteria met, administer **MORPHINE SULFATE 0.05mg / kg (10 mg max) slow IVP or SQ or IM.** May give up to 3 more 0.05 mg / kg doses of MORPHINE every 3 to 5 minutes to a combined maximum total of 10 mg if the criteria are still met. See Morphine Dosing Appendix.
4. "Pain Protocol" may also be used for other patients if ordered by Med Control.

J. SEXUAL ASSAULT / RAPE

1. Follow **Assessment of and General Orders for all Patients.**
2. Ascertain scene safety. Notify appropriate law enforcement agency.
3. Ask the patient not to bathe or change clothing. The police are responsible for disposition of the clothing as evidence. Transport the patient wrapped in a clean sheet, which should also be preserved for the police.

VII. POLICIES, PROCEDURES, and APPENDICIES

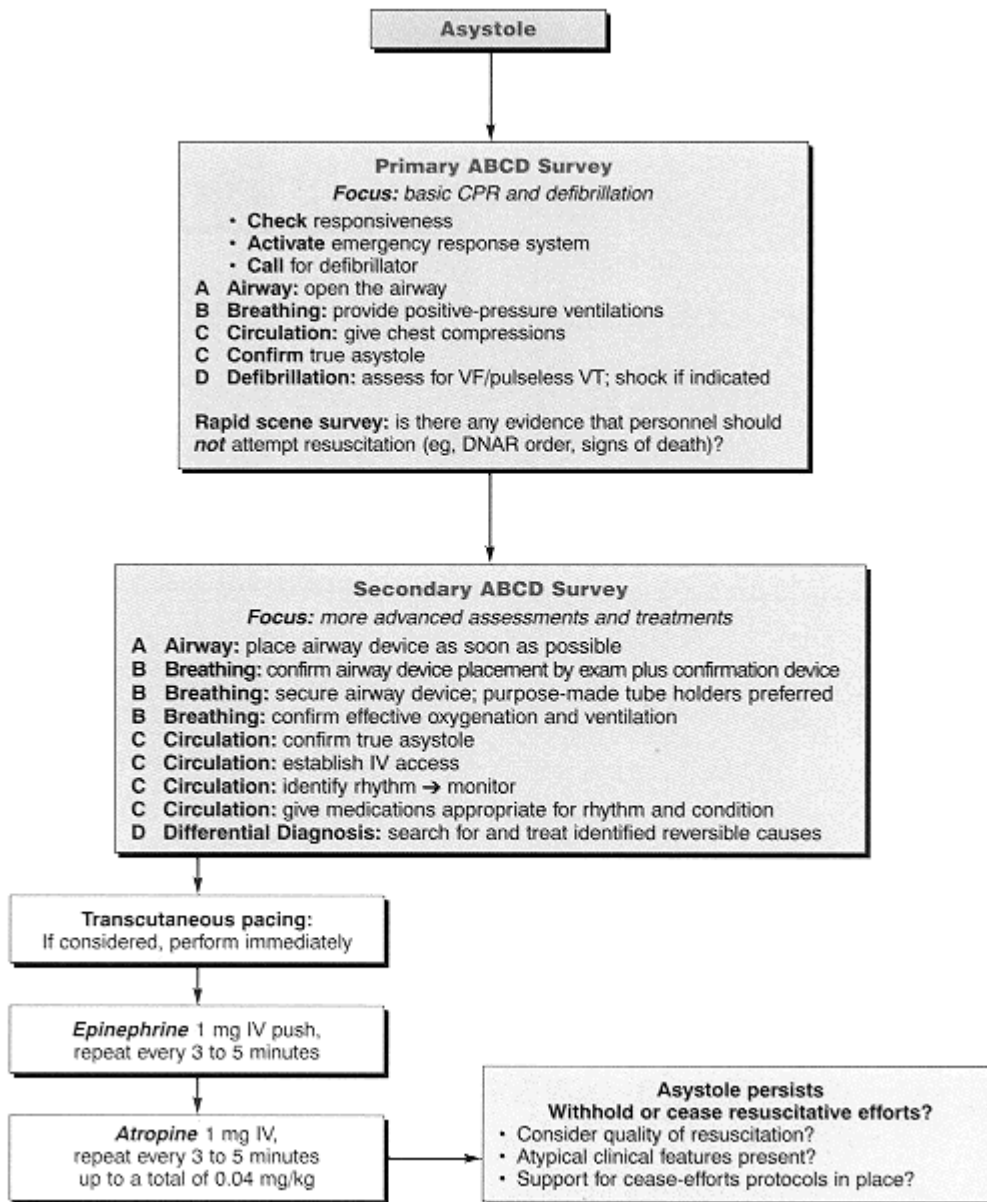
A. AEROMEDICAL TRANSPORT PROTOCOL

1. This will be updated to be in accordance with the recommendations of the state Trauma committee's recommendations.
2. Rotorwing air medical services may be requested directly to the scene by on-scene EMS or fire incident command. Considerations for air medical transport may be based on the patient's severity of injuries, the scene situation (prolonged entrapment, multiple victims, patient access, etc.), time/distance to an appropriate verified trauma facility or other circumstances deemed appropriate by the on-scene command.
3. A request for rotorwing air medical service response may be initiated when one of the following conditions exists:
 - a. The trauma patient's airway, breathing, or hemorrhage/circulation can not be controlled by conventional means and the estimated arrival time of the air-medical service is less than the time required for ground transport to the nearest hospital OR
 - b. The trauma patient's airway, breathing, and hemorrhage/circulation can be controlled by conventional means and air transport to an appropriate trauma center will occur in a shorter time than ground transport to an appropriate trauma center.
Time estimation should be made from the time the patient is ready for transport to arrival at the appropriate trauma center. This should include aircraft response to the scene.
4. Air medical services should not be requested for a victim of traumatic cardiac arrest due to blunt trauma or victims of penetrating trauma without vital signs for greater than 10 minutes.

B. AUTOMATIC EXTERNAL DEFIBRILLATOR (AED) POLICY

1. Confirm that the patient is in cardiac arrest.
2. Initiate CPR while applying AED.
3. Stop CPR and reconfirm pulselessness while pressing "Analyze" button.
4. Do not touch, apply compressions, or ventilate the patient while the AED is analyzing. Analyze only while the patient is not moving. Stop any transport to analyze.
5. Follow the subsequent instructions of the AED.
6. Continue CPR when indicated and reanalyze every 1 to 3 minutes.

C. CARDIAC DYSRHYTHMIAS – ASYSTOLE



D. CARDIAC DYSRHYTHMIAS – BRADYCARDIA

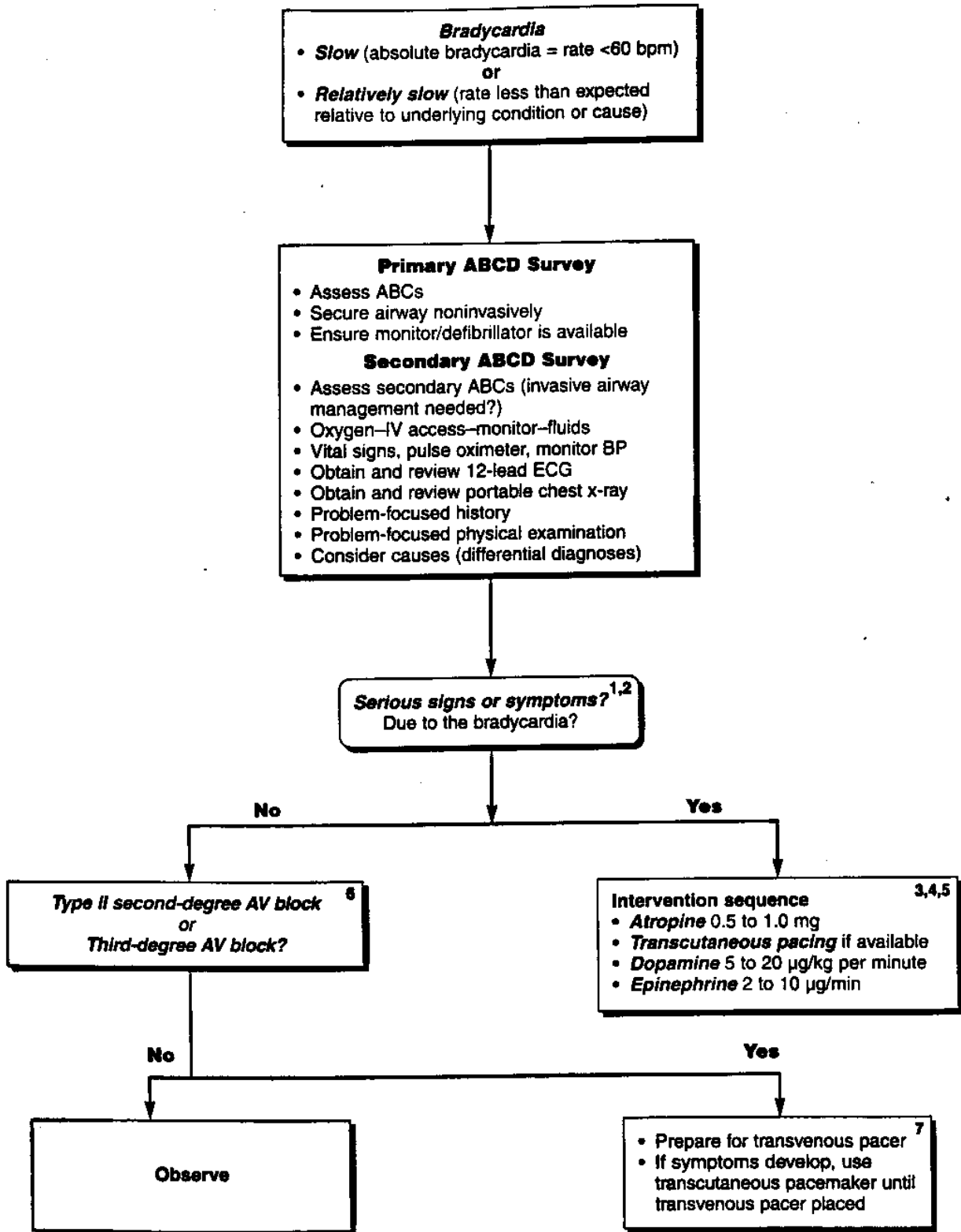
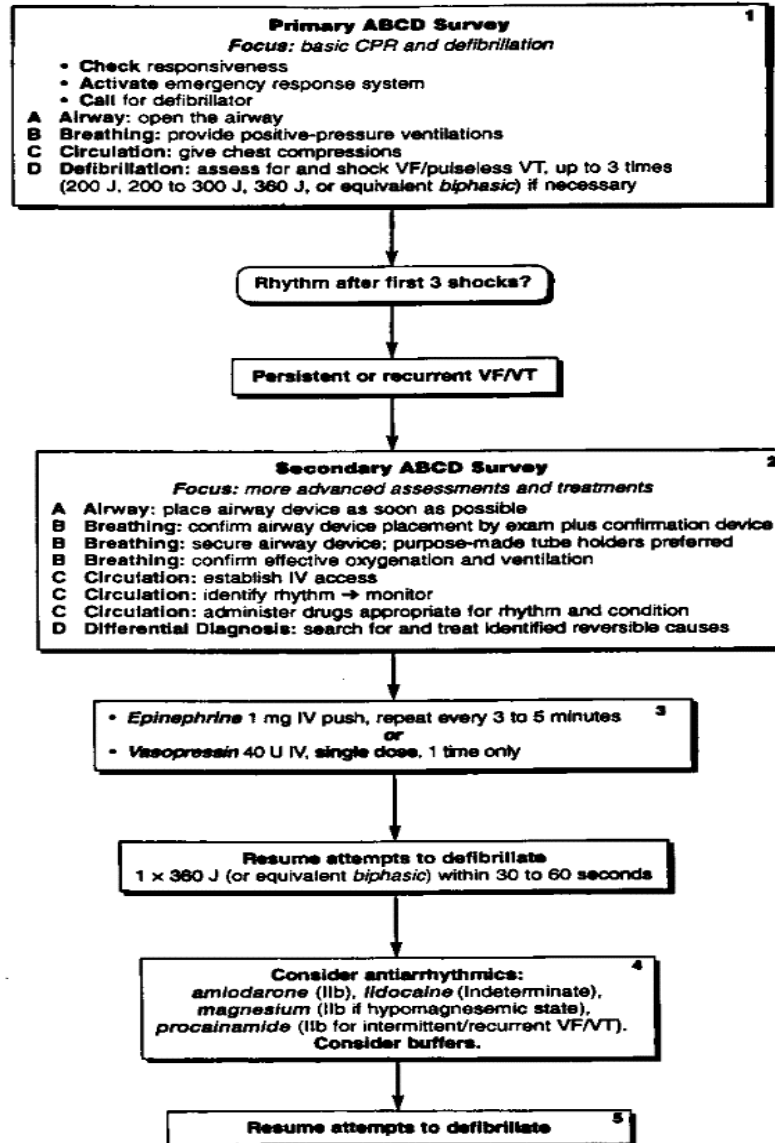


Figure 6. Bradycardia Algorithm.

E. CARDIAC DYSRHYTHMIAS – PULSELESS VF/VT



1. CARDIAC DYSRHYTHMIAS – TACHYCARDIA OVERVIEW

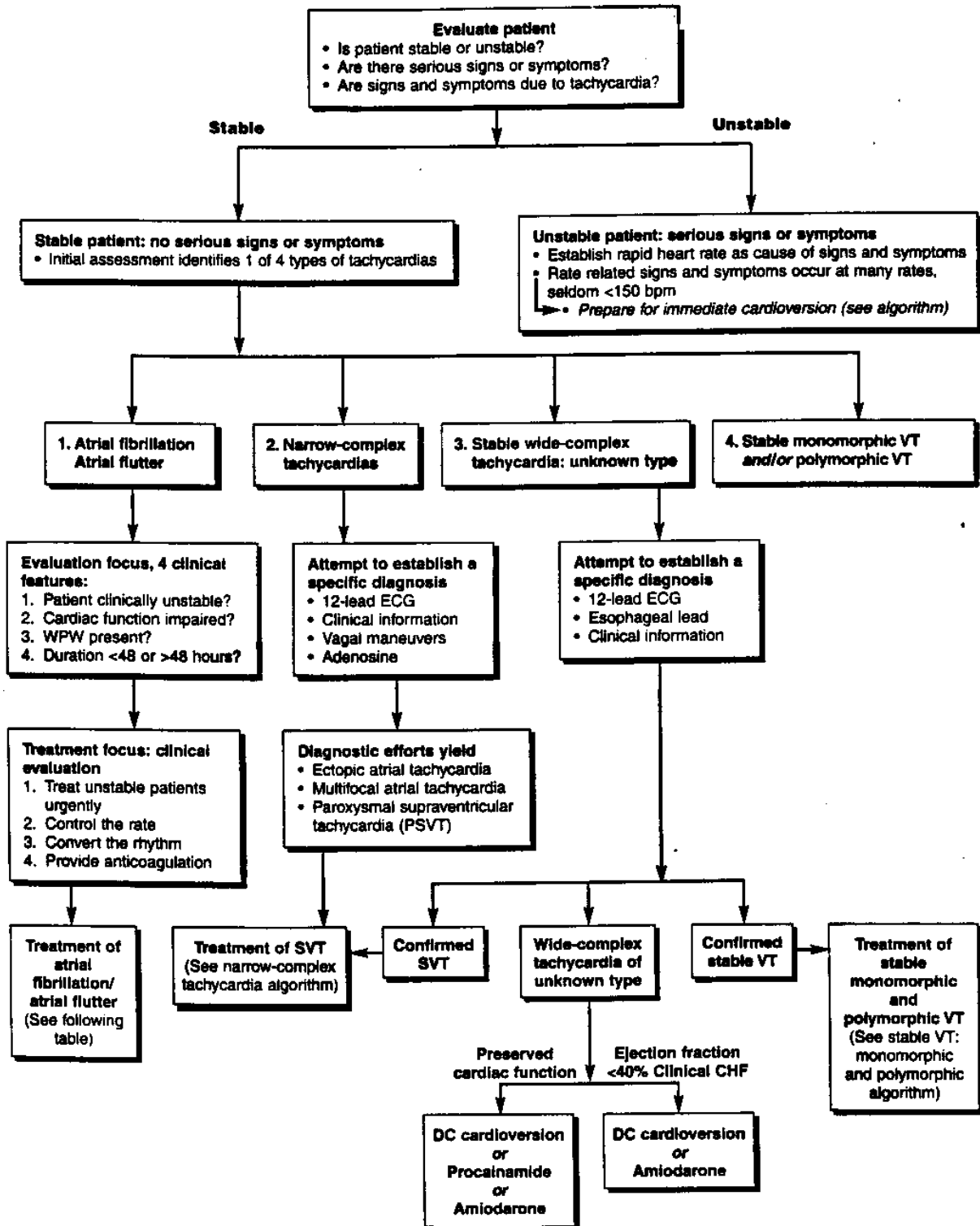


Figure 7. The Tachycardia Overview Algorithm.

F. CARDIAC DYSRHYTHMIAS – V TACH - STABLE

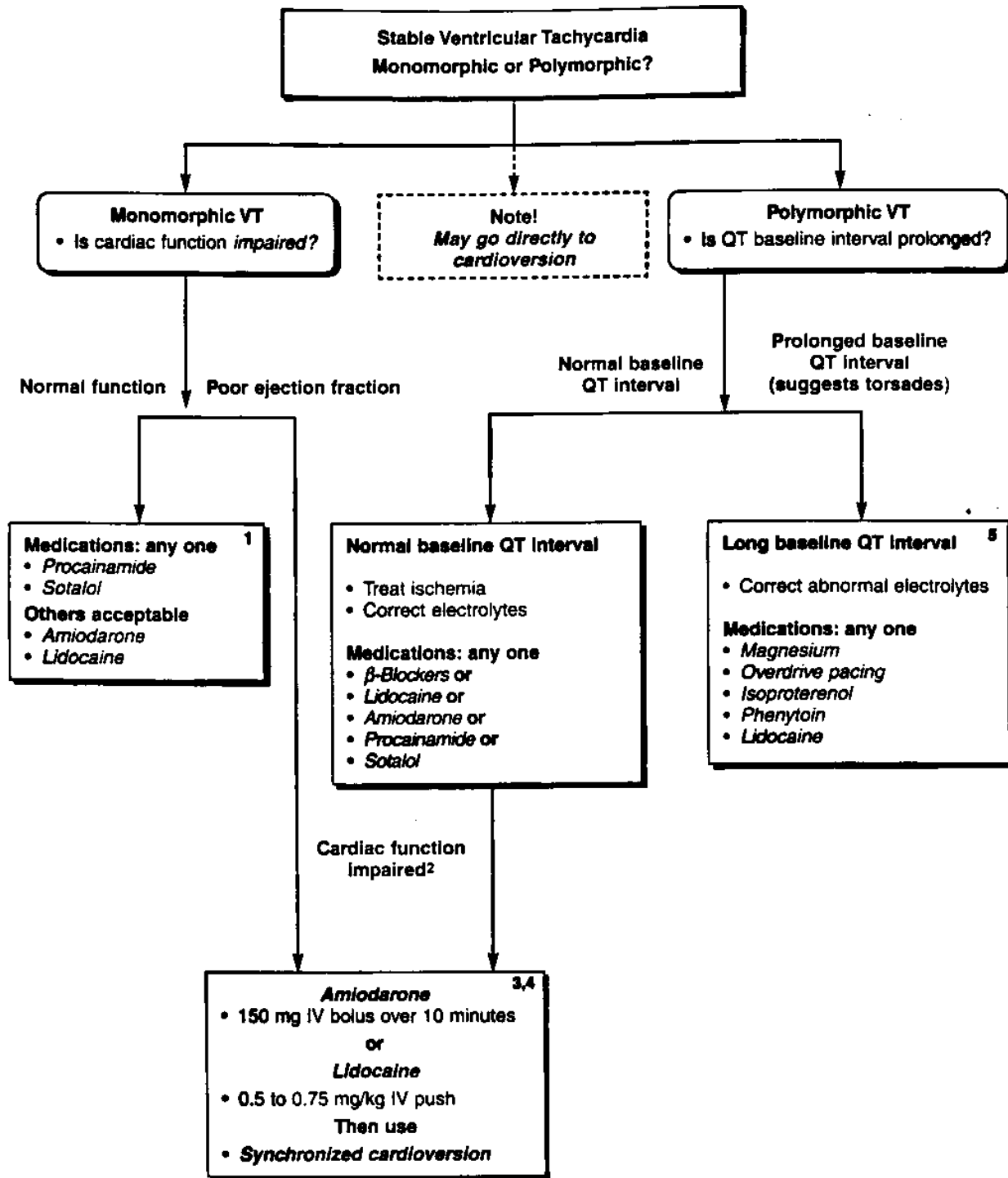
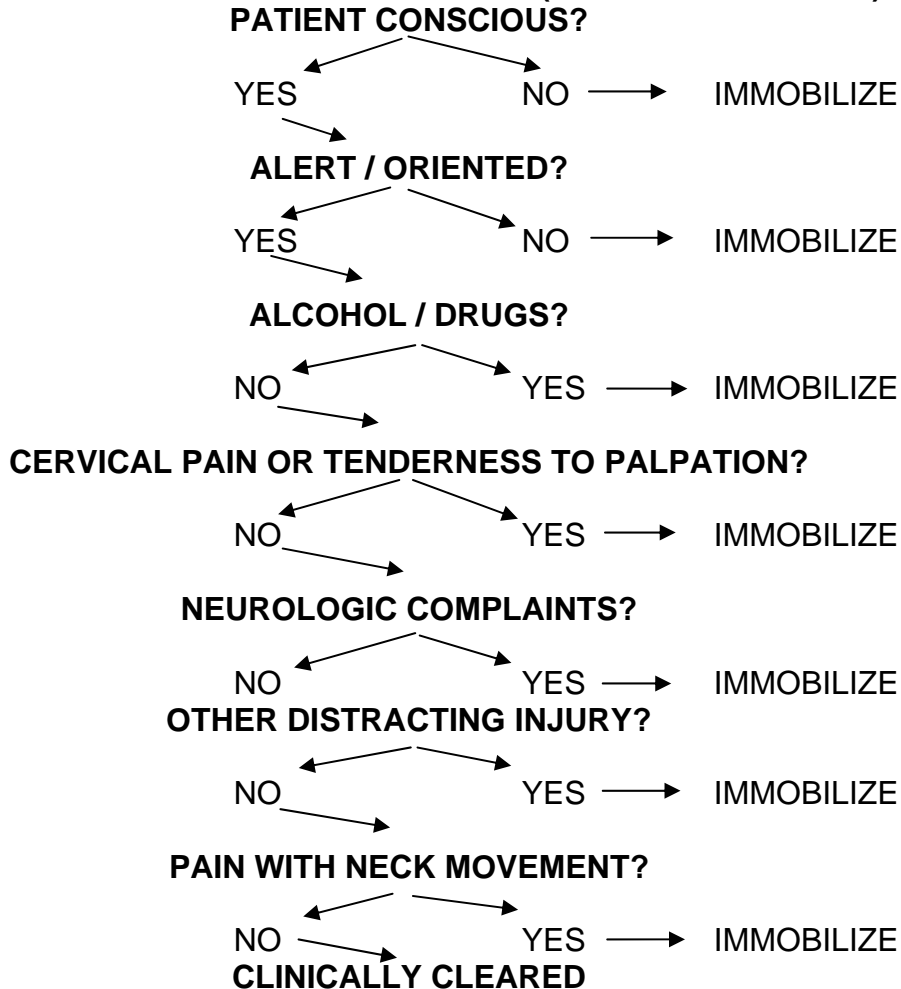


Figure 9. Stable Ventricular Tachycardia (Monomorphic or Polymorphic) Algorithm.

G. CERVICAL SPINE CLEARANCE ALGORITHM (assumes mechanism)



H. COMBITUBE PROCEDURE

1. POSSIBLE INDICATIONS

- Cardiopulmonary arrest.
- Inability to ventilate the unconscious patient by other methods.
- Unconscious patient with oral hemorrhage.

2. CONTRAINDICATIONS

- Conscious or semi-conscious patient.
- Presence of known esophageal trauma or corrosive poisoning.

3. PROCEDURE

- Test cuffs for air leak.
 - Maintain head in neutral position and insert Combitube into oropharynx.
 - Inflate proximal and distal cuffs.
 - Ventilate proximal and distal tubes, listening each time over the chest and abdomen in order to determine which is inflating the lungs. Continue to ventilate that tube.
 - If in doubt as to the location, remove the Combitube and re-insert.
- Clinical proficiency should be demonstrated and reported to the squad and medical director at least every six months.

I. CRICOTHYROIDOTOMY

1. Indications

- a. Unstable C-spine without oral access
- b. Unsuccessful nasotracheal/endotracheal intubation
- c. Impacted foreign bodies
- d. Severe facial trauma
- e. Severe laryngeal trauma or oropharyngeal hemorrhage
- f. Burns of face, upper airway precluding intubation
- g. Pharyngeal hematomas -- usually secondary to C-spine fractures.

2. PROCEDURE FOR NEEDLE CRICOTHYROIDOTOMY

- a. Palpate cricothyroid membrane, anteriorly between the thyroid cartilage and cricoid cartilage.
- b. If time allows, prep area with betadine swabs.
- c. Use 14-gauge angiocath with syringe and puncture the skin midline over the cricothyroid membrane.
- d. Direct the needle at a 45-degree angle.
- e. Insert needle through lower half of the cricothyroid membrane. Aspiration of air indicates entry into the tracheal lumen.
- f. Withdraw the stylet while advancing the catheter downward.
- g. Attach the catheter hub to an IV extension tubing and stopcock and then to a #3.5 ET tube universal adapter at 15 LPM oxygen.
- h. Auscultate chest for adequate ventilation.
- i. Secure apparatus to the neck.

3. PROCEDURE FOR SURGICAL CRICOTHYROIDOTOMY

- a. Palpate hyoid thyroid notch, cricothyroid interval and sternal notch.
- b. Prep area with betadine swabs if time allows.
- c. Stabilize thyroid cartilage with left hand and make a transverse skin incision approximately 2.5 cm over lower 1/2 of cricothyroid membrane.
- d. Carefully incise through the membrane.
- e. Insert the scalpel handle into the incision and rotate 90 degrees to open the airway.
- f. Insert an appropriately size, cuffed, endotracheal tube through the incision. (At least a 6.0 ET tube.)
- g. Inflate the cuff and ventilate the patient.
- h. Auscultate the chest and assure adequate breath sounds.

4. PEDIATRICS

- a. A surgical cricothyroidotomy is not to be performed on children under 12 years of age if it can be avoided.

J. DOBUTAMINE AND DOPAMINE INFUSION CHART

400 MG IN 250 CC

DOSE IN MCG/KG/MIN →		1	2	3	4	5	6	7	8	9	10	13	15
<u>KG</u>	<u>LBS</u>												
40	88	2	3	5	6	8	9	11	12	14	15	20	23
45	99	2	3	5	7	8	10	12	14	15	17	22	25
50	110	2	4	6	8	9	11	13	15	17	19	24	28
55	121	2	4	6	8	10	12	14	17	19	21	27	31
60	132	2	5	7	9	11	14	16	18	20	23	29	34
65	143	2	5	7	10	12	15	17	20	22	24	32	37
70	154	3	5	8	11	13	16	18	21	24	26	34	39
75	165	3	6	8	11	14	17	20	23	25	28	37	42
80	176	3	6	9	12	15	18	21	24	27	30	39	45
85	187	3	6	10	13	16	19	22	26	29	32	41	48
90	198	3	7	10	14	17	20	24	27	30	34	44	51
95	209	4	7	11	14	18	21	25	29	32	36	46	53
100	220	4	8	11	15	19	23	26	30	34	38	49	56

INFUSION RATE IN CC/HR

DOBUTAMINE INFUSION CHART

250 MG IN 250 CC

DOSE IN MCG/MIN →		5	10	15	20
<u>KG</u>	<u>LBS</u>				
60	132	18	36	60	72
70	154	21	42	66	84
80	176	24	48	72	96
90	198	27	54	80	108
100	220	30	60	90	120

INFUSION RATE IN CC/HR

K. EXTERNAL TRANSCUTANEOUS PACEMAKER PROTOCOL

1. INDICATIONS

- a. External cardiac pacing will be considered at the appropriate point in the algorithms for Bradycardia and Asystole.

2. PROCEDURE

- a. Prepare the transcutaneous pacemaker for use.
- b. Clean and dry the sites for pacing electrodes.
- c. Recommended placement of pads is centering apex pad over cardiac apex, and placing the other pad is over left scapula, behind the heart.
- d. For asystole, set the rate at 60 bpm and the amperage at 100 mA. The mA may be increased until capture is achieved.
- e. For symptomatic bradycardia, resistant to ATROPINE, set the rate at 70 bpm and the amperage at 20 mA. The mA may be increased until capture is achieved. (If patient is conscious and with good stable vital signs with pacing and is uncomfortable, consider DIAZEPAM 1 to 3 mg slow IVP).
- f. When utilizing the pacemaker, the femoral pulse must be checked as opposed to the carotid, due to muscular twitching.

L. INTRAOSSEOUS INFUSION

1. This procedure may only be performed by personnel who have received special instruction and practical experience with intraosseous infusion. It is the route of choice for drug and fluid administration in children less than 10 years of age when an IV cannot be obtained in two attempts and the condition is unstable.

2. CONTRAINDICATIONS

- a. Recently fractured bones.
- b. Cellulitis or infected burns.
- c. Osteogenesis imperfecta, Osteoporosis or other bone abnormality.

3. PROCEDURE

- a. Select site (tibia is preferred)
 - i. **Tibia** - Anteromedial aspect of proximal tibial shaft 1-3 cm below tibial tuberosity.
 - ii. **Femur** - Distal 1/3 femur, midline, approximately 3 cm above external condyle.
- b. Prep the skin with betadine and alcohol, 1% XYLOCAINE may be used if the child is conscious.
- c. After penetration of the skin, the needle is directed at a slight 10-15 degree angle (inferiorly for the tibia and superiorly for the femur) while gentle pressure is being applied.
- d. After bone marrow is entered (will feel "pop" or less resistance), remove stylet and attach a 5 cc syringe. Aspirate bone marrow contents to confirm placement.
- e. Flush with SALINE syringe and then connect to a conventional IV set and infuse fluids and/or drugs per pediatric protocol.
- f. Observe site closely for extravasation of fluids.
- g. Secure with tape, 4x4's, Kerlix wrap, etc., as needed.

M. MORPHINE DOSING APPENDIX

WEIGHT (LBS.)	WEIGHT (KG)	MORPHINE DOSE
44	20	1 mg
66	30	1.5 mg
88	40	2 mg
110	50	2.5 mg
132	60	3 mg
154	70	3.5 mg
176	80	4 mg
198	90	4.5 mg
220	100	5 mg
242	110	5.5 mg
264	120	6 mg

N. NASOTRACHEAL INTUBATION

1. INDICATIONS

- a. Inability to open the mouth or move the neck.
- b. Dental injuries.

2. CONTRAINDICATIONS

- a. Apnea.
- b. Severe facial trauma.

3. PROCEDURE

- a. The nasal mucosa is constricted with Neosynephrine 0.5%.
- b. A nasal trumpet is coated with Lidocaine gel and passed along the floor of the nasal cavity and removed. The easiest side to insert is noted.
- c. A #6 or #7 endotracheal tube is inserted along the floor of the nasal cavity and advanced into the hypopharynx. As the tube approaches the vocal cords, breath sounds are heard in the tube and the tube is advanced during an inspiratory effort.
- d. If the patient is able to continue talking after the tube is passed, the tube is not properly placed.
- e. Check for breath sounds.

O. NEEDLE DECOMPRESSION (for tension pneumothorax)

1. PROCEDURE

- a. Apply oxygen per mask under positive pressure.
- b. Identify the second intercostal space.
- c. If time permits, prep the area with betadine and anesthetize with 1% XYLOCAINE without EPINEPHRINE.
- d. Insert a 14-gauge over-the-needle catheter with syringe attached, into the skin just over the rib interspace.
- e. Puncture into the parietal pleura.
- f. Release of air will determine entry into pleural space.
- g. Remove the stylet and leave catheter in place an open.
- h. Connect the catheter to a flutter valve apparatus.

P. NITROGLYCERIN INFUSION DOSAGE CHART

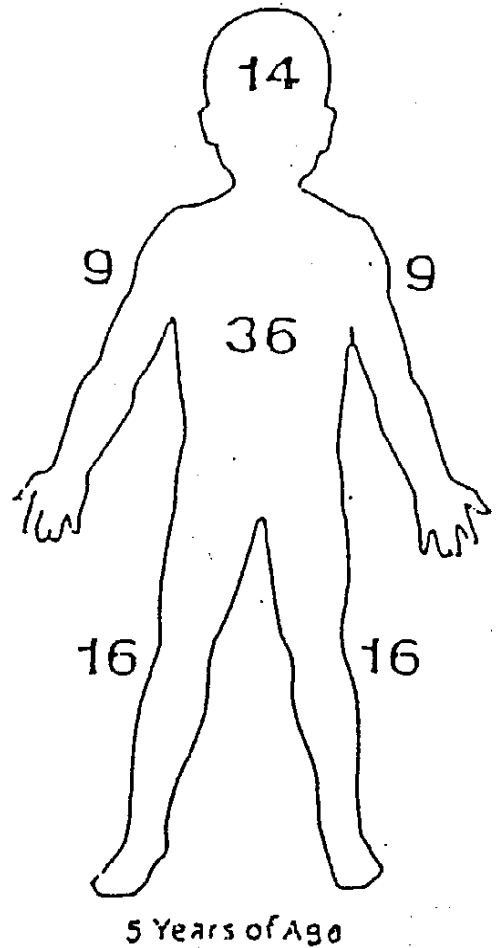
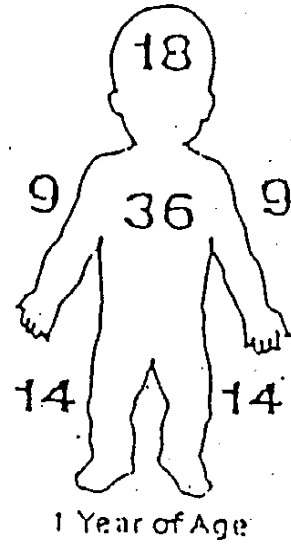
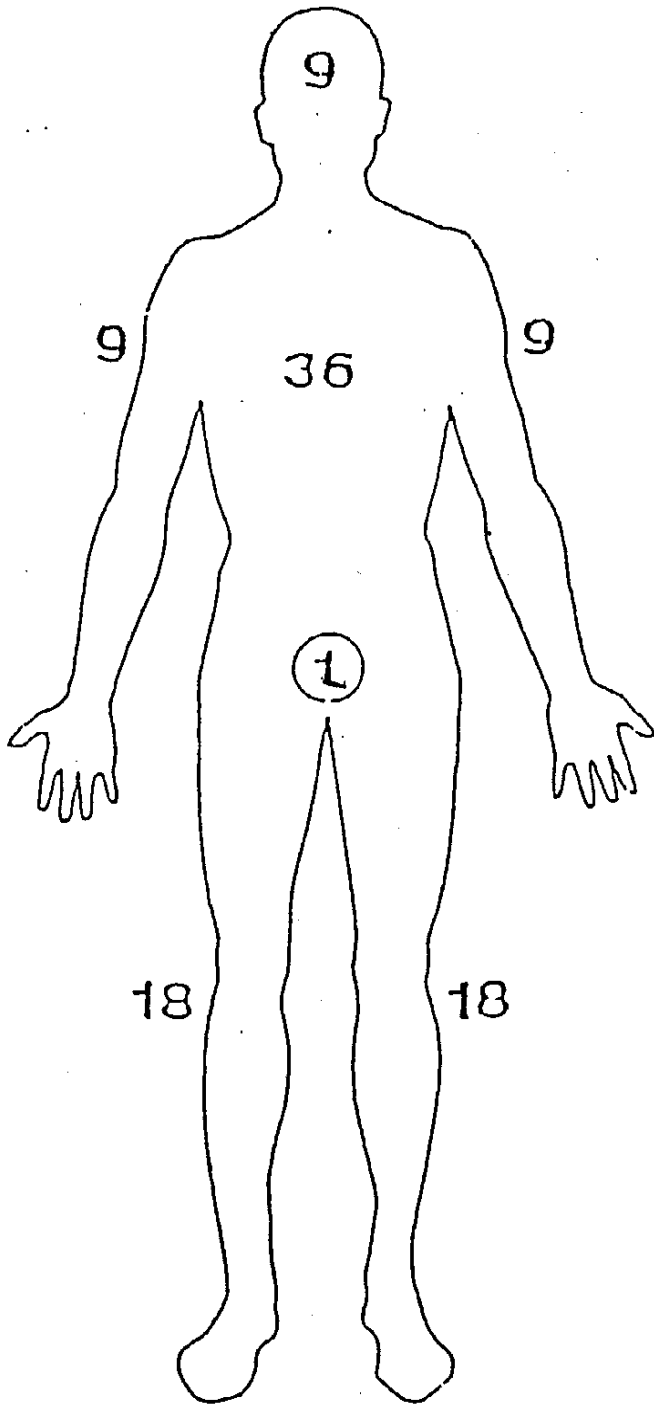
25 MG/250 CC	CONCENTRATION	50 MG/250 CC
CC/HR	DOSE MCG/MIN	CC/HR
3	5	1
6	10	3
9	15	4
12	20	6
15	25	7
18	30	9
21	35	10
24	40	12
27	45	13
30	50	15
33	55	16
36	60	18
39	65	19
42	70	21
45	75	22
48	80	24
51	85	25
54	90	27
57	95	28
60	100	30
63	105	31
66	110	33
69	115	34
72	120	36
75	125	37
78	130	39
81	135	40
84	140	42
87	145	43
90	150	45

Q. RESTRAINT POLICY

1. Soft restraints are to be used only when necessary in situations where the patient is potentially violent and may be of danger to themselves or others. EMS providers must remember that aggressive violent behavior may be a symptom of medical conditions such as but not limited to:
 - a. Head Trauma
 - b. Alcohol/Drug related problems
 - c. Metabolic disorders (i.e., hypoglycemia, hypoxia, etc.)
 - d. Psychiatric/Stress related disorders
2. Patient health care management remains the responsibility of the EMS provider. The method of restraint should not restrict the adequate monitoring of vital signs, ability to protect the patient's airway, compromise peripheral neurovascular status, or otherwise prevent appropriate and necessary therapeutic measures. It is recognized that evaluation of many patient parameters requires patient cooperation and thus may be difficult or impossible.
3. All restraints should have the ability to be quickly released, if necessary.
4. Restraints applied by law enforcement (i.e., handcuffs) require a law enforcement officer to remain with the patient to adjust restraints as necessary for the patient's safety. This policy is not intended to negate the need for law enforcement personnel to use appropriate restraint equipment.
5. Patients shall not be transported in a face down prone position to ensure adequate respiratory and circulatory monitoring and management. Transport on their side or on their back in a swimmer's position (one arm over head and one below) is recommended.
6. Restrained extremities should be monitored for color, nerve and motor function, pulse quality and capillary refill at the time of application and every 15 minutes thereafter.
7. Restraint documentation on the EMS report shall include:
 - a. Reason for restraint.
 - b. Agency responsible for restraint application (i.e., EMS, Police).
 - c. Documentation of cardio-respiratory status and peripheral neurovascular status.

R. RULE OF NINES

RULE OF NINES



S. TRAUMA DESIGNATION (per Med Central Trauma Service)

1. *TRAUMA ALERT (Category I)

- a. Penetrating injuries to the neck, chest, or abdomen, or to any extremity with neurovascular compromise.
- b. > 20 % BSA burn, or any burn with associated blunt or penetrating trauma or inhalation injury.
- c. Unstable or open pelvic fractures.
- d. Evidence of spinal cord injury with traumatic paralysis.
- e. Amputation proximal to wrist or ankle.
- f. GCS < 10 attributed to trauma.
- g. Systolic BP < 90 at any time in adult patients, or age-adjusted hypotension in children.
- h. Respiratory compromise or obstruction, or the need to emergently intubate the trauma patient.
- i. Any trauma patient being transferred from another institution who is requiring blood transfusions en route to maintain vital signs.

*** Specifically excluded from this category are patients with blunt or penetrating trauma who are pulseless in the field upon EMS arrival.**

2. TRAUMA STANDBY (Category II)

- a. Multiple fractures related to motor vehicle crash / fall from a height.
- b. Isolated femur or pelvis fracture due to MVC / fall from a height.
- c. Two or more proximal long bone fractures.
- d. Any trauma patient being transferred from another institution or being flown from the scene who is hemodynamically stable.

3. Category III

- a. These patients have mechanism of injury that should alert the healthcare worker of the possibility of significant injury, but no initially identified threatening injury.
- b. Included in this category is the patient with persistent tachycardia, without significant injuries on examination.
- c. Examples include:
 - i. MVC with ejection
 - ii. MVC with another person dead at the scene
 - iii. Motorcycle crash with separation of rider from vehicle
 - iv. Auto-pedestrian or auto-bicycle injury with significant impact

Remember that these are designations are for hospital personnel to determine what resources are needed for the incoming trauma patient. EMS personnel are not responsible for determining which trauma designation and resources the patient will be needing, but your relaying which of the above criteria the patient meets (especially trauma alert criteria) is very important in providing the best care for each patient.

Every patient who meets trauma alert criteria must be transported to a level 1, 2, or 3 trauma center (directly, if less than 30 minutes away, else consider air ambulance transport) when possible.

T. (Revised) TRAUMA and GLASCOW (GCS) SCORES

GLASGOW COMA SCALE

		GCS
EYES	SPONTANEOUSLY	4
	TO VERBAL COMMAND	3
	TO PAIN	2
	NO RESPONSE	1
BEST MOTOR RESPONSE	OBEYS VERBAL COMMAND	6
	PURPOSEFUL MOVEMENT TO PAIN	5
	FLEXION - WITHDRAWAL	4
	FLEXION - ABNORMAL	3
	EXTENSION	2
	NO RESPONSE	1
BEST VERBAL RESPONSE	ORIENTED & CONVERSES	5
	DISORIENTED & CONVERSES	4
	INAPPROPRIATE WORDS	3
	INCOMPREHENSIBLE SOUNDS	2
	NO RESPONSE	1

REVISED TRAUMA SCORE

		RTS
GLASGOW COMA SCALE	13 - 15	4
	9 - 12	3
	6 - 8	2
	4 - 5	1
	0 - 3	0
RESPIRATORY RATE	10 - 29	4
	MORE THAN 29	3
	6 - 9	2
	1 - 5	1
	0	0
SYSTOLIC BLOOD PRESSURE	LESS THAN 89	4
	76 - 89	3
	50 - 75	2
	1 - 49	1
	0	0