Grays Harbor County & North Pacific County

PATIENT CARE PROTOCOLS

Grays Harbor EMS & Trauma Care Council
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Protocol Manual Introduction

This EMS protocol manual was established to facilitate optimal patient care by multiple levels of EMS providers functioning within the Grays Harbor EMS system. The protocols have been developed with input from all levels of providers, following Washington State DOH requirements, and research supported best-practices.

The EMS provider will be proactive in the implementation of these protocols and should not withhold or delay any indicated intervention. Personnel functioning within the Grays Harbor EMS system may only function as an EMS provider under the authority of the Medical Program Director. Providers' guiding principle should be to act in the best interest of the patient at all times. If the protocols are not adequately addressing a patient's needs, the provider should contact Medical Control for guidance. Providers should remember to "FIRST DO NO HARM".

Emergency medicine continues to evolve at a rapid pace. Periodic revisions will be made in order to reflect the best possible care rendered to our patients consistent with currently acceptable medical practices. These revisions shall be made with the established EMS leadership in conjunction with the Medical Program Director (MPD) and local medical community involvement.

Accordingly, this document is subject to change as new information becomes available and accepted by the medical community. Dates of revised or newly implemented protocols will be shown on the respective protocol as well as in the contents section.

Any discipline based on patient care issues shall be done by the Medical Program Director under the guidelines of the Washington State Department of Health Medical Program Director's Handbook. Complaints and/or concerns based on an EMS provider's care or any other concerns related to EMS operations are to be forwarded to the Medical Program Director immediately.

CONTINUOUS QUALITY IMPROVEMENT:
All agencies and EMS personnel in Grays Harbor and North Pacific Counties are required to participate in **C**ontinuous **Q**uality **I**mprovement (CQI). To maximize the quality of care in EMS, it is necessary to continually review all EMS activity in order to identify areas of excellence and topics for improvement. This method allows optimal and continuous improvement. CQI is defined as a proactive involvement in issues and applications to constantly assess the value and direction of the EMS system.
Components of CQI include: active communications, documentation, case presentations, protocol review and refinement, medical direction involvement, medical community involvement, continuing education, and reassessment of expected goals and outcomes. Participation in the CQI process is mandatory in order to function within the system.

The primary focus of CQI is on “system performance”. Specifically, CQI focuses on the bigger picture of our system, including protocols, guidelines, equipment, training and standard operating procedures. The EMS Medical Program Director may request additional documentation, for the purpose of gathering information about a particular call, event, or procedure in question. Failure to cooperate with a request of the Medical Program Director may result in disciplinary action by the Medical Program Director and/or the State of Washington Department of Health.

PREHOSPITAL PROVIDER CONDUCT

1. EMS Providers must maintain the highest standard of professional conduct.

2. Competent medical care must be provided with compassion and dignity for all persons. Every patient will be afforded the best care available, in accordance with these protocols and the EMS provider’s best judgment, without regard to their sex, mental status, national origin, religion, creed, color, race, diagnosis or prognosis, complaint, lifestyle preference, or ability to pay for services rendered. There is a zero-tolerance policy for discrimination based on any of the above.

3. Providers must refuse to participate in unethical activities and/or activities which may impair professional judgment and the ability to act competently.

4. Matters of disagreement between prehospital providers regarding patient care must be handled professionally without alarming anyone on the scene. Medical Control contact will be made for immediate direction. Providers should not threaten, degrade, insult, or verbally abuse each other.

5. Patient Confidentiality will be maintained at all times in compliance with Health Insurance Portability and Accountability Act (HIPAA) of 1996. All applicable federal and state laws.

INFECTION CONTROL STANDARDS

1. Infection Control Standards assume that all contact with blood, other bodily fluids and potentially infectious materials is infectious.

2. The standards of use of Universal Precautions/Body Substance Isolation, which includes safe work practices, correct use of engineering controls and personal protective equipment is mandated by WISHA and must be adhered to.

3. EMS Providers must protect themselves at all times from “reasonably anticipated potential for exposure”. The following is a list of items: Gloves, Masks, Face Shields, Safety Glasses, High Efficiency Particulate Aire (HEPA) Filters, Resuscitation Equipment and Protective Clothing.

4. For special situations, CDC Guidelines should be followed.

GUIDELINES AND PROTOCOLS

Volunteer or career, emergency medicine demands a strong commitment to the profession. It is the responsibility of each EMS provider to remain current in the lifelong process of EMS education. EMS providers are heavily encouraged to attend any available continuing education opportunities. We trust and hope that this document is both informative and helpful.

These protocols have been divided into four sections, those being as follows:

1. Introduction (INT)

- Introduction protocols include the general introduction to the Grays Harbor EMS protocols and provide information for guiding patient care and general rules for EMS providers.

2. Patient Care Protocols (PCP)

- Patient Care Protocols are the guidelines for treating patient-specific conditions and symptoms. The specific protocols list pertinent medical history that should be obtained, signs and symptoms that may be present, differentials that should be considered, and special notes providers should review. Each Protocol provides a list of treatments providers may use to provide care to the patients.

3. Procedures (PRC)

- Procedures are references and descriptions of procedures set forth that may be performed by EMS personnel in the field, based on their level of training.

4. Medications (MED)

- Medications are the informational protocols for administering medications by EMS agencies within the GHEMS service area. Agencies are to carry the medications according to their level of service. The Medical Protocols include medications that may be used on Interfacility transports and alternative medications that may be used when the standard supply is unavailable.

Medical Control

When the necessity arises that EMS personnel need to contact Medical Control, they shall contact an on-duty Emergency Room physician at Harbor Regional Health, unless otherwise expressed by the Medical Program Director.

In instances where, after receiving direction from Medical Control, EMS personnel feel Medical Control does not fully understand the circumstances of a pre-hospital situation the EMS provider in charge of the patient may contact the Medical Program Director at his/her discretion.

Medical direction may also be made directly from the Medical Program Director or the Emergency Department Physician @ Grays Harbor Regional Health.

Delivery of Services

Provider Level: Pre-hospital providers will provide care based on their respective scope of practice

+MPD Specialized Training Required ++Supraglottic (SGA) Endorsement Required

Level	Medical Control & Skill Capabilities	Medication Administration
EMR	MPD Protocols Patient Assessment CPR/BVM/AED Basic Bandaging/Splinting BLS Airway (OPA) BLS Trauma Triage BLS Medical BLS Pediatrics BLS OB/GYN Basic Hemorrhage Control Pulse Ox +Glucometry +Traction Splinting	Oxygen Narcan-IN +ASA +Glucose (oral) EPI-Pen (Auto-injector) +May assist with patients MDI
EMT	**All EMR skills and knowledge as well as:** BLS Airway (NPA/OPA) ++Supraglottic Airway CPAP +CO2 Mechanical CPR 12-Lead EKG(Print & Read text only) Mechanical Restraints	**All EMR medications as well as:** Epi-Injection (IM) Oral Glucose +Activated Charcoal +Narcan (IM) +Glucagon Albuterol Ipratropium +Ondansetron (Zofran) PO/SL +Diphenhydramine PO +Nitroglycerine SL Acetaminophen PO/PR
EMT-IV	**All EMR and EMT skills and knowledge as well as:** Peripheral IV skills/venous blood sample Fluid Therapy Intraosseous infusion (IO) skills	**All EMR and EMT medications as well as:** +IV D10W Normal Saline Lactated Ringers
PARAMEDIC	**All EMR, EMT and EMT-IV skills and knowledge as well as:** MPD Protocols Advanced Airway Procedures ACLS Manual Defibrillation Advanced medical and trauma assessment and skills +IFT Transports	**All Medication in these Protocols (consider Medical Control as indicated)** *Blood Products

General Patient Assessment

Once notified of the need for services, EMS providers will take the appropriate actions to respond with the standard of care for their level of certification.

Size-Up

1. **Answer the following questions:**
    a. **Is it safe for us to be here?**
    b. **Do we have the appropriate BSI protection deployed?**
    c. **What is the Nature of the call? (Medical-NOI or Trauma-MOI)**
    d. **How many patients are involved and how badly are they hurt?**
    e. **Do I have enough resources to treat and transport the patients?**

Primary Assessment

1. **Form a general impression of the patient.**
    a. Identify immediate threats
    b. Identify chief complaint
    c. Position patient for assessment
2. **Determine responsiveness (AVPU)**
3. **Circulation**
4. **Airway**
5. **Breathing**
6. **Disability**
7. **Establish Priority (determine ALS vs BLS evaluation, treatment, and transport)**

Secondary Assessment

1. **Medical Complaint**
    a. <u>Responsive</u>
        i. Rapid assessment PRN
        ii. Baseline vital signs
        iii. Treatment PRN
    b. <u>Unresponsive</u>
        i. Rapid assessment
        ii. Baseline vital signs
        iii. SAMPLE History
        iv. Treatment PRN
2. **Traumatic Complaint**
    a. <u>Non-Significant MOI</u>
        i. Assess the injury site
        ii. Baseline vital signs

iii. SAMPLE History
iv. Treatment PRN

b. Significant MOI/Unresponsive
i. Rapid head to toe trauma assessment
ii. Baseline vital signs
iii. SAMPLE History
iv. Treatment PRN

Detailed Physical Exam

Per training, but consider:

1. **Medical Complaint**
   a. Responsive
      i. A complete review of affected body systems
      ii. Reassess vital signs
   b. Unresponsive
      i. A complete head to toe survey
      ii. Reassess vital signs
2. **Traumatic Complaint**
   a. Non-Significant MOI
      i. A complete review of injured body region
      ii. Reassess vital signs
   b. Significant MOI/Unresponsive
      i. A complete head to toe survey
      ii. Reassess vital signs

Ongoing Assessment

1. **Repeat and record initial assessment**
2. **Repeat and record vital signs**
   a. Unstable: every 5 minutes
   b. Stable: every 15 minutes
3. **Repeat and record focused assessment of patient complaint/injuries**
4. **Check and record response to interventions**

Communications and Patient Care Reports

1. All medical emergencies will include communication via the appropriate 911 dispatch center. (HARBOR/PACCOM).
2. When non-transporting units are on scene providing initial patient care, short reports will be given to incoming patient transport units as soon as possible. Short reports will include, when possible:
    a. Unit Identification
    b. Age and sex of the patient
    c. Severity
    d. Chief Complaint
    e. Vital Signs
    f. Treatment given, response to treatment.
    g. Additional pertinent information
3. ALS upgrades will be done via the dispatch center as soon as providers become aware of a condition that may require ALS intervention. The BLS provider will need to evaluate the appropriate treatment and disposition of the patient. This may include the ALS unit coming directly to the scene or ALS intercept.
4. Providers will contact Medical Control when:
    a. Directed to do so by Protocol or Procedure.
    b. A Protocol or Procedure does not directly cover a patient's condition or medical problem. The provider shall discuss the situation with Medical Control to determine the best treatment and care for the patient.
5. Any unit transporting a patient is required to contact the receiving facility with a prehospital contact report. The prehospital contact report should be given to the receiving facility, preferably once the transport disposition of the patient to the facility is determined. A prehospital contact report will include:
    a. Unit identification
    b. Age and sex of patient
    c. Severity
    d. Chief Complaint
    e. Relevant medical history
    f. Vital signs
    g. Treatments given and response to treatment.
    h. ETA
    i. Qualified Alerts: STEMI, STROKE, SEPSIS, TRAUMA
    j. Request for additional information or treatment
6. Ground Transports
    a. All ground transports will be made by a Washington State DOH licensed and trauma-verified Medic Unit or Aid Unit. An exception is made during disaster situations.
    b. All patients transported by ground shall go to the closest appropriate hospital unless Medical Control approves bypassing the closest appropriate facility.

c. All ground transport response times and providers shall be in accordance with current WAC 246-976-390.

7. A verbal report shall be given for hand off of every patient.
    a. A verbal report should be provided to a provider who will assume primary responsibility of the patient. The verbal report may be brief, providing the patient's current condition, the severity of the condition, past medical history, treatments, and response to treatment.
    b. If under extreme circumstances the receiving facility is unable to take a verbal report after 30 minutes of waiting, a written report may be given in its place.
8. A written report shall be completed by every agency involved in patient care.
    a. The written report shall be written in SOAP Format.
    b. Agencies are encouraged to use an Electronic Platform Patient Care Reporting System capable of reporting to NEMSIS and WEMSIS.
    c. The Agency that transported the patient to a receiving facility shall make the written report available to the facility as soon as possible, no later than 24 hours after delivery of the patient.
    d. All EKG tracing must be attached to the written report.
    e. Document special circumstances and findings as identified with in Protocol and Procedures.

Refusal of Service (AMA)/Non-Transport

Non-Transport

A patient may be documented as a non-transport, (not AMA) if the following criteria are met:

- Patient has a reasonable and safe plan to meet their medical needs
- Paramedic/EMT agrees that the plan is safe and reasonable after performing a basic assessment

Patients Refusing Transport Against Medical Advice

Patients of the age of consent may refuse treatment and transport given they are of sound mind, not intoxicated to the level of incapacity, and not injured in such a way as to render their judgment suspect. Additionally, parents or guardians of minor children may refuse on behalf of a minor child but must meet capacity requirements for informed refusal and allow examination of the minor patient to allow for informed refusal. The following guidelines shall be used to ensure that patients are not putting themselves at risk by refusing care.

1. The EMS provider is responsible for a reasonable assessment of the patient to determine and inform the patient of possible or suspected medical conditions, including discussion of abnormal vital signs, any abnormalities found on history and examination and any abnormalities found from bedside testing.

2. Patient or responsible party must be informed of the limited testing that can be performed in the field, and that any pre-hospital assessment for emergency medical conditions is not a comprehensive assessment and may not identify all life threatening emergencies. A complete evaluation should be performed in the Emergency Department.

3. The EMS provider should determine that patient or responsible party has decision making capacity and is able to participate in an informed refusal.

4. All providers on scene must agree with allowing the refusal.

PROCEDURE

1. Perform history and examination and discuss potential differential diagnoses and any abnormal findings on history, examination and bedside testing (glucose, ECG, etc.) with the patient.

2. Determine decision making capacity and patient's understanding of risks of non-transport, incomplete evaluation, and potential delay of diagnosis and care. Alcohol use does not

necessarily impair decision making capacity, meaning that each patient will have to be assessed on an individual basis. **The following is a method for demonstrating Capacity**:

- The patient or parent/guardian can communicate a clear choice.
    - Alert/Oriented and free of undue influence, including circumstances, substances, and other persons.
    - No criteria for mental health holds exists; Not homicidal or suicidal, not gravely disabled or psychotic, not a danger to self or others.
- The patient or parent/guardian understands the relevant information and appreciates the current situation:
    - EMS providers cannot fully assess patients based on their complaints, history, and out-of-hospital exam. Further treatment, including specialized testing and exams by a physician is needed to rule out any life-threatening medical conditions, and not being transported by EMS may delay further diagnosis/treatment.
    - If present, does the patient understand that there are abnormal findings on history, exam, or bedside testing (glucose, ECG, etc)?
    - Does the patient understand that the absence of abnormal findings on history, exam, or bedside testing does not rule out acute life-threatening medical conditions?
- Can the patient manipulate and use the information to make a rational decision?
    - Understand the nature of the illness or injury.
    - Understand the consequence of refusal of care.
    - The patient needs to be able to repeat back their understanding of the risks involved and give their rationale for refusing care.

3. High Risk Situations where Medical Control Contact is required for patient refusals (ALS providers are not required to contact medical control):

- Patients are refusing AMA – Provider, based upon clinical judgment, feels the patient is at risk of DEATH, clinical DETERIORATION, or DISABILITY unless medical care is rendered.
- Minor patients whom the parent/guardian will not allow an EMS evaluation for potential medical condition or to inform a refusal of care.
- High Risk Complaint:
    - Chest pain
    - Shortness of breath with hypoxia or increased work of breathing
    - Abdominal pain
    - Headache which is sudden onset or with neurological symptoms
    - New onset seizures or convulsions
    - New onset ataxia, weakness, numbness, tingling, clumsiness or trouble speaking
    - New onset visual loss or double vision

- Vital Signs outside the following parameters:
    - HR <50 or >110
    - SBP <90 or >200
    - DBP <50 or >105
    - RR <12 or >24
    - Temp <96.8 F or >100.4 F
    - SpO2 <92% or below patient's baseline
    - Glucose <60 or >300

For the following patients, AMA refusal is not an acceptable option. Additional resources should be used to secure appropriate treatment of the patient, including Law Enforcement, Medical Control physician, county designated mental health specialist:

- Those patients the provider feels cannot meet capacity determination and who does not adequately understand the risks of refusing transport.
- Patients with a suspected or reported history of suicidal or homicidal ideation
- Patient's with suspected or reported history of self-harm (intentional overdose, cutting, etc.)
- Minor patients when the provider feels that the patient should be transported (for any reason), has high risk for clinical deterioration, or suspicion for abuse/non-accidental trauma and the parent/guardian is not allowing transport.

4. For the patient who refuses treatment and transport (against medical advice), providing the patient with clear instructions and warnings is imperative:

- All medical conditions can change with time – call back immediately if worse or if patient changes their mind.
- Calling back for transport later will not cause the patient to incur any penalty.

5. Documentation must include:

- Patient's capacity and ability to make an informed decision; AND
- Their ability to understand risks of condition/situation that was explained to them, including incomplete evaluation in the field, potential life threatening medical conditions that may exist, and risk of delay in diagnosis and treatment

6. Helpful tips to facilitate discussion with the patient in order to enhance understanding:

- Common risks can include but are not limited to loss of current lifestyle, death and permanent disability.
- Documentation of patient repeating in their own words their understanding of the risks is often helpful in demonstrating their understanding and their capacity.

Controlled Substance Policy

Purpose:

To establish policies and procedures pertaining to the acquisition, administration and security of controlled substances in compliance with state and federal Controlled Substances Acts and rules.

Policy:

It is the responsibility of all Grays Harbor and North Pacific County Emergency Medical Services personnel that are required by the scope and/or application of their duties to adhere to all procedures contained in this Controlled Substance Policy. The Medical Services Officer (MSO)/Emergency Medical Coordinator (EMC), Supervisors or Chief of each licensed EMS agency is responsible for securing and maintaining the required registration with the DEA. This will be done in conjunction with the Medical Program Director (MPD), his or her physician delegate or the hospital pharmacy in compliance with applicable laws.

Procedure:

A. Initial Receipt of Controlled Substance Stock

1. Only the MSO/EMC or his/her designated alternate may order and transport controlled substances.

2. Upon receipt of controlled substances, two personnel, other than the MSO/EMC or designated alternate, shall count and record the controlled substances on the *Controlled Substance Receivable Log.*

3. The *Controlled Substance Receivable Log* and a copy of the *DEA Form-222* shall be forwarded to the MSO/EMC. The MSO/EMC will forward them to the MPD via the GHEMS office.

4. The *Controlled Substance Record* cards shall be filled out for the appropriate amount of controlled substance being added to the daily controlled substance count.

B. Storage of Controlled Substances

1. Upon receipt of controlled substances, they shall be placed into the Controlled Substances Supply Safe or Lock-Box at the appropriate location. Access to the Controlled Substances Supply Safe or Lock-Box shall be directly limited to the department's Authorized personnel only.

2. For ALS units, all controlled substances will be secured in a locking cabinet and/or drawer for storage within the confines of the ALS unit. Access shall be limited to the paramedic assigned to the unit and those under his/her direct supervision.

C. Daily inventory of Controlled Substances

1. Inventory of controlled substances shall be done at the beginning of each shift by a paramedic and his/her assigned partner with the results recorded in ink on the *Controlled Substance & Monitor Daily Check* form. Discrepancies will be investigated immediately and reported as described in **Section H** of this policy. Note: The daily Inventory may be done each shift instead of daily if shifts last more than 24 hours, and securing a witness to the inventory would cause undue hardship.

2. During daily and monthly inventory, all controlled substances shall be inspected for an intact seal and the correct number of controlled substances on each ambulance:
    a. Each Ambulance shall have approximately the following or as supplies allow:
        i. Five (5) 100 mcgs Fentanyl
        ii. Two (2) 10 mgs Morphine
        iii. Four (4) 100 mgs Propofol
        iv. Two (2) 200 mgs Succinylcholine
        v. Four (4) 1 mg Lorazepam
        vi. Two (2) 10 mgs Rocuronium
        vii. Four (4) 500 mgs Ketamine

3. The *Controlled Substance & Monitor Daily Check* form will be matched with the *Controlled Substance Record* cards to verify the amount of controlled substances on hand.

4. Due to constant controlled substance supply shortages, there can be fluctuations in the amount of each controlled substance that is stored on each ambulance. These fluctuations will be made known to the personnel assigned to the units and the *Controlled Substance & Monitor Daily Check* form shall reflect such changes.

5. If there is a discrepancy with the drug count on the *Controlled Substance & Monitor Daily Check* form, the Paramedic who found the discrepancy shall

notify the MSO/EMC, Supervisor or Chief. They shall investigate the cause of the discrepancy and fill out the *Controlled Substance Discrepancy Report*.

a. If the discrepancy is found to be a **Minor** discrepancy (as defined in section H), the Paramedic with the supervision of the Chief and/or Supervisor shall make the correction on the *Controlled Substance & Monitor Daily Check* form.

b. If the discrepancy is found to be a **Major** discrepancy (as defined in section H), the steps outlined in **Section H** shall be followed. The MSO/EMC shall be notified of each occurrence. The completed *Controlled Substance Discrepancy Report* shall be forwarded to the MSO/EMC. The MSO/EMC shall fax all completed *Controlled Substance Discrepancy Reports* to the EMS office.

6. If an irregularity or discrepancy is apparent in a controlled substance container, the Supervisor or Chief must be notified immediately. Follow all steps as outlined in **Section H** of this Policy. The MSO/EMC shall notify the MPD as soon as possible.

D. Administration of Controlled Substances

1. The administration and use of controlled substances shall be in accordance with treatment guidelines in the Grays Harbor/North Pacific County Protocols.

2. The drug, route of administration, amount, ordering physician, administrating paramedic and receiving hospital shall be documented on the Patient Care Report (PCR).

3. After each use of a controlled substance, the appropriate *Controlled Substance Record* card shall be filled out with the following information:
   a. Date of use
   b. Patient Name
   c. Signature of administering paramedic
   d. Witness' initials
   e. Name of ordering Physician
   f. Amount of drug given and amount of drug wasted

4. The controlled substance that was used shall be replaced from the controlled substance supply safe/lock-box and the drug count shall be changed accordingly on the *Controlled Substance Record* card.

E. Discarding (wasting) the Unused Portion of a Controlled Substance

1. Any remnants of controlled substances contained in pre-load and/or vial forms that were not administered to a patient must be discarded in the following manner:

    a. The Paramedic who Administer the controlled substance remains responsible for the controlled substance until the remaining portion is discarded. All controlled substances are to be destroyed by a registrant or caused to be destroyed by a registrant pursuant to Section 1317.90 DEA's destruction of controlled substances, they shall be destroyed in compliance with applicable Federal, State, Tribal and local laws and regulations shall be rendered non-retrievable.
    b. Where multiple controlled substances are commingled, the method of destruction shall be sufficient to render all such controlled substances non-retrievable.

    c. The method of destruction shall be consistent with the purpose of rendering all controlled substances to a non-retrievable state in order to prevent diversion of any such substance to illicit purposes and to protect the public health and safety.

    d. The names of the personnel involved in the disposal process must be documented on the *Controlled Substance Record* card with the amount of controlled substance that is rendered non-retrievable.

    e. The destruction of any controlled substances shall be in accordance with the following regulations, Title 21 Code of Federal Regulations: PART 1317-DISPOSAL, Subpart A-Disposal of controlled Substances by Registrants.

F. Outdated Controlled Substance

1. When an outdated controlled substance is found, the Paramedic shall notify the Supervisor and/or Chief.

2. The outdated controlled substance shall be wasted in accordance with Section E of this policy.

3. The *Broken/Expired/Missing/Stolen Controlled Substance Report* shall be filled out accordingly and forwarded to the MSO/EMC.

4. The changes to the Controlled Substance & Monitor Daily check form shall be made accordingly.

5. The *Controlled Substance Record* card shall be filled out appropriately.

G. Documentation

1. Controlled substance information, purpose and use.

    a. Federal Law required that possession of controlled substances be tracked from the manufacturer to the patient receiving the medication. Accurate record keeping is essential, as every milligram of a controlled substance must be traceable and accounted for. Therefore, the chain of responsibility must be recorded by signature at each step of use and/or transfer of controlled substances.

    b. A Paramedic, by his or her acceptance of the possession of a controlled substance, thereby accepts complete responsibility for the security, handling, and use of the controlled substance. Discrepancies and/or failure to follow procedures for handling, possession, use or disposal of controlled substances, as outlined in this policy, shall require the immediate notification of the Supervisor and MSO/EMC.

2. Random audits shall be performed for quality control purposes. All logs and any controlled substance materials shall be made available to the individual performing the audit. The individual performing the audit shall utilize the Grays Harbor & North Pacific County *Controlled Substance Audit Report*. Once the audit is performed, the *Controlled Substance Audit Report* shall be forwarded to the MSO/EMC. If discrepancies are found, the Supervisor and MSO/EMC shall be notified and the proper steps taken to investigate the discrepancy as noted in **Section H.**

3. Logs and Forms

    a. All controlled substance forms shall be done in ink and forwarded to the MSO/EMC upon completion.

    b. Hard copies of all controlled substance documents shall be stored in a locked file cabinet for no less than 2 years.

    c. Records regarding controlled substances shall be made available to the MPD and appropriate Federal, State and Local law enforcement agencies

upon request: all of whom will be responsible for maintaining confidentiality of information contained therein.

d. *Controlled Substance Record* cards shall be photocopied and placed with all other controlled substance documentation. The original *Controlled Substance Record* card shall be turned in to Grays Harbor EMS office.

H. Controlled Substance Discrepancies

1. Strict adherence to the controlled substance policy will prevent discrepancies. Any discrepancy involving controlled substances shall result in the immediate mandatory notification of the Supervisor, MSO/EMC and MPD. Should a discrepancy occur, it shall be classified as either a **Minor Discrepancy** or a **Major Discrepancy**. These discrepancies are defined as follows:
    a. **Minor Discrepancies** are defined as incomplete or omitted documentation on a PCR, *Controlled Substance Record* card, *Controlled Substance & Monitor Daily Check* form, or other controlled substance written documentation or a witnessed accidental breakage of a controlled substance. Also, an error made opening the incorrect controlled substance prior to administering the controlled substance.
        i. The Supervisor shall determine the appropriate action to resolve minor discrepancies.

        ii. The Supervisor shall notify, during the shift, the MSO/EMC.

        iii. All minor discrepancies shall be noted and tracked by using one or both forms:

            - *Grays Harbor & North Pacific County Controlled Substance Discrepancy Report*.
            - *Grays harbor & North Pacific County Broken/Expired/Missing/Stolen Controlled Substance Report.*

        iv. The MSO/EMC will report all **major/minor discrepancies** to the Chief and the Grays Harbor Medical Program Director. All discrepancies shall be tracked by both the department and the Grays Harbor Medical Program Director.

    b. **Major Discrepancies** are defined as accidental loss of a controlled substance, an error in the administration of a controlled substance,

an error in the administration of a controlled substance, theft thereof or tampering (open packaging, broken seals, or broken locks). In the event of a major discrepancy, the following procedure shall take place:

i. The employee(s) discovering the discrepancy shall immediately notify the Supervisor.

ii. Under no circumstances may any employee responsible for the controlled substance involved in a discrepancy be released from duty until the Supervisor approves such release.

iii. All evidence must be retained for the Supervisor's inspection

iv. The supervisor will conduct an immediate investigation.

v. The employee(s) involved must complete a *Controlled Substance Discrepancy Report* and a *Broken/Expired/Missing/Stolen Controlled Substance Report*. Copies of such forms shall be attached to the Controlled Substance Policy and included in the final report. All on-duty and/or off-going personnel must submit all patient care reports for entire shift prior to the discovery of the discrepancy.

vi. The Supervisor shall notify the MSO/EMC as soon as possible.

vii. A complete report of the discrepancy including its resolution must be completed and submitted to the MSO/EMC and MPD for review.

viii. The MSO/EMC will report all **major/minor** discrepancies to the Chief and the Grays Harbor Medical Program Director. All discrepancies shall be tracked by both the department and the Grays Harbor Medical Program Director.

ix. Under the direction of the Chief and the MPD, the MSO/EMC shall notify the appropriate Law Enforcement Agency for "suspected" criminal activity involving a controlled substance.

1. Criminal activity shall include, but is not limited to:
    a. Theft of a controlled substance

b. Unauthorized tampering of a controlled substance container
c. Unauthorized use of a controlled substance
d. Unauthorized distribution of a controlled substance
e. Any act that reflects a willingness to deceive or misrepresent facts and information that may pertain to an ongoing controlled substance investigation
f. Individuals involved may be subjected to criminal prosecution under applicable laws and/or possible disciplinary action through their department.

2. Individuals involved may be subjected to criminal prosecution under applicable laws and/or possible disciplinary action through their department.

Universal ALS Upgrades

An ALS upgrade is required if any of the conditions listed below are present:

- Signs or symptoms of shock.
- Any blood loss or suspected fluid loss with auscultated systolic BP < 90 mmHg (or absent radial pulse).
- Pulse < 50 or > 130, symptomatic.
- Unconscious.
- Status epilepticus.
- Red Criteria trauma patient.
- Intoxicated Yellow Criteria trauma patient.
- SOB with RR <10 or > 32 or absent lung sounds or significant work of breathing.
- Airway compromise or impaired gag reflex.
- Uncontrollable bleeding.
- Prolonged extrication (complex forcible entry to vehicle).

NOTE: May consider ALS Upgrade based on BLS evaluation or "Gut Feelings".

Universal Patient Care Protocol Adult/Child

Consider ALS Evaluation and/or Transport if:

* *Suspected Coronary Chest Pain*
* *Shortness of breath not relieved by initial interventions*
* *Abnormal Vital Signs*
* *Altered Mental Status*
* *Based on BLS Evaluation "Gut Feeling"*
* *Airway Compromise*
* *Stroke*
* *Sepsis*
* *Red Trauma Criteria*

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Scene Safety/BSI

↓

Initial Assessment
Pediatric Assessment
Procedure (PRC225)

→ Cardiac Arrest → **Cardiac Arrest Protocol**
Adult (PCP075)
Pediatric (PCP275)

↓

Vital Signs
BP, Pulse, Respiration

↓

E | **Temperature** PRN
Blood Sugar
Pulse Oximetry | E

↓

R | Oxygen
O2 Sat>94-98% | R

↓

E | **Consider Cardiac Monitor
12 Lead ECG | E

↓

Appropriate Protocol(s)

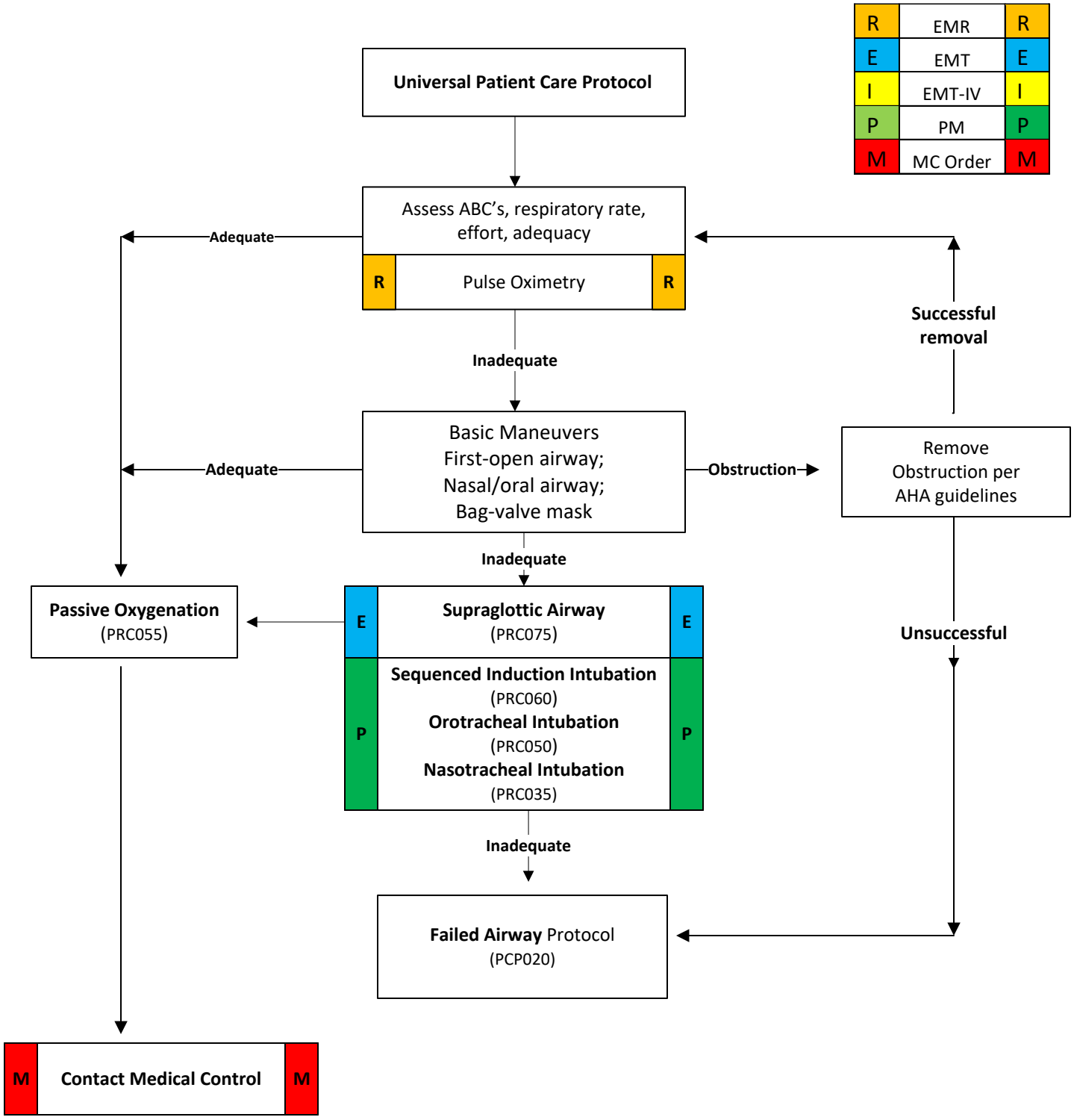
↓

M | Doesn't fit protocol?
Contact Medical Control | M

Notes:

- A Pediatric patient is defined by a length based tape. If the patient does not fit on the tape, they are considered adult.
- Exam: Minimal exam, if not noted on the specific protocols, requires vitals signs, mental status, and location of injury or complaint.
- Any patient contact which does not result in an EMS transport shall be documented.
- **EMT can acquire 12-lead ECG and read/report text printout **but cannot interpret**.
- Verbal report at handoff. Written report (Narrative in SOAP format) to receiving hospital within 24 hours of call.

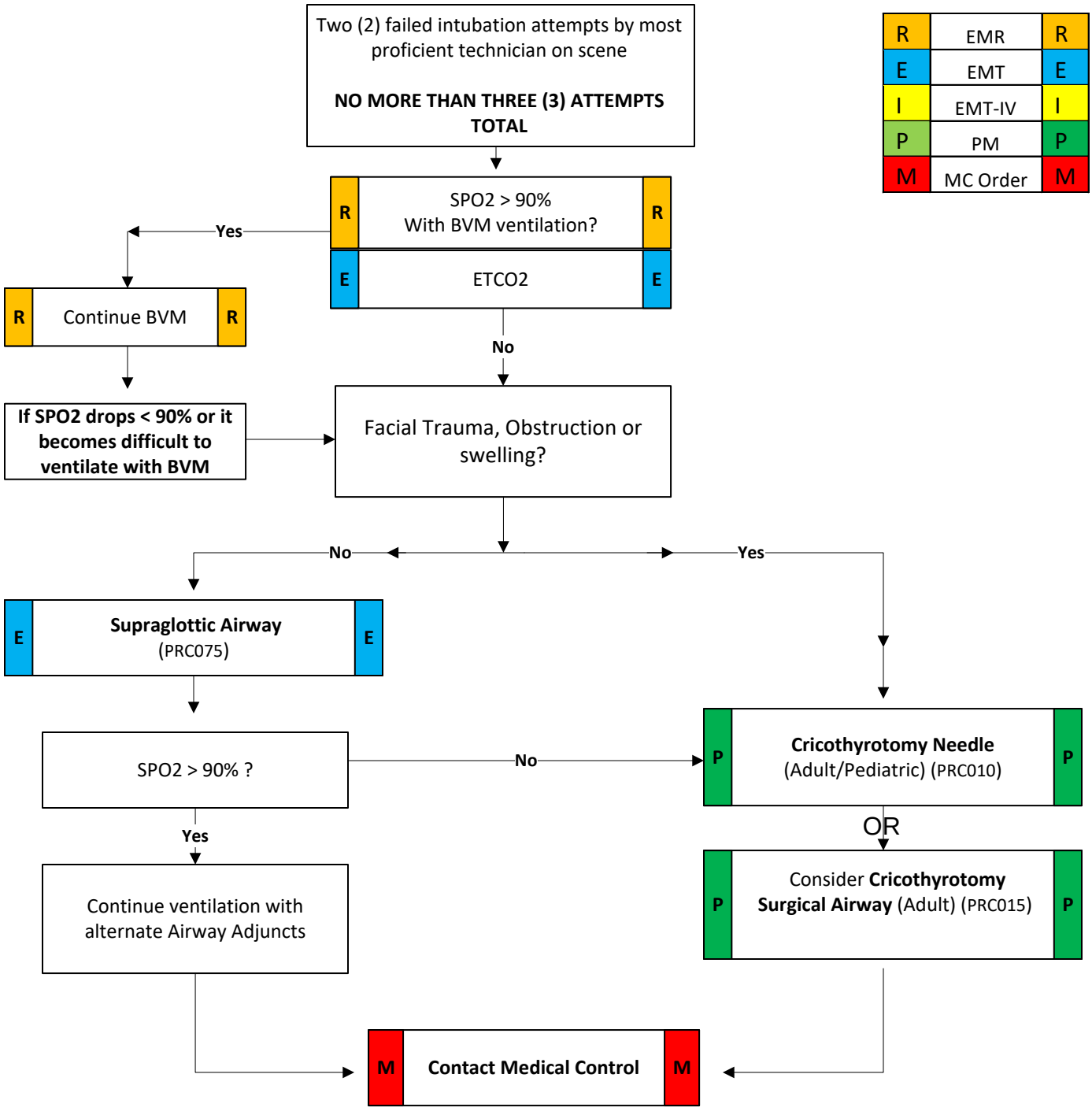
Airway - Adult



Notes:

- Capnometry or capnography is mandatory with all methods of advanced airway. Document results.
- For this protocol, adult is defined as any person who does not fit the length based tape.
- EMT's must have multi specialized airway training to use Supraglottic Airway Adjuncts.
- Maintain C-spine immobilization for patients with suspected spinal injury
- Paramedics should consider Supraglottic Airway Adjuncts.
- Reconfirm ETT placement each time patient is moved.
- Continuous pulse oximetry should be utilized in all patients with compromised respiratory function.

Airway - Adult Failed



Notes:

- **Difficult Airway Assessment** (PRC020)
- If first intubation attempt fails, make an adjustment and then try again:
  - *Different Laryngoscope blade.
  - * Different ETT size.
  - ***Eschmann Catheter** (PRC030)
  - ***Video Assisted Laryngoscopy** (PRC090) (if available and appropriate)
  - *Change cricoid pressure
  - * Apply BURP maneuver (push trachea Back [posterior], Up and to the patient's Right)
  - *Change head positioning.
- Continuous Pulse Oximetry and ETCO2 should be utilized in all patients with inadequate respiratory function.
- **Notify Medial Control AS EARLY AS POSSIBLE about the patients difficult/failed airway.**

High Threat

Inclusion Criteria:	Exclusion Criteria:
• Patient care in the presence of an active threat, where greater than normal conditions exist that are likely to cause damage or danger to the provider or patient, including: *Technical Rescue incident. *Water Rescue/Marine Operations *Hazardous Materials incident *Active Shooter	• Patients not meeting inclusion criteria.

Ensure provider safety

EMS personnel operating in the Hot or Warm Zone should follow the direction of competent technical personnel in regards to safe movement through the environment i.e. law enforcement, hazardous materials, or technical rescue personnel.

Providers should defer in depth medical interventions if engaged in ongoing direct threat, e.g. active shooter, unstable building, improvised explosive device(s), or hazardous materials.

In an active threat MCI, SALT Triage should be deferred until a later phase of care and prioritization for extraction or extrication should be based on resources available and the situation presented.

Encourage patients to provide self-first aid or instruct aid from uninjured bystanders.

In an active threat MCI, initial providers should create a Causality Collection Point (CCP) in conjunction with competent technical personnel.

R	EMR
E	EMT
I	EMT-IV
P	PM
M	MC Order

Universal Patient Care Protocol

Manage bleeding per **Hemorrhage Control Protocol** (PCP160)

Consider providing bleeding control with early tourniquet application. Bleeding control is often the only intervention provided in the Hot Zone.

Manage airway per **Airway- Adult Protocol** (PCP015)

Consider prioritizing patient movement and evacuation over medical procedures beyond immediate bleeding control.

C-Spine precautions should be foregone if their completion may pose a risk to providers, law enforcement personnel, or patients.

In an active threat MCI, deceased subjects should be placed prone with their arms and legs crossed.

P Consider foregoing ALS procedures until the patient has been removed to the Warm Zone, Cold Zone or a CCP. P

P Consider Airway Management using supraglottic rather than endo-tracheal intubation to facilitate speed of completion and down-stream BLS management and transport P

P Consider **Pain and Sedation Management** (PCP180) P

Narcotic pain management should be avoided in operational personnel who may be needed to mitigate the incident

Treat other conditions in accordance with appropriate protocol or procedures

M **Contact Medical Control** M

National Trauma Triage of Injured Patients

Red Criteria: High Risk for Serious Injury

Injury Patterns

- Penetrating injuries to head, neck, torso, and proximal extremities
- Skull deformity, suspected skull fracture
- Suspected spinal injury with new motor or sensory loss
- Chest wall instability, deformity, or suspectyed flail chest
- Suspected pelvic fracture
- Suspected fracture of two or more proximal long bones
- Crushed, degloved, mangled or pulseless extremity
- Amputation proximal to wrist or ankle
- Active bleeding requiring a tourniquet or wound packing with continuous pressure

Mental Status & Vital Signs

All Patients

- Unable to follow commands (motor GCS<6)
- RR <10 or >29 breaths/min
- Respiratory distress or need for respiratory support
- Room Air pulse oximetry <90%

Age 0-9 years

- SBP <70mmHg + (2 x age in years)

Age 10-64 years

- SBP <90 mmHg or
- HR >SBP

Age > 65 years

- SBP <110 mmHg or
- HR > SBP

Patients meeting any RED criteria should be transported to a level I or II trauma service within 30 minutes transport time (air or ground). Transport time greater than 30 minutes, take to the closest most appropriate trauma service.

Yellow Criteria: Moderate Risk for Serious Injury

Mechanism of Injury

- High-Risk Auto Crash
  - Partial or complete ejection
  - Significant Intrusion (including roof)
    - ▣ >12 inches occupant site OR
    - ▣ >18 inches any site OR
    - ▣ Need for extrication for entrapped patient
  - Death in passenger compartment
- Child (age 0-9 years) unrestrained or in unsecured child safety seat
- Vehicle telemetry data consistent with severe injury
- Rider separated from transport vehicle with significant impact (e.g., Motorcycle, ATV, horse, etc.)
- Pedestrian/bicycle rider thrown, run over, or with significant impact
- Fall from height >10 feet (all ages)

EMS Judgement

Consider Risk factors, including:

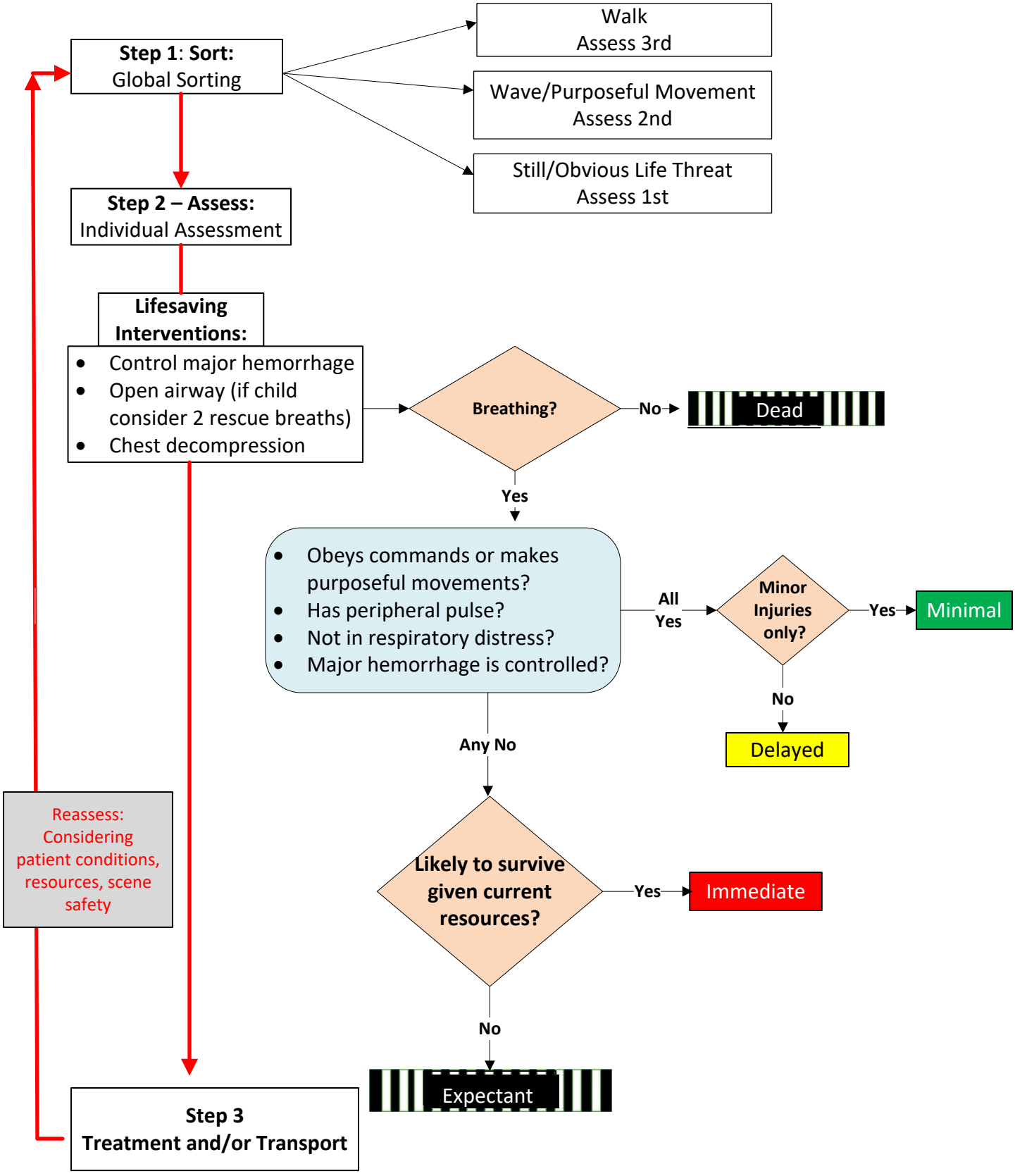
- Low-level falls in young children (age ≤5 years) or older adults (age ≥65 years) with significant head impact
- Anticoagulant use
- Suspicion of child abuse
- Special, high-resource healthcare needs
- Pregnancy > 20 weeks
- Burns in conjunction with trauma
- Children should be triaged preferentially to pediatric capable centers

If concerned, take to a trauma service

Patients meeting YELLOW criteria, WHO DO NOT MEET THE RED CRITERIA, should be transported to a designated trauma service, it need not be the highest level.

SALT Mass Casualty Triage Algorithm

(Sort, Assess, Lifesaving Interventions, Treatment/Transport)



SALT Mass Casualty

DEFINITIONS:

MASS CASUALTY INCIDENT (MCI): A number of injured or ill patients that exceed the capabilities of an agency's normal response.

TRIAGE RIBBON: Colored ribbon (i.e., Red, Yellow, Green or Expectant/Zebra) attached to a patient's arm or leg, indicating patient's treatment and/or transport priority status.

TRIAGE TRACKING TAG: Tag indicating patient's priority status along with space for vital signs, injuries, treatment and personal information.

TRIAGE REPORT: Includes the total number of patients and the number of patients triaged by color code. The triage report is a benchmark that should be relayed early by the IC at an incident to Dispatch Center and the appropriate medical facility.

NIMS: National Incident Management System.

MEDCON: Medical Control

INDICATIONS:

Background/Objectives: The guidelines listed here are designed to coincide with individual agency policies and procedures as well as NIMS to achieve the effective management of multiple patient incidents regardless of the number of patients or incident size.

The guidelines listed here should be implemented by the first arriving unit(s) to arrive at a multiple patient incident when it is determined that the needs of the incident exceed the available resources. Depending on the number of patients encountered and available resources, an MCI incident should be declared.

The following procedures are general orders for the MCI and should serve as the basis for managing these incidents. Providers and incident commanders must be aware that this is not all encompassing of the variety HAZMAT, acts of violence, disasters or public health emergencies that may be encountered. Specific management of those incidents will require expanding the scale of response and ICS structure to mitigate the incident.

The following initial actions will be taken by first arriving unit(s):

1. Scene Size-up and situation assessment.
2. First arriving unit should initiate and/or establish Incident Command per agency guidelines.

3. Determine if an MCI exists and request additional resources as needed through Dispatch Center.
4. Initiate SALT and assign Triage Officer.
5. Establish a Treatment Area in safe zone (outside of the hot zone).
6. Assign a Treatment Officer.
7. Assign a Transport Officer as needed to coordinate transportation of patients.
8. Contact MEDCON and provide information concerning the incident, MEDCON will assist or directly coordinate the decisions on receiving facilities for patients.

INCIDENT ORGANIZATION:

Triage will be initiated early in an MCI incident, especially when the number of patients and/or the severity of their injuries exceed the capabilities of an agency's normal first response. Triage will be performed using the **SALT Triage Algorithm**.

Personnel assigned to perform triage will utilize a systematic approach to identifying the severity of patient injuries using the SALT system. A colored ribbon corresponding to the appropriate SALT Algorithm shall be tied to either the patient's wrist or ankle after triage is completed. Personnel will maintain a count of all patients triaged and their severity level to report to the Triage Officer or IC.

Triage is typically performed in the **HOT ZONE**; patients will be moved to the Treatment Area following the completion of triage.

TREATMENT AREA:

As a general rule, establishing a Treatment Area is optional for MCIs and should be dependent on the situation or hazards encountered. For MCIs when transportation is not immediate due to resource limitations or could be delayed, a Treatment Area should be established. A Treatment Area will be established for all situations where patients will be moved following triage when they are not in a safe environment or will continue to be exposed to a hazard.

If a Treatment Area is established, a Treatment Unit Leader will be assigned to track patients. The Treatment Unit Leader is responsible for treatment, preparation for transport and direct the movement of patients to the Transportation Area. The Treatment Unit Leader will maintain intake tracking of all patients received from Triage utilizing the color coded tabs on the Triage Tag. One appropriate color triage tab will be removed from the Triage Tag and a total count for patients in the Treatment Area will be maintained.

The Treatment Area should be divided into clearly identified areas by color so that patients are identified by priority for transport. Entry into the Treatment Area should be clearly identified to ensure that all patients are appropriately tagged. At the entry, a

Triage Tag is attached to the patient and the patient numbered according to the triage tag system.

All patients triaged Minor (GREEN) shall be directed to a holding area where they can be further assessed, protected from the environment and arrangements made for their release from the scene or transported as appropriate. These patients should not be allowed to self-deploy to the hospital or from the scene. Prior to release, all patients will receive a Triage Tag and their information appropriately recorded.

TRANSPORTATION AREA:

If a formal Treatment Area is established, coordination for loading/transporting of patients should be assigned to a Transportation Group Supervisor. The Transportation Area shall be established to coordinate loading of patients and movement to the appropriate receiving facility. Personnel assigned to Transportation Group Supervisor shall be in communications with MEDCON.

The MEDCON doctor will communicate with the receiving facilities about transportation of patients to their facility. In cases of patients being moved out of county and at the request of MEDCON, direct communications with the regional Disaster Medical Command Center (DMCC) may be necessary. For Grays Harbor County - West Region PCP designated the DMCC as MEDCON Doctor at Providence St. Peters Hospital in Olympia.

Triage Tags provide a transportation receipt. The Transport Unit Leader is responsible to maintain the transportation receipt and provide each transporting unit with the appropriate ambulance receipt for assigned patients. The Transportation Unit Leader will document on the transportation receipt the destination of the patient and transporting agency and unit ID.

STAGING:

When a Treatment Area has been established, a Staging Area for arriving ambulances should be designated to coordinate the orderly flow of units into and out of the patient Transport Area loading zone. A Staging Officer should be established to work in conjunction with the Transportation Group Supervisor to ensure patients are placed with an appropriate transport unit (ALS vs. BLS). The Staging Officer should operate on a predetermined radio frequency identified by the Incident Commander.

In the event an air ambulance will be utilized to transport patients, an LZ Officer will be assigned to manage the air resources. A separate loading zone appropriate for air resources will be established in a safe area.

Reference NIMS for additional positions and descriptions.

COMMUNICATIONS:

Communication with the receiving medical facility is critical to the successful mitigation of an MCI. The following steps should be considered to eliminate confusion and to facilitate an orderly flow of patients.

- **Initial Triage Report**: The initial "head count" of the injured patients will allow the hospital to implement their appropriate internal response to the incident. This report should be communicated to MEDCON.

- **Individual Patient Reports**: These may be managed by the individual transport units as they leave the scene if transport time and distance will allow. If a Transportation Group Supervisor or Communications Unit Leader is established, individual patient reports should be made by them to the receiving facility instead of by the transporting unit. The method of communicating with the receiving facility should be made clear to all transporting units prior to their departure from the scene.

Ongoing communications and progress reports should be made by the IC or designee to the MEDCON facility as needed.

Ten Critical Steps for Handling Possible Bioterrorism Events

Consider Activating Mass Casualty

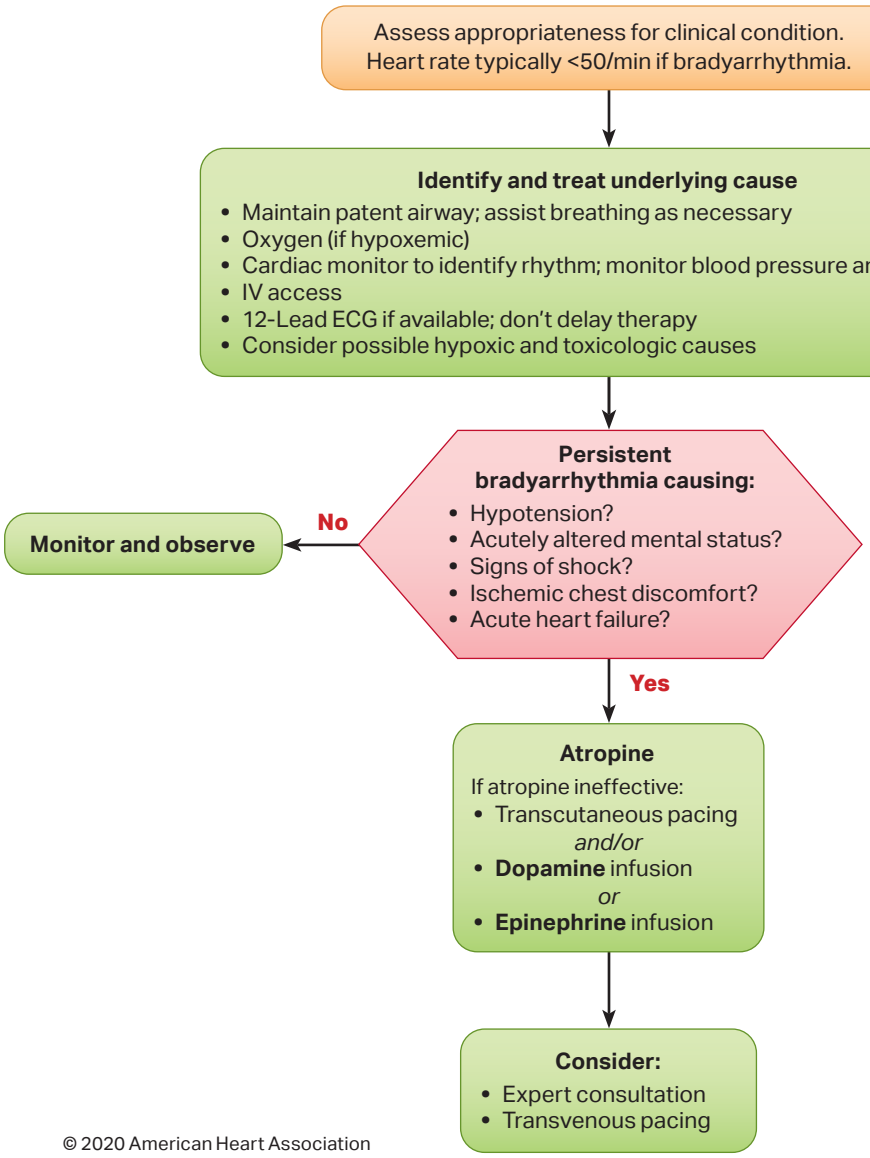
<table>
<tr><td>1-
Maintain an index of suspicion:</td><td>In an otherwise healthy population, some associations are very suggestive, especially when seen in clusters, high numbers, or unusual presentations.
<table><tr><th>“Clustered” Symptoms</th><th>Potential Bioagents</th></tr><tr><td>Hemoptysis</td><td>Plague</td></tr><tr><td>Flaccid Paralysis</td><td>Botulism</td></tr><tr><td>Purpura</td><td>Viral hemorrhagic Fevers-VHF</td></tr><tr><td>Wide mediastinum</td><td>Anthrax</td></tr><tr><td>Centripetal rash</td><td>Smallpox</td></tr></table></td></tr>
<tr><td>2-
Protect yourself and your patients.</td><td>Use appropriate personal protection equipment (PPE).
Prophylaxis; vaccines, if available; or antibiotics, if risks are known.</td></tr>
<tr><td>3-
Adequately assess the patient.</td><td>Review and assess the patient’s history. Also, ask:
• Are others ill?
• Were there any unusual events?
• Was there an uncontrolled food source or other environmental factor?
• Was there vector exposure?
• Has the patient been traveling?
• What is the patient’s immunization record?
Perform a physical examination with special attention to the respiratory system, nervous system, skin condition and hematologic and vascular status.</td></tr>
<tr><td>4-
Decontaminate as appropriate; try to identify the chemical for correct decontamination.</td><td>Do not use bleach on exposed people. Soap, water and shampoo are perfectly adequate for all biological and most chemical agents. Chemically contaminated clothes should be removed and discarded safely. Biologically contaminated clothes can be laundered with soap, water and perhaps, bleach.</td></tr>
<tr><td>5-
Establish a diagnosis.</td><td>Think clinically and epidemiologically; always send specimens for culture.
<table><tr><th>Symptom (individuals)</th><th>Possible Diagnosis</th></tr><tr><td>Pulmonary</td><td>Tularemia, plague, staph enterotoxin B (SEB)</td></tr><tr><td>Neuromuscular</td><td>Botulism, Venezuelan equine encephalitis (VEE)</td></tr><tr><td>Bleeding/purpura</td><td>VHF, ricin, plague (late)</td></tr><tr><td>Flu-like symptoms</td><td>Varies</td></tr></table></td></tr>
</table>

<table>
<tr><td rowspan="5">5-
Establish a diagnosis continued</td><td>Immediate Symptoms (large numbers)</td><td>Possible Diagnosis</td></tr>
<tr><td>Pulmonary</td><td>SEB, mustard, Lewisite, phosgene, cyanide</td></tr>
<tr><td>Neurologic</td><td>Nerve gases, cyanide</td></tr>
<tr><td>Delayed Symptoms (large numbers)</td><td>Possible Diagnosis</td></tr>
<tr><td>Pulmonary</td><td>Biologic agents, mustard, phosgene</td></tr>
<tr><td></td><td>Neurologic</td><td>Botulism, VEE, other encephalitis</td></tr>
<tr><td>6-
Render prompt treatment:</td><td colspan="2">A: Airway
B: Breathing
C: Circulation</td></tr>
<tr><td>7-
Provide good infection control:</td><td colspan="2">• Gloves, gown, mask and hand washing, and eyewear if necessary are sufficient.
• Recommended isolation precautions for biologic agents include:
Standard Precautions - for all individuals/patients
Contact Precautions - Viral Hemorrhagic Fevers
Droplet Precautions - Pneumonic Plague and Tularemia
Airborne Precautions - Smallpox</td></tr>
<tr><td>8-
Alert the proper authorities:</td><td colspan="2"><u>CALL FIRST:</u> Your local law enforcement agency; call either 911 or your local phone number for law enforcement
<u>CALL SECOND:</u> Your area FBI office
Western WA: 206.622.0460
Eastern WA: 509.747.5196
After hours statewide in WA: 206.622.0460
<u>CALL THIRD:</u> Your local emergency management, or if unavailable, the WA State EM Duty Officer at: 1-800-258-5990</td></tr>
<tr><td>9-
Assist in the epidemiologic investigations:</td><td colspan="2">Steps in an epidemiologic investigation so as to determine who may be at risk:
• Count cases
• Relate to the at-risk populations
• Make comparisons
• Develop hypotheses
• Make inferences
• Conduct studies
• Interpret and evaluate</td></tr>
<tr><td colspan="3">10. Know and spread this information</td></tr>
</table>

CONTINUOUS CPR

Component	Adult > 8 years old	Child 1 - 8 years old	Infant 0 - 1 years
Recognition	Unresponsive - all ages. Not breathing or no normal breathing (i.e. only gasping) all ages. No pulse palpated within 10 seconds - all ages		
CPR Sequence	**C - A - B** (Circulation - Airway - Breathing)		
Compression Rate	100 - 120 Compressions per minute for all ages		
Compression Depth	**Adult** 2 - 2 ½ inches	**Child** At least 1/3 AP diameter About 2 inches	**Infant** At least 1/3 AP diameter About 1½ inches
Chest Wall Recoil	Allow complete recoil between compressions		
Compression Interruptions	Attempt to limit interruptions to <10 seconds		
Airway	Head tilt chin lift/jaw thrust maneuver when trauma suspected. No cricoid pressure when ventilating recommended. Place airway adjuncts (OPA/NPA) as soon as possible. Prepare for suctioning. Secure airway (Supraglottic/ETT) when time permits. Recommended Eschmann Catheter (ET introducer) in place of stylet.		
Compression to Ventilation Ratio	Continuous compressions with 1 breath every 6-8 seconds or every 10th compression with or without secured airway given over 1-2 seconds/compressions.		
Defibrillation	Attach and use AED/manual defibrillator as soon as available. Minimize interruptions in chest compressions before and after shock. For AED, follow the prompts of AED, as most AED's will have 2-minute cycles. While using a manual defibrillator, charge at 1:45 of the 2-minue cycle. For AED's/Manual Defibrillators, continue compressions through the charging phase if defibrillator allows, resume CPR, beginning with chest compression immediately after each shock. Follow manufacturer's recommendations for "dumping" the charge if no shock is indicated.		
Note	All advance procedures i.e., Advanced airways, IV/IO's will be attempted during compression phases in order to limit interruptions. If using "recording" defibrillator, turn device on prior to starting CPR if possible. Follow current ACLS guidelines for medication administraiton.		

Adult Bradycardia Algorithm



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Doses/Details

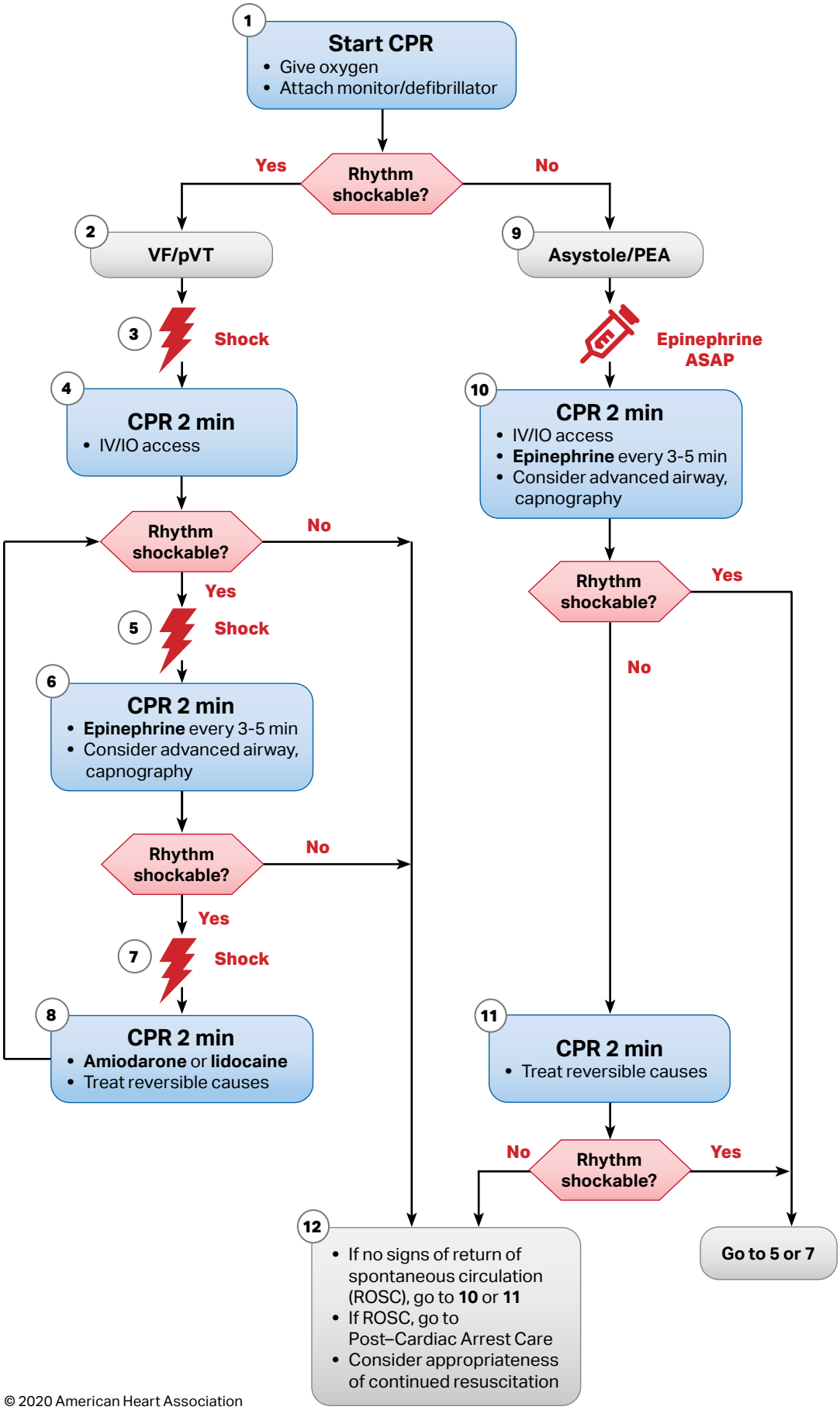
Atropine IV dose:
First dose: 1 mg bolus.
Repeat every 3-5 minutes.
Maximum: 3 mg.

Dopamine IV infusion:
Usual infusion rate is 5-20 mcg/kg per minute.
Titrate to patient response; taper slowly.

Epinephrine IV infusion:
2-10 mcg per minute infusion.
Titrate to patient response.

Causes:
- Myocardial ischemia/infarction
- Drugs/toxicologic (eg, calcium-channel blockers, beta blockers, digoxin)
- Hypoxia
- Electrolyte abnormality (eg, hyperkalemia)

Adult Cardiac Arrest Algorithm



CPR Quality

- Push hard (at least 2 inches [5 cm]) and fast (100-120/min) and allow complete chest recoil.
- Minimize interruptions in compressions.
- Avoid excessive ventilation.
- Change compressor every 2 minutes, or sooner if fatigued.
- If no advanced airway, 30:2 compression-ventilation ratio
- Quantitative waveform capnography
  - If P_{ETCO_2} is low or decreasing, reassess CPR quality.

Shock Energy for Defibrillation

- **Biphasic**: Manufacturer recommendation (eg, initial dose of 120-200 J); if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- **Monophasic**: 360 J

Drug Therapy

- **Epinephrine IV/IO dose:** 1 mg every 3-5 minutes
- **Amiodarone IV/IO dose:** First dose: 300 mg bolus. Second dose: 150 mg. *or* **Lidocaine IV/IO dose:** First dose: 1-1.5 mg/kg. Second dose: 0.5-0.75 mg/kg.

Advanced Airway

- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography or capnometry to confirm and monitor ET tube placement
- Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions

Return of Spontaneous Circulation (ROSC)

- Pulse and blood pressure
- Abrupt sustained increase in P_{ETCO_2} (typically ≥40 mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

Reversible Causes

- **H**ypovolemia
- **H**ypoxia
- **H**ydrogen ion (acidosis)
- **H**ypo-/hyperkalemia
- **H**ypothermia
- **T**ension pneumothorax
- **T**amponade, cardiac
- **T**oxins
- **T**hrombosis, pulmonary
- **T**hrombosis, coronary

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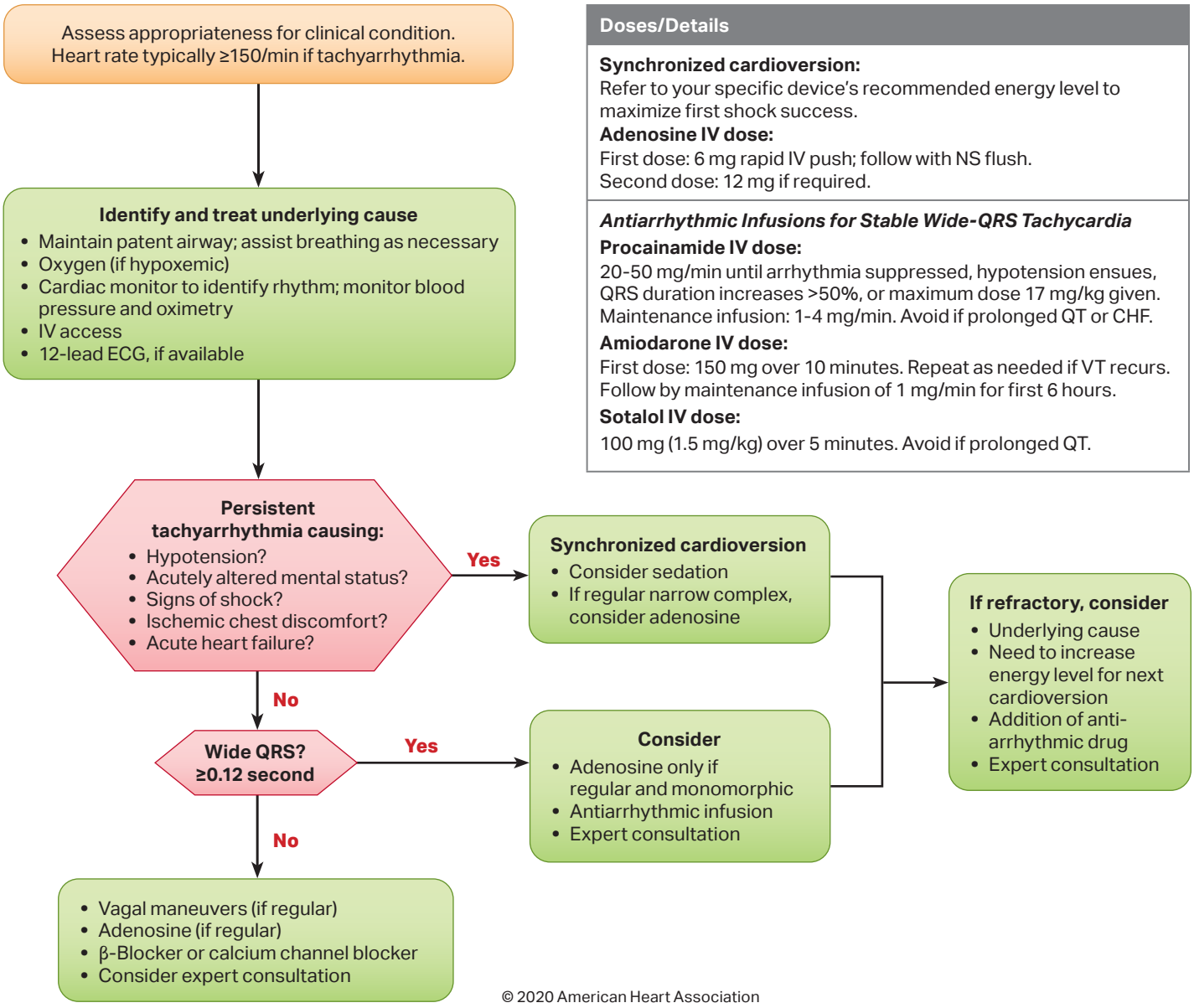
Adult Tachycardia With a Pulse Algorithm



Doses/Details
Synchronized cardioversion: Refer to your specific device's recommended energy level to maximize first shock success. **Adenosine IV dose:** First dose: 6 mg rapid IV push; follow with NS flush. Second dose: 12 mg if required.
Antiarrhythmic Infusions for Stable Wide-QRS Tachycardia **Procainamide IV dose:** 20-50 mg/min until arrhythmia suppressed, hypotension ensues, QRS duration increases >50%, or maximum dose 17 mg/kg given. Maintenance infusion: 1-4 mg/min. Avoid if prolonged QT or CHF. **Amiodarone IV dose:** First dose: 150 mg over 10 minutes. Repeat as needed if VT recurs. Follow by maintenance infusion of 1 mg/min for first 6 hours. **Sotalol IV dose:** 100 mg (1.5 mg/kg) over 5 minutes. Avoid if prolonged QT.

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Bradycardia

Consider ALS Evaluation and/or Transport:

History:	Signs/Symptoms	Differential:
• Past Medical History • Medications- Beta-Blockers Calcium Channel Blockers Clonidine Digitalis • Pacemaker	• *HR , 60/min and symptomatic* • *Chest Pain* • *Respiratory Distress* • *Hypotension or shock* • *Altered mental status* • *Syncope*	• Acute myocardial Infarctoin • Sinus bradycardia • Athletes/non pathological • Stroke • Sick sinus Syndrome • Heart Block

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

E — ** ECG/12 lead — E

I — Obtain IV/IO access — I

Perfusion
Signs of Inadequate perfusion – acute altered mental status, ongoing chest pain, hypotension or other signs of shock.

Adequate → Observe/monitor
Consider PRN TCP pads

Inadequate

I — **Isotonic IVF**
250cc-1,000cc
May repeat x1 if not in Pulmonary Edema
Goal SPB >90, MAP >65 — I

P — Atropine PRN
1mg IVP q 3-5 min
Max 3mg — P

P — Sedation per **Pain Management Protocol** (PCP180) PRN
Transcutaneous Pacing (PRC115) — P

P — See **Pain and Sedation Management** (PCP180) — P

P — **Epinephrine**
Titrate drip 2-10 mcg/min
IV/IO SBP >100 PRN — P

P — See **Non-Traumatic** or **Traumatic Shock** as appropriate (PCP215) — P

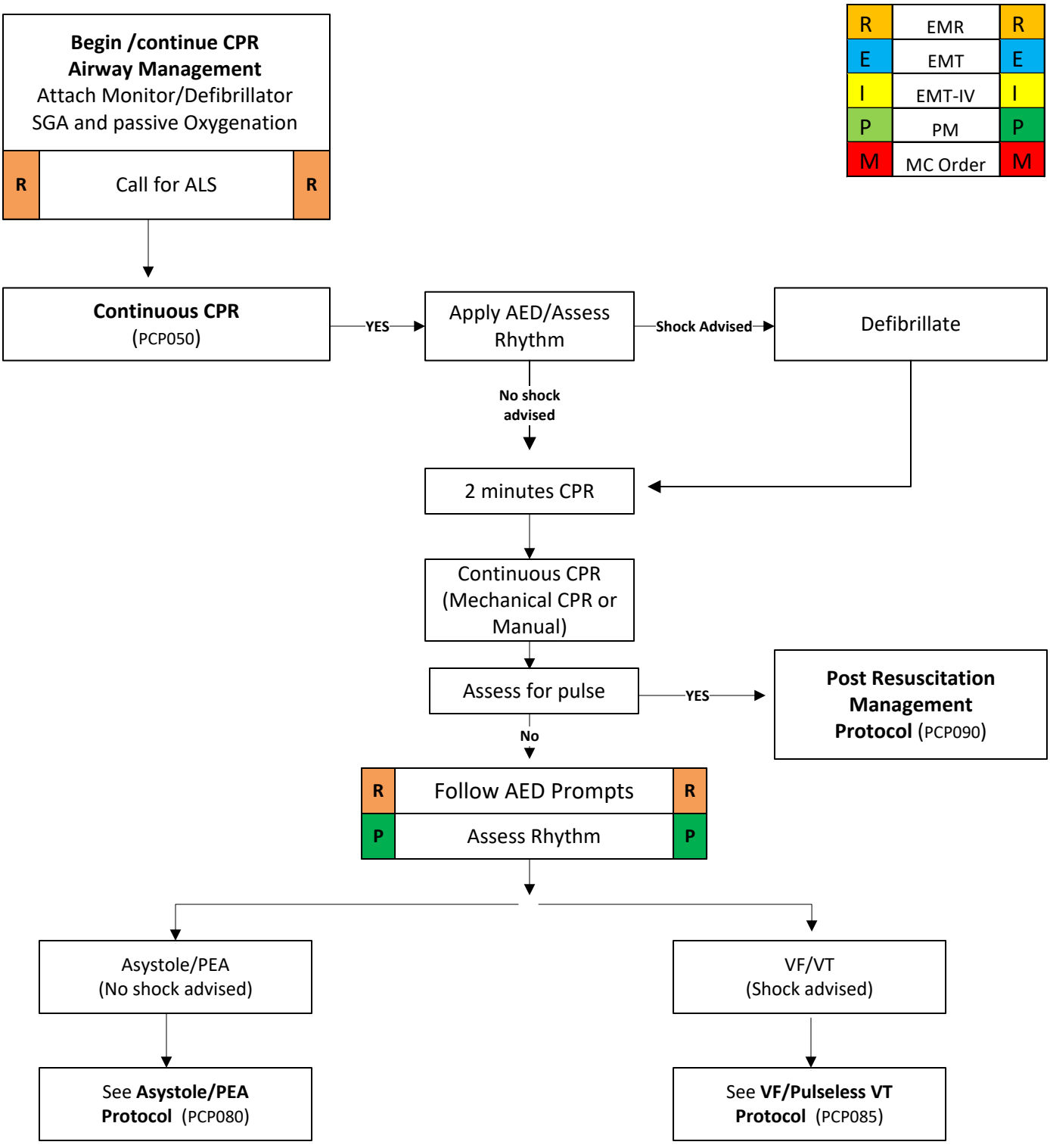
M — **Transport and Contact Medical Control** — M

Reminders

- **H**ypovolemia
- **H**ypoxia
- **H**ydrogen ion (acidosis)
- **H**ypo-/Hyperkalemia
- **H**ypoglycemia
- **H**ypothermia
- **H**eart Meds
- **T**oxins
- **T**amponade, cardiac
- **T**ension pneumothorax
- **T**hrombosis (coronary or pulmonary)
- **T**rauma (hypovolemia, increased ICP)

Note: **EMT can acquire 12-lead ECG and read report text printout **but cannot interpret.**

Cardiac Arrest



Notes:

- All shocks Monophasic or Biphasic follow manufacturers recommendations. If Biphasic equivalent unknown, deliver shock at 200 J.
- Consider **Discontinuing CPR** pursuant to **Procedure** (PRC145).
- For ROSC refer to **Post Resuscitation Management Protocol** (PCP090).
- **High Performance CPR** (PCP050).

Cardiac Arrest - Asystole/PEA (No Shock Advised)

Arrive here from **Cardiac Arrest Protocol** (PCP075)

High Performance CPR (PCP050)
Airway Management and confirm effective oxygenation and ventilation

I — Obtain IV/IO access — I

Search for and treat possible causes:

- **H**ypovolemia
- **H**ypoxia
- **H**ydrogen ion (acidosis)
- **H**ypo/Hyperkalemia
- **H**ypoglycemia
- **H**ypothermia
- **H**eart Meds
- **T**oxins
- **T**amponade, cardiac
- **T**ension pneumothorax
- **T**hrombosis (coronary or Pulmonary)
- **T**rauma (hypovolemia, increased ICP)

Consider **Hyperkalemia Protocol** (PCP165)

P — **Epinephrine** 1 mg 1:10,000 IV/IO q 3-5 min — P

Assess Rhythm

VF/VT (Shock Advised)

See **VF/Pulseless VT (SA)** protocol (PCP085)

Asystole or PEA (No Shock Advised)

P — Consider **Sodium Bicarbonate** 1 mEq/kg IV/IO
If preexisting hyperkalemia (renal failure), TCA or ASA OD consider TCP for Bradycardic rhythms — P

M — **Contact Medical Control** — M

R	EMR
E	EMT
I	EMT-IV
P	PM
M	MC Order

NOTES:

- Guideline for **Discontinuation of Resuscitation** (PRC145)

Cardiac Arrest – VF/pVT (Shock Advised)

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Arrive here from **Cardiac Arrest Protocol** (PCP075)

Defibrillate once

High Performance CPR (PCP050)
Airway Management and confirm effective oxygenation and ventilation

I — Obtain IV/IO access — I

Assess Rhythm

VF/VT
(Shock Advised)

Asystole or PEA
(No Shock Advised)

Go to **Asystole or PEA (NSA)** Protocol (PCP080)

P — **Epinephrine**
1 mg 1:10,000 IV/IO q 3-5 min. — P

Resume attempts to **defibrillate**
High Performance CPR between defibrillations

P — **Lidocaine**
Initial bolus 1-1.5 mg/kg
IV/IO repeat bolus
0.5-0.75 mg/kg q5 min
to max 3 mg/kg
OR
Amiodarone
300 mg IVP,
may repeat 150 mg IVP — P

P — Consider in appropriate Patients
Sodium Bicarbonate
1 mEq/kg IV/IO
If preexisting hyperkalemia (renal failure), TCA or ASA OD consider **TCP** for Bradycardic rhythms — P

Resume attempts to **defibrillate**
High Performance CPR between defibrillations

P — If Torsades de pointes-
Magnesium Sulfate 2mg IVP,
may repeat — P

M — **Contact Medical Control and Transport** — M

Reminders

- **H**ypovolemia
- **H**ypoxia
- **H**ydrogen ion (acidosis)
- **H**ypo/Hyperkalemia
- **H**ypoglycemia
- **H**ypothermia
- **H**eart Meds
- **T**oxins
- **T**amponade, cardiac
- **T**ension pneumothorax
- **T**hrombosis (coronary or pulmonary)
- **T**rauma (hypovolemia, increased ICP)

Notes: • **Hyperkalemia –** Dialysis patients consider **Bicarb.**
• Guidelines for **Discontinuation of Resuscitation** (PRC145)

Post Resuscitation Management

ALS evaluation and/or transport if available:

History:	Signs and Symptoms:	Differential:
• Respiratory arrest • Cardiac arrest	• ROSC	• Continue to address specific differentials Associated with the original dysrhythmia

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Repeat Primary Assessment

Continue ventilatory support with 100% Oxygen PEEP after oxygen and saturations between 94-98%

I — Obtain IV/IO access — I

E — **Monitor ECG/12 lead Capnography
Vital Signs/ Pulse Oximetry — E

Hypotension

I — **Consider fluid bolus** — I

P — **Norepinephrine**
Titrate drip 2-12 mcg/min
IV/IO SBP >120
Or
Epinephrine
Titrate drip 2-10 mcg/min
IV/IO SBP >120

Treat non-traumatic shock as appropriate, MAP >65, SBP >90 — P

Stable

Bradycardia

Treat per **Bradycardia Protocol** (PCP070)

If arrest reoccurs, revert to appropriate protocol and/or initial successful treatment

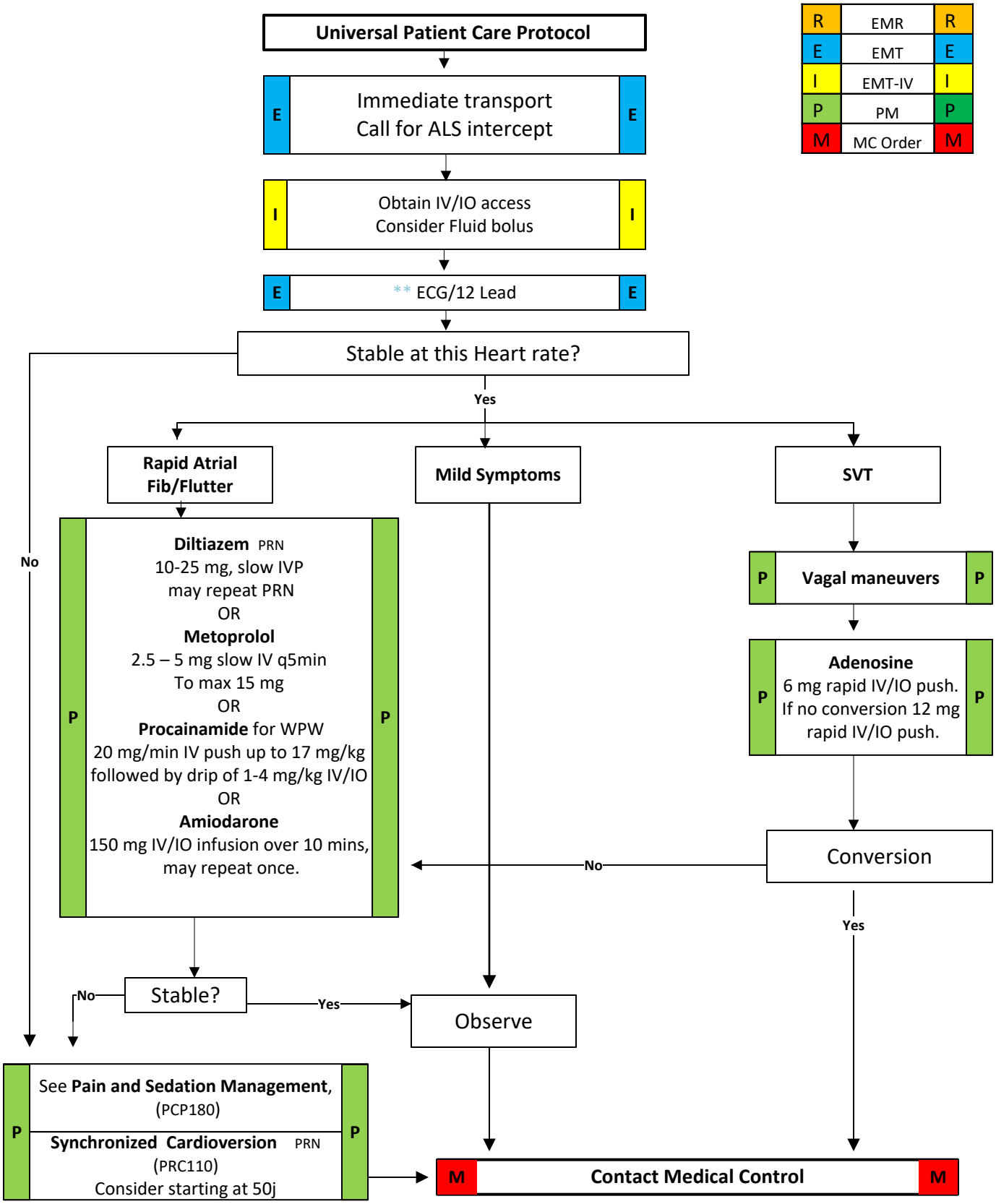
P — Consider mild sedation **Pain and Sedation Management** (PCP180) — P

M — **Contact Medical Control** — M

Notes: **EMT can acquire 12-lead ECG and read report text printout **but cannot interpret.**

- Sedate as needed.
- Continue antiarrhythmic infusions from previous resuscitation protocol PRN
- **Dopamine** may be used as alternative for hypotension.

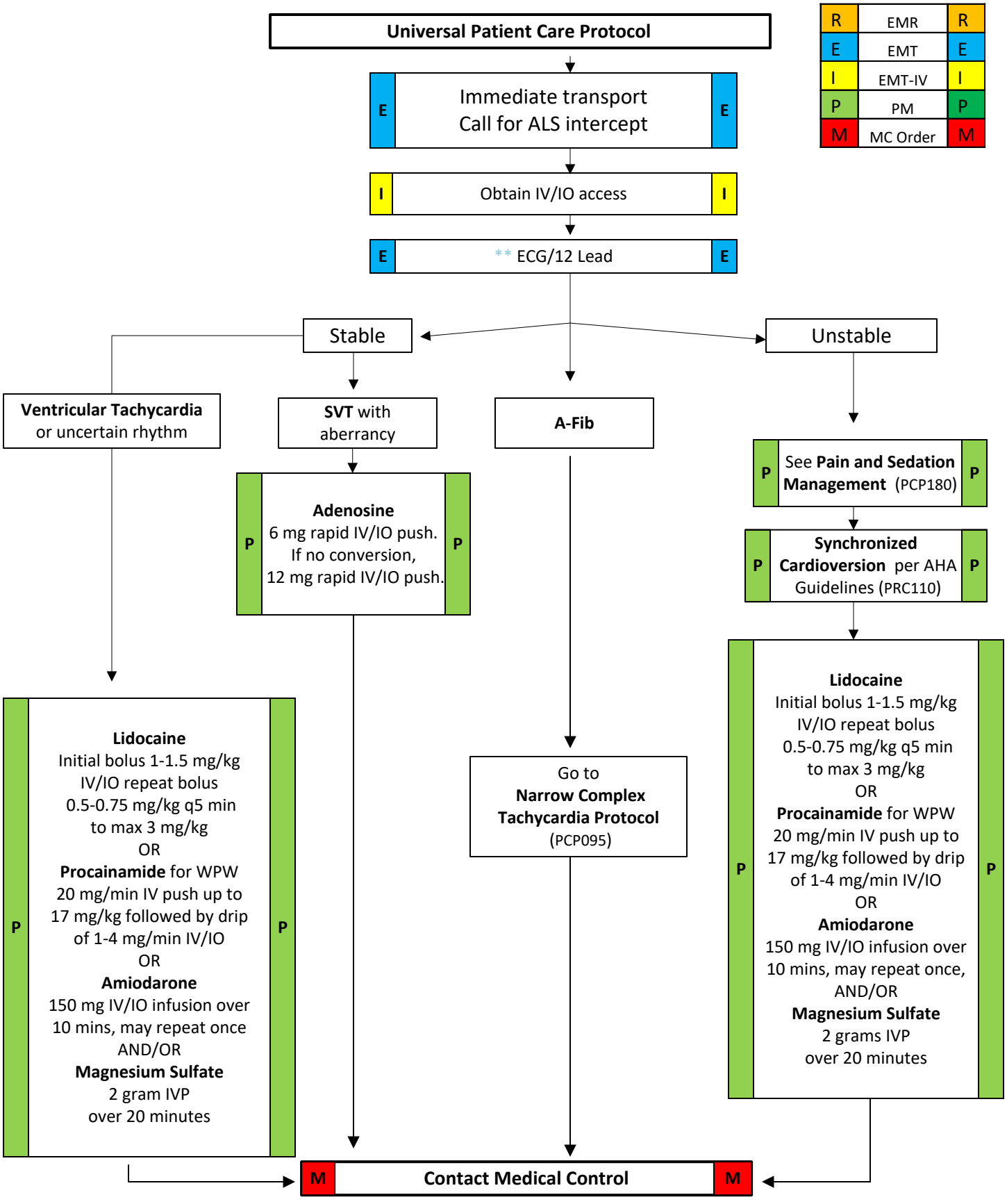
Tachycardia, Narrow Complex



NOTES: Use B-Blockers with caution in pulmonary disease or CHF

- If patient already on a B-blocker, give **Metoprolol**
- WPW (Wolff Parkinson White): pre-existing syndrome which can lead to paroxysmal tachydysrhythmias. Caution must be used when treating WPW with rapid atrial fibrillation/SVT.
- **EMT can acquire 12-lead ECG and read report text printout **but cannot interpret**.

Tachycardia, Wide Complex



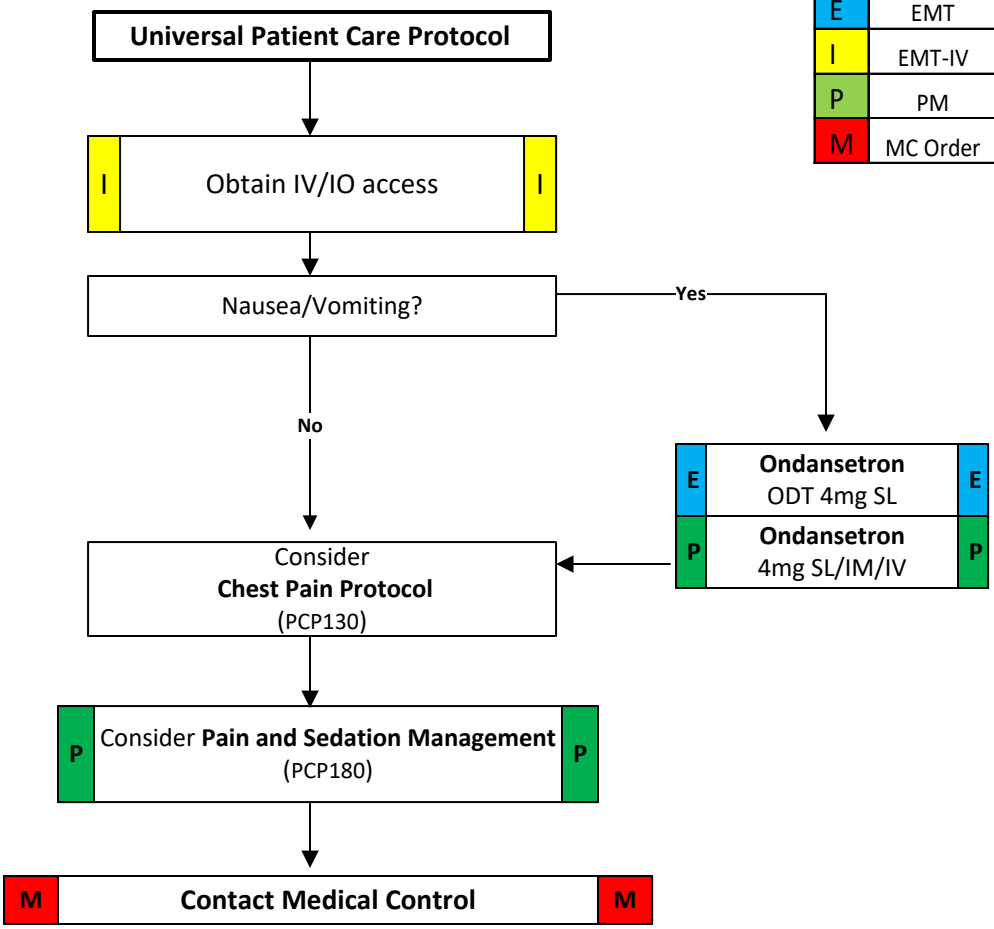
Note:
** EMT can acquire 12-lead ECG and read report text printout **but cannot interpret.**

Abdominal Pain

ALS evaluation and/or transport if available:

History:	Signs and Symptoms:	Differential:
• Age • Past medical / surgical history • Mediations • Onset • Palliation/Provocation • Quality (crampy, constant, sharp, dull, etc.) • Region/Radiation/Referred • Severity (1-10) • Time (duration/repetition) • Fever • Last meal eaten • Last bowel movement/emesis • Menstrual history (pregnancy)	• Pain (location/migration) • Tenderness • Nausea • Vomiting • Diarrhea • Dysuria • Constipation • *Pregnancy* • *Pulsating mass* • *Chest Pain* • *Shortness of breath* • *Abnormal vital signs*	• AAA • Ectopic pregnancy • Bowel obstruction • Cardiac • Pregnancy (ectopic?) • *GI Bleed* • Appendicitis • Cholecystitis • Pancreatitis • Kidney stones • *Distended or Rigid*

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M



Notes:

- Abdominal pain in women of childbearing age should be treated as an ectopic pregnancy until proven otherwise.
- The diagnosis of abdominal aneurysm should be considered with abdominal pain in patients over 50.
- Appendicitis presents with vague, peri-umbilical pain which migrates to the RLQ over time.

Allergic Reaction

ALS evaluation and/or transport if available:

History:
- Onset and Location
- Insect bite/sting
- New clothing, soap, detergent

Signs/Symptoms:
- Anxiety
- Nausea/Vomiting
- *Altered Mental Status*
- Pale Diaphoresis
- Chest Pain
- *Hypotension*
- Rash/Hives
- *Facial Edema*
- *Angioedema*
- *Shortness of breath*
- *Wheezing/Stridor*

Differentials:
- Sepsis
- Acute Coronary Syndrome

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

R — Oxygen O2 Sat>94-98% — R

Hives/Rash Only No respiratory Component

E — May **Assist patient with own meds** – Benadryl, Allegra, Claritin, Dramamine, Pepcid, Zantac and Tagamet (Diphenhydramine, cetirizine, fexofenadine, loratadine dimenhydrinate) — E

E — **Diphenhydramine** 25-50 mg PO — E

Reassess patient

Evidence of impending Respiratory Distress or shock?

R — **Epinephrine** EMR may assist with **patient's Auto Injector** — R

E — **Epinephrine** 1:1,000 0.3 mg IM Repeat Epinephrine PRN — E

E — **Albuterol** 2.5 mg SVN PRN
Ipratropium 0.5 mg SVN — E

I — Obtain IV/IO access
Isotonic IVF — I

E — **Diphenhydramine** 25-50 mg PO — E

P — **Diphenhydramine** 20-50 mg PO/IM/IV/IO — P

P — **Methylprednisolone** 125 mg IV/IO/IM — P

E — **Consider ECG/12 lead — E

P — Treat non-traumatic shock as appropriate
Consider anti-emetic — P

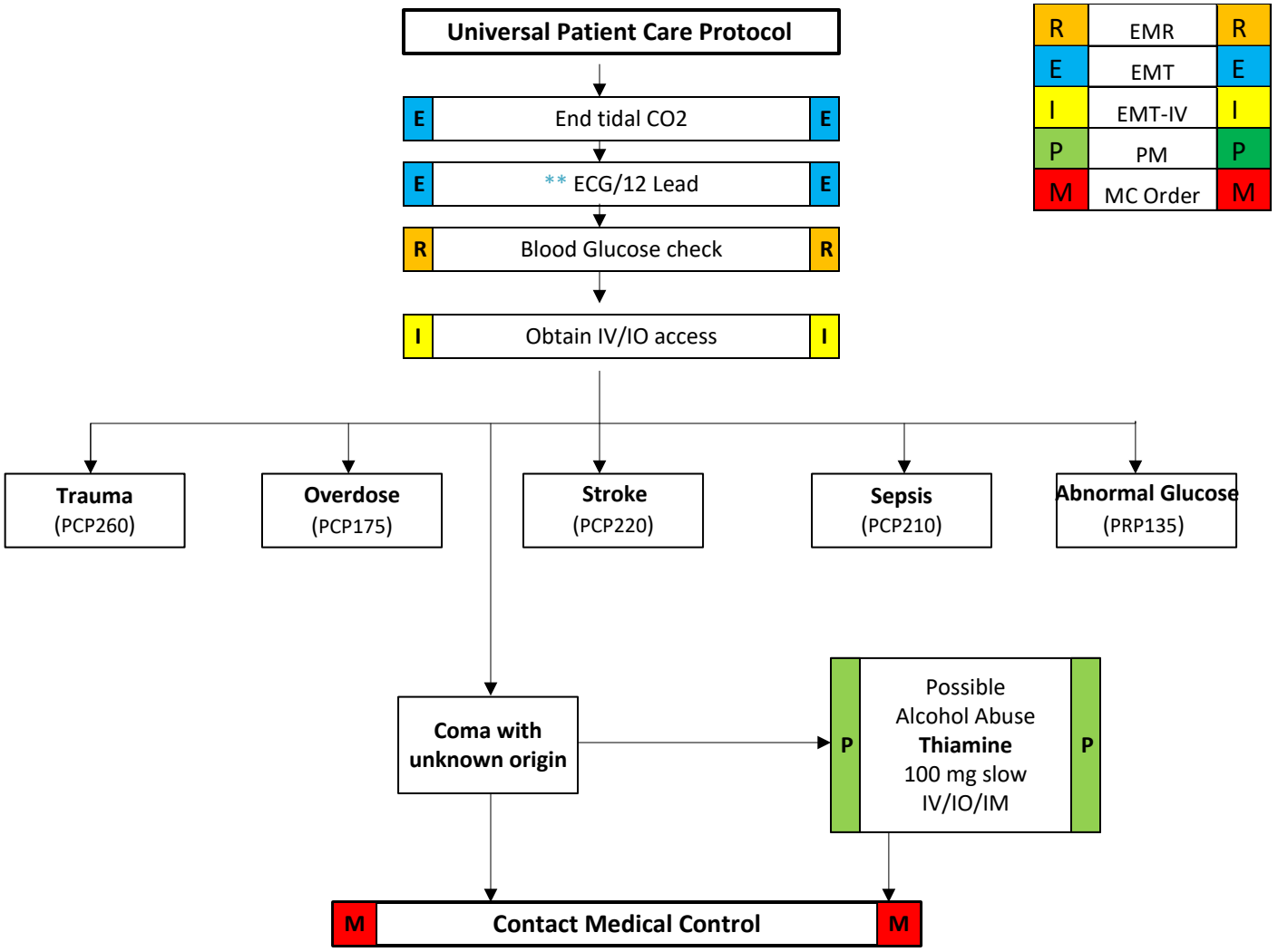
M — **Contact Medical Control** — M

- **NOTE:** ** EMT can acquire 12-lead ECG and read report text printout **but cannot interpret.**
- Signs of shock include SBP <90
- The shorter the onset from contact to symptoms, the more severe the reaction
- A single does of epinephrine may not reverse the effects of anaphylaxis. Administer additional dose as needed
- EMR may assist with patients own MDI
- Be watchful for possible secondary allergic response, after apparent resolution of initial S/S and patient should continue to be monitored. **With any administration of Epinephrine**, patient should be transported to ED by **ALS (if available)** for further Evaluation.

Altered Mental Status

ALS evaluation and/or transport if available:

History:	Signs and Symptoms:	Differential:
• Known diabetic, medic alert tag • Drugs, drug paraphernalia • Report of illicit drug use or toxic ingestion • Past medical history • Mediations • History of trauma • GI History Syncope	• Decreased Mental status • Change in baseline mental status • Bizarre behavior • Hypoglycemia (cool, diaphoretic skin) • Hyperglycemia (warm, dry skin; fruity breath; Kussmal resps; signs of dehydration) • Diabetic • Syncope • *Abnormal Vital Signs persist* • *Shortness of breaths*	• **A** - Alcohol/Acidosis • **E** - Endocrine/Epilepsy/Electrolytes/ Encephalopathy • **I** - Insulin • **O** - Opiates/Overdose/Oxygen • **U** - Uremia • **T** - Trauma • **I** - Infection • **P** - Poisoning/Psychosis/Pharmacology • **S** - Stroke/Seizure/Syncope



Notes:

- **EMT can acquire 12-lead ECG and read report text printout but **cannot interpret.**
- Be aware of AMS as presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety.
- Do not let alcohol confuse the clinical picture. Alcoholics frequently develop hypoglycemia.
- Low glucose (<60), normal glucose (60-120), high glucose (>250).
- Consider restraints if necessary for patient's and/or personnel's protection per the **Restraint procedure** (PRC265).
- Repeat blood glucose for any change in mental status after treatment has begun.

Breathing Difficulty - Pulmonary Edema

ALS evaluation and/or transport if available:

History:
- Congestive heart failure
- Past medical History
- Mediations (Digoxin, Lasix, HCTZ)
- Viagra, Levitra, Cialis
- Cardiac history – past myocardial infarction

Signs and Symptoms:
- Respiratory distress, rales
- Apprehension, orthopnea
- Jugular vein distention
- Pink, frothy sputum
- Peripheral edema, diaphoresis
- Hypotension, shock
- Chest Pain

Differential:
- Myocardial infarction
- Congest Heart Failure
- Asthma
- Anaphylaxis
- Aspiration
- COPD
- Pleural effusion
- Pneumonia
- Pulmonary Embolus
- Pericardial tamponade

Mild-Moderate – able to speak sentences crackles base only, O2 sat >92%
Severe – respiratory distress, crackles throughout, O2 sat <92%
Near Death – Decreased LOC, cyanosis, dropping O2 sat, ineffective respiratory drive.

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

E — Non-Invasive positive pressure ventilation NIPPV if available — E

E — ** ECG/12 Lead; End tidal CO2 — E

I — Obtain IV/IO access — I

P — Consider mild sedation **Pain and Sedation Management** (PCP180) — P

Fever or Purulent Sputum?

Yes → Support **Adult Airway Protocol** (PCP015)

No

Nitroglycerin
Indicated of SBP >100

E — Per patient's Rx 0.4 mg tablet/spray SL may repeat q 3-5 min — E

P — Consider **Nitroglycerine drip** Hold if SBP <100 **Nitro Paste** 1-2" to chest wall — P

P — Consider for transports longer than 30 mins **Furosemide** 40-80 mg IV — P

P — See **Pain and Sedation Management** (PCP180) For CP refractory to Nitroglycerin — P

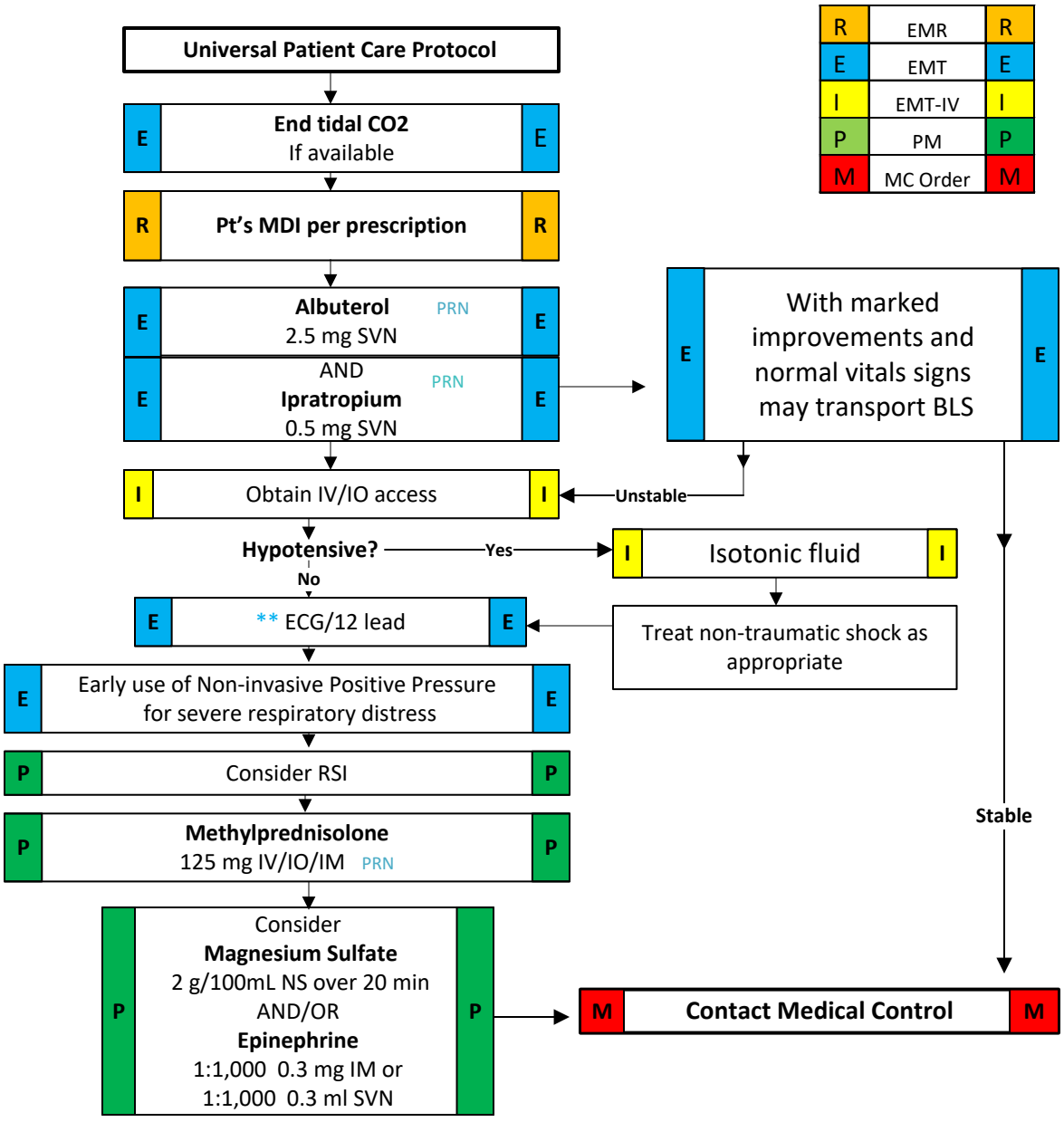
M — **Contact Medical Control** — M

Notes:
- **Avoid Nitroglycerin in any patient (man or woman) who has used sexual performance enhancement drugs (i.e. Viagra, Levitra, etc.) in the past 24 hours due to possible severe hypotension.**
- If patient has taken Nitroglycerine without relief, consider potency of the medication.
- **Consider myocardial infarction in all these patients.**
- Allow the patient to be in their position of comfort to maximize their breathing effort.
- **EMT can acquire 12-lead ECG and read report text printout but **cannot interpret.**

Breathing Difficulty - Reactive Airway Disease

ALS evaluation and/or transport if available:

History:	Signs/Symptoms	Differential:
• Asthma • COPD – emphysema, chronic bronchitis • Congestive heart failure • Home treatment (O2 nebulizer) • Medications (theophylline, steroids, inhalers) • Toxic exposure • Smoking	• Shortness of breath • *Pursed-lip breathing* • *Decreased ability to speak* • *Increased respiratory rate and effort* • Wheezing rhonchi, rales • *Use of accessory muscles* • Fever, cough • Tachycardia • *Suspected PE*	• Asthma • Anaphylaxis • Aspiration • COPD (Emphysema, Bronchitis) • Pleural effusion • Pneumonia • Pulmonary embolus • Pneumothorax • Cardiac (MI or CHF) • Pericardial Tamponade • Hyperventilation • Inhaled Toxin (Carbon monoxide, etc.)



Note: **EMT can acquire 12-lead ECG and read report text printout **but cannot interpret.**
- Barotrauma is often caused by the over-ventilation of Reactive Airway patients. Allow for a prolonged expiratory time when ventilating such patients.

Chest Pain/Acute Coronary Syndrome

ALS evaluation and/or transport if available:

Cardiac Risk Factors:	History:	Signs/Symptoms:	Differential:
• Previous MI/Known Cardiac disease • Hypotension • Diabetes • Smoking tobacco use • Family History • High Cholesterol • Major Stress • Takatsobu cardiomyopathy	• **Viagra, Cialis, Levitra** (Male/Female) • **O**nset • **P**alliation/**P**rovocation • **Q**uality (crampy, constant, sharp, dull, etc.) • **R**egion/Radiation/Referred • **S**everity (1-10) • **T**ime (duration/repetition)	• *CP (Pain, pressure, aching, tightness)* • *Radiation of pain* • *Pale, diaphoresis* • *Shortness of breath* • *Nausea, vomiting, dizziness* • *Abnormal vital signs*	• Aortic dissection or aneurysm • Trauma vs. Medical • Pericarditis • Pulmonary embolism • Asthma/COPD • Pneumothorax • GE reflux or Hiatal hernia • Esophageal spasm • Chest wall injury or pain • Pleural pain

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

Suspect Acute Coronary Syndrome

R — Aspirin 325 mg chewable PO — R

I — Obtain IV/IO access — I

E — **Nitroglycerin** If BP > 100 systolic Per patient Rx, 0.4 mg SL q 3-5 min Beware if HR < 60 bpm — E

E — ** ECG/12 lead — E

If suspected CNS stimulant →

P — Consider **Lorazepam** 0.5-2 mg IV/IO/IN/IM OR **Midazolam** 2.5-5 mg IV/IO/IN/IM OR **Diazepam** 2-5 mg IV/IO/IN/IM OR **Labetalol** 10-20 mg IV/IO — P

E — **STEMI** **BLS**: Transport to nearest Hospital — E

P — **ALS:** Transport patient to nearest Level I or Level II if transport time does not exceed additional 60 minutes. — P

P — **Consider Nitro** sublingual — P

P — **Consider Metroporal** - 5mg IV q 5 min; max dose 15 for hyperdynamic state. — P

P — **Nitroglycerin Infusion/Nitro Paste** — P

P — Consider **Morphine** 2 mg IV q 3-5 min to 20 mg max OR **Fentanyl** 25 mcg IV q 3-5 min to 300 mcg max — P

E — Consider repeat ECG/12 lead — E

M — **Contact Medical Control** — M

Notes:
- Consider Pain and Sedation managment (PCP 180)
- Avoid Nitroglycerine in any patient (man or woman) who has used sexual performance enhancement drugs (ie Viagra, Levitra, Etc.) in the past 24 hours due to possible severe hypotension
- If positive ECG changes, establish a second IV while in route to the hospital
- Monitor for hypotension after administration of nitroglycerine and morphine.

**EMS can acquire 12-lead ECG and read report text printout but cannot interpret.

Diabetic Emergency

ALS evaluation and/or transport if available:

History:	Signs and Symptoms:	Differential:
• Known diabetic, medic alert tag • Drugs, drug paraphernalia • Report of illicit drug use or toxic ingestion • Past medial history • Medications • History of trauma • GI History • Syncope	• Decreased mental status • Change in baseline mental status • Bizarre behavior • Hypoglycemia (cool, diaphoretic skin) • Hyperglycemia (warm, dry skin; fruity breath; Kussmal respirations; signs of dehydration) • Diabetic • Syncope • *Abnormal vital signs persist* • *Shortness of breath*	• *Hypovolemia* • *Hypoxia* • *Hydrogen ions (acidosis)* • *Hypo-/Hyperkalemia* • Hypoglycemia • *Hypothermia* • *Toxins* • *Tamponade, cardiac* • *Tension pneumothorax* • *Thrombosis, coronary or pulmonary* • *Trauma*

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

R If glucose check unavailable, for suspected hypoglycemia, give oral glucose R

E End tidal CO2 E

R Blood Glucose check R

I Obtain IV/IO access I

Blood Glucose <60 mg/dL With symptoms

R **Administer Oral Glucose** If possible R

Patient Malnourished/ETOH ?

Yes → P Consider Thiamine 100mg IV/IM P

No

E Consider **Glucagon** PRN 1 mg IM/IN E

I **Dextrose** D10 25-50 g IV/IO Consider starting with 25g I

P **Dextrose** D50/25/10 12.5-25 g IV/IO Consider starting with 25g P

Blood Glucose 60-300 mg/dL

E Blood Glucose Check PRN E

E ** ECG/12 lead E

If suspected **OD**, see (PCP175)
If positive **BEFAST Exam**, see (PRC285)
If possible **Sepsis**, see (PCP210)

M **Contact Medical Control** M

Blood Glucose >300 mg/dL

I **Isotonic IVF** 500-1,000 cc bolus I

Notes:

- **Be aware of AMS as presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety.**
- It is safer to assume hypoglycemia than hyperglycemia if doubt exists.
- Do not let alcohol confuse the clinical picture. Alcoholics frequently develop hypoglycemia.
- Consider Restraints if necessary for patient's and/or personnel's protection per the restraint procedure.
- Repeat blood glucose for any change in mental status after treatment has begun.
- **EMT can acquire 12-lead ECG and read report text printout but **cannot interpret.**

End of Life/Palliative Care

Inclusion Criteria:	Exclusion Criteria:
• Patient diagnosed with a terminal illness or condition, **AND** • Suffering from symptoms related to such terminal condition, **AND** • Having advance care directives indicating "comfort measures only" or similar, **OR** • For whom transport and/or condition correcting treatment has been refused by competent patient or family members.	• Complaints unrelated to the underlying terminal illness or condition **AND/OR** • Patients not meeting inclusion criteria

R	EMR
E	EMT
I	EMT-IV
P	PM
M	MC Order

Universal Patient Care Protocol

Oxygen-as needed for comfort

Encourage PO fluid intake as appropriate if Patient is able to swallow. Consider ice chips or water soaked swabs if difficulty swallowing.

Assist patient and family in finding a position of comfort

Assist family with Care Plan/Hospice Plan

M **If additional care is needed contact Medical Control** M

I Obtain IV/IO access
Consider Fluid Bolus if signs of dehydration or hypovolemia I

P Consider **Pain and Sedation Management** (PCP180) P

P Atropine Sulfate IV Solutions 0.1mg IV/SQ For secretions P

Respiratory distress?

P Consider **Morphine** 2-20 mg IV/IN/IM OR **Fentanyl** 25 mcg SVN, mixed in 2 mL Normal Saline P

Nausea relief, **General Illness** (PCP150)

Anxious?

P Consider **Lorazepam** 0.5-2 mg IV/IN/IM OR **Midazolam** 0.5-5 mg IV/IN/IM Or **Diazepam** 0.5-5 mg IV/IN/IM P

M **Contact Medical Control** M

Notes:

- Social interactions with family may affect end-of-life care
- Generally, patients receiving palliative or end-of-life care for their underlying terminal illness or condition should not be transported. Careful consideration must be given prior to transport in collaboration with the patient hospice or palliative care provider, guardian, power of attorney, or other accepted healthcare proxy. ALS Providers are authorized to medicate these patients in accordance with this protocol and to leave them in their home or palliative care setting.
- Base physician shall be consulted prior to the palliative management of patients.

Environmental Emergencies

ALS evaluation and/or transport if available:

History:	Signs and Symptoms:	Differential:
• Age • Exposure to increased/decreased temperatures and/or humidity • Past medical history/medications • Extreme exertion • Time and length of exposure • Poor PO intake	• *Altered mental status or unconsciousness* • *Hypotension or shock* • *Seizure* • Nausea • Hot, dry or sweaty skin • Fatigue and/or muscle cramping	• Fever (infection)*/Sepsis* • Dehydration • Medications • Hyperthyroidism *(Storm)* • *Delirium Tremens (DT's)* • Heat exhaustion • Heat Stroke • Hypoglycemia • *Poisoning/overdoes*

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

I — Obtain IV/IO access (Consider x2 Lg bore IV's) — I

Isotonic IVF

E — ** ECG/12 Lead — E

Document patient temperature

Hyperthermic?

Cooling Measures
** Remove Clothes
** Cold Packs

Shivering? — Yes

P — Consider
Lorazepam
0.5-2mg IV/IO/IN/IM
Or
Midazolam
2.5mg IV/IO/IN/IM
Or
Diazepam
2-5 mg IV/IO/IN/IM — P

No

Hypothermic?

Warming Measures
* Remove Wet Clothes
* Warm Packs
* Blankets
** Dysrhythmia considerations

E — Blood Glucose Check — E

Treat per appropriate Protocol

M — **Contact Medical Control** — M

Notes:

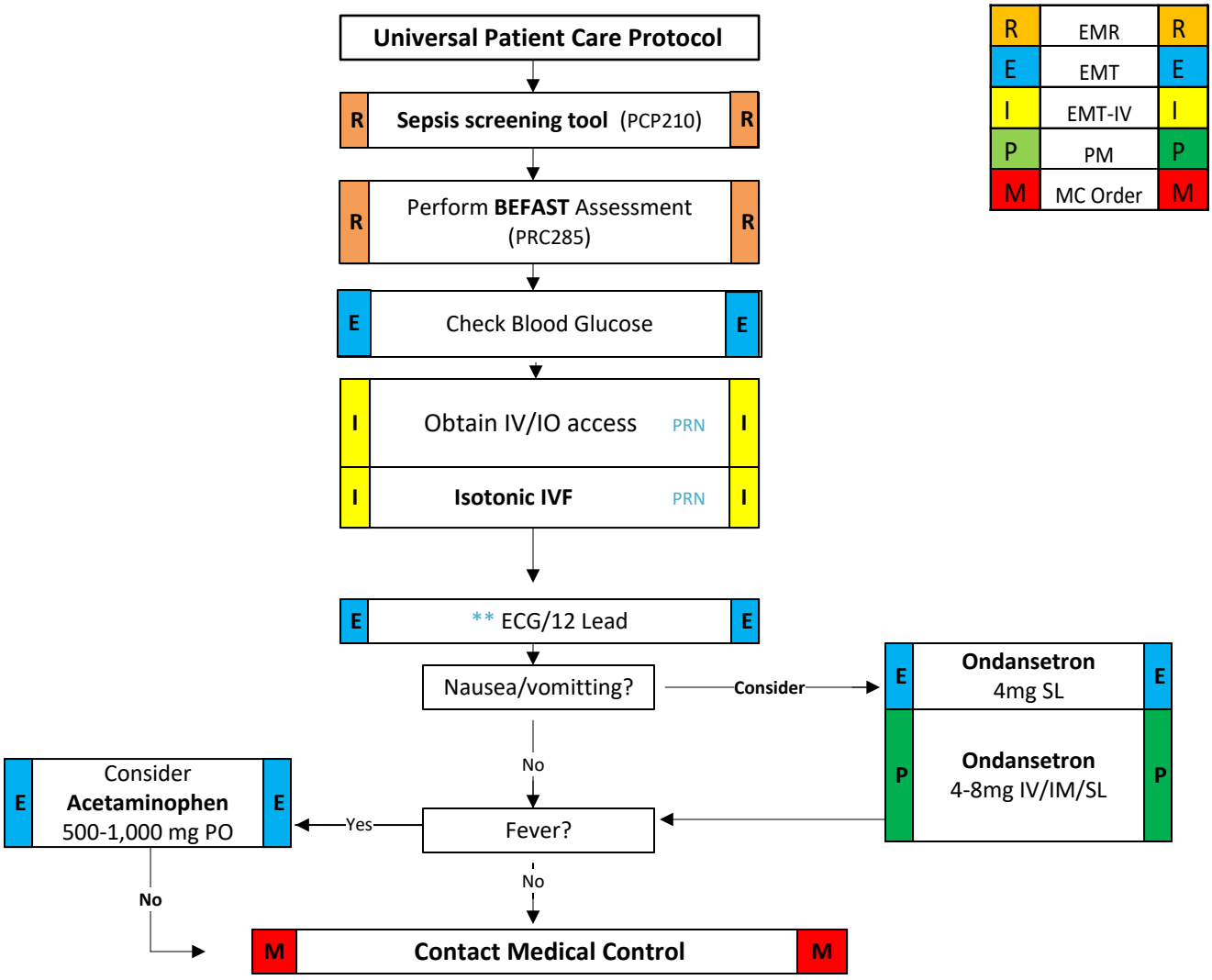
- **ATTEMPT REWARMING BEFORE CEASING RESUSCITATION EFFORTS. Hypothermia may produce severe bradycardia.**
- Extremes of age are more prone to temperature emergencies (i.e. young & old)
- Core Temperature is the most reliable measure. For pts with ALOC and pts <2 years old this should be the method of measurement.
- Heat emergencies can be precipitated by use of: tricyclic antidepressants, phenothiazines, anticholinergic medications and alcohol.
- Cocaine, amphetamines and Salicylates may elevate body temperatures.
- Shivering stops below 32°C (90° F).
- Sweating generally disappears as body temperature rises above 40° C (104° F).
- **With temperature less than 31° C (88° F) Ventricular fibrillation is common cause of death. Handling patients gently may prevent this (rarely responds to defibrillation).
- **EMT can acquire 12-lead ECG and read report text printout but **cannot interpret.**

General Illness

Fever/ Nausea/ Vomiting/ Unknown

ALS evaluation and/or transport if available:

History:	Signs and Symptoms:	Differential:
• Age • Duration • Past Medial history • Last oral intake • Medications • Immunocompromised • Bloody emesis/diarrhea • Menstrual history • Past surgial history • Environmental exposure/travel history	• Warm • **Sweaty** • **Flushed** • **Pain** • **Radiation** • **Abdominal distention** • **Chills/Rigors** • **Constipation** • **Diarrhea** • *Persistent Abnormal Vital Signs* • *ALOC* • *Shortness of Breath*	• Infection/ *Sepsis* • Cancer/ Tumors/ Lymphomas • GI or Renal disorders • *Heat Stroke* • Medication or drug reaction • Vasculitis • Hyperthyroid • CNS disease/trauma • *Myocardial infarction* • *Diabetic Ketoacidosis* • Gynecologic disease (ovarian cyst, PID) • Electrolyte abnormalities • Pregnancy • Psychologic



Notes:

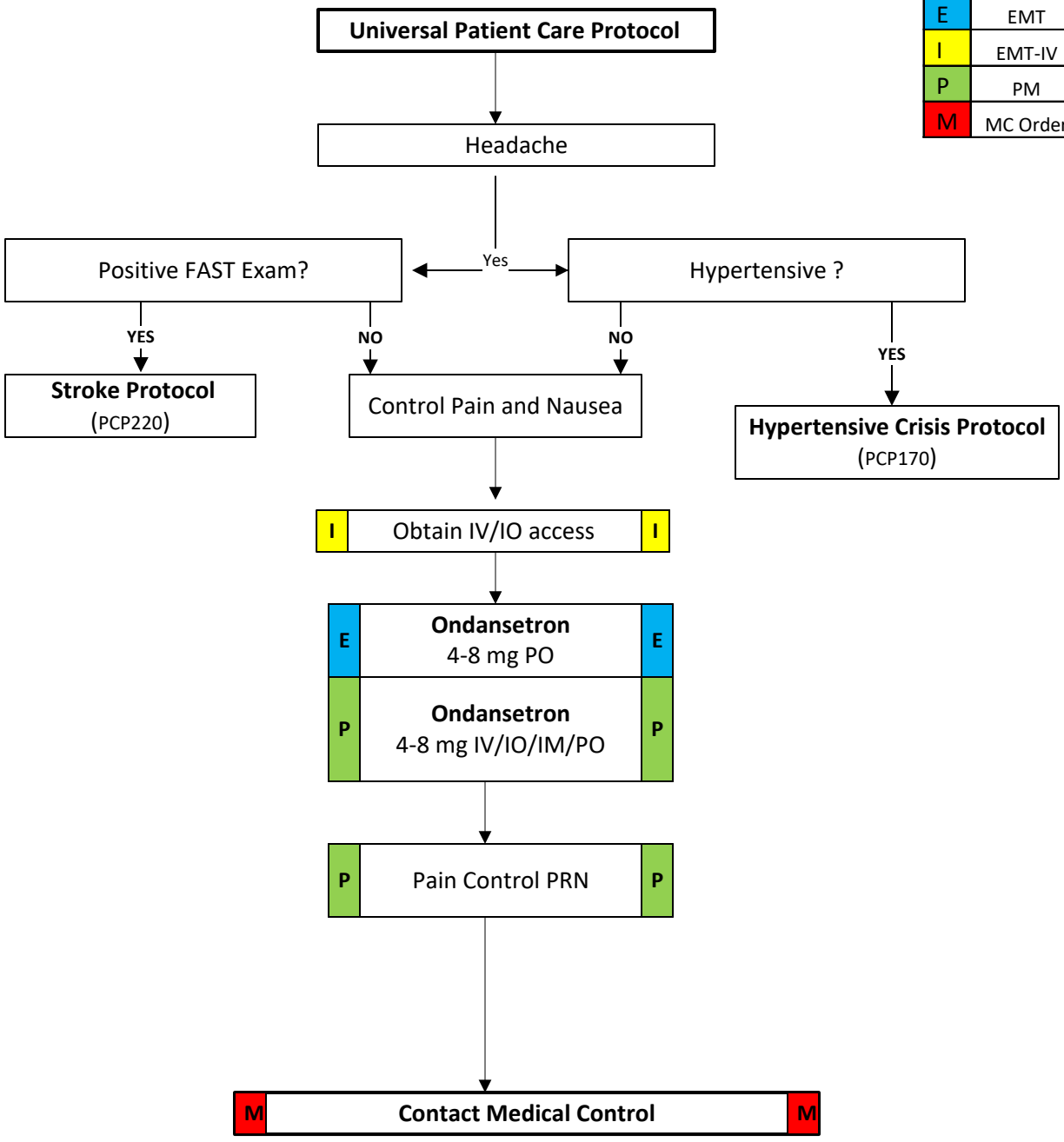
- Individuals' normal body temperatures differ, with 98.6° F(37° C) being average. Generally a temperature over 100.4° F (38° C) is considered a fever.
- ** EMT can acquire 12-lead ECG and read report text printout but **cannot interpret.**

Headache

ALS Evaluation and/or transport if available:

History:	Signs and Symptoms:	Differential:
• Trauma • Migraines • Missed Medication • Stroke symptoms •	*CVA* Elevated Blood Pressure Nausea/Vomiting	*CVA* *Hypertensive Emergency* *Migraine*

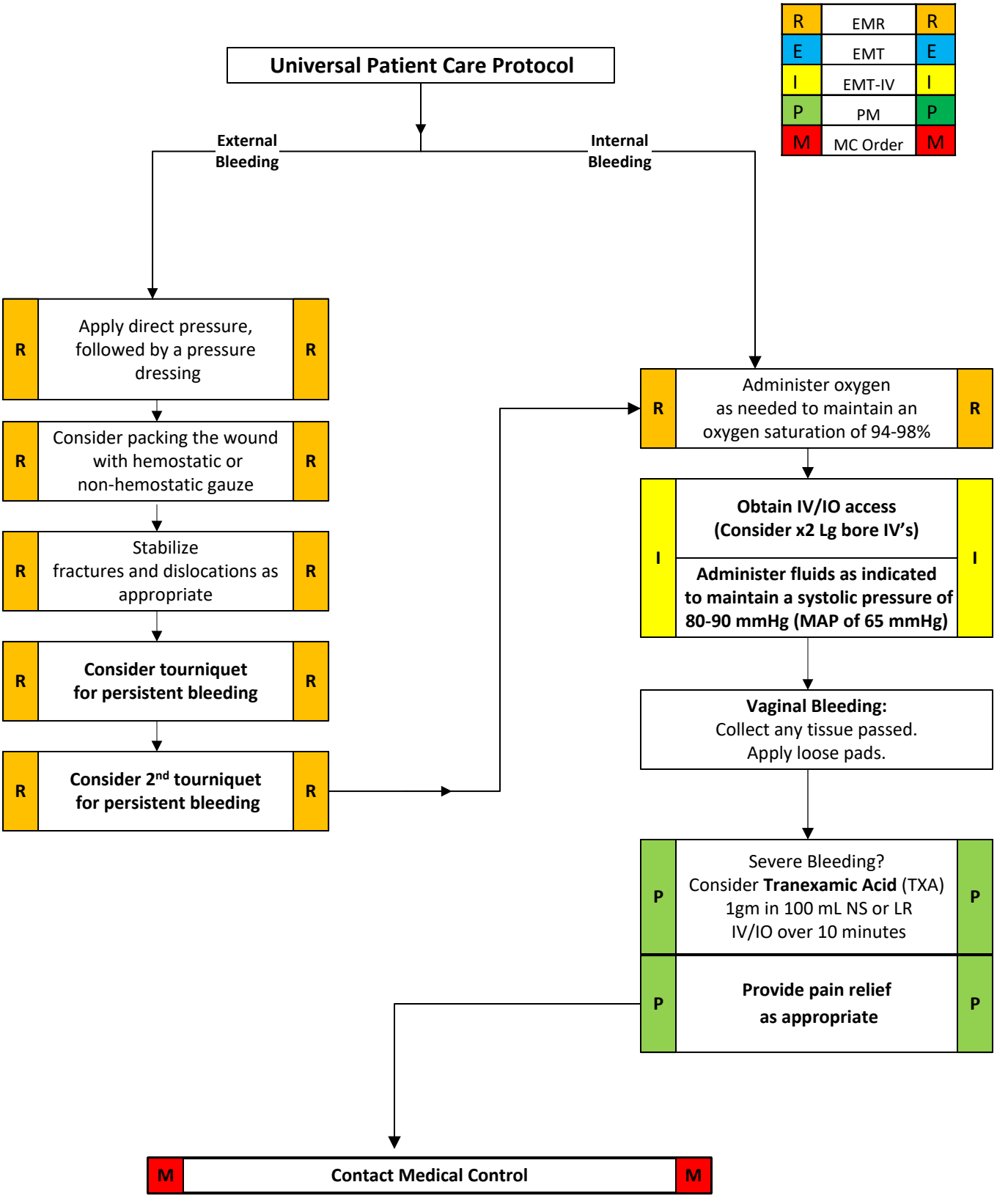
R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M



Notes:

- Patient with Headaches will be sensitive to lights and sounds.
- Severe Headaches may mimic several medical problems, provide complete assessment.

Hemorrhage Control



Notes:

- Provide appropriate analgesia for tourniquet placement and other injuries.

Hyperkalemia

ALS evaluation and/or transport if available:

Consider in patients with History of:	With EKG Changes of:
• Chronic dialysis patient(typically due for dialysis or late) • Suspected Rhabdomyolysis or crush injury • Extensive Burn Injury • Tumor Lysis Syndrome • Severe Acidosis • Extensive physical activity • Depolarizing paralytic (Succ) • Consider Excited Delirium	• Peaked T-Waves (without suspected MI) • Loss of P-Waves (with peaked T-waves) • Wide QRS (IVCD Pattern) • Sine wave pattern VT or VF • Bradycardia or Bradyasystolic Rhythm Asystole

Universal Patient Care Protocol

E — ** ECG/12 Lead — E

I — Obtain IV/IO access **Normal Saline IVF bolus** **Normal Saline only (No Ringers)** — I

Symptomatic Arrhythmia?

R	EMR
E	EMT
I	EMT-IV
P	PM
M	MC Order

Yes

P — **Calcium Chloride** 1000 mg IV over 2-5 min or as a drip — P

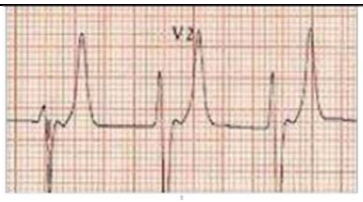
P — Sodium Bicarbonate 1 mEq/kg IV/IO — P

P — Continuous **Albuterol** — P

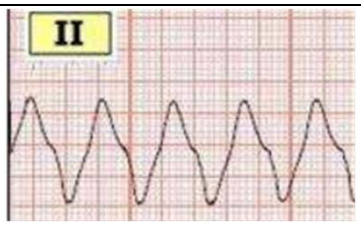
I — Consider **Normal Saline** Bolus 500-1000 cc — I

P — with **Furosemide** 40 mg IV — P

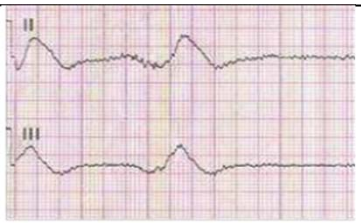
Peaked T, Loss of P Waves



IVCD Sine Wave VT



IVCD Sine Wave Bradyasystolic



No

P — Consider **Albuterol** 10 mg SVN — P

I — Consider **Normal Saline** PRN — I

P — Consider **Furosemide** 40 mg IV — P

M — **Contact Medical Control** — M

Notes:

- Guidelines for **Discontinuation of Resuscitation** (PRC145)
- Line must be flushed after administration of calcium chloride to avoid precipitation of subsequent medications.
- ** EMT can acquire 12-lead ECG and read report text printout **but cannot interpret.**

Hypertensive Crisis

ALS Evaluation and evaluation if available:

History:	Symptoms:	Differential:
• On medication for Blood Pressure • Missed Medications • CVA • Cardiac History	• *Headache* • *Seizures* • *Vision changes* • *+ FAST Screen* • *Nausea/Vomiting* • *Hearing changes* • *ALOC* • *Chest Pain* • *SOB*	• CVA • Stimulant intoxication • ETOH withdrawal • Uncontrolled Hypertension w/o crisis • ACS

R	EMR
E	EMT
I	EMT-IV
P	PM
M	MC Order

Universal Patient Care Protocol

I — Obtain IV/IO access — I

E — **EKG/12 Lead — E

Systolic Blood Pressure > 220
Diastolic Blood Pressure >120

Yes → **Labetalol** 10 mg Slow IV/IO; Consider 2nd dose after 10 minutes 20 mg Slow IV/IO (P — P)

No → Symptomatic

Yes → **Consider Symptom Specific Treatment:**

- Chest Pain – Consider Nitroglycerine
- Seizure, S/S of EtOH withdrawals or stimulant intoxication – Consider Benzodiazepines
- S/S of CVA – See Stroke Protocol (PCP220)

Still Hypertensive? → Labetalol

No → **Continuous Monitoring**

M — **Contact Medical Control** — M

NOTES:

- **Contact Medical Control if no response after 2nd Labetalol.**
- **Contact Medical Control prior to administration of Labetalol if patient is Bradycardic.**

Overdose/Poisoning

ALS evaluation and/or transport if available:

History:	Signs and Symptoms:	Differential:
• Ingestion or suspected ingestion of a potentially toxic substance • Substance ingested, route, quantity • Time of ingestion • Reason (suicidal, accidental, criminal) • Available medications in home • Past medical history, medications • Home remedies given to patient prior to aid arrival	• *Mental status changes* • *Hypotension/Hypertension* • *Decreased respiratory rate* • *Tachycardia, dysrhythmias* • *Seizures* ***Poison Control*** **800-222-1222**	• Tricyclic antidepressants (TCAs) • Acetaminophen (Tylenol) • Depressants • Stimulants • Anticholinergic • Cardiac mediations • Solvents, Alcohols, Cleaning agents • Insecticides (organophosphates)

Universal Patient Care Protocol

R	EMR
E	EMT
I	EMT-IV
P	PM
M	MC Order

Follow **Diabetic Emergency** (PCP135)

Check Blood Glucose

- < 60 mg/dl → Follow **Diabetic Emergency** (PCP135)
- Above 60 mg/dl → I: Obtain IV access PRN I

Respiratory depression?

- R: **Naloxone** 2-8 mg IN R → E: **ECG/12 lead E
- E: **Naloxone** 2-8 mg IN/IM E
- P: **Naloxone** 0.4-2 mg IV/IO 2-8 mg IN/IM P

Call Poison Control

Tricyclics

P: **Sodium Bicarbonate** 1mEq/kg IV/IO P

P: Treat non-traumatic shock as appropriate P

Calcium Channel Blockers

P: **Calcium Chloride** 1-2 grams IV/IO over 10 min, may repeat in 20 min. P

P: Consider TCP P

Beta Blockers

P: **Albuterol** 5mg SVN P

P: Treat non-traumatic shock as appropriate P

P: **Glucagon** 3-5 mg IV/IO P

Organophosphates

P: **Atropine** PRN 2 mg IVP/IOP q 2-5 Min. Max 20 mg P

P: If seizing **Midazolam** 2.5-5 mg IV/IO P

CNS stimulants

P: **Lorazepam** 0.5-4 mg IV/IO/IN/IM Or **Midazolam** 2.5-5 mg IV/IO/IN/IM Or **Ketamine** 0.5-1 mg/kg IV/IO May repeat P

P: **Labetalol** 10-20 mg IV/IO For HTN (SBP >180) P

E: Consider **Activated Charcoal** E

M: **Contact Medical Control** M

Notes:

- Do not rely on patient history of ingestion, especially in suicide attempts.
- Bring bottles, contents, and emesis to ED.
- Treat medication overdoses if symptomatic including ECG changes SPB <100, ALOC, HR >100.
- Document case number from Poison Control on the PCR.
- Activated charcoal is ineffective for ingestions beyond 1 hour.
- Recommendations from Poison Control Center, verify with Medical Control.
- **EMT can acquire 12-kead ECG and read report text printout but **cannot interpret.**

Pain and Sedation Management

ALS transport if patients given a sedating medication:

Inclusion Criteria:	**Exclusion Criteria:**
• Patients who are experiencing moderate to severe pain • Discomfort/Anxiety	• Pregnancy with active labor • Patients with care plans that prohibit use of parenteral analgesics by EMS (Relative) • Patients with chronic pain who are **not** part of a Hospice/Palliative care plan **AND** who are not experiencing an acute injury or illness resulting in pain (Relative)

Universal Patient Care Protocol

R	EMR
E	EMT
I	EMT-IV
P	PM
M	MC Order

R — Provide oxygen as appropriate to maintain an oxygen saturation of 94-98% or as indicated by clinical presentation. — R

R — Ice/cool packs and positioning as Appropriate to manage pain — R

I — Obtain IV/IO access PRN — I

Moderate to severe discomfort

P

Ketorolac
30 mg IM or 15 mg IV in non-pregnant patient

OR
Fentanyl
1 mcg/kg IV/IM/IO/IN, repeat PRN q 5 min
Max initial dose 100 mcg,
Max cumulative dose 3 mcg/kg

OR
Morphine Sulfate
0.1 mg/kg IM/IV/IO, repeat PRN q 5 min
Max initial dose of 15 mg IM or 10 mg IV,
Max cumulative dose 0.3 mg/kg

OR
Ketamine
0.25 mg/kg IM/IV/IO
Max dose of 50 mg q 5 min prn

P

Anxiety/Sedation

P

Consider
Lorazepam PRN
0.5-2 mg IV/IO/IN/IM

OR
Midazolam PRN
2.5-5 mg IV/IO/IN/IM

OR
Diazepam PRN
2-5 mg IV/IO/IN/IM

Cardioversion - Consider
Propofol
50-100 mg IV/IO

P

Nausea?

P

Consider
Ondansetron
4-8 mg IV/IM/PO/SL,
Max dose of 16 mg

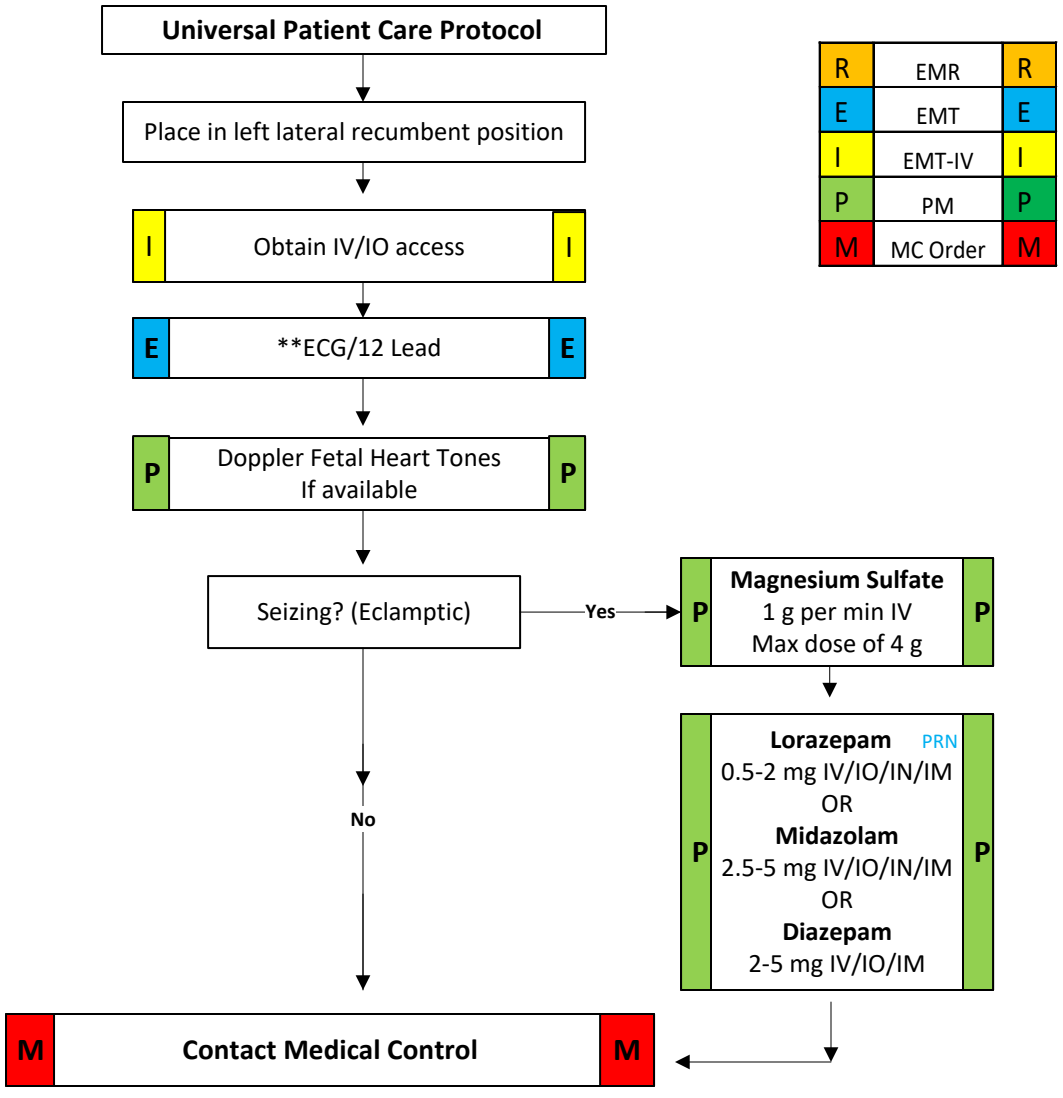
P

M — **Transport and Contact Medical Control** — M

Pregnancy - Eclampsia/Pre-eclampsia

ALS evaluation and/or transport if available gently and quietly

History:	Signs and Symptoms:	Differential:
• Past medical history • Prenatal care • Medications/drugs • Familial incidence • Primigravida • Renal disease	• *Seizure* • *Hypertension* • *Tachycardia* • *Edema* • *Headache* • *Visual disturbance* • *Abdominal pain* • *Amnesia and/or other change in mental status*	• *Hypertension* • *Multiple fetuses* • *Gestational diabetes* • *Microthrombi* • *Improper placental implantation*



Notes:

- Eclampsia can present up to two months postpartum
- Severe headache, vision changes or RUQ pain may indicate pre-eclampsia.
- In the setting of pregnancy, hypertension is defined as a BP greater than 140 systolic or greater than 90 diastolic, or a relative increase of 30 systolic and 20 diastolic from the patient's normal (pre-pregnancy) blood pressure.
- **EMT can acquire 12-lead ECG and read report text printout but **cannot interpret**.
- **Pre-eclampsia: ≥ 20 weeks pregnant.**

Pregnancy – Emergency Delivery

ALS evaluation and/or transport if available:

History:	***Signs and Symptoms***
• Prenatal Care and History • Due date and gestational age • Multiple gestation (twins etc.) • Meconium • Delivery difficulties • Mediations (maternal) • Maternal risk factors • Substance abuse	• *Excessive vaginal bleeding* • *Signs of shock* • *Presentation of/Anticipated Complication*

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

R Oxygen R

I Obtain IV/IO access I

Place in left lateral recumbent during transport, unless birth is imminent.
If child birth is imminent, prepare for delivery

Normal Delivery

See Procedure **Childbirth/Fundal Massage** (PRC130)

See **Newborn Resuscitation/Post Delivery Care** Protocol (PCP290)

Post Partum Protocol (PCP195)

Complicated Delivery

If Newborn Delivered

- If unable to deliver head, place gloved index finger and middle finger into vagina with palm towards the baby's face forming a "V" with your fingers to maintain airway. Transport Immediately.

Prolapsed Cord:

- Place Sterile gloved index and middle finger into the vagina, pushing the infant up to relieve pressure on the cord. Transport immediately.

Limb Presentation:

- Transport immediately if there is limb presentation.

Transfer all Field Deliveries

M Contact Medical Control M

Pregnancy - Postpartum

ALS evaluation and/or transport if available:

History:	Signs and Symptoms	Differential:
• Prenatal Care and History • Due date and gestational age • Multiple gestation (twins etc.) • Meconium • Delivery difficulties • Mediations (maternal) • Maternal risk factors • Substance abuse	• *Excessive vaginal bleeding* • *Signs of shock*	• Secretions • Infection • Hypovolemia • Hypoglycemia

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

Encourage breast feeding

I **Obtain IV/IO access (Consider x2 Lg bore IV's)** I

Placenta Delivered?

YES → **Fundal Massage** (PRC130) **Newborn Resuscitation/Post Delivery Care** (PCP295)

If heavy bleeding

P **Oxytocin** PRN
10 units IM

then

Oxytocin PRN
20 units in 1,000 mL NS
Titrated to severity of bleeding P

Postpartum Hemorrhage?

YES → **See Fundal Massage with Bimanual Compression** (PRC130)

P Consider TXA, **Hemorrhage Control** (PCP160) P

NO → M **Contact Medical Control** M

Psychological/Emotional/Behavioral Emergency

ALS transport if patients given a sedating medication.

History:	Signs and Symptoms:	Differential:
• Situational crisis • Psychiatric illness • Medications • Injury to self or threats to others • Medic alert tag • Substance abuse/overdose • Diabetes	• Anxiety, agitation, confusion • Affect change, hallucinations • Delusional thoughts, bizarre behavior • Combative violet • Expression of suicidal/homicidal thoughts	• Alcohol intoxication • Toxin/Substance abuse • *Medication effect/overdose* • Withdrawal syndromes • Sepsis/Meningitis • See Altered Mental Status differential

Score-Descriptor	
BARS Scoring	**1** – Difficult or unable to arouse **2** – Asleep but responds normally to verbal or physical contact **3** – Drowsy, appears sedated **4** – Quiet and awake (normal level of activity) **5** – Signs of overt verbal or physical activity, but calms with instructions **6** – Extremely or continuously active, not requiring restraint **7** – Violent, requires restraint

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

Imminent threat to providers?

YES → Leave scene immediately And stage → **Await Police** → BARS 6 or 7

NO → Assess and treat patient per appropriate protocol

BARS 6 or 7

Restraint Procedure (PRC265)

Or

Monitor situation and await Police

Patient remains aggressive or Refractory to TASER?

YES → P
- **Ketamine*** 3-5 mg/kg IN/IM Max 400 mg
- **Midazolam*** 2.5-10 mg IN/IM And/Or **Lorazepam*** 0.5-2 mg IN/IM And/Or **Diazepam*** 2-10 mg IN/IM And/Or **Haldol*** 2-5 mg IM/IV (IM preferred)

P → BARS score before and after sedation

NO →

I — Obtain IV/IO access — I

E — ** ECG/12 Lead — E

P
- **Ketamine*** 0.5-1 mg/kg IV/IO-Max dose 200 mg And/Or **Lorazepam*** 0.5-2 mg IV/IO/IN/IM And/Or **Haldol*** 2-5 mg IM/IV (IM preferred)

P → Treat per appropriate Protocol

M — **Contact Medical Control** — M

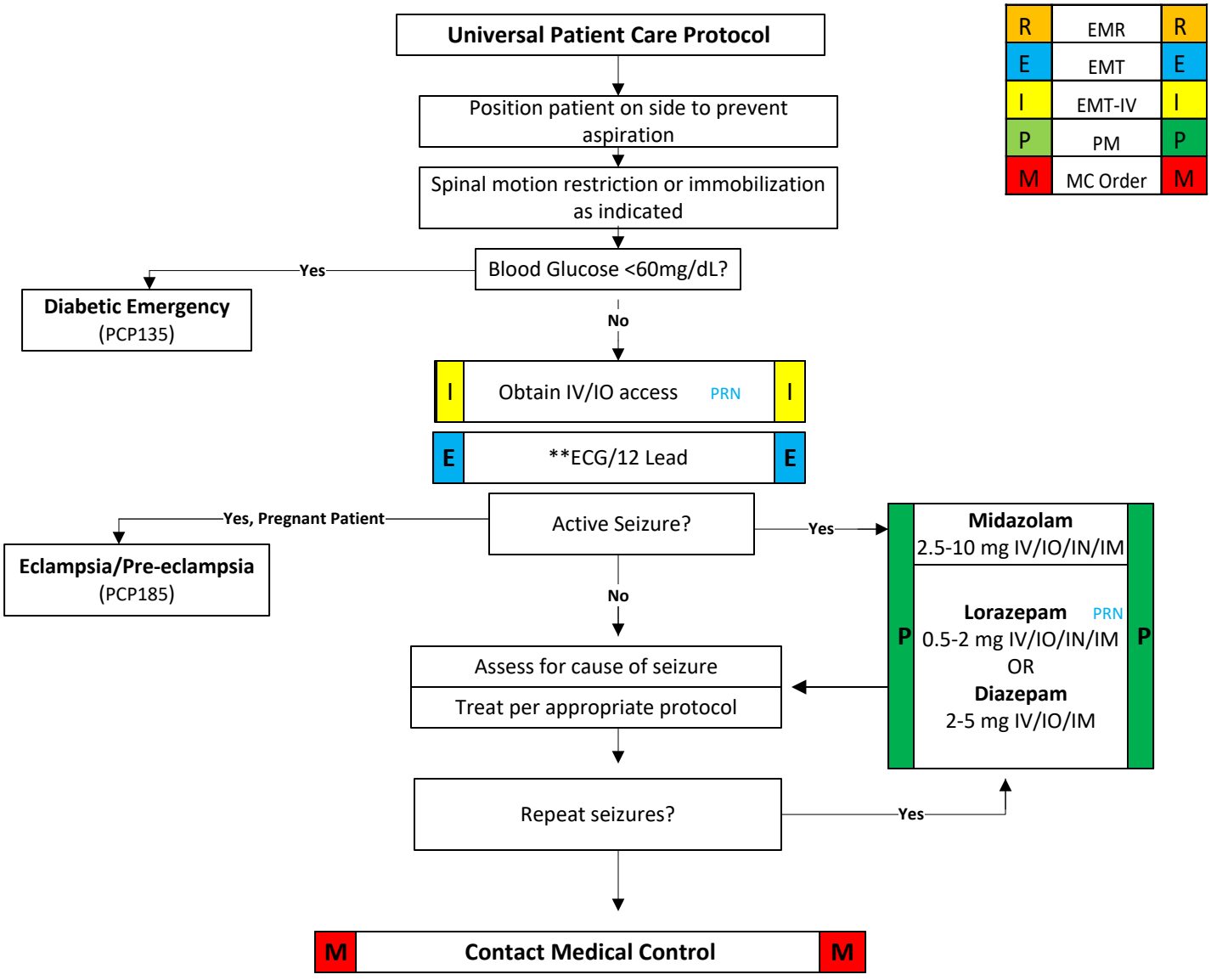
Notes:

- Be sure to consider all possible medical/trauma causes for behavior.
- Do not overlook the possibility of associated domestic violence or child abuse.
- ***Doses may be repeated for the immediate safety of the provider or the patient**.
- May consider other Benzodiazepines as appropriate.
- ** EMT can acquire 12-lead ECG and read report text printout but **cannot interpret.**

Seizure

ALS transport if patient given a sedating medication and/or:

History:	Signs and Symptoms:	Differential:
• Prior history of seizures • Seizure medications • Reported seizure activity • History of recent head trauma • Congenital abnormality • Pregnancy (see Pregnancy Induced Hypertension – Eclampsia) • Medical alert tag • *If given sedation medication by EMS*	• *Observed seizure activity* • *Altered mental status* • *Tonic/clonic activity* • *Status epilepticus* • Incontinence • Mouth trauma • *First time Seizure*	• *Hypovolemia* • *Hypoxia* • *Hydrogen ions (acidosis)* • *Hypo-/Hyperkalemia* • Hypoglycemia • *Hypothermia* • *Toxins* • *Tamponade, cardiac* • *Tension pneumothorax* • *Thrombosis, coronary or pulmonary* • *Trauma*



Notes:

- Be prepared to assist ventilations specially if a benzodiazepine is used.
- If evidence or suspicion of trauma, spine should be immobilized.
- Consider nasopharyngeal airway and elevate head of bed to 30 degrees.
- **EMT can acquire 12-lead ECG and read report text printout but **cannot interpret**.

Shock - Code Sepsis

ALS Evaluation and/or transport if available:

Pre-existing factors:

- Cancer with recent treatment (chemo, radiation)
- Diabetes mellitus
- Renal Failure
- Liver Failure
- Hypertension (HTN)
- Cardiac Disease (CHF and vascular disease)
- Known Infection
- Implanted ports
- Feeding Tube
- Urinary Tube (Foley, suprapubic cath, or urostomy)
- Colostomy
- Surgical Sites
- Implanted Devices
- Pressure ulcers
- Antibiotic therapy within 30 days
- Surgery within 30 days
- HIV

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

Identify patient that may have sepsis.

Criteria for calling a Code Sepsis:

2 SIRS criteria:

Temp> 38C (100.6F) or <36C (89.6F)

Heart Rate >90

Respiratory Rate >20

Altered Mental Status

And

Possible source of infection (including COPD Exacerbation)

Notify receiving hospital of Code Sepsis

E ** ECG/12 Lead E

I Obtain IV/IO access (Blood draw if able) I

Consider Isotonic IVF For hypotension, begin 30 mL/kg bolus

P **Acetaminophen** 15 mg/kg IV, up to 1,000 mg, 15 mg/kg PO **AND/OR Ketorolac** 15-30 mg IV P

P **Norepinephrine** PRN Titrate drip 2-20 mcg/min IV/IO SBP >100 **OR** **Epinephrine** Titrate drip 2-10 mcg/min IV/IO SBP >100 Additional 1 mL of 1:10,000 in 10 mL NS IV push P

Document

Start Time: IVF was started

Stop Time: IVF was stopped

Volume: How much was given in total

Questions?

M **Contact Medical Control** M

Shock - Non-Traumatic

Consider ALS Evaluation and/or Transport:

History:	Signs and Symptoms:	Differential:
• Cardiac ischemia (MI, CHF) • Medications	• *Hypotension* • Rales & Pulmonary Edema on exam • *Altered mental status* • Weakness, dizziness • Weak, rapid pulse • Pale, cool, clammy skin	• Dysrhythmias • Vasovagal • Allergic Reaction • Anaphylaxis • Sepsis • Neurogenic

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

Is your patient septic?

Yes → Go to **Code Sepsis** (PCP210)

No

I — Obtain IV/IO access — I

I — **Isotonic IVF**
250cc-1,000 cc may repeat x1 if not in Pulmonary Edema
Goal SBP >100 — I

E — ** ECG/12 Lead — E

P — **Norepinephrine** PRN
Titrate drip 2-12 mcg/min
IV/IO SBP >100
OR
Epinephrine
Titrate drip 2-10 mcg/min
IV/IO SBP >100
additional
1 mL of 1:10,000 + 9 mL NS
0.5 mL q 2-5 min — P

M — **Contact Medical Control** — M

Notes:

- **EMT can acquire 12-lead ECG and read report text printout but **cannot interpret.**

Stroke

ALS evaluation and/or transport if available:

History:	Signs and Symptoms:	Differential:
• Previous CVA ,Tia's • Previous cardiac/Vascular surgery • Associated disease: diabetes, hypertension, CAD • Atrial Fibrillation • Medications (blood thinners) • History of trauma	• *Altered Mental Status* • Weakness/Paralysis/Paresthesia • Blindness or other visual changes • Aphasia/Dysarthria • *Syncope* • Vertigo/Dizziness/*Ataxia* • Vomiting • *Severe Headache* • *Seizures* • *Respiratory pattern change* • *Questionable airway* • *Abnormal Vital Signs*	• *Hypoglycemia/hyperglycemia* • *Hypoxia* • *Hydrogen Ions (acidosis)* • *Hypo-/Hyperkalemia* • *Hypovolemia* • Prior stroke • Toxins • Trauma

Los Angeles Motor Scale (LAMS)[22]		
Face	0	Both sides move normally
	1	One side is weak or flaccid
Arm	0	Both sides move normally
	1	One side is weak
	2	One side is flaccid/doesn't move
Grip	0	Both sides move normally
	1	One side is weak
	2	One side is flaccid/doesn't move
Total	0–5	

Universal Patient Care Protocol

E Blood Glucose E

I Obtain IV/IO access I

> 60 mg/dL

< 60 mg/dL → Treat hypoglycemia as appropriate

R **Stroke BEFAST Assessment** (PRC285) R

LAMS

0-4 hours: Go to closest Level II-III Stroke Center
>4 hours: Go to nearest Level I-II Stroke Center
Consider Air Transport for Level I

Consider other appropriate protocol as needed

P **Labetalol**
10 mg IV/IO over 1-2 min
For SBP > 220
And/or DBP > 120
May repeat once in 5 min. P

M **Contact Medical Control** M

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

	B.E.F.A.S.T.
BALANCE	Sudden loss of balance or coordination.
EYES	Sudden loss of vision in one eye or both, double vision?
FACE	Is one side of their face drooping?
ARMS	Does one arm drift or weak?
SPEECH	Slurred Speech, difficulty speaking, confused?
TIME	When was the last NORMAL?

Notes:

- Onset of symptoms is defined as the last known time the patient was symptom free (i.e. awakening with stroke symptoms would be defined as an onset time of the previous night when patient was symptoms free).
- The differential listed on Altered Mental Status Protocol should also be considered.
- Be alert for airway problems (swallowing difficulty, vomiting).
- Hypoglycemia can present as a localized neurologic deficit, especially in the elderly.
- Elevate head of bed to 30 degrees.
- **Do Not Delay Transport for ALS upgrade except to stabilize patient.**
- **If transport to a higher level stroke center is no more than 15 minutes greater than transport to the lower level stroke center, transport to the higher stroke center.**
- **If onset of symptoms are greater than 24 hours, transport to nearest hospital.**

Stroke – Interfacility Transport

1. **Report from transferring facility:**
    a. Obtain PMH, Allergies, Last known well, and current treatments.
    b. Establish baseline neurologic status of patient. Presenting deficits and current.
2. **Monitor vital signs and Neuro checks:**
    a. Every 15 minutes while in transport.
    b. Neuro checks to include: LOC, Pupils, GCS, and orolingual angioedema if the patient has received or receiving TPA.
    c. Blood pressure management recommendations for TPA patient and hemorrhagic patient. See range recommendations below.
3. **Ischemic/TIA non-TPA patients:**
    a. If SBP > 220 mmHg or DBP >120 mmHg treat with Labetalol 10 mg IV q 10 min x2 doses (monitor heart rate).
    b. If SBP <90 mmHg or DBP < 50 mmHg treat with IV bolus per protocol.
4. **Ischemic with or status post TPA treatment:**
    a. If SBP >180 mmHg or DBP >100 mmHg treat with Labetalol 10 mg IV q 10 min x 2 doses.
    b. If SBP < 105 mmHg or DBP < 50 mmHg treat with IV fluid bolus per protocol.
5. **Intraparenchymal hemorrhage:**
    a. If SBP >160 mmHg or DBP >110 mmHg treat with Labetalol 10 mg IV q 10 min x 2 doses.
6. **Subarachnoid hemorrhage:**
    a. If SBP >140 mmHg or DBP >100 mmHg treat with labetalol 10 mg IV 10 min x 2 doses.
7. **Treatment for Orolingual Angioedema:**
    a. Stop TPA infusing immediately.
    b. Administer **Diphenhydramine 50 mg IV** x 1
    c. Administer **Famotidine 20 mg IV** x 1
    d. Administer **Methylprednisolone 125 mg IV** x 1
    e. If symptoms do not resole with initial treatment:
        i. Administer **<u>Epinephrine 0.3 mg (0.3mL) IM</u>**

Notes:

a. Monitor blood pressure within parameter to ensure the patient has adequate perfusion and decrease risk for cerebral injury.
b. Monitor for orolingual angioedema: Most common during the TPA infusing and up to 2 hours post infusing but monitor for delayed reaction.
c. Monitor neuro checks q 15 minutes **at minimum** to determine patient tolerance to treatment(s). Any neurological deterioration, new headache, nausea/vomiting, new atrial fibrillation may require call to Medical Control if patient has TPA infusing during transport.

Abuse - Suspected

Transport ALL patients

• **Physical findings:** • Unexplained bruises • Numerous/multiple bruises • Burns • Cigarette, Immersion, Rope, Infected • Torn, stained, bloody underclothes • Poor hygiene/malnourished • Child with repeated injuries/multiple calls to the same address • Flat/bald spots on head (infants) • Unexplained wet clothing/body	**Behavioral:** • History of minor incident inconsistent with major injury • MOI inconsistent with developmental age • Inappropriate fear of parent • Inconsistent explanation for injury • Nervous disorders (rash, hives, stomachaches) • Age-inappropriate behaviors (bedwetting) • Lack of adult supervision • Delay in seeking medial care • Caregiver who refuses treatment or transport (contact LE/CPS/ APS should caretaker not allow transport to hospital) • Discuss refusal with Medical Control before leaving scene.

Universal Patient Care Protocol

↓

Consider Scene Preservation (See **Crime Scene Preservation** Procedure (PRC135)

↓

Reconsider Scene Safety

↓

Consider other treatment Protocol as necessary

↓

Documentation:
- Carefully document caretakers description of event
- Note environmental including temperature
- Note clothing, stains, and conditions

↓

M **Contact Medical Control** **M**

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Sexual Abuse – See Special Considerations under Crime Scene Preservation Procedure
- May be present without apparent signs of physical abuse
- Discourage patient from going to the bathroom
- Discourage patient from changing clothes or washing
- Bring clothing to hospital (if Law is not on scene)
- **EMS are mandatory reporters**
- **Child Protective Services 1-866-764-2233**
- **Adult Protective Services 1-877-734-6277**

Burns

ALS evaluation and/or transport if available:

History:	Signs and Symptoms:	Differential:
• Type of exposure (heat, gas, chemical) • *Inhalation injury* • Other trauma • Loss of consciousness	• Burns, pain, swelling • Dizziness • *Seizure* • *Shock/Hypotension* • *Airway compromise/distress* • *Singed facial or nasal hair* • *Hoarseness/wheezing*	• Chemical • Thermal • Radiation • *Electrical*

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

R | Oxygen PRN | R

Airway Management (skill at level of provider's Certification)

Stop the burning process:
Remove jewelry and clothing that may be burned, covered in chemicals or restricting.

Thermal/Electrical

Cover burn with a dry clean sheet or dressing
Keep warm

Use Rule of 9's

>10% then
TBSA 2nd/3rd degree burns

I | Obtain IV/IO access
TBSA x weight in kg÷4 = Volume of Isotonic IVF in 1st hour | I

Pain and Sedation Management Protocol (PCP180)

If burn <10% body surface area **Cool down wound with Normal Saline**

Cover burn with dry clean sheet or dressing

M | **Contact Medical Control** | M

Chemical

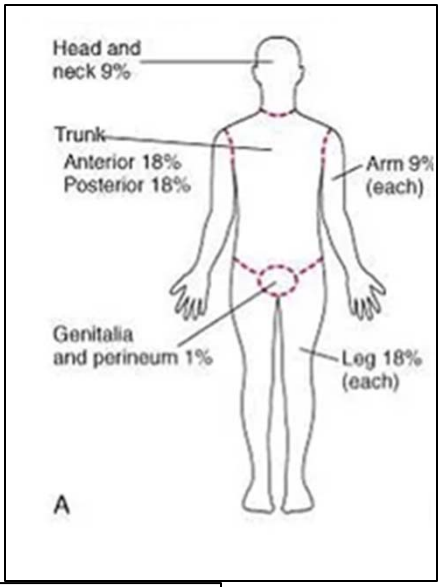
Brush off any excess chemical or powder

Flush area with water or Normal Saline (except materials that react with H2O) Keep Warm

Eye involvement?
Saline flush in the affected eye

Needs a Burn Unit

1. Partial and/or Full Thickness (2nd and/or 3rd degree burn >10% TBSA.
2. 2nd and/or 3rd degree burns to face, hands, or genitals.
3. Circumferential burns or burns at groin, axilla, or over major joints.



Notes:
- **Parkland Burn formula for IVF in the 1st hour: TBSA x weight in kg ÷ 4 = mL/hr**
- **TBSA** – Total Body Surface Area.

Crush Injury

ALS evaluation and/or transport if available:

History:	Inclusion Criteria:	Exclusion Criteria:
• Determine the duration of crush • Examine extent of tissue involvement	• Traumatic crush mechanism of injury • *Anything above wrist or ankle*	• Non-crush injuries

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

Manage bleeding as appropriate in accordance with Extremity Trauma**/External Hemorrhage Control** Protocol (PCP160)

R Administer High Flow Oxygen R

I Obtain IV/IO access I

I Fluid Bolus **Normal Saline** 10-15 ml/kg Preferably prior to extrication I

P Consider **Pain and Sedation Management** (PCP180) P

P For significant crush injuries Or prolonged entrapment (more than 30 min.) of an extremity. P

YES

Monitor carefully for dysrhythmia and Signs of hyperkalemia immediately after Release of pressure and during transport

Consider the following post extrication

P Continued **Normal Saline** resuscitation (500-1000 mL/hr for adults 10 ml/kg/hr for children) P

For indications of Hyperkalemia

P **Calcium Chloride** 1 gm IV/IO, over 5 min for Infusion rate not to exceed 1 mL/minute P

P **Sodium Bicarbonate** 1 mEq/kg IV Max dose of 50 mEq over 5 min. P

E **Albuterol** 5 mg SVN E

M **Contact Medical Control** M

Notes:

- Crush patients should be considered high priority for transport or transfer in accordance with the Washington State Trauma Triage tool.

Drowning

Transport ALL near drowning Patients/ALS Evaluation and/or transport if available:

History:	Signs and Symptoms:	Differential:
• Aspiration of fluid • Submersion in water-regardless of depth • Possible history of trauma • Duration of immersion • Temperature of water • Salt vs. Fresh water	• *Unresponsive* • *Changes in mental status* • *Seizure* • Coughing • *Respiratory compromise*	• Trauma • Pre-existing medical problem • Pressure injury (diving) Barotrauma Decompression sickness

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

↓

Oxygen saturation 94-98%

↓

Spinal Motion Restriction
(PRC275)

↓

Remove wet clothing
Cover with dry (warm) blankets
Warming Measures

↓

I Obtain IV/IO access (Consider x2 Lg bore IV's) I

↓

E Non-Invasive positive pressure ventilation for Pulmonary Edema E

E ** ECG/12 Lead E

↓

Monitor and reassess

↓

Treat per appropriate Protocol

↓

M **Contact Medical Control** M

Notes:

- **Exam: Check Head, Neck, Chest, Abdomen, Pelvis, Back, Extremities, Skin, Neuro for Trauma**
- **EMT can acquire 12-lead ECG and read report text printout but **cannot interpret.**
- With cold water there is no time limit-resuscitate all.
- **Scene Safety!** Drowning is a leading cause of death in would-be rescuers.

Eye Injury

ALS Evaluation and/or transport if available:

History:	Signs and Symptoms:	Differential:
• Onset • Mechanism • Chemical (Acid/Alkali) • Medications • Major/Multisystem Trauma	• Pain, swelling, Bleeding • Puncture • Foreign body • *ALOC* • *Orbital Fractures* • *Globe Rupture*	• Medial Administration • Acute Temporary exposure to Ipratropium causes mydriasis • Eye Medication

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

Severe Eye Injury

Minor Eye Injury

Globe Rupture/ Puncture Wound/ Foreign Body

- Irregular Pupil
- Streaming
- Hyphemia

- Nothing in eye
- Protect
- NPO (surgical)

Chemical Exposure

Irrigate Copiously with Saline or Water 10-20 minutes

Contact **Poison Control** (1-800-222-1222)

P Consider Morgan lens P

Retrobulbar Hematoma

- Proptosis
- Vision changes
- N/V
- Severe Pain

- Notify ED of Concern
- Control Pain
- Treat N/V

UV Burn

P Consider **Tetracaine** 1-2 gtts For comfort P

Minor injury, scratch or debris in eye

P Consider **Tetracaine** 1-2 gtts

Consider gentle irrigation P

M **Contact Medical Control** M

Notes:

- **No NSAIDS or Antiplatelets**
- **Do Not send Patient Home with Tetracaine – (Only for temporary anesthetic use).**
- **Recommendations from Poison Control Center, verify with Medical Control.**

Head Injury

ALS evaluation and/or transport if available:

History:	Signs and Symptoms:	Differential:
• Onset • Mechanism (blunt/penetrating) • Loss of Consciousness • Bleeding • Medical History (ETOH) • Medications (Anticoagulants) • Extremes of age • Step IV trauma	• Pain, swelling, bleeding, oto/rhinorrhea • *Altered Level of Consciousness GCS <13* • *Respiratory distress/failure* • Vomiting • Significant mechanism of injury **Signs of Herniation:** • *GCS <8* • *Fixed or asymmetric pupils* • *Neurologic Posturing* • *Cushing Triad* • *Intermittent apnea* • *Neurologic deterioration (decrease in GCS ≥2)*	• *Seizure* • *Stroke* • **A**lcohol • **E**pilepsy Endocrine • **I**nsulin • **O**verdose • **U**remia • Trauma • Infection/*sepsis* • Psychosis

Universal Patient Care Protocol

Isolated Head Trauma?

- No → **Multi-system Trauma** Protocol (PCP260)
- Yes →

Spinal motion restriction with head of board Elevated approx 30°

Oxygen - to keep sats between 94-98%

GCS

R	EMR
E	EMT
I	EMT-IV
P	PM
M	MC Order

GCS 3-8

I — **Obtain IV access** Maintain SBP≥ 90 mm Hg — I

P — **Sequenced Intubation** (RS) (PRC060) **PRN** — P

P — **Sodium Bicarbonate** 1 mEq/kg IV For signs of Cushing Reflex — P

GCS 9 or greater

I — **Obtain IV access** Maintain SBP ≥ 90 mm Hg — I

E — **Ondansetron** 4 mg SL **PRN** — E

P — **Ondansetron** 4-8 mg IV/IM/SL **PRN** — P

GCS ≥14

Treat S/S Per Appropriate Protocol

P — Maintain **Capnography** where available (PRC005) (maintain EtCO2 32-37 mmHG) Avoid excessive hyperventilation — P

M — **Contact Medical Control** — M

Notes:

- Step IV Trauma for elderly with and without anticoagulation
- **Consider Air transport to a Level I Trauma Center for major isolated Head Injury.**

Multi-System Trauma

ALS evaluation and/or transport if available:

History:	Signs and Symptoms:	Differential:
• Time and Mechanism of injury • Damage to structure or vehicle • Location in structure or vehicle • Others injured or dead • Speed and details of MVA • Restraints/protective equipment • Symptoms preceding incident	• *Altered mental status or unconscious GCS<13* • *Hypotension or shock*	• *Chest – Tension pneumothorax* *Flail Chest* *Pericardial Tamponade* *Open chest wound* *Hemothorax* • *Intra-abdominal bleeding* • *Pelvis/femur fracture* • *Spine fracture/Cord injury* • Extremity fracture / Dislocation • *HEENT (Airway Obstruction)* • Hypothermia

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

Minimize on scene time

Expose injuries

Arrange transport according to **National Trauma Triage of Injured Patients** (PCP030)

Hemorrhage Control? (PCP160)
Pelvic Stabilization? (PRC250)
Spinal Immobilization? (PRC275)

I — Obtain IV/IO access
**Consider x2 Lg bore IV's — I

Signs of Shock?

Yes

I — Isotonic IVF bolus: repeat as needed to maintain MAP of 65 (avoid exceeding 2 liters) — I

Reassess Airway/Ventilation

P — **Orotracheal Intubation** as needed (PRC050) — P

No

Ongoing Assessment

Appropriate Protocol

M — **Contact Medical Control** — M

Notes:

- Exam: Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Back, Neuro.
- Mechanism is often a good indicator of serious injury.
- If domestic violence or abuse is suspected, it must be reported to Law Enforcement, receiving facility, air transport team.

SCUBA

Transport ALL near drowning Patient/ALS if available:

History:	Signs and Symptoms:	Differential:
• Aspiration of fluid • Possible history of trauma • Duration of immersion • Temperature of water • Depth of dive • Know history of dive (tank pressure/gas content • Recent air travel • Salt vs. Fresh water • Repetitive dives • Free diving is same as SCUBA	• *Unresponsive* • *Changes in mental status* • Coughing • Joint pain or tooth pain • Ear pain/hearing loss • *Stroke like symptoms* • Itching • Rash	• *Trauma* • Pre-existing medial problem • Pressure injury (diving) Barotrauma Decompression sickness • *Near Drowning*

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

R | 100% O2 Non rebreather mask | R

Spinal Immobilization PRN
Left lateral recumbent

Remove wet clothing
Cover with dry (warm) blankets
Warming Measures

I | Obtain IV/IO access PRN | I

E | ** ECG/12-Lead | E

E | **Non-invasive Positive pressure ventilation** (PRC045) if available for suspected pulmonary edema | E

Monitor and reassess

M | **Contact Medical Control** | M

Notes:

- **Exam: check Head, Neck, Chest, Abdomen, Pelvis, Back, Extremities, Skin, Neuro for Trauma**
- Transport dive computer with patient.
- For dive deaths, gear is evidence.
- What type of gas used? Any seizures in the History? Mixed Gas?
- Scene safety? Drowning is a leading cause of death in would-be rescuers.
- With cold water there is no time limit – resuscitate all.
- All near drowning victims should be transported – conditions may deteriorate during the next several hours.
- Active Trauma system. Consider Air Medical Transport. Contact early.
- For Air Embolism symptoms, patient should be placed on high flow oxygen and lie patient down on their left side with head and feet neutral.
- **Diver's Alert network (DAN) (877) 595-0625**

Hyperbaric Chambers capable of taking patients with the Bends or Carbon Monoxide poisoning on an emergency basis:

Harborview Medical Center
Phone – (206) 731-3000

US Naval Undersea Warfare Center (Active duty/dependents)
Phone 24 hours (360) 396-2111 Daytime (360) 396-2522
*Call for availability

Pediatric Bradycardia

ALS evaluation and/or transport if available:

History:
- Medical history
- **Possibility of foreign body**
- **Respiratory distress or arrest**
- **Possible toxic or poison exposure**
- **Congenital disease**
- **Medication (maternal or infant)**

Differential:
- Respiratory effort
- Foreign Body obstructions
- **H**ypovolemia (dehydration)
- **H**ypoxia
- **H**ydrogen ion (acidosis)
- **H**ypo-/hyperkalemia
- **H**ypoglycemia
- **H**ypothermia
- **T**oxins
- **T**amponade, cardiac
- **T**ension pneumothorax
- **T**hrombosis (Coronary or pulmonary)
- **T**rauma (hypovolemia, increased ICP)

Normal Ranges	BP	HR	Resp
Newborn	80/60	110-150	30-50
6-12 month	89/60	110-140	30-50
1 year	98/66	110-140	30-50
2 years	98/64	90-110	20-30
3 years	100/68	90-110	20-30
4 years	98/66	80-120	20-30
5 years	94/56	80-120	20-30
6 years	100/56	80-100	20-30
7 years	100/56	80-100	20-30
8 years	106/58	76-90	20-30

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

Oxygen keep sats 94-98%

Advanced Airway Management PRN

E **SGA** (PRC075) E

E **EKG/ 12 Lead E

Perform CPR if HR <60 after Oxygen and ventilation

I Obtain IV/IO access

I Isotonic IVF 20 ml/kg IV/IO May repeat up to 60 ml/kg for signs of shock I

Persistent symptomatic Bradycardia?

Yes → P **Epinephrine** 1:10,000 0.01 mg/kg IV/IO **OR** **Epinephrine** 1:1,000 0.01 mg/kg ET Repeat every 3-5 minutes PRN P

No → Support ABC's Give oxygen if needed Observe

P **Atropine** 0.02 mg/kg IV/IO P

P Consider pacing P

M **Contact Medical Control** M

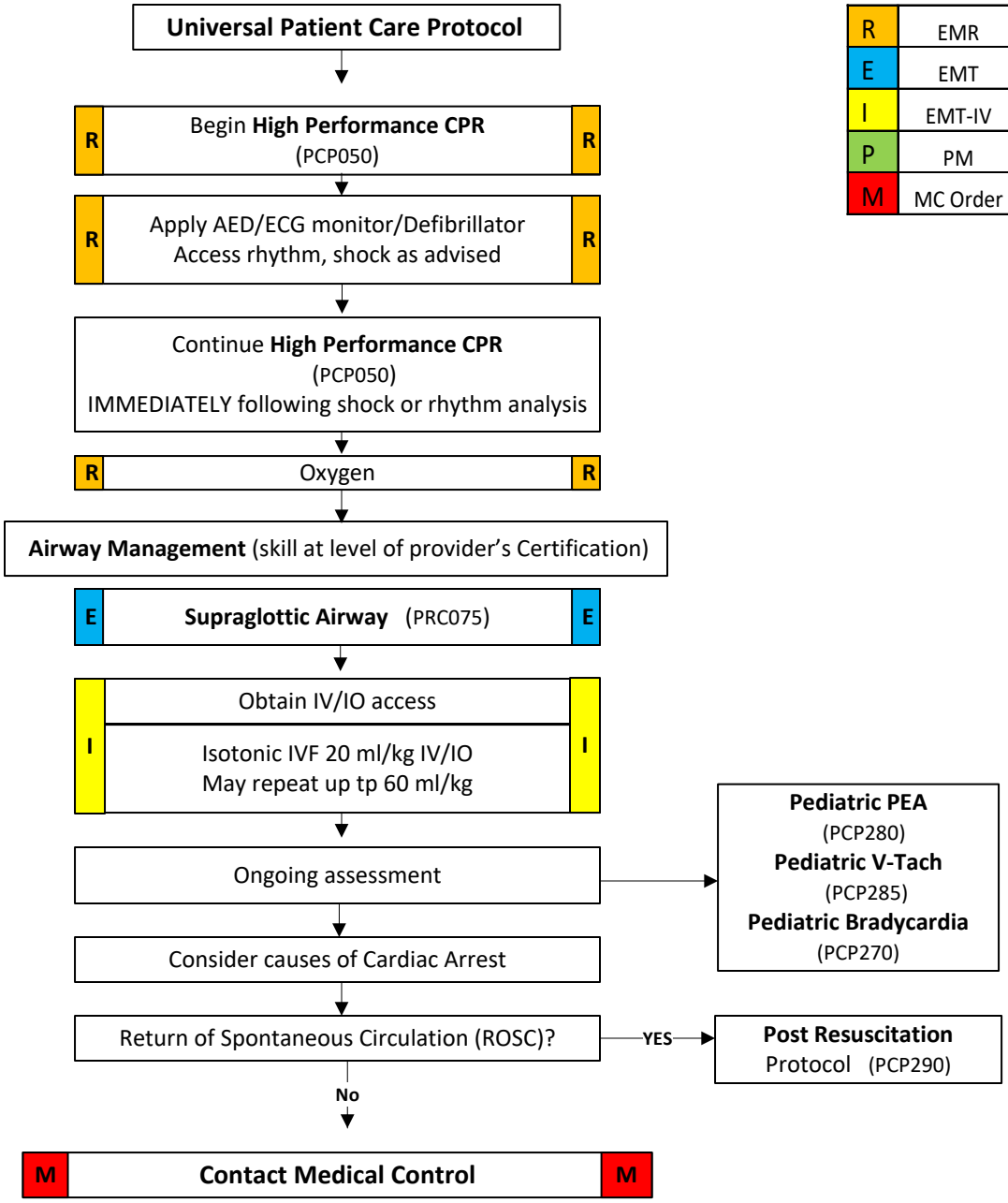
Weight	4 kg	6 kg	8 kg	10 kg	12 kg	15 kg	19 kg	24 kg	30 kg
Epinephrine 1:10,000 0.01 mg/kg IV/IO	0.04 mg	0.06 mg	0.08 mg	0.1 mg	0.12 mg	0.15 mg	0.19 mg	0.24 mg	0.3 mg
Epinephrine 1:1,000 0.1 mg/kg ET	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg
Atropine	0.1 mg	0.12 mg	0.16 mg	0.2 mg	0.24 mg	0.3 mg	0.38 mg	0.48 mg	0.6 mg
Pacing	Rate 160/20mA Increase 5-10 mA								

Pediatric Cardiac Arrest

ALS evaluation and/or transport if available:

History:
- Medical history
- Possibility of foreign body
- Respiratory distress or arrest
- Possible toxic or poison exposure
- Congenital disease
- Medication (maternal or infant)

Differential:
- Respiratory effort
- Foreign Body obstructions
- **H**ypovolemia (dehydration)
- **H**ypoxia
- **H**ydrogen ion (acidosis)
- **H**ypo-/hyperkalemia
- **H**ypoglycemia
- **H**ypothermia
- **T**oxins
- **T**amponade, cardiac
- **T**ension pneumothorax
- **T**hrombosis (Coronary or pulmonary)
- **T**rauma (hypovolemia, increased ICP)



Pediatric Cardiac – Asystole/PEA (No Shock Advised)

ALS evaluation and/or transport if available:

History:	Differential:	
• Time of arrest • Medical history • Possibility of foreign body • Hypothermia • Non-accidental trauma • SIDS	• Respiratory failure • Foreign Body obstructions • **H**ypovolemia (dehydration) • **H**ypoxia • **H**ydrogen ion (acidosis) • **H**ypo-/hyperkalemia • **H**ypoglycemia • **H**ypothermia	• **T**oxins • **T**amponade, cardiac • **T**ension pneumothorax • **T**hrombosis (Coronary or pulmonary) • **T**rauma (hypovolemia, increased ICP)

Universal Patient Care Protocol

Begin **High Performance CPR** (PCP050)

Oxygen

E **Supraglottic Airway** (PRC075) E

P **Pediatric Airway** (PCP310) P

E **EKG/ 12 Lead PRN E

I Obtain IV/IO access I

I Isotonic IVF 20 ml/kg IV/IO May repeat up to 60 ml/kg For signs of shock I

I For smaller patients, 2 bolus of 10 ml/kg IV/IO or suspected cardiogenic shock 5mL/kg IV/IO I

P **Epinephrine** 1:10,000 0.01 mg/kg **IV/IO** Repeat every 3-5 minutes PRN P

OR

P **Epinephrine** 1:1,000 0.01 mg/kg **ET** Repeat every 3-5 min PRN P

Resume CPR and treat other associated rhythms, consider differentials

Assess Rhythm after every 2 minutes of CPR

M **Contact Medical Control** M

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Weight	4 kg	6 kg	8kg	10 kg	12 kg	15 kg	19 kg	24 kg	30 kg
Epinephrine 1:10,000 0.01 mg/kg IV/IO	0.04 mg	0.06 mg	0.08 mg	0.1 mg	0.12 mg	0.15 mg	0.19 mg	0.24 mg	0.3 mg
Epinephrine 1:1,000 0.1 mg/kg ET	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg

Note: ** EMT can acquire 12-lead ECG and read report text printout **but cannot interpret.**

Pediatric Cardiac - VF/pVT (shock advised)

R	EMR
E	EMT
I	EMT-IV
P	PM
M	MC Order

Arrive here from **Pediatric Cardiac Arrest Protocol** (PCP275)

Defibrillate at 2 J/kg

High Performance CPR x 2 min.
(PCP050)
Airway management and confirm effective oxygenation and ventilation

I — Obtain IV/IO access — I

Assess Rhythm

VF/VT
(Shock Advised)

Defibrillate at 2,4, max 10 J/kg

High Performance CPR x 2 min between defibrillations

P — **Epinephrine**
1:10,000
0.01 mg/kg IV/IO
Repeat every 3-5 min. PRN — P

P — Consider
Lidocaine
1.5 mg/kg
IV/IO repeat bolus
0.5-0.75 mg/kg q 5 min to max 3 mg/kg
Or
Amiodarone
5 mg/kg IV/IO
Max dose 300 mg; may
Repeat x1 to max 450 mg — P

P — **Mag Sulfate**
50 mg/kg IV/IO — P

If recovery of pulses go to **Pediatric Post Resuscitation Protocol** (PCP290)

Asystole or PEA
(No Shock Advised)

Go to **Pediatric Asystole or PEA (NSA)** Protocol
(PCP280)

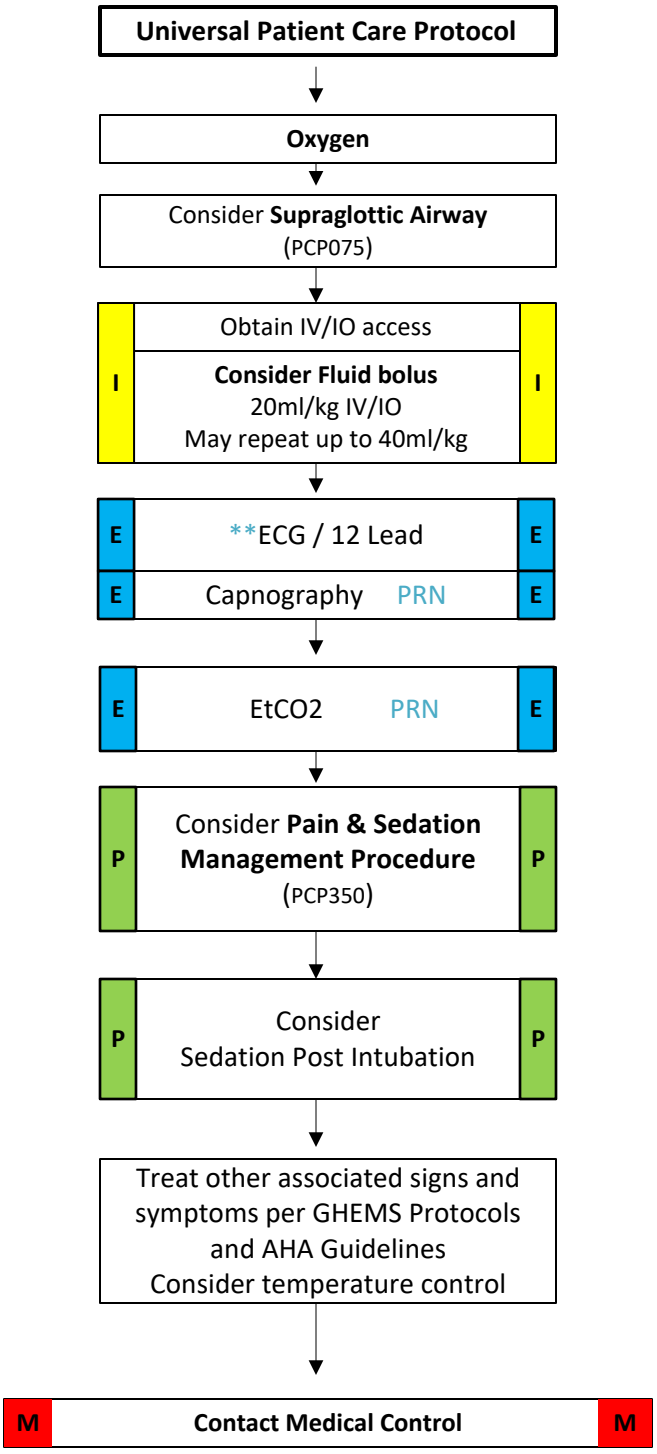
M — **Contact Medical Control** — M

Weight	4 kg	6 kg	8kg	10 kg	12 kg	15 kg	19 kg	24 kg	30 kg
Epinephrine 1:10,000 0.01 mg/kg IV/IO	0.04 mg	0.06 mg	0.08 mg	0.1 mg	0.12 mg	0.15 mg	0.19 mg	0.24 mg	0.30 mg
Lidocaine 1.5 mg/kg	6 mg	9 mg	12 mg	15 mg	18 mg	22 mg	28 mg	36 mg	45 mg
Lidocaine repeat bolus 0.5-0.75mg/kg	2-3 mg	3-4 mg	4-6 mg	5-7 mg	6-9 mg	7-11 mg	9-14 mg	12-15 mg	15-22 mg
Amiodarone	20 mg	30 mg	40 mg	50 mg	60 mg	75 mg	95 mg	120 mg	150 mg
Magnesium Sulfate	200 mg	300 mg	400 mg	500 mg	600 mg	750 mg	950 mg	1200 mg	1500 mg
Joules 2 Joules/4 Joules	8/16 J	12/24 J	16/32 J	20/40 J	24/48 J	30/60 J	38/76 J	48/96 J	60/120 J

Pediatric Cardiac - Post Resuscitation Management

ALS evaluation and/or transport if available:

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M



Notes:

- ** EMT can acquire 12-lead ECG and read report text printout but **cannot interpret.**

Pediatric Cardiac - Newborn Resuscitation/Post Delivery Care

ALS evaluation and/or transport if available:

History:	Differential:
• Prenatal Care and History • Due date/LMP • Multiple gestation (twins etc.) • Meconium • Delivery difficulties • Medications (maternal) • Maternal risk factors • Congenital disease	• Airway obstruction • Respiratory distress • Infection • Hypovolemia • Hypoglycemia • Congenital Heart Disease • Hypothermia • Persistent Central Cyanosis

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

Suction with bulb syringe PRN
Mouth then nose
Dry infant and keep warm

APGAR (PRC095)
1 min/5 min

**** Consider ceasing resuscitation efforts if gestational age <20 weeks (fetal foot length < 33 mm).**

Oxygen Blow-by PRN
Assess breathing and heart rate
Consider
Blood Sugar/Naloxone

Heart Rate >100 → Continue ongoing assessent

Heart rate <100 or inadequate respirations

Assist ventilations BVM PRN

Heart rate <60
Begin Chest Compressions

P — **Consider**
Blood Glucose check if <60mg/dL
Then see **Pediatric Altered Mental Status** (PCP325) — P

R — **Naloxone** 0.1 mg/kg IN — R

P — Consider **Naloxone** 0.1 mg/kg IV/IO/IN/IM — P

P — **Ped. Umbilical Vein Cannulation** (PRC245) — P

I — Obtain IV/IO access
Isotonic IVF 20 mL/kg IV/IO
May repeat up to 60 mL/kg — I

E — **ECG/12 Lead — E

P — **Epinephrine**
1:10,000
0.01 mg/kg IV/IO
OR
Epinephrine
1:1,000 0.1 mg/kg ET
Repeat every 3-5 in. PRN — P

M — **Contact Medical Control** — M

P — **Pediatric Airway – Sequenced Intubation** (PCP315) PRN — P

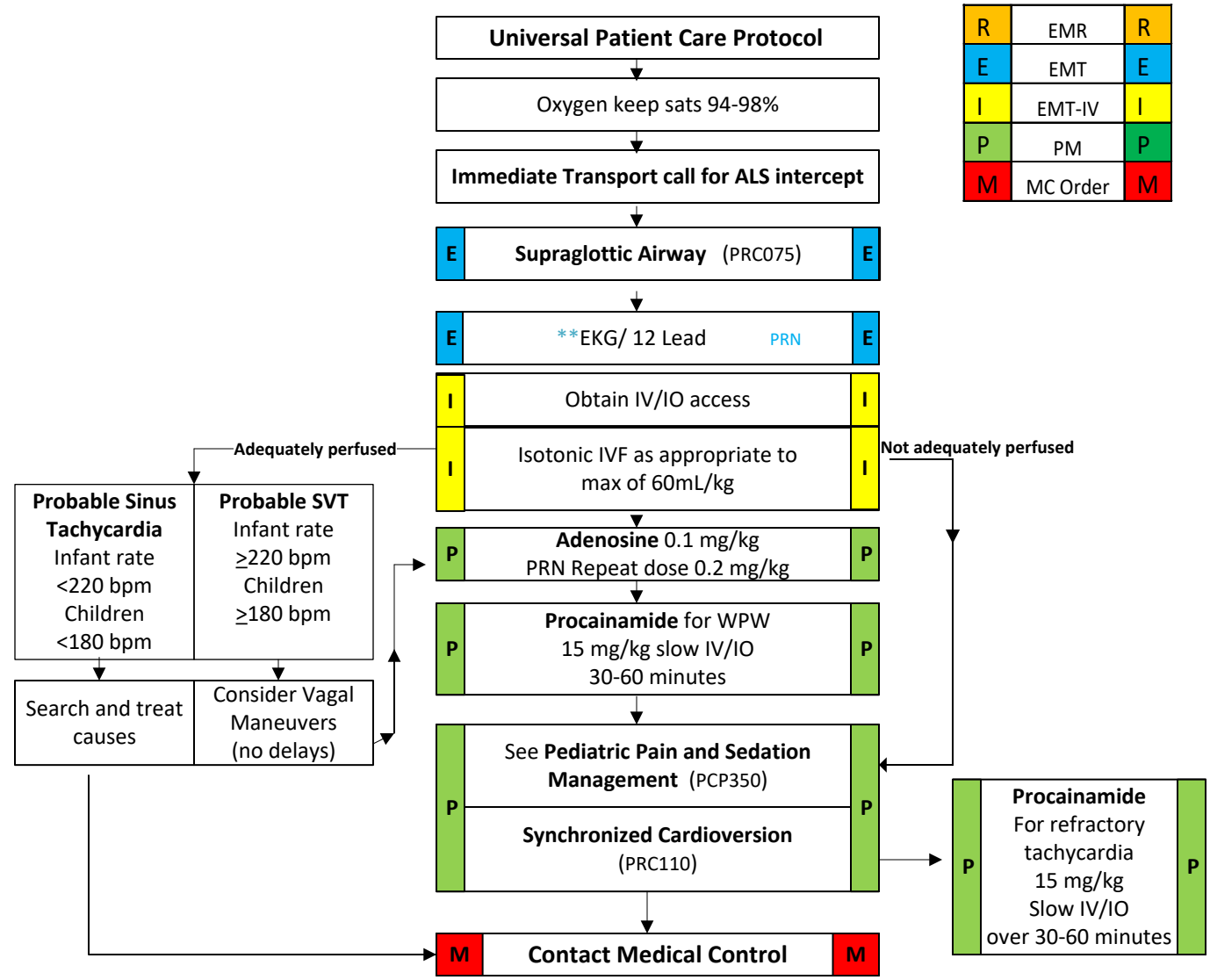
Weight	2 kg	3 kg	4 kg	5 kg
Epinephrine 1:10,000 0.01 mg/kg **IV/IO**	0.02 mg	0.03 mg	0.04 mg	0.05 mg
Epinephrine 1:1,000 0.1 mg/kg **ET**	0.2 mg	0.3 mg	0.4 mg	0.5 mg

Weight	4 kg	6 kg	8 kg	10 kg	12 kg	15 kg	19 kg	24 kg	30 kg
Naloxone	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg

Pediatric Tachycardia - Narrow Complex

ALS evaluation and/or transport if available:

History:	Differential: Sinus Tachycardia vs. SVT
• Medications or toxins • **Congenital heart disease** • **Respiratory distress** • ***Syncope*** • **Volume loss (diarrhea/vomiting)**	• Heart disease (congenital) • Electrolyte imbalance • *Hypotension* • Fever/infection/sepsis • Medication/toxin/drugs • Pulmonary Embolism • Tension pneumothorax



Weight	4 kg	6 kg	8kg	10 kg	12 kg	15 kg	19 kg	24 kg	30 kg
Adenosine 0.1 mg/kg - 1st dose	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg
Adenosine 0.2 mg/kg - 2nd dose	0.8 mg	1.2 mg	1.6 mg	2 mg	2.4 mg	3 mg	3.8 mg	4.8 mg	6 mg
Midazolam	0.2 mg	0.3 mg	0.4 mg	0.5 mg	0.6 mg	0.75 mg	1 mg	1.2 mg	1.5 mg
Diazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Lorazepam	0.2 mg	0.3mg	0.4 mg	0.5 mg	0.5 mg	0.5 mg	0.5 mg	0.5 mg	0.5 mg
Procainamide	60 mg	90 mg	120 mg	150 mg	180 mg	225 mg	285 mg	360 mg	450 mg

Note: **EMT can acquire 12-lead ECG and read report text printout but **cannot interpret**.

Pediatric Tachycardia - Wide Complex

ALS evaluation and/or transport if available:

History:	**Differential:**
• Medications or toxins • **Congenital heart disease** • **Respiratory distress** • *Syncope* • **Drugs (cocaine)**	• Heart disease (congenital) • Hypovolemia (dehydration) or anemia • Electrolyte imbalance • Anxiety • *Hypotension* • Mediation/toxin/drugs

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

Oxygen PRN

Immediate Transport/ALS Intercept

E **Supraglottic Airway** (PRC075) E

E **EKG/ 12 Lead PRN E

I Obtain IV/IO access

Isotonic IVF 20 mL/kg IV/IO I

Adequate Perfusion?

NO

Yes

YES

P See **Pediatric Pain and Sedation Management** (PCP350) P

P **Synchronized Cardioversion** (PRC110) P

M **Contact Medical Control** M

Consider Monitor and Transport

P Consider **Lidocaine** 1 mg/kg IV/IO Or **Amiodarone** 5 mg/kg IV/IO Or **Procainamide** 15 mg/kg IV/IO over 30-60 minutes P

P Unable to convert or unstable? P

Yes

No

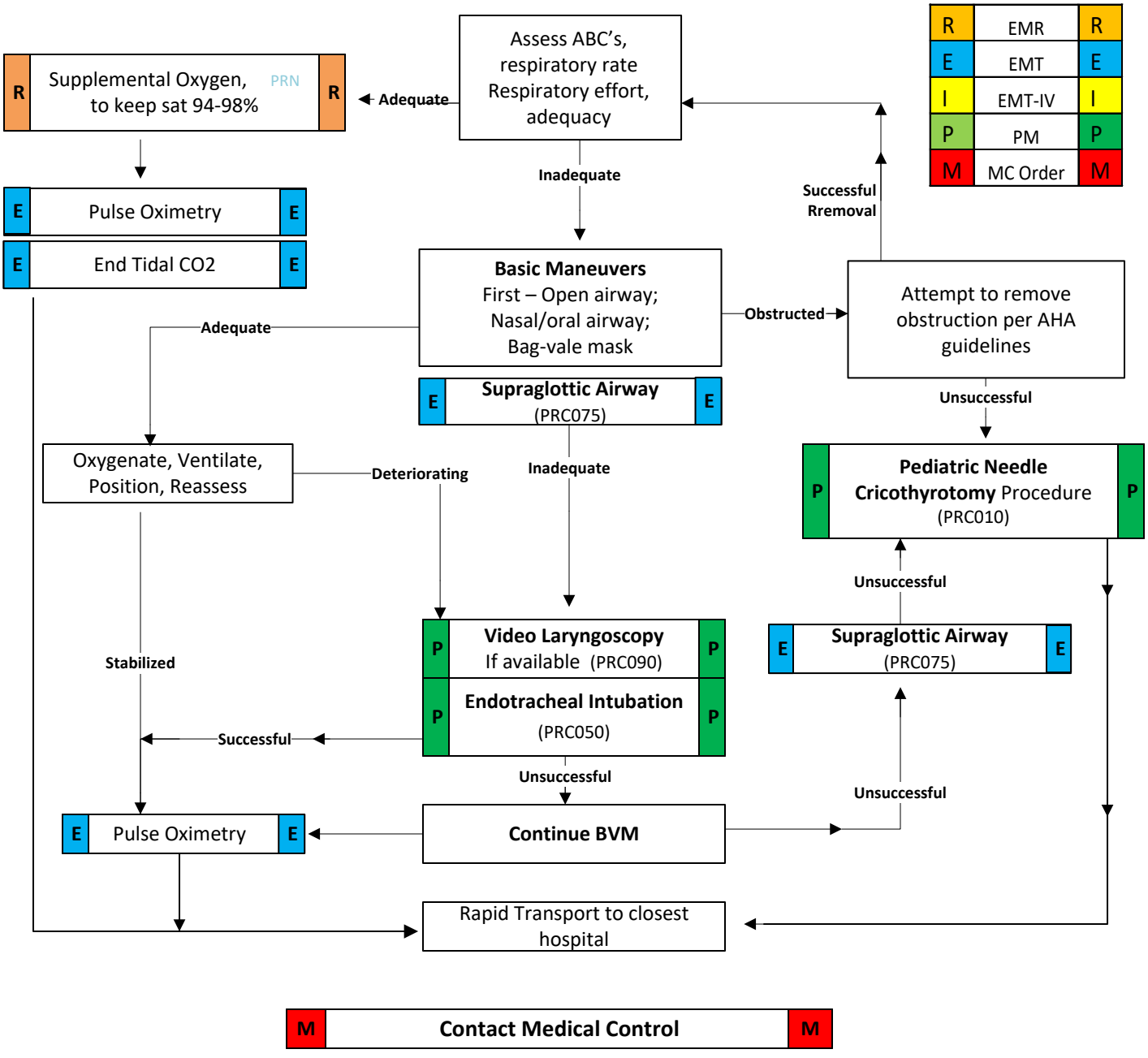
Weight	4 kg	6 kg	8kg	10 kg	12 kg	15 kg	19 kg	24 kg	30 kg
Lidocaine	4 mg	6 mg	8 mg	10 mg	12 mg	15 mg	19 mg	24 mg	30 mg
Amiodarone	20 mg	30 mg	40 mg	50 mg	60 mg	75 mg	95 mg	120 mg	150 mg
Midazolam	0.2 mg	0.3 mg	0.4 mg	0.5 mg	0.6 mg	0.75 mg	1 mg	1.2 mg	1.5 mg
Diazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Lorazepam	0.2 mg	0.3 mg	0.4 mg	0.5 mg	0.5 mg	0.5 mg	0.5 mg	0.5 mg	0.5 mg
Procainamide	60 mg	90 mg	120 mg	150 mg	180 mg	225 mg	285 mg	360 mg	450 mg

Note: **EMT can acquire 12-lead ECG and read report text printout **but cannot interpret.**

Pediatric Airway

ALS evaluation and/or transport if available:

History:	Differential:
• Known difficult Airway • Neck or head trauma • Trisomy 21 • Congenital malformations	• Physical Examination *Small jaw or limited jaw opening *Limited cervical spine movement , swollen tongue, oropharynx, or neck, midface hypoplasia.



Notes:

- **For this Guideline, child is defined as less than 8 years old.**
- **Limit intubation attempts to 3 per patient**
- Maintain C-Spine immobilization for patients with suspected spinal injury.
- Reconfirm ETT placement each time patient is moved.
- **<u>All</u> choking victims need to be transported to the hospital. Children who have possibly aspirated anything may not be transported POV, but can be transported BLS if stable.**

Pediatric Airway - Sequenced Intubation

ALS evaluation and/or transport if available:

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

P — Preoxygenate with 100% FIO2 for 5 min. Avoid bag mask ventilation if possible — P

I — Obtain IV/IO access — I

P — Consider **Atropine** 0.02 mg/kg for salivation — P

Shock?

- Yes → P — **Ketamine** 0.5 mg/kg IV/IO — P
- No → Suspected intracranial hypertension?
  - Yes → P — **Ketamine** 1 mg/kg IV/IO — P
  - No → P — **Ketamine** 1 mg/kg IV/IO Or **Fentanyl** 2 mcg/kg IV/IO And **Midazolam** 0.1 mg/kg IV/IO Or **Propofol** 3 mg/kg IV/IO — P

P — Apply cricoid pressure — P

Any personal or family history of malignant hyperthermia, known or suspected mitochondrial or skeletal myopathy, glaucoma, penetrating eye injury? Known or suspected Hyperkalemia?

- Yes → P — **Rocuronium** 0.6 to 1.2 mg/kg IV/IO — P
- No → P — **Succinylcholine** 2 mg/kg IV/IO Or **Rocuronium** 0.6 to 1.2 mg/kg IV/IO — P

P — **Orotracheal Intubation** (PRC050) — P

P — **For Bradycardia** Consider *** Atropine** 0.02 mg/kg IV/IO — P

P — See **Pediatric Pain Sedation Management** (PCP350) — P

M — **Contact Medical Control** — M

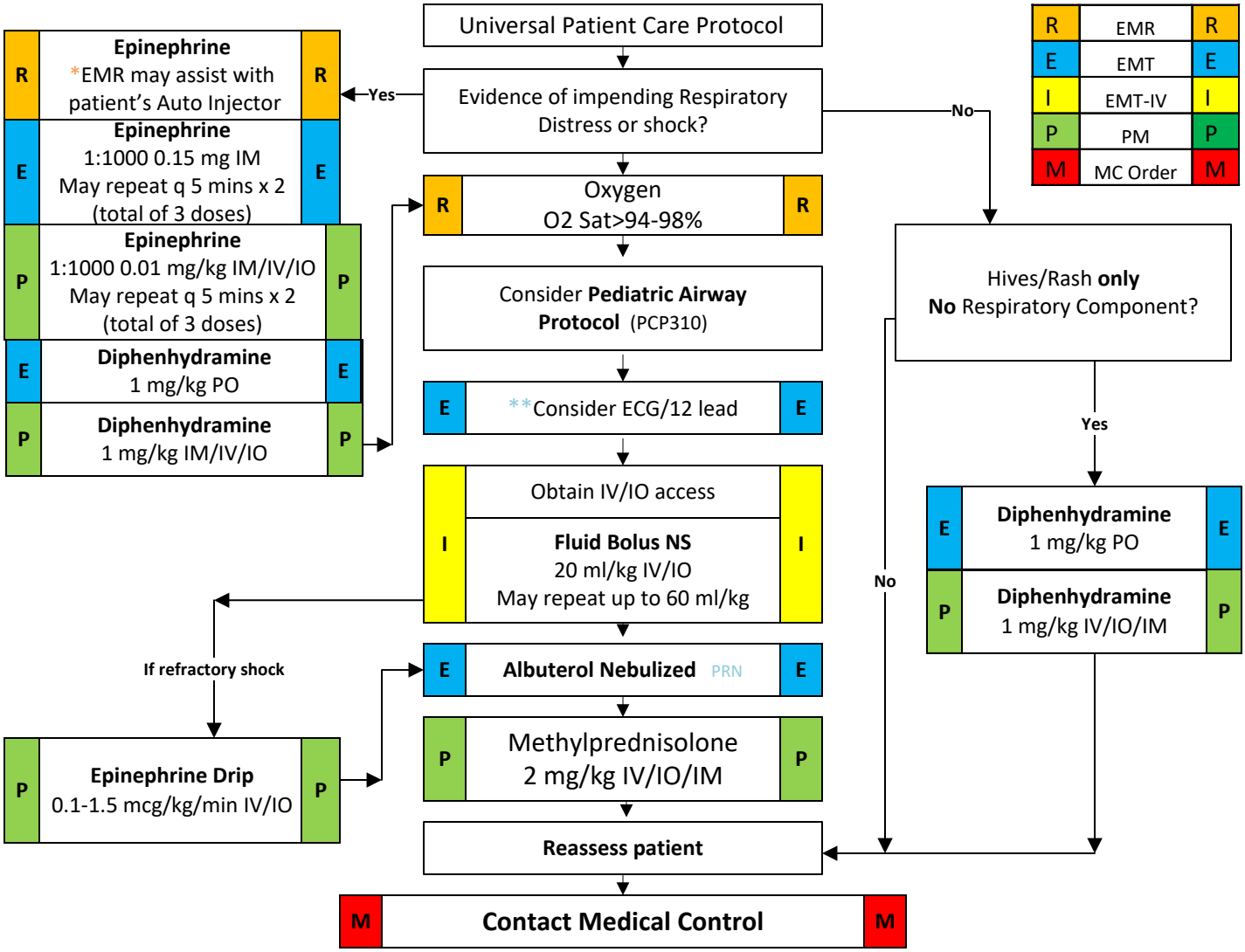
Weight	4 kg	6 kg	8 kg	10 kg	12 kg	15 kg	19 kg	24 kg	30 kg
Atropine	*0.1 mg	0.12 mg	0.16 mg	0.2 mg	0.24 mg	0.30 mg	0.38 mg	0.48 mg	0.60 mg
Ketamine 0.5 mg/kg	N/A	3 mg	4 mg	5 mg	6 mg	7.5 mg	9.5 mg	12 mg	15 mg
Ketamine 1 mg/kg	N/A	6 mg	8 mg	10 mg	12 mg	15 mg	19 mg	24 mg	30 mg
Fentanyl	8 mcg	12 mcg	16 mcg	20 mcg	24 mcg	30 mcg	38 mcg	48 mcg	60 mcg
Midazolam	0.2 mg	0.3 mg	0.4 mg	0.5 mg	0.6 mg	0.75 mg	1 mg	1.2 mg	1.5 mg
Succinylcholine	8 mg	12 mg	16 mg	20 mg	24 mg	30 mg	38 mg	48 mg	60 mg
Rocuronium	4 mg	6 mg	8 mg	10 mg	12 mg	15 mg	19 mg	24 mg	30 mg
Propofol	N/A	N/A	N/A	N/A	N/A	45 mg	57 mg	72 mg	90 mg

Note: * Atropine 4 kg and less, give only 0.1 mg

Pediatric Allergic Reaction/Anaphylaxis

ALS evaluation and/or transport if available:

History:		Differential:	
• Allergies	• Last oral ingestion	• Acute respiratory failure	• Asthma
• Medications	• Event preceding	• Anxiety	• Drug reaction
• Past Medical History		• Aspiration	• Shock



Weight	4 kg	6 kg	8kg	10 kg	12 kg	15 kg	19 kg	24 kg	30 kg
Diphenhydramine	4 mg	6 mg	8 mg	10 mg	12 mg	15 mg	19 mg	24 mg	30 mg
Methylprednisolone	8 mg	12 mg	16 mg	20 mg	24 mg	30 mg	38 mg	48 mg	60 mg
Epinephrine	0.04 mg	0.06 mg	0.08 mg	0.1 mg	0.12 mg	0.15 mg	019 mg	0.24 mg	0.3 mg
Epinephrine Drip	1 mg Epinephrine 1:1,000 in 250 ml = 4 mcg/ml					Use 60 gtt tubing			

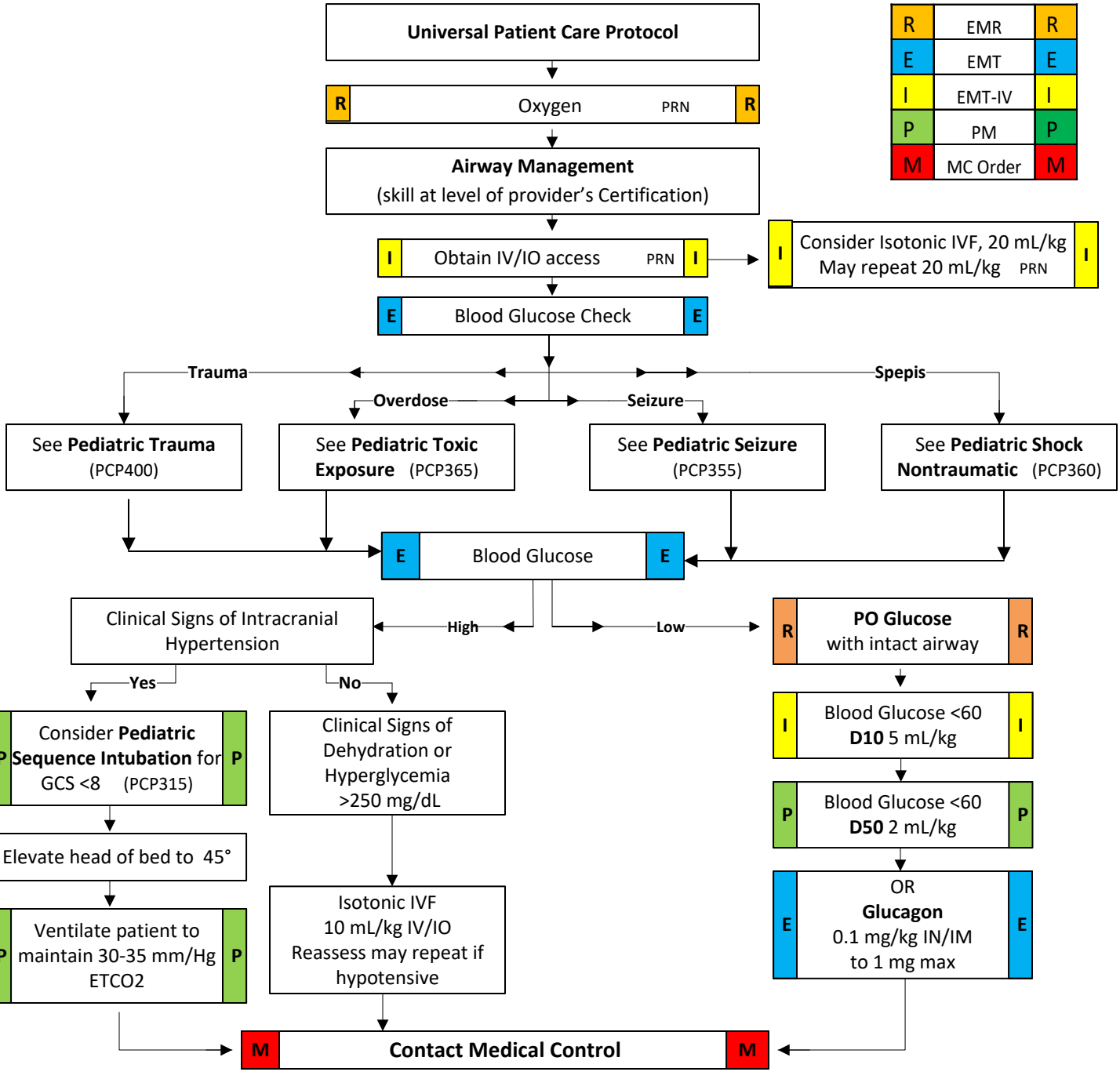
Mcg/min	2	4	6	8	10
Administer	30 gtts/min	60 gtts/min	90 gtts/min	120 gtts/min	150 gtts/min
Run gtts/sec	1 every 2 seconds	1 every second	15 every second	2 every second	2.5 every second

NOTE: ** EMT can acquire 12-lead ECG and read report text printout **but cannot interpret.**

Pediatric Altered Mental Status

ALS evaluation and/or transport if available:

History:	Clinical Signs:	Differential:
• Polyuria • Polydipsia • Vomiting • Weakness • Confusion	• *Dehydration* • *Kussmaul respirations* • *Smell of ketones* • *Change in mental status*	• Behavioral crisis • Trauma • Seizure • Hypo/Hyperglycemia • Infection/Sepsis • Toxin ingestion



Notes:

- Signs of intracranial hypertension include severe headache, lethargy, vomiting and coma.
- **EMT can acquire 12-lead ECG and read repot text printout but **cannot interpret.**

Pediatric Breathing Difficulty

ALS evaluation and/or transport if available:

History:	Differential:	
• Possibility of foreign body	• Asthma	• Epiglottitis
• Cardiac/Respiratory history	• Aspiration	• Congenital heart disease
• Respiratory infection	• *Foreign body*	• Mediation or Toxin
• *Persistent Symptoms*	• Pneumonia (aspiration)	• Trauma
	• Croup	

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

R Oxygen R

Severe Distress Respiratory Failure

Yes → **Pediatric Airway** (PCP310)

No

Transport in position of minimal agitation

Lower Airway → Wheeze?

Wheeze? **Yes**

E **Albuterol** 2.5 – 5 mg SVN E

E Consider **Ipratropium** < 6 yrs 0.25 mg SVN > 6 yrs 0.5 mg SVN E

Upper Airway → Stridor and/or Restrictions?

Stridor and/or Restrictions? **Yes**

P **Epinephrine** 0.5 mL/kg up to 5 mL undiluted; 1:1,000 SVN (No saline needed) P

P Consider **Methylprednisolone** 2 mg/kg IV/IO/IM P

P **Magnesium Sulfate** 25-50 mg/kg IV/IO over 20 minutes P

P Repeat appropriate nebulizer treatment as indicated for continued symptoms P

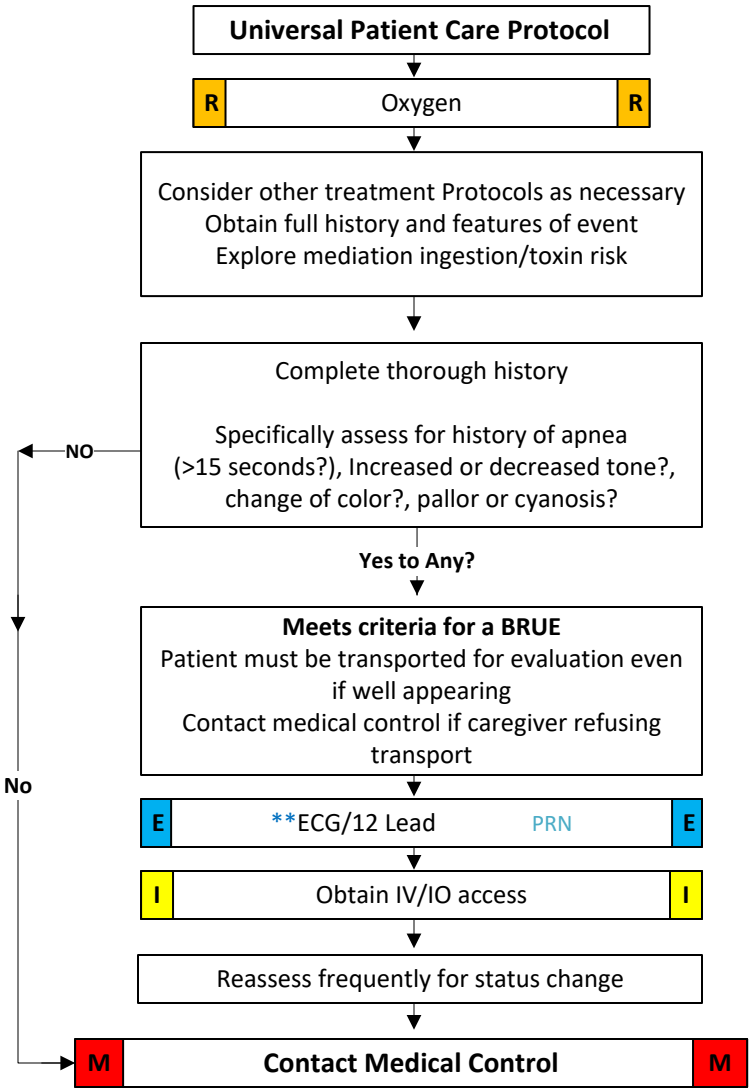
M **Contact Medical Control** M

Weight	4 kg	6 kg	8kg	10 kg	12 kg	15 kg	19 kg	24 kg	30 kg
Epinephrine					3 mL SVN				
Nebulizer	Albuterol 2.5 mg					Ipratopium 0.5 mg			
Methylprednisolone	8 mg	12 mg	16 mg	20 mg	24 mg	30 mg	38 mg	24 mg	30 mg
Magnesium Sulfate IV/IO	100 mg	150 mg	200 mg	250 mg	300 mg	375 mg	475 mg	600 mg	750 mg

Pediatric Brief Resolved Unexplained Event (BRUE)

ALS evaluation and/or transport if available:

History: • Altered Mental Status • Cardiac • Respiratory Failure • Seizures • Syncope	Differential: • Hypovolemia(dehydration • Hypoxia • Hydrogen Ion (acidosis) • Hypo-hyperkalemia • Hypoglycemia • Hypothermia • **T**oxins • **T**amponade, cardiac • **T**ension pneumothorax • **T**hrombosis (Coronary or pulmonary) • **T**rauma (hypovolemia, increased ICP)
Inclusion: Suspected **BRUE**: An event in an infant less than 1 year old reported by a bystander as sudden, brief (less than 1 min) event, completely resolved upon EMS arrival that includes one of the following: • Absent, decreased, or irregular breathing • Color change (central cyanosis or pallor) • Marked change in muscle tone (hyper- or hypotonia • Altered level of responsiveness.	**Exclusion Criteria:** • Identifiable cause for the event, which may include: • Gastric reflux (spitting up) • Swallowing dysfunction • Nasal congestion • Color change that involved only redness (e.g. in the face) or isolated perioral or hand/feet cyanosis.



R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Note: ** EMT can acquire 12-lead ECG and read report text printout, **but cannot interpret**

Pediatric Environmental Emergencies

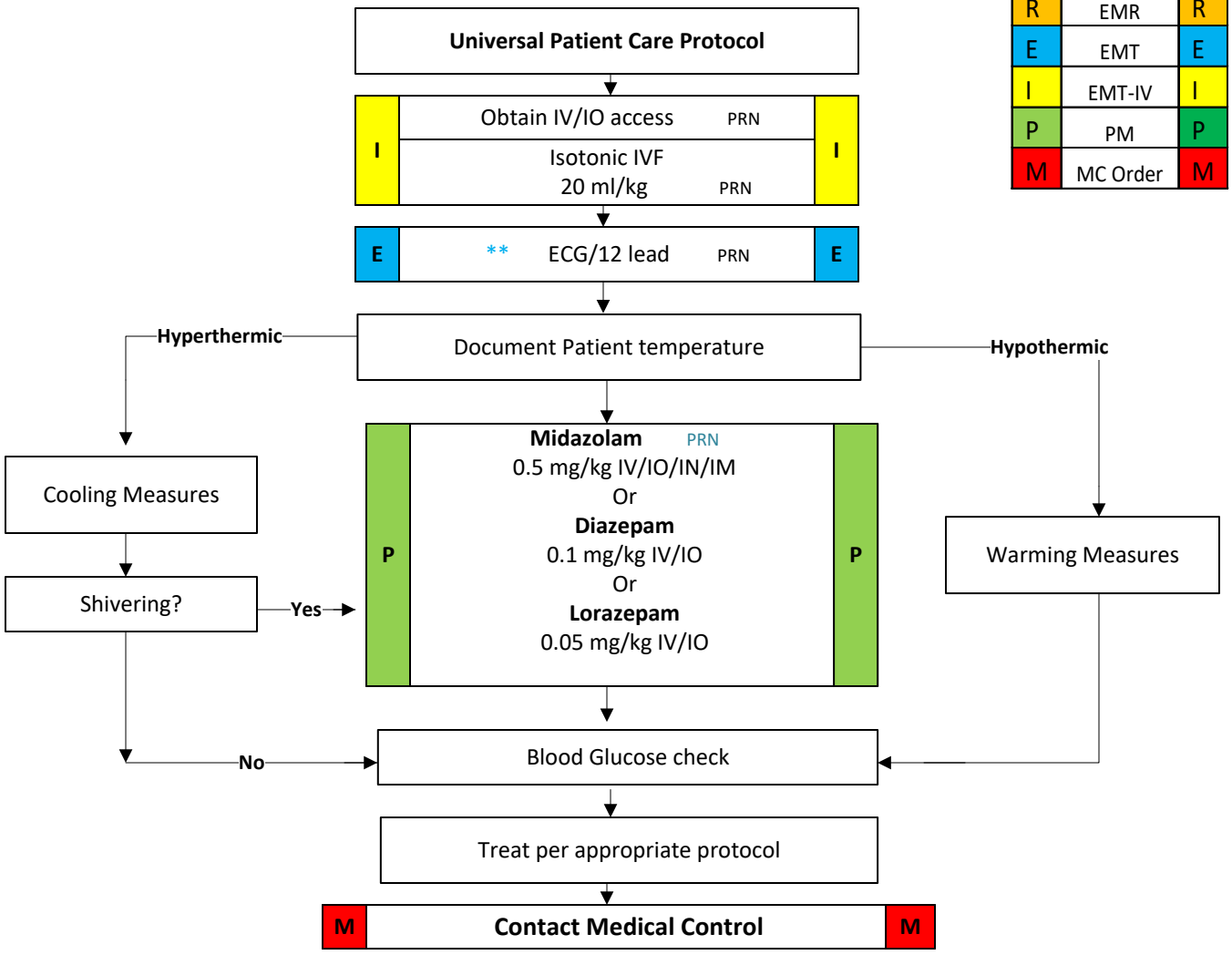
ALS evaluation and/or transport if available:

History:
- Age
- Exposure to increased temperature and/or humidity
- Extreme exertion
- Time and length of exposure
- Fatigue and/or muscle cramping

- *Altered Mental Status*
- *Temp >104° F or 40 C due to heat*
- *Abnormal vital signs*

Differential:
- Infection
- Dehydration
- Medications
- Thyroid storm

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M



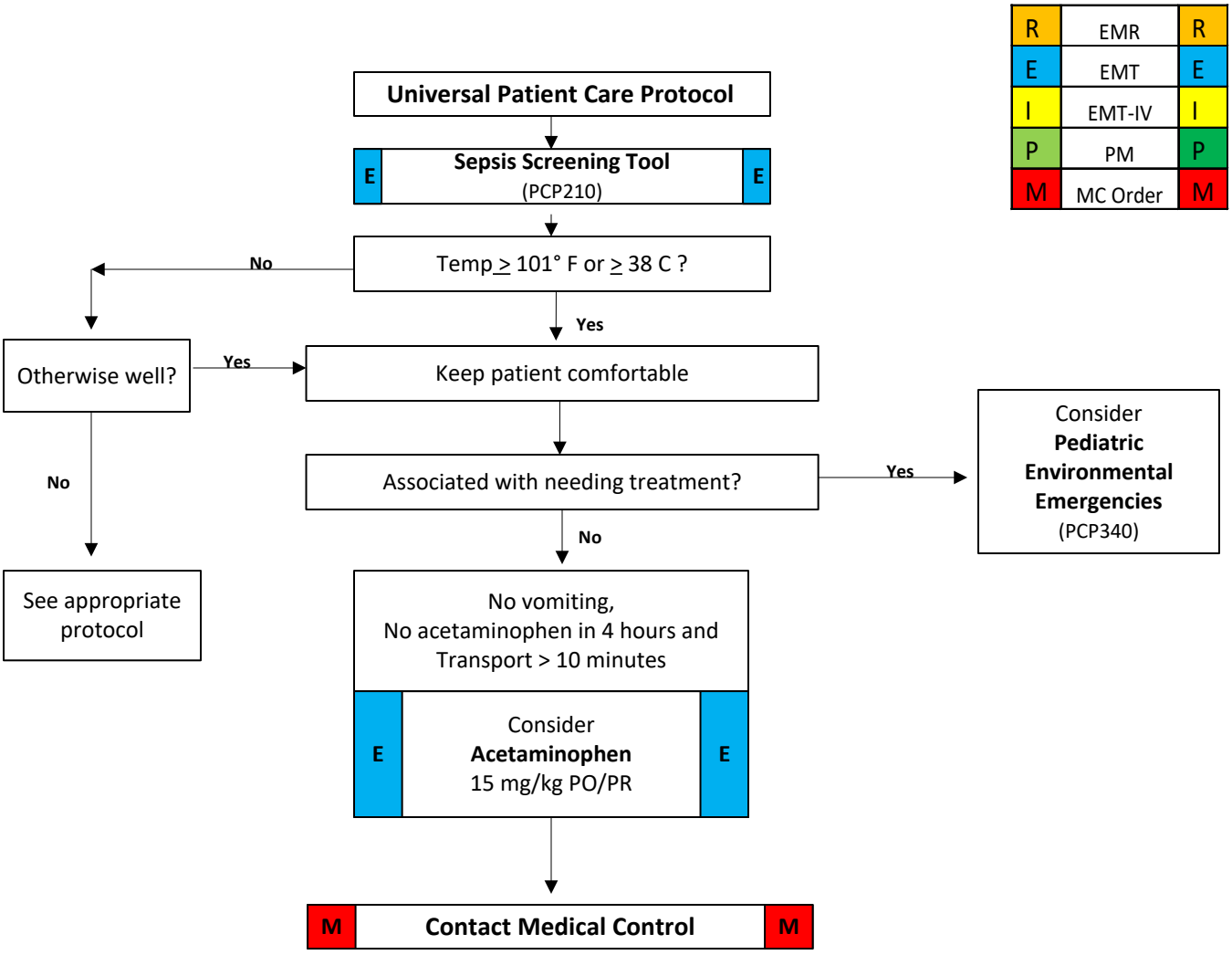
Weight	4 kg	6 kg	8kg	10 kg	12 kg	15 kg	19 kg	24 kg	30 kg
Midazolam	0.2mg	0.3 mg	0.4 mg	0.5 mg	0.6 mg	0.75 mg	1 mg	1.2 mg	1.5 mg
Diazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Lorazepam	0.2 mg	0.3 mg	0.4 mg	0.5 mg	0.5 mg	0.5 mg	0.5 mg	0.5 mg	0.5 mg

Notes:
- Succinylcholine not recommended for Hyperthermic patients.
- Document patient's rectal temperature.
- Rapid cooling to 39° C(103°F) to avoid overshooting and shivering.
- Apply room temperature water to skin and increase airflow around patient if possible.
- **EMT can acquire 12-lead ECG and read report text printout but **cannot interpret.**
- Ice packs to axillae and groin.
- Be cautious with polypharmacy and using multiple medications.

Pediatric Fever

ALS evaluation and/or transport if available:

History:	Differential:
• Fever not associated with heat injury does not require rapid temperature reduction • Seizure	• Infections/Sepsis • Medication or drug reaction • Altered mental status



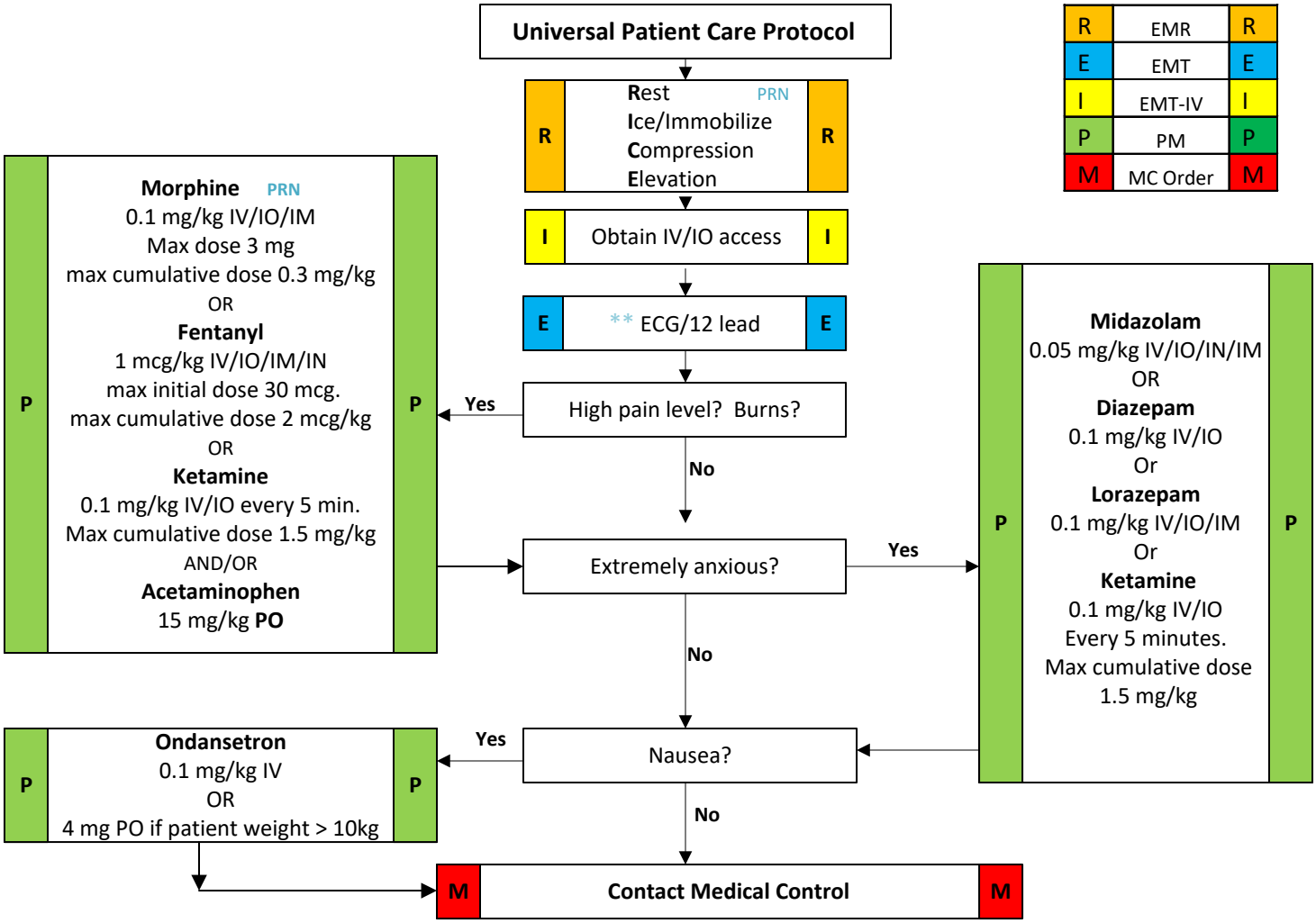
Weight	4 kg	6 kg	8kg	10 kg	12 kg	15 kg	19 kg	24 kg	30 kg
Acetaminophen PO	60 mg	90 mg	8 mg	120 mg	150 mg	225 mg	285 mg	360 mg	450 mg

Pediatric Pain and Sedation Management

ALS transport if patients given a sedation medication

History:
- Age
- Location
- Duration
- Severity (1-10)
- Past medical history
- Medications
- Drug Allergies
- Aggravating factors
- Alleviating factors

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



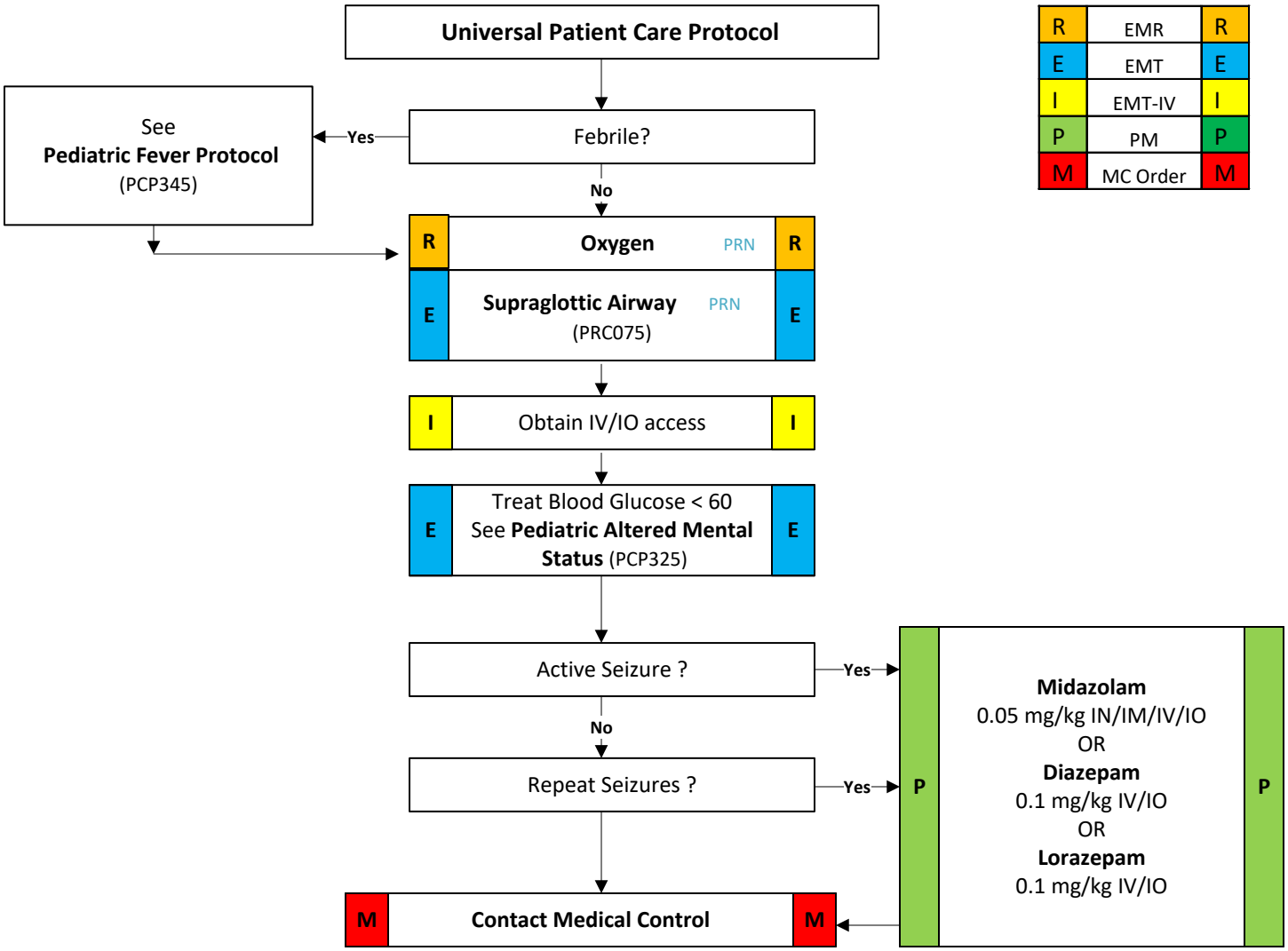
Weight	4 kg	6 kg	8kg	10 kg	12 kg	15 kg	19 kg	24 kg	30 kg
Morphine	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg
Fentanyl max	8 mcg	12 mcg	16 mcg	20 mcg	24 mcg	30 mcg	38 mcg	48 mcg	60 mcg
Midazolam	0.2 mg	0.3 mg	0.4 mg	0.5 mg	0.6 mg	0.75 mg	1 mg	1.2 mg	1.5 mg
Diazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Lorazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Ondansetron	Contact MC			1 mg	1 mg	1 mg	2 mg	2 mg	3 mg
Ondansetron PO	Contact MC			4 mg ODT					
Ketamine	N/A	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg
Acetamineophen PO	60 mg	90 mg	120 mg	150 mg	180 mg	225 mg	285 mg	360 mg	450 mg

NOTE: ** EMT can acquire 12-lead ECG and read report text printout but cannot interpret.
- Avoid polypharmacy and switching between multiple medications.

Pediatric Seizure

ALS evaluation and/or transport if available:

History:	Differential:
• Prior history of seizures • Seizure medications • History of VP Shunt • Fever • *Head Trauma*	• *Medication or Toxin* • *Hypoxia or Respiratory failure* • Hypoglycemia • *First time Seizure*



Weight	4 kg	6 kg	8kg	10 kg	12 kg	15 kg	19 kg	24 kg	30 kg
D 25	8 mL	12 mL	16 mL	20 mL	24 mL	30 mL	38 mL	48 mL	60 mL
D 10	20 mL	30 mL	40 mL	50 mL	60 mL	75 mL	95 mL	120 mL	150 mL
Glucagon	0.4 mg	0.6 mg	0.8 mg	1 mg	1 mg	1 mg	1 mg	1 mg	1 mg
Midazolam	0.2 mg	0.3 mg	0.4 mg	0.5 mg	0.6 mg	0.75 mg	1 mg	1.2 mg	1.5 mg
Diazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Lorazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1 mg	1 mg	1 mg	1 mg	1 mg

Pediatric Shock Non-Traumatic

ALS evaluation and/or transport if available:

History:
- Medical History
- Respiratory distress or arrest
- Possible toxic or poison exposure
- Congenital disease
- Medication (maternal or infant)
- Non accidental trauma
- Fever

Differential:
- Respiratory effort
- Hypovolemia (dehydration)
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-hyperkalemia
- Hypoglycemia
- Hypothermia
- Trauma
- Toxins/poison exposure
- Tamponade, cardiac
- Tension pneumothorax
- Thrombosis (coronary or pulmonary)
- Infection, cardiac
- Congenital disease
- Non-accidental trauma

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

E — **Oxygen** PRN
Early assisted ventilation
Supraglottic Airway (PRC075) — E

Consider Warming Measures

I — Obtain IV/IO access
Fluid Bolus NS
20 ml/kg IV/IO
May repeat up to 60 ml/kg — I

E — **Consider ECG/12 lead — E

P — **Epinephrine Bolus**
1:10,000 0.01 mg/kg IV/IO
Epinephrine Drip
0.1-1.5 mcg/kg/min IV/IO — P

Ongoing assessment

Consider other treatment Protocols as necessary

M — **Contact Medical Control** — M

Weight	**4 kg**	**6 kg**	**8kg**	**10 kg**	**12 kg**	**15 kg**	**19 kg**	**24 kg**	**30 kg**
Epinephrine 1:10,000 0.01 mg/kg IV/IO	0.04 mg	0.06 mg	0.08 mg	0.1 mg	0.12 mg	0.15 mg	019 mg	0.24 mg	0.3 mg
Epinephrine Drip	1 mg Epinephrine 1:1,000 in 250 ml = 4 mcg/ml						Use 60 gtt tubing		

Mcg/min	2	4	6	8	10
Administer	30 gtts/min	60 gtts/min	90 gtts/min	120 gtts/min	150 gtts/min
Run gtts/sec	1 every 2 seconds	1 every second	15 every second	2 every second	2.5 every second

NOTE: ** EMT can acquire 12-lead ECG and read report text printout but cannot interpret.

Pediatric Toxic Exposure

ALS transport and evaluation if available:

• **History:** • Ingestion or suspected ingestion of potentially toxic substance • Time of ingestion • Available medications in the home	**Signs and Symptoms** • *Altered mental status* • *Abnormal vital signs* • Reason(suicidal, accidental or criminal) • Poor muscle control	**Differential:** • Tricyclic antidepressants (TCAs) • Acetaminophen (Tylenol) • Cardiac medications • Depressants • Solvents, Alcohols, Cleaning agents • Stimulants • Anticholinergic • Insecticides(organophosphates)

Universal Patient Care Protocol

R	EMR
E	EMT
I	EMT-IV
P	PM
M	MC Order

R **Oxygen** R

E **Supraglottic Airway** (PRC075) E

Consider

R **Contact Poison Control 800-222-1222** R

E **Contact Medical Control** with nature of toxic exposure E

E Consider **Activate Charcoal** 1 gm/kg PO E

R **Naloxone** 2-8 mg IN R

E **Naloxone** 2-8 mg IN/IM E

P **Naloxone** 0.1 mg/kg IV/IO P

I Obtain IV/IO access

Fluid bolus 20 ml/kg IV/IO May repeat up to 60 ml/kg I

E **Consider ECG/12 lead E

Tricyclics

P Consider **Sodium Bicarbonate** 4.2% 1-2 mEq/kg IV/IO For arrhythmia or AMS P

Calcium Channel Blockers

P **Calcium Chloride** 10 mg/kg IV/IO P

P Consider Transcutaneous pacing P

P **Epinephrine** See **Ped. Shock Non-Traumatic** (PCP360) P

Beta Blockers

P **Glucagon** 0.1 mg/kg IV/IO P

Organophosphates

P Excess Airway Secretions? **Atropine** 0.08 mg/kg IV/IO P

P **Midazolam** 0.1 mg/kg IV/IO/IN/IM For seizures P

CNS stimulants

P **Midazolam** 0.1 mg/kg IV/IO/IN/IM OR **Diazepam** 0.1 mg/kg IV/IO OR **Lorazepam** 0.1 mg/kg IV/IO OR **Ketamine** 1 mg/kg IV/IO P

M **Contact Medical Control** M

Weight	4 kg	6 kg	8kg	10 kg	12 kg	15 kg	19 kg	24 kg	30 kg
Activated Charcol	4 gm	6 gm	8 gm	10 gm	12 gm	15 gm	19 gm	24 gm	30 gm
Naloxone	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Sodium Bicarbonate	4 mEq	6 mEq	8 mEq	10 mEq	12 mEq	15 mEq	19 mEq	24 mEq	30 mEq
Calcium Chloride	40 mg	60 mg	80 mg	100 mg	120 mg	150 mg	190 mg	240 mg	300 mg
Glucagon	0.4 mg	0.6 mg	0.8 mg	1 mg	1 mg	1 mg	1 mg	1 mg	1 mg
Atropine	0.32 mg	0.48 mg	0.64 mg	0.8 mg	0.96 mg	1.2 mg	1.52 mg	1.92 mg	2.4 mg
Midazolam	0.2 mg	0.3 mg	0.4 mg	0.5 mg	0.6 mg	.75 mg	1 mg	1.2 mg	1.5 mg
Diazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Lorazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Ketamine	N/A	6 mg	8 mg	10 mg	12 mg	15 mg	19 mg	24 mg	30 mg

NOTE: ** EMT can acquire 12-lead ECG and read report text printout but cannot interpret.

Pediatric Trauma - Burns

ALS evaluation and/or transport if available:

History:	Signs and Symptoms	Differential:
• Type of exposure (heat, gas, chemical) • *Inhalation injury* • Time of Injury • Mechanism of injury • Non-accidental trauma • *Trauma*	• Superficial (1st °) red and painful • Partial thickness (2nd °) blistering • *Full Thickness (3rd°) charred or leathery skin* • *Burns to the head, chest and glove of hand*	• Chemical • Thermal • Electrical

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

R **Oxygen** PRN R

E **Airway-Supraglottic** (PRC075) E

Stop the burning process:
Remove jewelry and clothing that may be burned, covered in chemicals or restricting.

Thermal/Electrical

Cover burn with a dry clean sheet or dressing

Keep warm

Chemical

Brush off any excess chemical or powder

Flush area with water or Normal Saline (except materials that react with H2O) Keep Warm

Eye involvement?
Saline flush in the affected eye

Use **Rule of 9's**

I Obtain IV/IO access PRN I
Less than 5 yr. old
Isotonic IVF at 125 mL/hr
5-14 yr. old
Isotonic IVF at 250 mL/hr
15 yr. and older
Isotonic IVF at 500 mL/hr

With better estimate of TBSA, use **Parkland Formula**
TBSA x weight in kg ÷4 = mL/hr.
Isotonic IVF for the 1st hour

Pediatric Pain Management (PCP350)

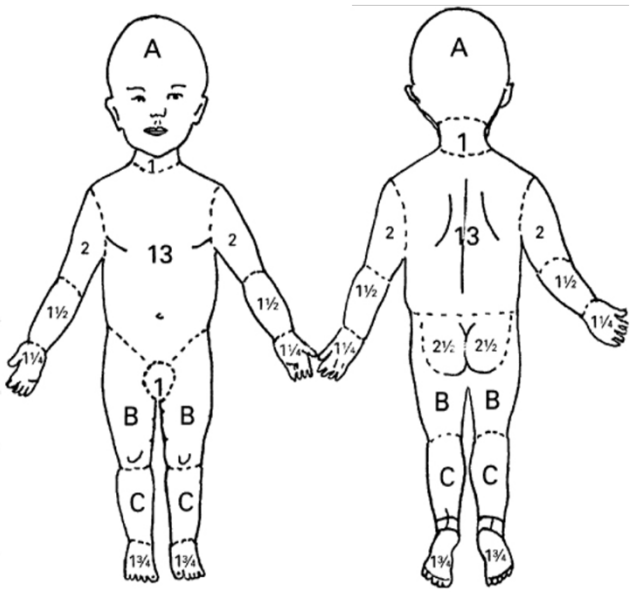
If burn <10% body surface area **Cool down wound with Normal Saline**

Cover burn with dry clean sheet or dressing

M **Contact Medical Control** M

Needs a Burn Unit

1. Partial and/or Full Thickness (2nd and/or 3rd degree burn >10% TBSA.
2. 2nd and/or 3rd degree burns to face, hands, or genitals.
3. Circumferential burns or burns at groin, axilla, or over major joints.



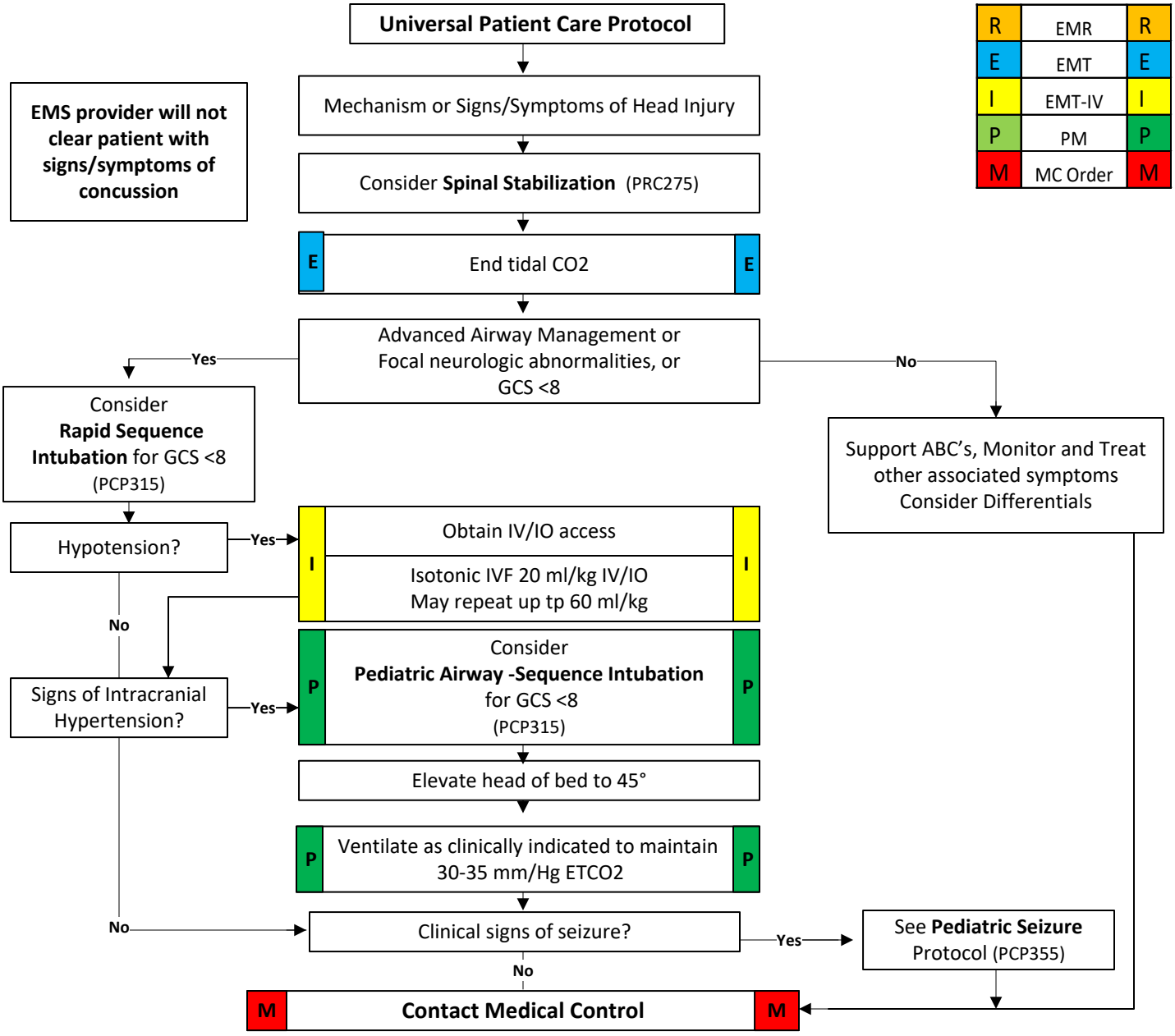
Area	Age 0	Age 1	Age 5	Age 10	Age 15
A = ½ of Head	9½	8½	6½	5½	4½
B = ½ of Thigh	2¾	3¼	4	4¼	4½
C = ½ of Leg	2½	2½	2¾	3	3¼

Notes: • **Parkland Burn formula for IVF in the 1st hour: TBSA x weight in kg ÷ 4 = mL/hr**
• **TBSA** – Total Body Surface Area.

Pediatric Trauma – Head Injury

ALS evaluation and/or transport if available:

Signs observed by Others:	**Symptoms Reported by Patient:**
• Appears dazed or stunned • Confusion • Forgetfulness • Unsure • Moves Clumsily • Answers Questions slowly • Lose consciousness • Behavior or personality Changes • Can't recall events prior to hit/fall • Apparent weakness • Neurological deterioration over time • *Abnormal Vital Signs*	• Headaches • Nausea or *vomiting* • Balance problems or dizziness • Double or blurry vision • Sensitivity to noise • Numbness or weakness in extremities • Feeling sluggish, hazy, foggy or groggy • Concentration or memory problems • Confusion/*Altered Mental Status* • DOES NOT "FEEL RIGHT"



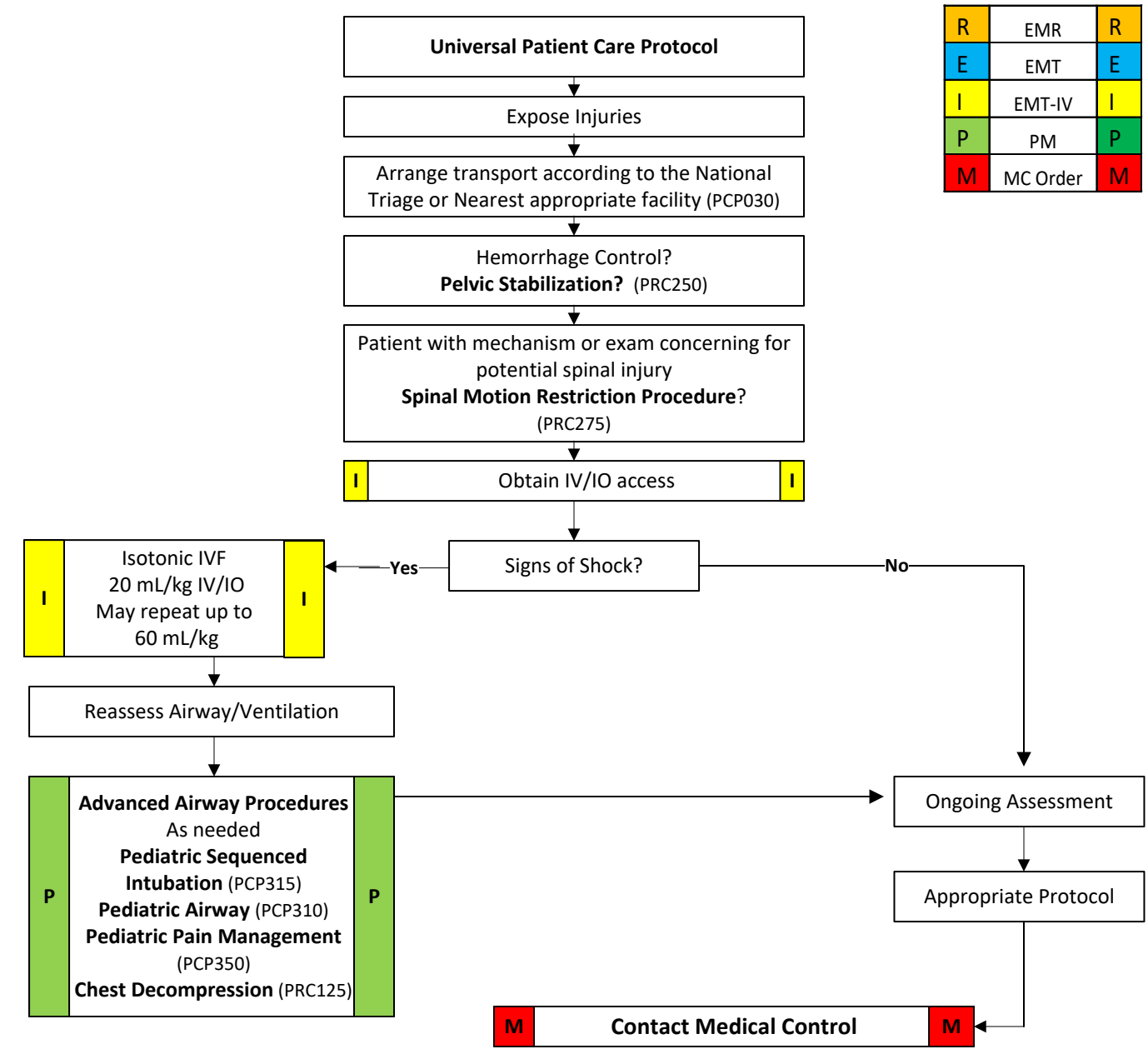
Notes:

- Recommended that patient not return to sports until cleared by qualified medical professional.
- Consider Non-Accidental Trauma – Contact Law.

Pediatric Trauma - Multi-System

ALS evaluation and/or transport if available:

History:	Signs and Symptoms:	Differential:
• Time and Mechanism of injury • Damage to structure or vehicle • Location in structure or vehicle • Others injured or dead • Speed and details of VA • Restraints/protective equipment • Symptoms preceding incident	• *Altered mental status or unconscious* • *Hypotension or shock*	• *Chest – Tension pneumothorax* • *Flail Chest* • *Pericardial Tamponade* • *Open Chest wound* • *Hemothorax* • *Intra-abdominal bleeding* • *Pelvis/femur fracture* • *Spine fracture/Cord Injury* • Extremity fracture/Dislocation • *HEENT (Airway Obstruction)* • Hypothermia



Notes:

- **Exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Extremities, Back, Neuro**
- Mechanism is often a good indicator of serious injury
- If domestic violence or abuse is suspected, it is mandatory to report to Law Enforcement, receiving facility, air transport

Pediatric Trauma - Drowning

ALS evaluation and/or transport if available:

History:	**Differential:**
• Submersion in water regardless of depth • Possible history of trauma • Duration of submersion • Temperature of water • Salt vs Fresh Water	• Trauma • Pre-Existing medical problems • Barotrauma • Decompression Sickness

R	EMR	R
E	EMT	E
I	EMT-IV	I
P	PM	P
M	MC Order	M

Universal Patient Care Protocol

Consider **Spinal Immobilization** (PRC275)

E **Airway Supraglottic** (PRC075) E

If no pulse or Symptomatic Bradycardia begin **CPR** (PCP050)
See Appropriate Guideline

Remove Wet Clothing
Cover with dry (warm) blankets
Warming Measures

Consider other treatment Protocol as necessary

I Obtain IV/IO access I

E ** ECG/12 lead E

M **Contact Medical Control** M

Notes:

- ** EMT can acquire 12-lead ECG and read report text printout but **cannot interpret**
- **All drowning or near drowning victims will be transported to the hospital. Children who have possibly aspirated anything may not be transported POV, but can be transported BLS if stable.**
- Considerations: Fresh water vs seawater.
- Considerations: Secondary pneumonia.

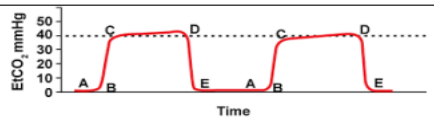
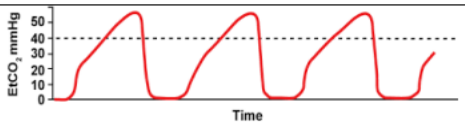
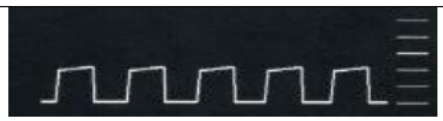
Airway Capnography, End Tidal CO2

Clinical Indications:

- All intubated/Supraglottic Airway patients.
- Any patient being treated for carbon monoxide poisoning.
- If appropriate cannula-type sensors are available capnography may be used in non-intubated patients with severe respiratory distress/respiratory insufficiency.

Procedure:

1. For non-intubated patients with severe respiratory distress/respiratory insufficiency, place cannula-type sensor in patient's nares.
2. Attach capnography sensor t supraglottic airway or endotracheal tube.
3. Note CO2 level and waveform changes. These will be documented on each respiratory failure or cardiac arrest patient.
4. The capnometer shall remain in place with the airway and be monitored throughout the prehospital care and transport.
5. Any loss of CO2 detection or waveform indicative of any airway problem should be documented.
6. The capnogram should be monitored as procedures are performed to verify or correct the airway problem.
7. Document the procedure and result on the Patient Care Report (PCR).

NORMAL: "Square box" waveform; baseline CO2 = 0; ETCO2 = 35-45 mm Hg Management: Monitor	
DISLODGED ETT / ESOPHOGEAL INTUBATION: Loss of waveform, Loss of ETCO2 reading Management: Replace ETT	
"SHARKFIN" with/without prolonged expiration = Bronchospasm (asthma, COPD, allergic rxn): Management: Bronchodilators (Albuterol, Atrovent, or epinephrine)	
RISING BASELINE = Patient is rebreathing CO2: Management: Check equipment for adequate oxygen inflow Allow intubated patient more time to exhale	
HYPERVENTILATION: Rapid RR; shortened waveform; baseline ETCO2 = 0; ETCO2 < 35 mm Hg Management: Biofeedback if conscious, decrease assisted ventilation rate if unconscious/intubated	
PATIENT BREATHING AROUND ET TUBE: angled, sloping down stroke on waveform, Broken cuff or tube is too small Management: Assess patient, oxygenation, ventilation; may need to reintubate	

Important: Severe metabolic acidosis (DKA, sepsis, salicylate poisoning, acute renal failure, methanol ingestion, tricyclic overdose) will cause tachypnea but ETCO2 will be HIGH.

THIS IS NOT NORMAL

Airway
Cricothyrotomy Needle (Adult & Pediatric)

Clinical Indications:

- Failed Airway Protocol.
- Management of an airway when standard airway procedures cannot be accomplished or has failed in a patient.

Procedure:

1. Have suction supplies including the endotracheal adapter of a 3.0 mm-ID ET tube.
2. Locate the cricothyroid membrane utilizing anatomical landmarks.
3. Use the non-dominate hand to secure the membrane.
4. Prep the area with antiseptic swab.
5. Using the syringe and the finder needle supplied in the commercial needle cricothyrotomy kit (or a 5cc syringe attached to a 10 to 14-gauge catheter-over-needle device if needed), insert the needle through the cricothyroid membrane at 45-60 degree caudal angle.
6. Aspirate for air with the syringe throughout the procedure.
7. Once air returns easily, stop advancing the device. If using an over the needle catheter, thread the catheter off the needle gently at a 60 degree caudal angle.
8. Attach the previously sized ET adapter to the end of the catheter and begin ventilation with a Bag Valve Mask connected to high flow oxygen source.
9. Assess breath sounds. Make certain ample time is uses not only for inspiration but expiration as well, i.e., a 1:6 ratio is not unreasonable.
10. Secure needle by best method available, recognizing that this method may be direct hands-on control of the device throughout the entire transport.
11. If unable to obtain an adequate airway, resume basic airway management and transport the patient as soon as possible.
12. Regardless of success or failure of needle cricothyrotomy, notify the receiving hospital at the earliest possible time of a surgical emergency.
13. Document time/procedure/confirmation/change in patient condition/time on the patient care record (PCR).

NOTE: For Reference picture please see PRC015

Airway
Cricothyrotomy Surgical (Adult)

Clinical indications:

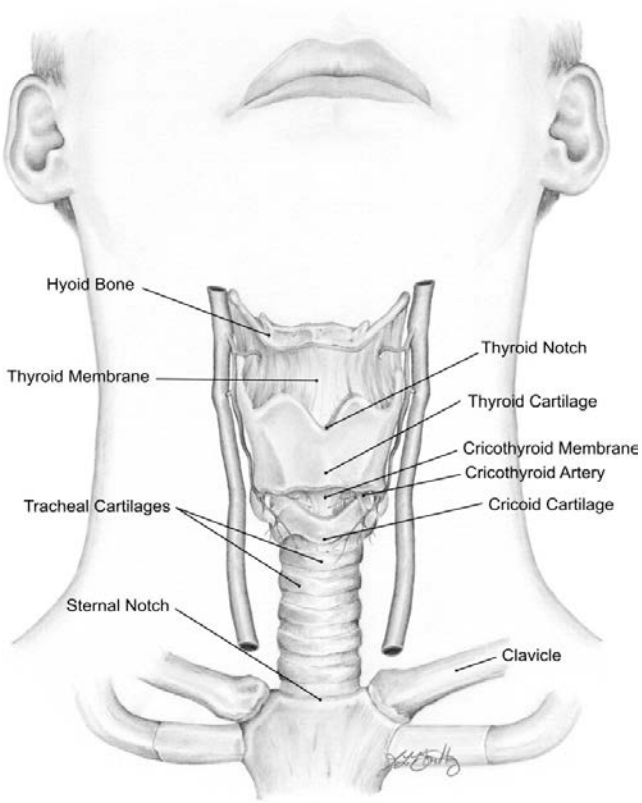
- Failed Airway Protocol
- Management of an airway when standard airway procedures cannot be performed or have failed in a patient >12 years old.

Clinical Contraindications:

- History of prior surgical airway.
- Significant trauma to the trachea or larynx suspicious of a tear or fracture.
- Massive neck edema obstructing landmark identification.
- Children less than 12 years of age.
- Ability to effectively ventilate/ oxygenate and suction if necessary.

Procedure:

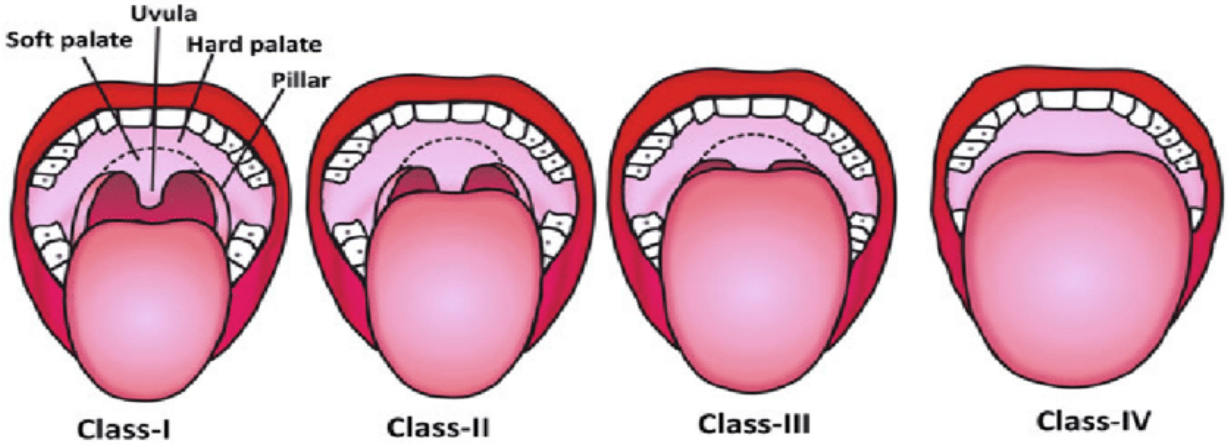
1. Have suction and supplies available and ready.
2. Place the patient supine with the neck in a neutral position.
3. Locate the cricothyroid membrane utilizing anatomical landmarks.
4. Prep the area with antiseptic swab.
5. Stabilize the thyroid cartilage with the non-dominant hand.
6. Identify the cricothyroid membrane.
7. Make an incision over the cricothyroid membrane.
8. Visualize the cricothyroid membrane and puncture with the cric introducer or scalpel.
9. Dilate the cricothyroid membrane using any of the following techniques: kit dilator, curved hemostats, or gloved finger. You may insert a skin hook and advance a Bougie through the incision with a curved tip directed towards the feet.
10. Insert a 5.5 - 6.5 ID ET Tube just until the cuff passes into the trachea. Be sure the cuff has cleared the cricothyroid space. IF you've inserted a Bougie, pass the endotracheal tube over the top of the Bougie stylet.



11. Inflate the cuff with 5-10cc of air and ventilate the patient while manually stabilizing the tube.
12. All of the standard assessment techniques for insuring tube placement should be performed (auscultation, chest rise & fall, end-tidal CO2 detector, etc.) Esophageal bulb devices are not accurate with this procedure.
13. Secure the tube. Document the time, procedure, and patient response on the PCR.

Airway
Difficult Airway Assessment

HEAVEN CRITERIA		
Physical signs	**Less difficult airway**	**More difficult airway**
H ypoxemia	SpO2 ≥ 93% at time of initial laryngoscopy	SpO2 ≤ 93% at time of initial laryngoscopy
E xtremes of size	❖ Adult patients ❖ Normal body habitus	❖ Age < 8 years of age ❖ Clinically obese ❖ Other size related complications requiring special resources, equipment, or positioning.
A natomic challenge	❖ No facial, head, or neck trauma ❖ No swelling or foreign body ❖ No other structural abnormality limiting laryngoscopic view	❖ Facial, head, neck trauma ❖ Airway swelling or foreign body ❖ Other structural abnormality limiting laryngoscopic view
V omit/blood/fluid	❖ Pharynx and hypopharynx clear of blood, emesis, or other fluid	❖ Blood, vomit, or other fluid present in pharynx or hypopharynx limiting laryngoscopic view
E xsanguination/ anemia	❖ No suspected anemia or blood loss	❖ Suspected or know anemia or blood loss which could accelerate desaturation during apneic periods
N eck	❖ No suspected neck injury, medical condition, or device limiting cervical range of motion	❖ Known or suspected neck injury, medical condition or device limiting cervical mobility



Airway
ETT Placement Verification and Monitoring

Clinical Indication:

- Verification and monitoring of endotracheal tube (ET) placement in all intubated patients. The use of waveform capnography in initial confirmation and ongoing placement monitoring is required when available for all intubated patients.

Procedure:

After successfully intubating the patient:

1. Assess for breathing sounds high in axilla, anterior chest and over the abdomen.
2. Observe misting of the Endotracheal tube.
3. Assess for negative gastric sounds.
4. Use inline ETCO2 monitoring for confirmation and continuous monitoring of tube placement when available. This must be documented in narrative and capnography readings should be included in vitals.
5. Colorimetric CO2 detector may be used at the initial stage of ET intubation, but inline continuous monitoring should occur thereafter.
6. In the perfusing patient, obtain and monitor SPO2. These should be adequate or improving. Record data.

Airway
Intubation with Eschmann Catheter, Tracheal Tube Introducer or Gum Elastic Bougie

Technique:

1. Perform direct video laryngoscopy after, thorough pre-oxygenation. **Passive Preoxygenation (PRC055)**

2. Insert bougie under direct visualization (grade II) or semi blind (grade III) using epiglottis as a guide. Maintain midline bent end facing anteriorly.

3. With the tip directed anteriorly, guide the bougie toward the epiglottis.

4. Advance the bougie posterior to the epiglottis and into the glottic opening.

5. Cricoid pressure may facilitate correct placement (when the tip of the introducer passes the cricoid cartilage and enters the trachea it also may be palpable at the anatomic location).

6. The operator may be able to feel the bougie "click" or "bump" over the anterior tracheal rings ("wash boarding or railroading").

7. Use the laryngoscope to elevate the pharyngeal soft tissue.

8. Subtle maneuvering may be required to traverse the vocal cords.

9. Advance to the carina (resistance to passage) to verify placement (approximately 45 cm). Once advanced to the carina, further insertion causes the bougie to rotate on entrance into bronchus as an additional criterion to confirm correct placement. Failure to meet resistance after inserting nearly the full length of the bougie indicates esophageal placement. Withdraw and align the black "lip-line marker" with the lips (1 cm band located 40 cm (4 stripes) for proximal end).

10. Pass endotracheal tube (larger than 6.0 mm) over the bougie.

11. If the endotracheal tube catches on the arytenoid or aryepiglottic folds, withdraw the tube slightly and rotate it 90° counterclockwise and advance it forward (allows beveled end to pass).

12. For optimal passage of the tube over the bougie into the trachea, the laryngoscope may be left in place as the endotracheal tube is advanced with the bevel facing posteriorly.

13. Secure the tube (remove the bougie) and verify tube placement.

Airway
Nasotracheal Intubation

Clinical Indications:

- Spontaneously breathing patient in need of intubation (inadequate effort, evidence of hypoxia or carbon dioxide retention, or need for airway protection).
- Patient must be 12 years of age or older.
- RSI would impose undue risk to patient.

Procedure:

1. Premedicate the patient with nasal spray (oxymetazoline) Afrin®.
2. Select the largest and least obstructed nostril and insert a lubricated nasal airway to help dilate the nasal passage.
3. Pre-oxygenate the patient. Lubricate the tube with water soluble lubricant. **Passive Pre-Oxygen (PRC055)**
4. Remove the nasal airway and gently insert the tube keeping the bevel of the tube toward the septum.
5. Insert the tube along the floor of the nasopharynx angling toward the posterior hypopharynx.
6. Continue to pass the tube, listening for air movement and looking for vapor condensation in the tube. As the tube approaches the larynx, the air movement will get louder.
7. Open the patient's mouth to assure the tube is centered behind the uvula.
8. Gently and evenly advance the tube through the glottic opening on inspiration. This facilitates passage of the tube and reduces the incidence of trauma to the vocal cords.
9. Upon entering the trachea, the tube may cause the patient to cough, buck, strain, or gag. **Do not remove the tube.** This is normal but be prepared to control the cervical spine of patient and be alert for vomiting.
10. Auscultate for bilaterally equal breath sounds and absence of sounds at the epigastrium. Observe for symmetrical chest expansion. The 15mm adapter usually rests close to the nostril with proper positioning.
11. Inflate the cuff with 5-10 cc of air. Confirm tube placement using an end-tidal CO_2 monitoring or esophageal bulb device.
12. Medicate patient as per protocol.
13. Secure the tube. Document the procedure, time, and result (success) on/with the patient care report.

Airway
Nebulizer Inhalation Therapy

Clinical Indications:

- Patients experiencing bronchospasm or stridor.

Procedure:

PPE - use appropriate PPE, consider N-95 or better for nebulized treatments.

1) Instill appropriate medication into the reservoir well of the nebulizer.
2) Connect the nebulizer device to oxygen at 6-8 liters per minute or adequate flow to produce a steady, visible mist.
3) Instruct the patient to inhale normally through the mouthpiece of the nebulizer. The patient needs to have a good lip seal around the mouthpiece.
   a) Consider if the patient is unable to maintain a good lip seal around the mouthpiece, nebulizer may be connected to a face mask.
   b) For a child, use a child face mask or may hold nebulizer as blow by in front of the patient's face.
4) In the intubated patient, patient on NIPPV or BVM, nebulizer should be placed in-line for effective medication delivery.
5) The treatment should last until the solution is depleted. Tapping the reservoir well near the end of the treatment will assist in utilizing all of the solution.
6) Monitor the patient for medication effects. This should include the patient's assessment of his/her response to the treatment and reassessment of vital signs, ECG, and breath sounds.
7) Document the treatment, dose, and route on the patient care report (PRC).

Airway
Non-Invasive Positive Pressure Ventilation (NIPPV)

Clinical Indications:

- Near drowning, Asthma/RAD, Passive oxygenation.
- Consider respiratory distress in the conscious patient suffering from:
  - Presumed pulmonary edema.
  - Severe reactive airway disease.
  - Consider use in patients DNR/DNI with signs of respiratory compromise.
- **Continue medical management of cardiogenic pulmonary edema while preparing and during use of NIPPV.**

Contraindications:

- Respiratory arrest.
- Inability to protect airway and impaired consciousness.
- Facial trauma/surgery/structure deformity that would affect ability to make a seal.
- Known or suspected pneumothorax.
- Upper airway obstruction
- Pulmonary fibrosis.

Procedure:

1) Assemble equipment and ensure proper function.
2) Ensure adequate oxygen supply to ventilation device.
3) Assess and document initial SpO2, work of breathing and EtCO2 if possible.
4) Explain the procedure to the patient.
5) Place the delivery mask over the mouth and nose.
   a) Consider placement of a nasopharyngeal airway.
6) Place the delivery mask over the mouth and nose.
7) Secure the mask with provided straps or other provided devices.
8) **BLS** may only use CPAP – recommended starting at pressure/PEEP of 10 cm H2O. Adjust flow as needed with nebs. **ALS** - If using BIPAP, select IPAP similar to CPAP pressure and EPAP should be approximately HALF of IPAP. For example, IPAP 10 cm H20 and EPAP of 5cm H2O. Increase/titrate for effect. Increase/titrate for effect.
9) Begin at 10 cm H20 with low pressure and increase as patient tolerates and /or the clinical situation dictates by 2.5 cm H20 to maximum of 15 cm H20.
10) Frequently reassess patient's respiratory status and vital signs.
    a) If rapid improvement is **NOT** noted, discontinue NIPPV and manage respiratory condition via other means.
11) Notify receiving facility of NIPPV use.
12) SVN can be utilized in line in the NIPPV circuit.

Airway
Orotracheal Intubation

Clinical Indications:

- An unconscious patient without a gag reflex who is apneic or is demonstrating inadequate respiratory effort.
- Persistent hypoxia in spite of other interventions.
- Any patient medicated for rapid sequence intubation.

Procedure:

1. Prepare all equipment and have suction ready.
2. Pre-oxygenate the patient **(PRC055).**
3. Medicate according to appropriate **RSI procedure (PRC060).**
4. Open the patient's airway and hold the laryngoscope in the left hand, insert the blade into the right side of the mouth and sweep the tongue to the left.
5. If using a video assisted laryngoscope, record and save, if possible, to PCR as part of PCR.
6. Use the blade to lift the tongue and epiglottis (either directly with the straight blade or indirectly with the curved blade).
7. Once the glottic opening is visualized, apply cricoid manipulation if needed and slip the tube through the cords and continue to visualize until the cuff is past the cords.
8. Number of attempts at ventilation shall not further compromise oxygenation. Oxygenate between each attempt and record SPO2. If unable to intubate after two attempts proceed to **Failed Airway protocol (PRC020)**.
9. Remove the stylet and inflate the cuff (5-10cc until no cuff leak).
10. Auscultate for absence of sounds over the epigastrium and bilaterally for equal breath sounds.
11. This should be repeated frequently and after movement or manipulation.
12. Confirm the placement using a minimum of two methods. CO2 detection device mandatory.
13. Secure the tube.
14. Document ETT size, time, result (success), and placement location by the centimeter marks either at the patient's teeth or lips on/with the patient care report (PCR).
15. Document all devices used to confirm initial tube placement. Also document positive or negative breath sounds before and after each movement of the patient.

Airway
Passive Pre-Oxygenation Procedure

Clinical indications:

- Cardiac arrest
- To support and maintain oxygen saturation throughout airway procedures.
- All rapid sequence intubations.
- All conscious sedations.

Clinical contraindications:

- None.

Procedure:

- Place a nasal cannula on all patients while preparing for RSI, with EtCO2 monitoring if available.

1. **Low risk patient (96-100%):**
    a. Pre-oxygenation: non rebreather mask (NRB) w/normal flow.
    b. Induction: NRB and nasal cannula (NC) set to 15L/min.
    c. During intubation: NC kept at 15L/min.

2. **High risk (91-95%):**
    a. Pre-oxygenation: NRB or CPAP or bag valve mask (*BVM) with PEEP value set initially at 10cm H2O.
    b. Induction: as above plus NC at 15L/min.
    c. Intubation: NC at 15L/min.

3. **Hypoxemic, Cardiac arrest (<90%):**
    a. Pre-oxygenation: CPAP or BVM w/PEEP value set initially at 10cm H2O.
    b. Induction: as above plus NC at 15L/min.
    c. Intubation: NC at 15L/min.
    d. Cardiac arrest: NC at maximum output.

4. Once advanced airway has been placed, the nasal cannula can be removed.

5. Document the procedure and results on the Patient Care Report (PCR).

Airway
Sequenced Induction and Intubation

Inclusion Criteria:

- ❖ Patients with an intact gag reflex who require proactive airway control and management due to clinical conditions.

Procedure:

1. Assemble equipment and ensure proper function using the Rapid Sequence Induction and Intubation Checklist.
    a. Ensure availability of Atropine for all patients.
    b. Ensure availability of vasopressors for all patients.
2. Preoxygenate with High Flow Oxygen using Non-Rebreather mask and Nasal cannula.
3. Assess patient for difficult airway.
4. Explain the procedure to the patient as appropriate.
5. If the patient displays clinical indications of shock, resuscitate as appropriate before attempting intubation, if possible.
    a. Hypovolemia: Appropriate fluid bolus of isotonic crystalloid.
    b. Other causes of shock: vasopressors as appropriate.
    c. A higher than normal target pressure (systolic greater than 130 mmHg/MAP greater than 85 mmHg) may be desirable in the shocked patient prior to intubation attempt(s).
6. Sedate/dissociate as appropriate:

Non-Shock/Normotensive Patient	Shock/Hypotensive Patient
Ketamine 1 mg/kg (***Peds*** *>3months of age)* Or **Midazolam** 0.1 mg/kg (Max dose of 10 mg) Or **Propofol** 50-100 mg (1-2.5 mg/kg) *(**Peds** >3 years of age 3 mg/kg IV/IO)*	**Ketamine** 0.5 mg/kg *(**Peds** > 3months of age)*

7. Consider Continuing preoxygenation for up to 3 minutes if patient condition tolerates.
8. Position the patient as appropriate.
9. Paralyze as appropriate:

Non-Shock/Normotensive Patient	Shocked/Hypotensive Patient
Succinylcholine 1.5 mg/kg **(Adult)** **Succinylcholine** 2 mg/kg **(Pediatric)** OR **Rocuronium** 0.6 to 1.2 mg/kg	**Rocuronium** 0.6 to 1.2 mg/kg OR **Succinylcholine** 2mg/kg **Contraindications for Succinylcholine:** ❖ Renal Failure ❖ Prolonged Crush Injury ❖ Burns > 24 hours old ❖ Recent Paralysis

Airway
Sequenced Induction and Intubation (Continued)

10. Intubate the patient per procedure.
    a. Consider using video laryngoscopy and/or bougie on first attempt.
11. Consider ongoing sedation as needed:

Non-Shock/Normotensive Patient	Shocked/Hypotensive Patient
Ketamine 1-2 mg/kg *(**Peds** >3 months of age)* OR **Midazolam** 0.1 mg/kg (max dose of 10 mg) OR **Diazepam** 2-5 mg with **Fentanyl** 1 mcg/kg (Max dose of 25-100 mcg) OR **Propofol** 10-20 mcg/kg/min. May titrate to 50 mcg/kg/min *(**Peds >3 years of age** – may repeat bolus as needed)*	**Ketamine** 0.5 mg/kg *(**Peds** > 3months of age)* OR **Diazepam** 2-5 mg with **Fentanyl** 1mcg/kg OR **Ketamine drip** 0.5-2 mg/kg/hr *(**Peds** > 3months of age)*

12. Consider ongoing paralysis as needed and clinically indicated:

Non-Shock/Normotensive Patient	Shocked/Hypotensive Patient
Rocuronium 0.1 – 0.2 mg/kg IV **(Adult)** **Rocuronium** 0.075 – 0.125 mg/kg IV **(3 months – 14 years)** OR **Vecuronium** 0.1 mg/kg	

Airway
Suctioning – Advanced

Clinical Indications:

- Obstruction of the airway (secondary to secretions, blood, or any other substance) in a patient currently being assisted by an airway adjunct such has:
    - Naso-tracheal tube.
    - Endotracheal tube.
    - Supraglottic Airway.
    - Tracheostomy tube.
    - Cricothyrotomy tube.

Procedure:

1. Ensure suction device is in proper working order with rigid suction tip in place.
2. Collect supplies including flexible suction catheter, sterile saline in container, clean gloves.
3. Pre-oxygenate the patient as much as possible. Do not over inflate the lungs.
4. Attach suction catheter to suction device, keeping end of catheter aseptic.
5. Measure length of catheter for proper depth of insertion based on the type of device in place.
6. If applicable, remove ventilation devices from the airway.
7. With the thumb port of the catheter uncovered, insert the catheter through the airway device.
8. Once the desired depth (measured in #5 above) has been reached, occlude the thumb port, and remove the suction catheter slowly.
9. Interrupt ventilations for no more than 30 seconds.
10. Reattach ventilation device (e.g., bag-valve mask) and ventilate the patient.
11. Clear the suction catheter of thick secretions by aspirating sterile saline.
12. If thick secretions prevent effective suctioning, instill 3-5 cc of sterile saline in the ET tube and ventilate the patient 3-4 breaths. Then repeat suctioning as described.
13. Document time and result including SpO_2 readings before and after procedure on the Patient Care Report (PCR).

Airway
Suctioning – Basic

Clinical Indications:

- Obstruction of the airway (secondary to secretions, blood, or any other substance) in a patient who cannot maintain or keep the airway clear.

Procedure:

Oropharyngeal

1. Ensure suction device is in proper working order with rigid suction tip in place.
2. Pre-oxygenate the patient as much as possible.
3. Explain the procedure to the patient if they are coherent.
4. Examine the oropharynx and remove any potential foreign bodies or material which may occlude the airway if dislodged by the suction device.
5. If applicable, remove airway adjuncts from the airway.
6. Use the suction device to remove any secretions, blood, or other substances.
7. Be aware that a patient with altered mentation may bite on the catheter resulting in a foreign body obstruction.
8. The alert patient may assist with this procedure.
9. Reattach ventilation device (e.g., bag-valve mask) and ventilate or assist the patient.
10. Record the time and result of the suctioning in the patient care report (PCR).

Nasopharyngeal

1. Ensure suction device is in proper working order with flexible suction tip in place.
2. Lubricate the end of the suction catheter with water soluble lubricant.
3. Pre-oxygenate the patient as much as possible.
4. Explain the procedure to the patient if they are coherent.
5. Examine the oropharynx and remove any potential foreign bodies or material which may occlude the airway if dislodged by the suction device.
6. If applicable, remove ventilation devices from the airway.
7. Insert the flexible catheter through the largest nare following the floor of the nasal passage angling toward the posterior pharynx.
8. Use the suction device to remove any secretions, blood, or other substance.
9. Reattach ventilation device (e.g., bag-valve mask) and ventilate or assist the patient.
10. Record the time and result of the suctioning on the Patient Care Report (PCR).

Airway
Supraglottic Airway

Clinical Indications: Appropriate intubation is impossible due to patient access or difficult airway anatomy. Apneic children and adults without an intact gag reflex.

- Airway, Adult: Airway Rapid Sequence Intubation; Failed Airway, Adult; & Cardiac Arrest
- Newborn Resuscitation.
- Pediatric Airway; Pediatric Difficult Airway & Pediatric Rapid Sequence Intubation.

Caution: This airway does not prevent or protect against aspiration.

Clinical Contradictions:

- Pulmonary Fibrosis
- Tracheostomies, chronically ventilated patients

Procedure:

1. Select the appropriate size I-gel

		Compatible Endotracheal Tube
Size 1.0	2-5 kg	3.0 mm I.D.
Size 1.5	5-12 kg	4.0 mm I.D.
Size 2	10-25 kg	5.0 mm I.D.
Size 2.5	25-35 kg	5.0 mm I.D.
Size 3	30-60 kg	6.0 mm I.D.
Size 4	50-90 kg	7.0 mm I.D.
Size 5	> 90 kg	8.0.mm I.D.

2. Lubricate with a water-soluble jelly on the middle of the smooth surface and return to the cradle.
3. Pre-oxygenate the patient.
4. Grasp the lubricated I-gel along the integral bite block. Position the device so that the I-gel cuff outlet is facing towards the patient's chin (mental region of mandible).
5. The patient should always be in the sniffing position with the head extended and the head flexed prior to insertion unless head/neck movement is inadvisable or contraindicated.
6. Introduce the leading soft tip into the mouth of the patient in the direction of the hard palate.
7. Glide the I-gel downward and backward along the hard palate with a continuous but gentle push until a definitive resistance is felt.
8. Connect the I-gel to a bag-valve-mask and assess for the breath sounds, adequate air exchange and end tidal CO2 (EtCO2).
9. Monitor oxygen saturation with pulse oximetry, EtCO2 and heart monitor.
10. Secure the I-gel.
11. Re-verify I-gel placement after every move and upon arrival in the Emergency Department.
12. Document the procedure, time, and result (success) on/with the patient care report (MIR/PCR).

*When using the device after encountering a difficult intubation endotracheal intubation may be accomplished by passing bougie through the I-gel into the trachea (see above chart for endotracheal tube compatibility. When advancing the bougie you may be able to "rail-road" the bougie to over the cartilaginous rings in the trachea to confirm proper location. Place an endotracheal tube over the bougie and advance into the trachea.

Airway
Tracheostomy Management

Clinical Indications:

- Presence of Tracheostomy site.
- Urgent or emergent indication to change the tube such as:
  - Obstruction that will not clear with suction.
  - Dislodgement.
  - Inability to oxygenate/ventilate the patient without other obvious explanation.

Procedure:

1. Enlist assistance of primary care giver if available.
2. Have all airway equipment prepared for standard airway management, including equipment for orotracheal intubation and failed airway.
3. Attempt to suction like you would an ETT, if unable to clear airway, consider replacing tube.
4. Have airway device (endotracheal tube or tracheostomy tube) of the same size as the tracheostomy tube currently in place as well as 0.5 size smaller available (e.g., if the patient has a #6.0 Shiley, then have a 6.0 and 5.5 tube).
5. Lubricate the replacement tube(s) and check the cuff.
6. Remove the tracheostomy tube from mechanical ventilation device and use a bag-valve mask (BVM) to pre-oxygenate the patient as much as possible.
7. Once all equipment is in place, remove devices securing the tracheostomy tube, including sutures and or supporting bandages.
8. If applicable, deflate the cuff on the tube.
9. Remove the tracheostomy tube.
10. Insert the replacement tube. Confirm placement via standard measures except for esophageal detection (which is ineffective for surgical airways).
11. If there is any difficulty placing the tube, re-attempt procedure with the smaller tube.
12. If difficulty is still encountered, use standard airway procedures such as oral bag - valve mask or endotracheal intubation (as per protocol). **More difficulty with tube changing can be anticipated for tracheostomy sites that are immature-i.e., less than two weeks old.**
13. **Great caution should be exercised in attempts to change immature tracheotomy sites**.
14. Document procedure, confirmation, patient response, and any complications in the PCR.
15. If transporting patient, bring spare tube from home to the hospital.

Airway
Ventilator Operation

Clinical Indications:

- Transport of an intubated patient.

Procedure:

A. Initial ventilator therapy:

1. Confirm the placement of tube as per airway protocol.
2. Ensure adequate oxygen delivery to the ventilator device.
3. Pre-oxygenate the patient as much as possible with bag-valve mask.
4. Remove bag-valve mask and attach tube to ventilator device.
5. Per instructions of device, set initial values. For example, set an inspiratory/expiratory ratio of 1:4 with a rate of 12 to 20, tidal volume 6-8 mL/kg ideal body weight.
6. Assess breath sounds. Allow for adequate expiratory time. Adjust ventilator setting as clinically indicated.
7. If any worsening of patient condition decrease in oxygen saturation or any question regarding the function of the ventilator remove the ventilator and resume bag-valve mask ventilations.
8. Document time, SPO_2/$EtCO_2$ trends, complications, and patient response on the patient care report (PCR).

B. Continued Ventilation Therapy:

Principals of Therapy:

1. The Following guidelines are to decrease work of breathing, improve patient-ventilator synchrony, enhance patient comfort maintain adequate blood gases and prevent alveolar distension Contact Medical Control for complex situations.
2. The patient and ventilator function as a dynamic system. No one set of ventilator parameters is ideal for all patient situations. Each patient has unique neural respiratory drives.
3. "The brain's desire to regulate respirations does not stop." Desynchrony occurs when the ventilator settings do not match the patient's needs as well. Depending on the clinical situation, one goal of therapy may take precedence over others:
    a. Dynamic hyperventilation
    b. Compliance
    c. Resistance
4. ****For changes in patients' condition, Contact Medical Control.**

Terms:

Assist Control – The ventilator delivers to a set tidal volume, or pressure, and rate regardless of whether or not the patient is spontaneously breathing. Best used with apneic patients (i.e., cardiac, or respiratory arrest).

Airway
Ventilator Operation (Continued)

SIMV – Synchronized Intermittent Mechanical Ventilation. Ventilators with this capability are able to sense the negative pressure caused by a spontaneously breathing patient's inspiration which then triggers ventilation delivery to either a set volume or pressure. The patient's exhalation is also sensed triggering the ventilator to stop inspiration In addition, a minimum rate an also be set (similar to a cardiac pacemaker on a ventricular demand setting) so that if the patient has a period of apnea, the ventilator will deliver a breath. This setting is quite often used in patients who are being weaned from or on long-term mechanical ventilation.

I:E – Ratio of inspiration time to expiration time. Often 1:3 or 1:4, but depending on the patient's needs, it may be more (1:5, 1:6, etc....).

FiO_2 – Fraction of Inspired Oxygen. Percent of oxygen in the ventilation. May be expressed as a decimal or percentage. For instance, 1.0 = 100%, 0.5 = 50%, etc. (Room air is 0.21 or 21%).

PEEP – Positive End Expiratory Pressure. The amount of pressure that a patient needs to exhale against. This helps prevent atelectasis by providing a pressure in the airways to 'stent' them open against the increased thoracic pressure during exhalation. Commonly 5cmH_2O, although some patients may need as much as 15cmH_2O. (If greater than 15cm H_2O, contact Medical Control.

PIP – Peak Inspiratory Pressure. The maximum allowable pressure used during the inspiratory phase. Can be adjusted to the patient's condition However, some ventilators may have a hard limit (around 35cmH_2O) that cannot be exceeded.

Ve – Minute Ventilation.

Vt – Tidal Volume.

Mechanical Ventilation

Indications:

1. Ventilation of patient with an indwelling tracheal or supraglottic airway.
2. Special Considerations:
    a. All patients with an artificial airway in place must be accompanied with an appropriately sized Bag-Valve mask and a 10cc syringe during transport.
    b. Continuous monitoring of waveform capnography is required.
        i. The morphology of the waveform should be documented in the PCR.
    c. Lung protective ventilator strategies should be used on all patients use the minimum necessary tidal volume and/or pressure to obtain the desired result.
    d. Obstructive ventilator strategies (permissive hypercapnia and prolonged expiratory time) should be used on all patients with concern for, or presence of, autoPEEP. These patients may also have a substantially elevated serum bicarbonate level.
    e. SIMV in the transport of acutely ill patients is rarely indicated.
        i. If used, assure adequate pressure support to reduce increased work of breathing for patient triggered breaths.

Airway
Ventilator Operation (continued)

CONTRAINDICAITONS:

1. None.

PROCEDURE:

1. **Trigger**
    a. Volume Control Ventilation is generally the standard beath type unless:
        i. Ventilation is suboptimal due to high PIP alarms.
        ii. Poor oxygenation exists despite appropriate alveolar recruitment with PEEP to 20.
        iii. Flow requirements cannot be met with current compliance and inspiratory times.
        iv. The patient is found ventilating well in PRVC or PCV and this modality can be safely continued during transport.
    b. Pressure Regulated Volume control.
        i. Breaths are delivered in a decelerating inspiratory flow patterns to a target pressure calculated from the previous breath, maximizing mean airway pressures when used in concert with PEEP.
        ii. The target pressure is adjusted as patient's pulmonary compliance changes based on the desired volume.
        iii. The maximum allowed target pressure should be at least 5cmH_2O less than the set High Airway Pressure Alarm setting.
        iv. Caution should be used in spontaneously breathing patients as variability in tidal volumes can be extreme.
        v. Cautions should be used in obstructive lung disease patients as rapidly changing compliance can preclude adequate ventilation.

2. **Lung Protection:**
    a. NOTE: Lung size is a function of the height, not weight.
    b. Tidal Volume should be 6mL/kg Ideal Body Weight to start.
        i. Ideal Body Weight calculation is based on height measured in inches. (See Charts at end of Ventilator Operation section).
            1. **Female:** 45.5 + 2.3 x (Height – 60) = mL of Tidal Volume.
            2. **Male:** 50 + 2.3 x (Height – 60) = mL of Tidal Volume.
        ii. Reduce Tidal Volume until pPLAT (plateau pressure) <30cmH_2O.
        iii. Tidal volumes as low as 4mL/kg can be used if necessary.
            1. CAUTION:
                a. Consider increasing rate to maintain Ve(minute ventilation).
                b. Closely monitor I:E (Inspiratory Expiratory Ratio) and avoid inverse ratio ventilation.

Airway
Ventilator Operation (continued)

3. **Oxygenation**

a) Generally, 100% Fi02 (Fraction of Inspired Oxygen) should be utilized until Sp02 is identified or obtained and is greater than 90%. Once at 90%, begin titrating Fi02 to keep Sp02 93% to 99%. For inter-facility patients, Fi02 should be the same as, or as close to, the transferring facility's ventilator.
   i. While strategies exist that address hypoxia with sequential increases in PEEP and Fi02, hyperoxia and free oxygen radicals have not been shown to be of concern in the acute resuscitative phase of an injury of illness.

b) PEEP should be at least 5 cmH20 on all patients. Some patients may require more. For pre-hospital patients, contact with the Base Station Physician is recommended. For inter-facility patients, PEEP should be the same as the facilities ventilator.

c) PEEP should be increased to 20 cmH20 to promote alveolar recruitment, prior to reflexively moving to pressure control ventilation.

d) PEEP may also be increased to reduce Fi02 requirements in the long-term setting.

4. **Ventilation**

a) Ventilatory RATE
   i. Used to control minute ventilation to accommodate patient needs as they relate to pC02 and respiratory acidosis.
   ii. Current Respiratory rate x pC02
   Desired pC02 = New Respiratory Rate
   pC02 is typically 2-5 mm Hg higher than EtC02 flow and I:E ratio.

b) Inspiratory time (i-Time).

c) Reducing the i-Time increases flow (VCALC).

d) Be cognizant of I:E ratio and inadvertent inverse ratio ventilation (i.e., 2:1).

For post-intubation HYPOXIA, consider **DOPES**

Displacement of endotracheal tube
Obstructions of the endotracheal tube
Patient **- P**neumothorax, **P**ulmonary edema, **P**ulmonary embolism, collapse of bronchospasm.
Equipment- ventilator malfunction.
Stacked breaths - lack of expiratory time.

For endotracheal tube suctioning: French size suction catheter = endotracheal tube size x 1.5

Simple way to determine proper endotracheal tube cuff pressure to prevent tracheal and or anterior esophageal necrosis form over inflated cuffs:

1. Attach 10 mL syringe to cuff pilot tube port.
2. Depress the syringe plunger to inflate cuff with 10mL air.
3. WAIT for the syringe plunger to retract back into syringe body. This indicates the equalization of pressures between the air within the cuff, atmospheric pressure, and the pressure of the tracheal soft tissues on the cuff.
4. 10mL - Amount of equalized back into the syringe = Amount of air remaining in the cuff.
5. Document.

Airway
Ventilator Operation
Female Tidal Volume Chart

FEMALE: Tidal Volume (mL) per Ideal Body Weight						
Height (inches)	**IBW (kg)**	**4 mL/kg**	**5 mL/kg**	**6 mL/kg**	**7 mL/kg**	**8 mL/kg**
4' 0" (48")	17.9	72	90	**107**	125	143
4' 1" (49")	20.2	81	101	**121**	141	162
4' 2" (50")	22.5	90	113	**135**	158	180
4' 3" (51")	24.8	99	124	**149**	174	198
4' 4" (52")	27.1	107	136	**163**	190	217
4' 5" (53")	29.4	118	147	**176**	203	235
4' 6" (54")	31.7	127	159	**190**	222	254
4' 7" (55")	34	136	170	**204**	238	272
4' 8" (56")	36.3	145	182	**218**	254	290
4' 9" (57")	38.6	154	193	**232**	270	309
4' 10" (58")	40.9	164	205	**254**	286	327
4' 11" (59")	43.2	173	216	**259**	302	346
5' 0" (60")	45.5	182	228	**273**	319	364
5' 1" (61")	47.8	191	239	**287**	335	382
5' 2" (62")	50.1	200	251	**301**	351	401
5' 3" (63")	52.4	210	262	**314**	367	419
5' 4" (64")	54.7	219	274	**328**	383	438
5' 5" (65")	57	228	285	**342**	399	456
5' 6" (66")	59.3	237	297	**356**	415	474
5' 7" (67")	61.6	246	308	**370**	431	493
5' 8" (68")	63.9	256	320	**383**	447	511
5' 9" (69")	66.2	265	331	**397**	463	530
5' 10" (70")	68.5	274	343	**411**	480	548
5' 11" (71")	70.8	283	354	**425**	496	566
6' 0" (72")	73.1	292	366	**439**	512	585
6' 1 " (73")	75.4	302	377	**452**	528	603
6' 2" (74")	77.7	311	389	**466**	511	622
6' 3" (75")	80	320	400	**480**	560	640
6' 4" (76")	82.3	329	412	**494**	576	658
6' 5" (77")	84.6	338	423	**508**	592	677
6' 6" (78")	86.9	348	435	**521**	608	695
6' 7" (79")	89.2	357	469	**535**	624	714
6' 8" (80")	91.5	366	458	**549**	641	732
6' 9" (81")	93.8	375	469	**563**	657	750
6' 10" (82")	96.1	384	481	**577**	673	769
6' 11" (83")	98.4	394	492	**590**	689	787
7' 0" (84")	100.7	403	504	**604**	705	806

Airway
Ventilator Operation
Male Tidal Volume Chart

MALE: Tidal Volume (mL) per Ideal Body Weight						
Height (inches)	**IBW (kg)**	**4 mL/kg**	**5 mL/kg**	**6 mL/kg**	**7 mL/kg**	**8 mL/kg**
4' 0" (48")	22.4	90	112	**134**	157	179
4' 1" (49")	24.7	99	124	**148**	173	198
4' 2" (50")	27	108	135	**162**	189	216
4' 3" (51")	29.3	117	147	**176**	205	234
4' 4" (52")	31.6	126	158	**190**	221	253
4' 5" (53")	33.9	136	170	**203**	237	271
4' 6" (54")	36.2	145	181	**217**	253	290
4' 7" (55")	38.5	154	193	**231**	270	308
4' 8" (56")	40.8	163	204	**245**	286	326
4' 9" (57")	43.1	172	216	**259**	302	345
4' 10" (58")	45.4	182	227	**272**	318	363
4' 11" (59")	47.7	191	239	**286**	334	382
5' 0" (60")	50	200	250	**300**	350	400
5' 1" (61")	52.3	209	262	**314**	366	418
5' 2" (62")	54.6	218	273	**328**	382	437
5' 3" (63")	56.9	228	285	**341**	398	455
5' 4" (64")	59.2	237	296	**355**	414	474
5' 5" (65")	61.5	246	308	**369**	431	492
5' 6" (66")	63.8	255	319	**383**	447	510
5' 7" (67")	66.1	246	308	**370**	431	493
5' 8" (68")	68.4	274	342	**410**	479	547
5' 9" (69")	70.7	283	354	**424**	495	566
5' 10" (70")	73	292	365	**438**	511	584
5' 11" (71")	75.3	301	377	**452**	527	602
6' 0" (72")	77.6	310	388	**465**	543	621
6' 1 " (73")	79.9	320	400	**479**	559	639
6' 2" (74")	82.2	329	411	**493**	575	676
6' 3" (75")	84.5	338	423	**507**	592	676
6' 4" (76")	86.8	347	431	**521**	608	694
6' 5" (77")	89.1	356	446	**535**	624	713
6' 6" (78")	91.4	366	457	**548**	640	731
6' 7" (79")	93.7	375	469	**562**	656	750
6' 8" (80")	96	384	480	**576**	672	768
6' 9" (81")	98.3	393	492	**590**	688	786
6' 10" (82")	100.6	402	503	**604**	704	805
6' 11" (83")	102.9	412	515	**617**	720	823
7' 0" (84")	105.2	421	523	**631**	736	842

Airway
Video Assisted Laryngoscopy

Preferred method if available

Clinical Indications:

- Difficult airways
- Routine airways
- First-use intubations, replacing direct laryngoscopy (DL)
- Normal or restricted oropharyngeal views/visualization and assessment of oropharynx.
- Trauma airways
- Airway management in morbidly obese patients
- Preterm and neonatal intubations
- Patients requiring cervical spine immobilization.
- Supervision and documentation of the laryngoscopy
- Nasal tracheal intubation
- Video-guided foreign body removal
- Awake intubation for difficult airway management

Procedure

1. Prepare all equipment, activate video assisted laryngoscope, and have suction ready.
2. Pre-oxygenate the patient.
3. Medicate according to appropriate **Sequenced Intubation procedure (PRC060).**
4. Record and save intubation whenever possible.
5. Instrument oropharynx as manufacture has suggested and as instructed during training. (An endotracheal tube stylet may be recommended by the manufacturer).
6. Using the video laryngoscope, visualize the tube to pass through the vocal cords.
7. Remove the stylet and inflate the cuff (5-10 mL until no cuff leak).
8. Auscultate for absence of sounds over the epigastrium and bilaterally equal breath sounds.
9. This should be repeated frequently and after movement or manipulation.
10. Confirm the placement using a minimum of two methods. CO2 detection device mandatory.
11. Secure the tube.

AVPU Infant/Child

Response	Infant	Child
A **Alert**	Curious/Recognizes Parents	Alert/Aware of surroundings
V **Responds to Voice**	Irritable/Cries	Opens eyes
P **Responds to Pain**	Cries in response to Pain	Withdraws from Pain
U **Unresponsive**	No response	No response

APGAR Scale

A Appearance (Skin Color)	Normal over entire body= **2** Normal, except for: Extremities = **1** Blue/Pale = **0**	**1 Minute Reading**	**5 Minute Reading**
P Pulse	Above 100 = **2** Below 100 = **1** Absent = **0**		
G Grimace (Reflex Irritability)	Sneeze, cough, pulls away = **2** Grimace = **1** No response = **0**		
A Activity	Active movement = **2** Arms & legs flexed = **1** Absent = **0**		
R Respiration	Good, strong cry = **2** Slow, Irregular = **1** Absent = **0**		

Blood Product Administration

For inter-facility transfer only

POLICY: This is a physician order procedure.

Clinical Indications:

- To replace blood loss while maintaining adequate circulating volume and oxygen during transport.
- To replace clotting factors or other lifesaving blood products.

Complications:

- Transfusion reactions may manifest as anaphylaxis with shortness of breath, hypotension with a BP greater than 90, tachycardia, angioedema, altered mental status, rash, or fever.
- Severe reactions are usually manifested during the initial 50cc or less of infusion.
- Too rapid an infusion producing a volume overloaded state.

Equipment Use: Infusion pumps may be helpful but not required unless delivery is through a central venous catheter or pediatrics. **Blood administration sets will be provided by the hospital**.

Procedure:

1. Initial blood administration will be instituted at the transferring hospital. All additional units must have the transferring hospital nursing staff cross check for correct blood before accepting. (The paramedic is allowed to begin administering a new bag that has been cross checked and verified by the transferring nursing staff). Document RN in the Patient Care Report.
2. Verify the physician order for blood product, blood type, rate of infusion and use of micro-aggregate or leukocyte removal filter.
3. **Check for history of previous reaction to a blood product and for pre-transfusion symptoms that could be mistaken for a transfusion reaction (i.e., fever, hypotension, tachycardia, shortness of breath, altered mental status or rash) See #4 below.**
4. Assess baseline temperature, pulse, respiratory rate ,and blood pressure prior to starting transfusion and at least every 15 minutes while blood is infusing and again when transfusion is completed (except albumin and plasma protein fraction). Vital signs must be documented.
5. Assess temperature, pulse, respiratory rate, and blood pressure every 15 minutes x 4 during intravenous gamma globulin administration.
6. Replace blood tubing after every 2 units or after 4 hours of use. Discarding tubing immediately following completion of transfusion.
7. Monitor peripheral site and infusion system at least every 15 minutes during blood product administration.
8. **For any suspected reaction:**
    a. Stop transfusion, do not clear tubing.
    b. Recheck labels.
    c. Notify base station physician.
    d. See **Allergic Reaction protocol (PCP110).**
    e. Remove bag and tubing; start isotonic saline.
    f. Monitor and treat symptoms of anaphylaxis.
    g. If possible, collect a urine specimen for receiving hospital.
    h. Save blood bags and all paperwork - deliver to receiving hospital along with urine specimen(if obtained) for further testing.

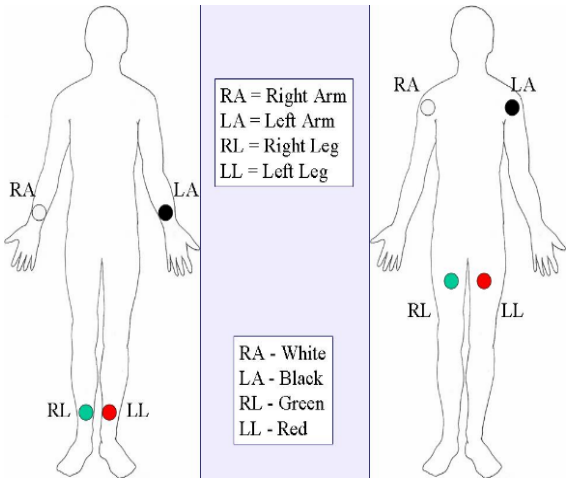
Cardiac
12 Lead ECG/15 Lead ECG

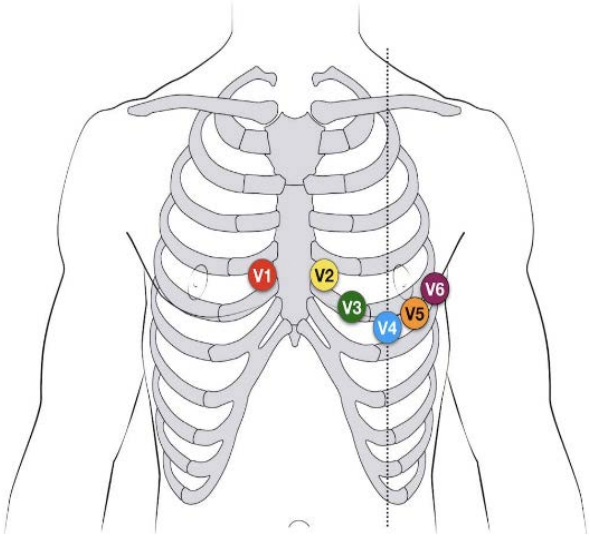
Clinical Indications:

- Chest pain/upper abdominal pain.
- Suspect cardiac etiology.
- Breathing difficulty with unknown etiology.
- Further indications as required by ACLS.

Procedure:

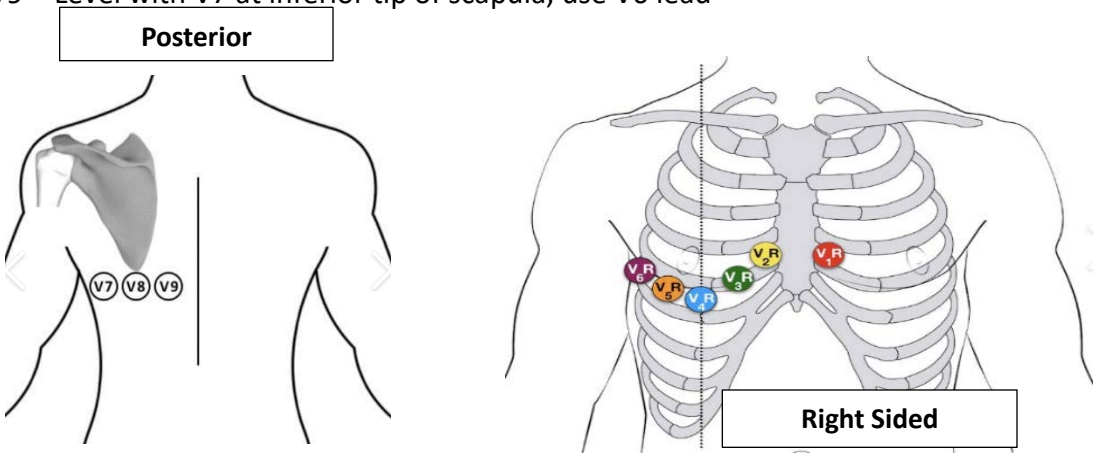
1. Assess patient, intervention of life threating conditions should be considered first including immediant transport.
2. If clinical indication presents, perform an ECG (EMT can perform ECG-read only).
3. Prepare ECG monitor and connect patient cable with electrodes.
4. If possible, enter the required patient information (patient name, ect.) into the ECG device.
5. Expose the chest and prep as necessary. Modesty of the patient should be respected.
6. Apply chest leads and extremity leads using the following landmarks:
    - RA- Right arm
    - LA - Left arm
    - RL- Right leg
    - LL - Left leg
    - V1 - 4th intercostal space at the right sternal border
    - V2 - 4th intercostal space at the left sternal border
    - V3 - Directly between V2 and V4
    - V4 - 5th intercostal space at midclacicular line
    - V5 – Level with V4 at left anterior axillary line
    - V6 – Level with V5 at left midaxillary line





Cardiac
12 Lead ECG/15 Lead ECG (continued)

- V7 – Same level as V6 at left midaxillary line, use V4 lead
- V8 – Level with V7 at inferior tip of scapula, use V5 lead
- V9 – Level with V7 at inferior tip of scapula, use V6 lead



- VR3 – Right 5th intercostal space between right sternal boarder and midclavicular line, use V3 lead
- VR4 – Right 5th intercostal space at midclavicular line, use V4 lead

7. Instruct patient to remain still.
8. Press the appropriate button to aquire the ECG.
9. If the monitor detects signal noise (such as patinet motion or a disconnected electrode), the ECG acquisition will be interruped until the nosie is removed.
10. Once acquired, transmit the ECG data by fax (where available) to the appropriate hospital.
11. Contact the receiving hospital to notify them that a ECG has been sent.
    a. If V1 And V2 ST depression, transition to 15 lead ECG.
    b. If tall R wave in V1 or V2, or inferior ST evlevation, perform right sided ECG.
    c. If lateral ST elevations, perform V7 and V8.
12. Monitor the patient while continuing with the treatment protocol.
13. Download data as per guidelines and attach a copy of the ECG to the Patient Care Report (PCR).
14. Document the procedure, time and results on the Patient Care Report (PCR).

I Lateral	aVR	V1 Septal	V4 Anterior
II Inferior	aVL Lateral	V2 Septal	V5 Lateral
III Inferior	aVF Inferior	V3 Anterior	V6 Lateral
RV3 Right Ventricle	RV4 Right Ventricle	V7 Apical/Posterior	V8 Apical/Posterior
V9 Posterior			

Cardiac

Synchronized Cardioversion

Clinical Indications:

- Unstable patient with a tachydysrhythmia (e.g., rapid atrial fibrillation, supraventricular tachycardia, ventricular tachycardia).
- Patient is not pulseless (the pulseless patient requires unsynchronized cardioversion, e.g., defibrillation).

Procedure:

1. Ensure the patient is attached properly to a monitor/defibrillator capable of synchronized cardioversion.
2. Have all equipment prepared for unsynchronized cardioversion/defibrillation if the patient fails synchronized cardioversion and the condition worsens.
3. Cardioversion can be painful, see **Sedation Protocol** (PCP180) **if needed.**
4. Set energy selection to appropriate level per AHA guidelines.
    a. Suggested energies for adult 100J, 150J, 200J.
    b. Consider 50J in NARROW Complex Tachycardia.
    c. Pediatrics start with 0.5-1J/kg. If unsuccessful increase to 2J/kg.
5. Set monitor/defibrillator to synchronized cardioversion mode. Verify synchronized markers.
6. Make certain all personnel are clear of patient.
7. Press and hold the button to cardiovert. Stay clear of the patient until you are certain the energy has been delivered. NOTE: It may take the monitor/defibrillator several cardiac cycles to "synchronize", so there may be a delay between activating the cardioversion and the actual delivery of energy.
8. Note patient response and perform immediate unsynchronized cardioversion/defibrillation if the patient's rhythm has deteriorated into pulseless ventricular tachycardia/ventricular fibrillation.
9. If the patient's condition is unchanged, repeat steps 2 to 8 above, using appropriate energy level per AHA guidelines. Re-select SYNCHRONIZED mode for subsequent attempts.
10. If the patient has not improved after three (3) attempts of synchronized cardioversion, contact Medical Control.
11. Note procedure, response, and time on the Patient Care Report (PCR).
12. Attach rhythm strips to PCR and document energy used in procedure.

Cardiac
Transcutaneous Pacing

Clinical Indications:

- Patients with symptomatic bradycardia.
- If used in asystole, it must be used early.

Procedure:

1. Oxygen, ECG monitor, IV (if Possible) should be in place prior to pacing 12 lead ECG if clinically appropriate.

2. Confirm the presence of the dysrhythmia (include a copy of the ECG strip) and evaluate the patient's hemodynamic status.

3. Adjust the QRS amplitude so the machine can sense the intrinsic QRS activity.

4. Apply pacing pads to the patient's chest in either of the following positions - anterior-posterior (preferred) or anterior - lateral.
   a. Pediatric patients requiring external transcutaneous pacing require the appropriate placement of pads for pediatric patients per the manufacturer's guidelines.

5. Attach the pacing pads to the therapy cable from the machine.

6. External pacing may be painful, consider **Sedation Protocol** (PCP180)**.**

7. Turn the pacer on.

8. Observe the ECG screen for a "sense" marker on each QRS complex. If a "sense" marker is not present, readjust ECG size or select another lead.

9. Set the desired pacing rate (60-80).

10. Start at the lowest setting and increase the current slowly while observing the ECG screen for evidence of electrical pacing capture. **Once you have electrical capture, confirm mechanical capture with radial or femoral pulse**.

11. Assess the patient's response to the pacing therapy with blood pressure and perfusion assessment.

12. Document the dysrhythmia and the response to external pacing with ECG strips.

Central Venous Device - Accessing

Clinical Indications:

- Need for vascular access using a patient's current externally accessible central venous device.
- For multi-lumen line, PICC lines, Hickman's and Groshong catheters.
- Subcutaneous ports.

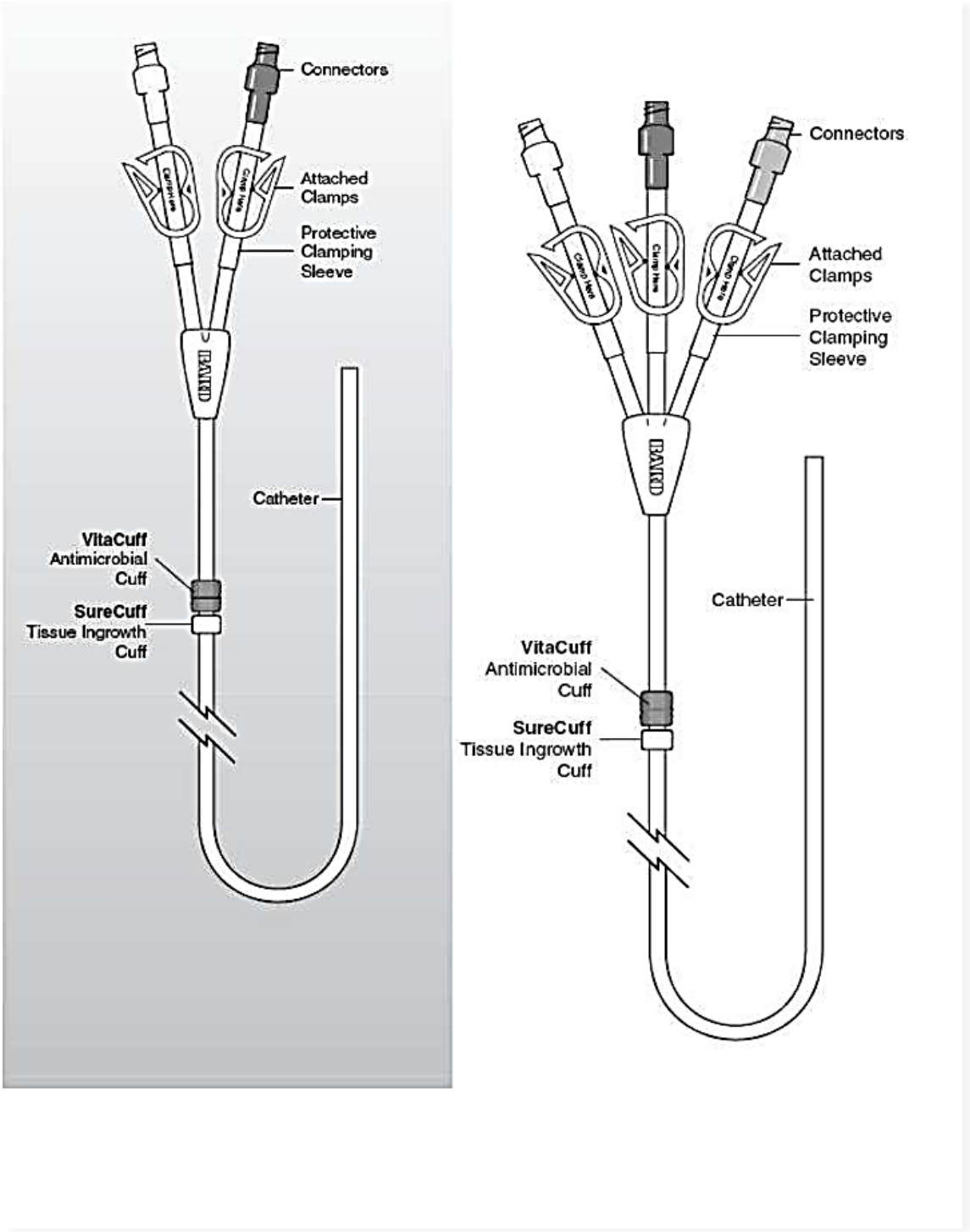
Procedures:

1) Apply gloves.
2) Gather all equipment required: antiseptic; 10 mL syringe of Normal Saline; IV solution and tubing; extra syringes.
3) If thumb or slide clamps are present, assure they are in the locked position before beginning. Clamps need to be closed before removing any syringe of adapter from the hub. Always clean the hub with antiseptic while changing of syringe or adapters.
4) Clean hub with antiseptic swab and attach a syringe of Normal Saline.
5) Flush with 5 mL of Normal Saline, aspirate for blood return and flush with the remaining 5 mL of Normal Saline.
6) Regardless of the type of PICC line access, if resistance is met, assume the lumen is obstructed and repeat procedure on the second lumen if available. Also repeat the procedure on the second lumen if aspirating for blood is unsuccessful.
7) If drawing labs and a clamp is present, close it, remove the syringe, clean the hub, attach a new syringe, open the clamp, and aspirate 5 mL of blood to discard. Attach a new syringe if needed, open the clamp, and draw blood for labs.
8) Establish IV fluids at minimum TKO rate or desired infusion rate and secure the line.
9) Discontinue if complications occur.

Accessing a Subcutaneous Implanted Port: (*Emergent Situations Only*)

1) Don mask.
2) Palpate port to locate septum.
3) Cleanse area around port with 3 separate antiseptic swabs/pads.
4) Don sterile gloves, stabilize device with thumb and index finger.
5) While stabilizing port, insert Huber needle at 90 degree angle through skin into the septum. Apply pressure until needle come into contact with metal backing of device.
6) Aspirate for blood to confirm placement. If no blood return, attempt to irrigate with saline and aspirate blood again.
7) Add new syringe of saline and flush with saline.
8) Assess for swelling around device. If swelling occurs, **STOP INJECTION**.
9) Tape down Huber needle "wings".
10) Apply transparent dressing.

Central Venous Device (continued)



Chest Decompression

Clinical Indications:

- Tension pneumothorax
- PEA Algorithm
- Inadequate decompression with 1st needle, consider 2nd needle.

Procedure:

1. Confirm presence of a tension pneumothorax or identify strong clinical evidence in a rapidly deteriorating patient in the setting of major trauma. Consider in the setting of refractory PEA.

2. Locate the insertion site at the second intercostal space at the midclavicular line on the affected side of the chest. May consider fifth intercostal space in the midaxillary line.

3. Prep the insertion site.

4. Insert the appropriate length, 10/12/14/16 gauge angiocath (1 ¼", 18 gauge angiocath in patients less than 8 years) with a 10cc syringe attached, by directing the needle just over the top of the third rib (2nd intercostal space) or (fifth intercostal space in the midaxillary line) to avoid intercostal nerves and vessels which are located on the inferior rib boarders.

5. Advance the catheter 1-2 inches (3/4-1" in patients less than 8 years) through the chest wall. Pull back on the plunger of the syringe as the needle is advanced. Tension should be felt until the needle enters the pleural space. A "pop" or "give" may also be felt. **Do Not** advance the needle any further.

6. Withdraw the needle and advance the catheter until flush with the skin. Listen for a gush or "hiss" of air which confirms placement and diagnosis. Caution: this is frequently missed due to ambient noise.

7. Dispose of the needle properly and **never reinsert into the catheter.**

8. Secure the catheter and rapidly transport the patient providing appropriate airway assistance.

Childbirth/Fundal Massage

Clinical Indications for Childbirth: Imminent delivery with crowning.
Clinical Complications: If presenting part is NOT the head, call Medical Control.

Procedure for Childbirth:

1. Delivery should be controlled so as to allow a slow controlled delivery of the infant. This will prevent injury to the mother and infant.
2. Support the infant's head as needed.
3. Once the head has delivered, check for the umbilical cord wrapped around the neck. If it is present, slip it over the head. If unable to free the cord from the neck double clamp the cord and cut between the clamps.
4. Suction the airway with a bulb syringe if needed. Mouth then nose.
5. Grasping the head with hands over the ears, gently guide the baby down to allow delivery of the anterior shoulder.
6. Gently guide the baby up to allow delivery of the posterior shoulder.
7. Slowly deliver the remainder of the infant.
8. Clamp the cord 2 inches from the abdomen with 2 clamps and cut the cord between the clamps.
9. Record **APGAR scores** at 1 and 5 minutes (PRC095)
10. Baby should be placed skin to skin with mother as soon as possible.
11. Follow the **Newborn Resuscitation/Post Delivery Care Protocol** (PCP295) for further treatment.
12. The placenta will deliver spontaneously, usually within 5 minutes of the infant. Do not force the placenta to deliver.
13. Once placenta has delivered, confirm no other babies before administering Oxytocin.
14. All field deliveries shall be transported (including placenta) to the hospital.

Clinical Indications for Fundal Massage:

- Post Partum hemorrhage **AFTER** placental delivery.

Procedure for Funal Massage:

1. Assure complete delivery of placenta.
2. Place absorbent material underneath pelvis of patient to facilitate the estimation of blood loss.
3. Place the ulnar aspect of your non dominant hand perpendicular to the abdomen parallel and just superior to the symphysis pubis.
4. Exert moderate pressure up and in toward the spine.
5. With your dominant hand find the uterine fundus and begin a "kneading" motion using moderate pressure.
6. This procedure will be uncomfortable for the patient but should not be painful.
7. Uterine massage should result in uterine contracture and the feeling of a firm "grapefruit" sized mass.
8. Continue procedure until bleeding subsides.
9. If hemorrhage continues, perform bimanual compression.
    a. Insert a gloved hand into the vagina with fist against or behind the cervix.
    b. The second hand on the abdomen over the uterine fundus.
    c. Compress the two hands together and hold until bleeding stops.
10. Document patient condition, procedure, and response on Patient Care Report (PCR).

Crime Scene Preservation

1. Forensic guidelines emphasizing crime scene preservation are important. However, the most important role of EMS providers is to ensure the preservation of life.
    a. EMS is in charge of the patient.
    b. Law Enforcement is in charge of the crime scene.
2. Communicate with Law Enforcement; ensure the scene is safe.
3. Observe the area and try to make mental notes of the scene surroundings.
4. Limit access and egress to a single path/route. This may be identified by law enforcement; or if EMS arrives first, notify law enforcement of your route.
5. Limit the number of personnel entering a potential crime scene to only those essential to safely and efficiently care for the patient. Provide law enforcement with a list of responders' names and when they arrived/departed.
6. EMS providers should not move anything; they should leave items alone unless absolutely necessary to perform lifesaving patient care.
7. **Do not cut through bullet/stab holes** on patient's clothing or binding knots, etc. as this may destroy critical evidence.
8. Do not use phones, sinks, toilets, garbage containers or anything at a crime scene. Only utilized equipment that was brought to the scene and only remove equipment brought in if absolutely necessary.
9. **Do not take anything from a crime scene that can be left**. Leave clothes, blankets, sheets, and any other items requested by law enforcement.
10. **Document everything you observed** (lighting, weather, temperature, odors, bystanders' behavior, position of patient), moved, and performed as patient care. Include statement made by the patient. Be as specific and exact as you can.

Special Considerations: Sexual Assault Survivors

1. Follow the crime scene preservation guidelines
2. Assess the patient first as a Trauma patient.
3. Not ALL sexual assault survivors will choose to file a report with the police. If patient chooses not to report, forensic evidence using SANE kit can be stored for up to 20 years. Forensic evidence should be maintained as much as possible. If law enforcement is involved, they should be responsible for collecting clothing and bedding. If there is no law enforcement involvement, collect the clothing and any related objects. Place the evidence in a paper bag if available, otherwise, a plastic bag will suffice. If the assault is recent, discourage the patient from washing, eating or drinking until evaluated in the ED.
4. Maintain chain of evidence. Document in your chart all collection of evidence and to whom you gave the articles. All evidence must stay in one person's possession and the handoff must be documented.
5. Document all crew members names in case exclusion DNA is needed**.**
6. Document the scene as much as possible, noting people present, interactions.

Crime Scene Preservation (continued)

Mandatory Reporting:

All first responders are mandatory reporters. If you suspect abuse or neglect of a minor or at risk adult, you are obligated to report it. You must report to CPS or APS. Abuse should also be reported to law enforcement.

It is not acceptable to assume that someone else will report. You are required to report, regardless if anyone else has reported.

CISM
(Critical Incident Stress Management)

Introduction:

The Grays Harbor EMS and Trauma Care Council (GHEMS) Critical Incident Stress Management (CISM) program is based on a team approach consisting of peer support personnel. GHEMS CISM Team provides multiple services for emergency referrals and education. These services are performed in conjunction with fire, police and EMS departments and providers in the county as well as the public as requested.

History:
There are strong indications that more than 86% of emergency service personnel experience some emotional, cognitive, or physical reaction after responding to certain calls. These calls have the potential to create a state of psychological distress which will cause the provider to become concerned about his or her health. It is extremely important that when providers are having unusual or intense reactions to a certain call or an accumulation of calls, that the GHEMS CISM Team shall be notified.

Major stresses of emergency workers may include, but are not limited to:

- Death or serious injury to a colleague
- Suicide of a fellow worker
- Multiple casualty incidents
- Death or serious injury to children
- Familiarity with the victims
- Prolonged Rescue Work
- Exposure to dismemberment
- A Failed Rescue

Goals:

- To provide the psychological support necessary to ensure optimal well-being of emergency providers.
- To enhance jobs (volunteer and career) retention capabilities for providers and reduce turnover rate.
- To enhance the psychological welfare of providers and their families.

Definitions:

- **Defusing** - Should only last 15-30 minutes. Defusings are performed after the incident and after personnel have returned to the station. The purpose is to offer information, support and allow initial ventilations of feelings. The need for a formal debriefing should be established at this time.

- Debriefing – Optimally debriefings should take place 48-72 hours after the incident if at all possible. The debriefing process allows the providers to express what they did, what they saw, and how they felt. This is done in a group forum to allow thd discussion to take place freely among providers. The GHEMS CISM Team members facilitate this discussion and provide positive feedback when appropriate.

Major Indicators of need for debriefing may include, but are not limited to the following:

- Anxiety
- Depression
- Feelings of Anger
- Frustration
- Nightmares
- Guilt
- Blaming Self
- Unable to Sleep
- Embarrassment

Procedures to activate the team:

- The Departments or providers are to contact the coordinators for GHEMS CISM Team. The numbers for these individuals may be obtained by calling them directly or contracting the GHEMS office (1-360-532-2067) or calling the Non-Emergency E911 (1-360-533-8765) for contact numbers.
- When notified, the team coordinator contacts the agency requesting service to access the specific support needs and is given a time and place for the defusing/debriefing.
- It is the team coordinators responsibility to contact the appropriate number of peer supporters to conduct the defusing/debriefing. One of the team will be the team leader and is responsible for the team.
- The department needs to give only one person as contact person in activating and facilitating defusing/debriefing session.
- The team leader will call contact person of the department to gather any additional information and to confirm time and place of the defusing/debriefing.
- After the defusing/debriefing, the team leader or coordinator is responsible for contacting the department within 48 hours to access effectiveness of defusing/debriefing and to follow up if any referrals or follow-up sessions are needed.

Confidentiality:

- All debriefing session are held in the strictest confidence.
- All participants must agree to keep names of persons participating in the session and the content of session confidential. **No Notes are to be Taken.**

All departments are to have the GHEMS CISM coordinators contact information available. Team is available 24-7.

Death Pronouncement in the Field

Universal PPE

- Valid DNR/POLST
- Decapitation
- Evisceration of the heart or brain
- Incineration
- Rigor Mortis
- Decomposition
- Multisystem Trauma not compatible with life
- Lividity

YES → Terminate Resuscitation

NO → Follow ACLS /AHA Guidelines

Continuous CPR

Resuscitation attempts may be terminated IF the following criteria are met:

ALS Provider

- Patient is 18 years or older.
- EMS has provided at least 20 min of CPR.
- Initial rhythm is asystole or PEA, confirmed in 2 leads on a printed rhythm strip.
- Rhythm remains in asystole or PEA throughout resuscitation efforts (no VFib or VTach)
- No return of spontaneous circulation
- **No defibrillation is performed**
- EMS did not witness the arrest
- Quantitative end-tidal CO2 value is less than 10 mmHg despite effective CPR.

BLS Provider

- The patient is 18 years or older
- EMS has provided at least 20 minutes of CPR
- EMS did not witness the arrest
- "No Shock" was advised/delivered by the AED during the resuscitation

For any concerns or special circumstances, Call Medical Control

If these criteria are not met, call Medical Control for consult prior to termination of efforts.

Record time of Death on Patient Care Record (PCR)

Patients pronounced dead at the scene will be reported to the appropriate authorities based on local procedures.

DO NOT LEAVE THE BODY UNATTENDED.

Do Not Resuscitate (DNR) Orders

Focused History and Physical Exam

1. Determine the Patient is in a Do Not Resuscitate status in one of the following ways:
    a. The patient has an original, valid POLST Form at the bedside or in the residence.
    b. Sometimes health care facilities prefer to use their own health care DNR orders. When encountering other DNR orders, perform the following:
        i. Verify that the order has a physician signature requesting "Do Not Resuscitate."
        ii. Contact online medical control for further consultation. In most cases, online medical control will advise to withhold CPR following verification of a valid physician-signed DNR order.

Management

1. Begin resuscitation when it is determined:
    a. No valid DNR order exists
    b. In your medical judgement, your patient has attempted suicide or is a victim of a violent crime.
2. Do Not initiate resuscitation measures when:
    a. The patient is determined to be "obviously dead" (Refer to DOA protocol).
3. When the patient has an existing, valid DNR order:
    a. POLST:
        i. Provide resuscitation based on patient's wishes identified on the form.
        ii. Provide medical interventions identified on the form.
        iii. Always provide comfort care.
    b. Other DNR orders:
        i. Contact Medical Control to discuss orders contained in DNR papers.
        ii. Follow specific orders allowed by your level of certification.
4. In the event of Death, follow local procedures for in field death (possible law involvement, coroners' office, chaplain/paster, hospice, funeral home or any other necessary to assist a patient or family.
5. If resuscitative efforts have been started before learning of a valid POLST Form, please follow POLST Form directives or Contact Medical Control.
6. Revoking the DNR order (including POLST Form). The following people can inform the EMS system that the DNR order has been revoked:
    a. The patient.
    b. The physician expressing the patient's revocation of the directive.

c. The legal surrogate for the patient expressing the patient's revocation of the directive.

7. Documentation:
    a. Complete the PCR form.
    b. State in writing in the narrative summary that the patient has a valid DNR/POLST Form. If possible, attach a copy of the DNR/POLST Form to PCR.
    c. Record the reason why EMS was called.
    d. Comfort the family and bystanders if possible.
    e. Follow local protocols for in field death (possible law involvement, coroners' office, etc.…).
8. Comfort Care Measures, which may include:
    a. See **End of Life Palliative Care** (PCP140)
    b. Consider treatment/transporting for injury or illness that cannot be managed at home or facility.
    c. Comfort the family and bystanders if possible.
9. Special Situations:
    a. The patient's wishes in regard to resuscitation should always be respected. Sometimes, however, the family may vigorously and persistently insist on CPR even if a valid DNR order is located. These verbal requests are not consistent with the patient's directive. However, in such circumstances:
        i. Attempt to convince family to honor the patient's decision to withhold CPR/Treatment. If family persists, then:
        ii. Initiate efforts and contact online medical control.

Firefighter Rehab Procedure

Purpose:
To provide guidance on the implementation and use of a rehabilitation process as a requirement of the incident management system (IMS) at the scene of a fire, other emergency, or training exercise. It will ensure that personnel who might be suffering the effects of metabolic heat buildup, dehydration, physical exertion, and/or extreme weather receive evaluation and rehabilitation during emergency operations.

Rules:
1. Rehabilitation shall commence when fire/emergency operations and/or training exercises pose a health and safety risk.
2. Rehabilitation shall be established for large-scale incidents, long-duration and/or physically demanding incidents, and extreme temperatures.
3. The incident commander shall establish rehabilitation according to the circumstances of the incident. The rehabilitation process shall include the following: Rest, Hydration to replace lost body fluids, Cooling or Warming (passive and/or active), Medical monitoring, Emergency medical care if required, Relief from extreme climatic conditions (heat, cold, wind, rain), Calorie and electrolyte replacement and Accountability.

Responsibilities:
The Incident Commander shall be responsible for the following:
1. Include rehabilitation in incident/event size-up.
2. Establish a rehabilitation group to reduce adverse physical effects on fire fighter while operating during fire/emergencies, training exercises, and extreme weather conditions.
3. Designate and assign a supervisor to manage rehabilitation.
4. Ensure sufficient resources are assigned to rehabilitation.
5. Ensure EMS personnel are available for emergency medical care of fire fighters as required.

The rehabilitation manager shall be responsible for the following:
1. Don the rehabilitation manager vest.
2. Whenever possible, select a location for rehabilitation with the following site characteristics:
    a. Large enough to accommodate the number of personnel expected (including EMS personnel for medical monitoring).
    b. Have a separate area for members to remove personal protective equipment.
    c. Be accessible for an ambulance and EMS personnel should emergency medical care be required.
    d. Be removed from hazardous atmospheres including apparatus exhaust fumes, smoke, and other toxins.
    e. Provide shade in summer and protection from inclement weather at other times.
    f. Have access to a water supply (bottled or running) to provide for hydration and active cooling.
    g. Be away from spectators and media.

3. Ensure personnel in rehabilitation "dress down" by removing their bunker coats, helmets, hoods, and opening their bunker pants to promote cooling.
4. Provide the required resources for rehabilitation including the following:
    a. Potable drinking water for hydration.
    b. Sports drinks (to replace electrolytes and calories) for long duration incidents (working more than one hour).
    c. Active cooling where required.
    d. Medical monitoring equipment (chairs to rest on, blood pressure cuffs, stethoscopes, check sheets, etc.).
    e. Food where required and a means to wash or clean hands and face prior to eating.
    f. Blankets and warm, dry clothing for winter months.
    g. Washroom facilities where required.
5. Time personnel in rehabilitation to ensure they receive at least 10 minutes to 20 minutes of rest.
6. Ensure personnel rehydrate themselves.
7. Ensure personnel are provided with a means to be actively cooled where required.
8. Maintain accountability and remain within rehabilitation at all times.
9. Document members entering or leaving rehabilitation.
10. Inform the incident commander, accountability officer (resource status unit), and EMS personnel if a member requires transportation to and treatment at a medical facility.
11. Serve as a liaison with EMS personnel.

Company officers/Crew Members shall be responsible for the following:

1. Be familiar with the signs and symptoms of heat stress and cold stress.
2. Monitor their team members for signs of heat stress and cold stress.
3. Notify the IC when stressed members require relief, rotation, or reassignment according to conditions.
4. Provide access to rehabilitation for their team members as needed.
5. Ensure that their team/partners are properly checked in with the rehabilitation manager and accountability officer (resource unit), and that the company remains intact.

Procedures:

1. All personnel shall maintain hydration on an ongoing basis (pre-incident, incident, post-incident).
2. Members shall be sent to rehabilitation as required.
3. All members shall be sent to rehabilitation following the use of two 30-minute or 45-minute SCBA cylinders or one 60-minute SCBA cylinder. Shorter times might be considered during extreme environmental conditions.
4. Passive cooling shall be employed to reduce fire fighter heat stress. This could include moving to a shaded or air-conditioned area, removal of PPE, ingestion of cool fluids, and rest.
5. Active cooling shall be employed to reduce fire fighter heat stress when passive cooling is ineffective or when a member is experiencing heat-related illness. This could include forearm immersion, misting fans, and cold towels.
6. In hot, humid conditions, a minimum of 10 minutes (20 minutes is preferable) of active cooling shall be applied following the use of the second and each subsequent SCBA cylinder.
7. Personnel in rehabilitation shall rest for at least 10 minutes to 20 minutes prior to being reassigned or released.

8. EMS personnel shall provide medical monitoring and emergency medical care as per medical protocol.
9. If a member is demonstrating abnormal vital signs, he or she shall be monitored frequently during rehabilitation.
10. Personnel who are weak or fatigued with pale clammy skin, low blood pressure, nausea, headache, or dizziness shall be assessed by EMS personnel.
11. Personnel experiencing chest pain, shortness of breath, dizziness, or nausea shall be transported to a medical facility for treatment.
12. Personnel transported to a medical facility for treatment shall be accompanied and attended to by a department representative.
13. Members should drink water during rehabilitation. After the first hour, a sports drink containing electrolytes should be provided. Soda and caffeinated and carbonated beverages should be avoided.
14. Nutritional snacks or meals shall be provided as required during longer duration incidents.
15. No tobacco use shall be permitted in or near the rehabilitation area.

Firefighter Rehab Tracking Sheet

INCIDENT NAME: **LOCATION:** **DATE:**

Full Name		Disposition ☐ Released From Rehab ☐ Referred to Medical
Agency	Vital Signs	Time In:
Assignment		Time Out:

Full Name		Disposition ☐ Released From Rehab ☐ Referred to Medical
Agency	Vital Signs	Time In:
Assignment		Time Out:

Full Name		Disposition ☐ Released From Rehab ☐ Referred to Medical
Agency	Vital Signs	Time In:
Assignment		Time Out:

Full Name		Disposition ☐ Released From Rehab ☐ Referred to Medical
Agency	Vital Signs	Time In:
Assignment		Time Out:

Full Name		Disposition ☐ Released From Rehab ☐ Referred to Medical
Agency	Vital Signs	Time In:

Glasgow Coma Score

Infants		Children/Adults
Eye Opening		
Spontaneous	4	Spontaneous
To Speech/Sound	3	To Speech
To Pain	2	To Pain
No Response	1	No Response
Verbal Response		
Coos or Babbles	5	Oriented
Irritable Crying	4	Confused
Cries to Pain	3	Inappropriate Words
Moans to Pain	2	Incomprehensible
None	1	None
Motor Response		
Spontaneous	6	Obeys Commands
Withdraws Touch	5	Localizes Pain
Withdraws Pain	4	Withdraws Pain
Abnormal Flexion	3	Abnormal Flexion
Abnormal Extension	2	Abnormal Extension
No Response	1	No Response

Glucometry

Clinical Indications:

- Patients with suspected hypoglycemia (diabetic emergencies, change in mental status, bizarre behavior, etc.)
- Patients with Altered Mental Status.
- Any patient where appropriate.
- Reference range normal is 60 to 120 mg/dL correlated to patients' condition.

Procedure:

1. Gather and prepare equipment.

2. Blood samples for performing glucose analysis should be obtained according to device manufacturers' recommendations.

3. Place correct amount of blood on reagent strip or site on glucometer per the manufacturers' instructions.

4. Time the analysis as instructed by the manufacturer.

5. Document the glucometer reading and treat the patient as indicated by the presenting symptoms, analysis, and protocol.

6. Repeat glucose analysis as indicated for reassessment after treatment and document patient response on the Patient Care Report (PCR).

7. Follow manufacture recommendations for device calibrations.

Helicopter Transports (Air Ambulance)

Air Ambulance Activation:

An Air Ambulance will be activated by the on-scene EMS provider or Incident Commander. Air ambulance should be considered in any patient in which air ambulance will get the patient to the most appropriate facility faster than ground transport.

- head injury with GCS <12 and significant mechanism of injury.
- burn patients >20% or involving the face and hands.
- spinal cord injuries with neurological deficits.
- Code stroke with significant disability.
- For all other patients, the decision to activate Air Ambulance should be made in conjunction with Medical Control. Dispatch may assist in contacting an air ambulance service for activation as soon as the need for air transport is identified.

Every attempt should be made to stabilize the patient prior to transport, including IV, airway, chest decompression, control external hemorrhage, and spine immobilization. Transfer of care to air ambulance personnel will optimally occur at designated landing stie, deviation from designated landing site should be briefly discussed with dispatch.

Personnel will request dispatch call the closest, most appropriate air ambulance.

Available air ambulance providers are Airlift Northwest and Life Flight.

Use of air ambulance should not delay care.

Requesting Air Ambulance:

1. Notify Dispatch Center of need for helicopter transport and planned patient destination.
2. Patient Considerations:
    a. If hazardous materials are involved, the patient needs to be decontaminated.
    b. Patient's weight and girth: Confirm with air transport that the patients height, weight and girth does not exceed their capabilities.
3. Select LZ location at or near incident site:
    a. Designate a tail rotor guard and LZ officer.
    b. 100' x 100' marked with cones (day) or strobe lights (night) if available.
    c. Slope less than 6 degrees.
    d. Provide GPS coordinates and/or cross streets.
    e. Clear of obstructions.
    f. Consider use of roadway, school, parking lot (water down loose dirt if possible).
4. Select ground contact.
5. Coordinate frequency for LZ Command via E-911.

Helicopter Transports (Continued)

General Responsibilities:

1. Make sure LZ is clear of debris or unsecured materials and brush is no taller than knee high.
2. Make note of overhead wires, light standards, radio towers, fences, or obstructions.
3. Fire department personnel maintain a 200' perimeter for bystanders, and personnel protective equipment should be used.
4. **Do not Use White Strobe Lights**. Use Red Lights to assist in noting location. All white lights in the area need to be turned off during landing and departure. Do not spot light overhead hazards. Lights are to be turned off and on at the direction of the pilot.
5. Make sure to brief the pilot prior to arrival, noting locations of hazards.
6. Remain in two-way radio contact throughout landing.
7. Do not approach the helicopter until the rotor blades have stopped, or until directed to do so by the flight crew.
8. Approach the helicopter only from the 3 o'clock or 9 o'clock positions, once directed by the flight crew.
9. **Do Not Walk Around the Tail**. Have a designated tail rotor guard.
10. Maintain the LZ lighting at all times. At departure, clear all ground personnel away from the helicopter.
11. No one may approach the helicopter after the engines start and the blades are turning unless directed to do so by the flight crew.
12. Re-establish two-way radio communications with pilot and confirm the LZ is secure.
13. Notify the pilot if an unsafe situation develops.

UNITED STATES COAST GUARD ACTIVIATION:

The United states Coast Guard, Group Astoria has helicopter assets available for Rescue and Medical Evacuation. In the event of an on scene Medical Evacuation, an air ambulance will be the first choice for air medical transport. In the event that an air ambulance is unavailable, the USCG can be called.

Requesting USCG:

1. Upon notification that an air ambulance is unavailable, notify the communications center to contact the USCG for the need for helicopter transport and planned patient destination.
2. Provide patient information as outlined for requests involving an air ambulance.

Hospital	Address	City	EMS Line	Trauma	Cardiac	Stroke
Capital Medical Center	3900 Capital Mall Drive SW	Olympia	360-956-2596	--	I	--
Forks Community Hospital	530 Bogachiel Way	Forks	360-374-6271	IV	II	III
Harbor Regional Health	915 Anderson Drive	Aberdeen	360-533-0880	III	II	II
Harborview Medical Center	325 9th Avenue	Seattle	206-744-4025	I	I	I
MaryBridge Children's Hospital	317 MLK Jr Way	Tacoma	253-403-4444	II P	--	--
Mason General Hospital	901 Mountain View Drive	Shelton	360-426-8171	IV	II	III
Providence Centralia Hospital	914 S Scheuber Road	Centralia	360-330-8515	IV	II	III
Providence St. Peter Hospital	413 Lilly Road	Olympia	360-491-8888	III	I	II
St Joesph Medical Center	1717 S J Street	Tacoma	253-426-6769	II	I	I
Summit Pacific Medical Center	600 E Main Street	Elma	360-346-2237	IV	II	III
Tacoma General	315 MLK Jr Way	Tacoma	253-403-2222	II	I	I
Willapa Harbor Hospital	800 Alder Street	South Bend	360-875-5526	V	II	III

Infant Transfer of Custody

1. In compliance with Washington Safe Haven Law (RCW 13.34.360), all firefighters shall be trained in and become familiar about their responsibilities as a "qualified person" to accept custody of a "newborn" infant.
    a. The bill defines a newborn infant as one less than 72 hours old.
2. All qualified persons will ascertain from anyone seeking to transfer custody of a child whether the child is less than 72 hours old as determined to a reasonable degree of certainty.
3. The qualified person shall not require a parent to provide any identifying information as a condition of transferring custody of the newborn and shall attempt to protect the anonymity of the parent.

Procedure:

1. The qualified person should notify dispatch that a newborn or other child has been received and request a transporting unit to location.
2. EMS personnel should medically assess the infant in accordance with Grays Harbor Emergency Medical Services Patient Care Protocols.
3. The qualified person should inquire as to whether the transferring person is the parent of the child, without requesting any identifying information.
4. The qualified person should attempt to verify the date and time of birth of the child to ascertain whether the child is a "newborn" as defined by the law.
5. Based on the information provided to the previous questions, it will be determined if the provisions of Washington Safe Haven Law (*RCW 13.34.360) applies.
6. The qualified person will attempt to obtain a family medical history or information
7. The qualified person shall notify Child Protective Services (1-866-END-Harm/1-866-363-4276) within 24 hours of the infant's transfer.
8. If it is determined that the child is not a newborn as defined in the state statue, the qualified person shall attempt to obtain family medical history and address any immediate health and safety needs of the child. The qualified person must notify law enforcement and Child Protective Services. The parent could face criminal charges if Washington Safe Haven Law (RCW 13.34.360) is not applicable.
9. In the event that employees or members of the department, who do not meet the definition of a "qualified person", are asked to accept transfer of a newborn from a parent, or any child from any person, they must ask the transferring individual to wait while a qualified person is summoned.

Injections – Subcutaneous and Intramuscular

Clinical Indications:

- When medication administration is necessary, and the medication must be given via the Subcutaneous (SQ) or Intramuscular (IM) route in selected medications.

Procedure:

1. Receive and confirm medication order or perform according to standing orders.
2. Prepare equipment and mediation, expelling air from the syringe.
3. Needle size: Subcutaneous Injection:
    a. 25g 5/8 inch needle for average adult
    b. 25-27g ½ inch needle for infant, child, elderly, or thin patient.
    c. The most common site for subcutaneous injections is the arm. Injection volume should not exceed 1cc.
4. Needle Size: Intramuscular injection:
    a. 20-25g 1-2" depending on patient size.
    b. The possible injection sites for intramuscular injection include the arm, buttock, and thigh.
5. Injection volume should not exceed 1cc for the arm and not more than 2.5cc in the thigh or buttock.
6. The thigh should be used for injections in pediatric patients and injection volume should not exceed 1cc.
7. Explain the procedure to the patient and reconfirm patient allergies.
8. Expose the selected area and cleanse the injection site with topical antiseptic swab.
9. Insert the needle into the skin with a smooth, steady motion.
10. **SQ: 45° angle** and **IM: 90° angle.**
11. Inject the medication.
12. Withdraw the needle quickly and dispose of properly without recapping.
13. Apply pressure to the site.
14. Monitor the patient for the desired therapeutic effects as well as any possible side effects.
15. Document the medication, dose, route, patient response and time on/with the patient care report (PCR).

Interfacility Transports

Interfacility transports may occur at either the BLS or ALS level within the following categories and under the following guidelines:

1. Transfer between hospitals for admission for services not available at the initial hospital.
2. Transport of patient to another facility for diagnostic evaluations with return to the initial facility.
3. Transport from an acute care facility to an extended care facility.
4. Transport of patient between facilities at the patient's request.
5. Transport of Mental Health patients to a state designated psychiatric facility.

As a general rule, it is the responsibility of the transferring facility to ensure that medical necessities for safe patient transfer are met. Medical instructions and orders of the attending physician will be followed unless specifically contrary to standing orders. If the attending physician accompanies the patient during the transfer, he/she may assume complete authority and direct all care. Medical Control should be aware and in agreement.

Registered nurses who accompany patients on interfacility transports must have orders to give medications, as they do not have coverage under pre-hospital WAC to do so. Such orders may come from the attending physician, on-line Medical Control, or by the receiving physician. If orders are verbal, they should be clearly documented as such in the pre-hospital patient care record. Further, if an RN attends a patient for an ALS transfer, a Grays Harbor County certified EMT-Paramedic shall accompany the patient. The only Exception Shall be if a Flight Nurse is in attendance of a patient, a paramedic does not need to accompany unless requested by the Flight Nurse. The authority of primary patient care will reside with the nurses accompanying the EMS providers. However, primary patient care will be transferred to the ALS Providers under the following circumstances:

1. The patient requested the paramedic to take over primary patient care.
2. Patient presentation deteriorates to the level that prehospital skill intervention is required for stabilization (example: placement of advanced airway).

The responsibility for arranging transfer to another facility resides with the transferring facility. In general, patients will not be transferred to another facility without first being stabilized. Stabilization should include adequate evaluation and initiation of treatment to assure that transfer of the patient will not, within reasonable medical probability, result in material deterioration of the medical condition, death, or loss or serious impairment of bodily functions, parts, or organs. Evaluation and treatment of patients prior to transfer should include the following:

1. Establish and ensure adequate airway and adequate ventilation.
2. Initiate control of hemorrhage.
3. Stabilize and splint the spine and/or fractures.
4. Establish and maintain adequate access routes for fluid and/or medication administration.

Interfacility Transports (Continued)

5. Initiate adequate fluid and/or blood product replacement.
6. Determine that the patient's vital signs (including pulse, respiration, blood pressure and urinary output, if indicated) are sufficient to sustain adequate tissue perfusion.

It is understood that circumstances may arise for which full stabilization is not possible or appropriate; however, the potential benefits of transfer should outweigh the risks. It is, further, the transferring facility's responsibility to establish the need for BLS or ALS care.

For ALS calls not meeting the criteria consistent with these protocols or stabilization prior to inter-facility transport, Medical Control shall be contacted, and the following may apply:

1. You may initiate pre-hospital protocols and guidelines as appropriate including the establishment of intravenous lines, airway control, vasopressor support, etc.
2. ALS providers shall contact Medical Control for all medications and/or medical equipment not approved within these protocols. When transporting patients with medications and or equipment not being covered by these protocols, providers shall obtain the appropriate information concerning the medication ore equipment (i.e., indications, contraindications, side effects, dosages, etc.) and consult with Medical Control.
3. You may refuse to transfer the patient until the facility complies with the previously noted evaluation and/or treatment. Should you decide this is necessary, contact online Medical Control for concurrence and consultation or contact the MPD directly, if available.

If BLS transport is requested and it is the judgement of the BLS crew that the patient needs ALS support, it is mandated that ALS level care be dispatched and Medical Control contacted. Under no circumstances (except as noted) should a BLS crew transport a patient, if in their judgement; this is an ALS level transport. (The only exception is a disaster/multi-casualty incident with exhaustion of county and air transport ALS capabilities)

The subsequent medications in this section are to be utilized during Inter-Facility Transports and not in the pre-hospital setting.

Medical instructions and orders, including medication administration, will be at the discretion of the attending physician and will be followed unless specifically contrary to standing orders. Dosages and infusion rates are to be determined by the attending physician and not to be changed by the transporting agency unless otherwise directed by Medical Control.

In the event an emergency occurs enroute, which was not anticipated, pre-hospital patient care protocols will immediately apply. Medical Control should be contacted as appropriate, and the receiving facility should be contacted as soon as possible to inform them of changes in the patient's condition.

Intranasal Medication Delivery

Clinical Indications:

- When medication administration is necessary, and an alternative route is not available or impractical.

Materials:

1. Appropriate sized syringe and needle/needleless device to draw up medication.
2. Atomizer.
3. Medication of appropriate concentration for nasal medication delivery.

Procedure:

1. Aspirate the proper volume of medication required to treat the patient. An extra 0.1 mL of mediation should be drawn up to account for the dead space within the atomizer at the end of the procedure.
2. Remove the syringe from the needle/needleless device.
3. Attach the atomizer tip via Leur Lock mechanism (twist into place).
4. Using your free hand to hold the crown of the head, place the tip of the atomizer snugly into the nostril aiming slightly upward and outward (toward the ear on the same side).
5. Briskly compress the syringe plunger to deliver half the medication into the nostril.
6. Move the device to the opposite nostril and administer the remaining medication as in step 5.

Notes:

Medications which are appropriate for intranasal use include:

- **Diazepam** (5mg/mL) 2-5mg
- **Fentanyl** (50mcg/mL) 25-50mcg
- **Glucagon** (solubilize two 1mg vials in 1mL sterile water) 2mg
- **Ketamine** (100mg/mL) 50-100mg
- **Lorazepam** (2mg/mL) 0.5-4mg
- **Midazolam** (5mg/mL) 1-10mg
- **Morphine** (10mg/mL) 2-10 mg
- **Naloxone** (1mg/mL) 0.4-2mg
    - May exceed 2mg if suspected extremely potent opioid overdose. Consider IV/IM route.

****USE CAUTION WITH MEDICATION CONCENTRATIONS.**

MARCH Trauma Bags

The purpose of the MARCH Trauma bag is to provide an easily deployed and mobile bag that a provider can use to treat life threats across multiple trauma patients. This reference is to provide a list of the contents withing a MARCH bag.

Reference MSO/EMC price list and vendor memo which will provide uniformity amongst all agencies covered by the Grays Harbor protocols.

Contents

Item	Quantity
1. Bag (Option A or B)	1-2 per primary medic unit
2. Gloves	3-5 patients worth
3. Eye Protection	1 pair
4. Trauma shears	2 pair
5. 25' Looped Webbing	1 each
6. Combat application Tourniquet	4 each
7. Nasopharyngeal airway	2 of each size 28 fr and 32 fr
8. Thoracentesis Needle	2 each
9. Asherman Chest Seal	2 each
10. HALO Chest Seal	2 each
11. H&H PriMed compressed gauze 4"	6 each
12. Israeli ABD Bandage	1 each
13. Israeli 4" Bandage	6 each
14. 3" roll medical tape	1 each
15. Cravats	4 each
16. Clotting Agent Gauze	2-4 each

Mechanical CPR Device

Clinical Indications:

- Cardiopulmonary arrest with limited personnel or need for prolonged High Performance CPR or need for uninterrupted performance CPR.
- Adult or child, the patient must fit in device and come within 15 mm of the device.

Material:

1. Automated CPR device
2. AED or monitor/defibrillator (ALS)

Procedure:

1. Confirm cardiopulmonary arrest.
2. Contact dispatch to declare “Cardiac Arrest/CPR in progress”.
3. Begin High Performance CPR.
4. Apply automated CPR device and activate the device per manufacture’s specifications.
5. Select “Continuous” setting for device.
6. Apply AED/defibrillator pads.
7. Elevate head of gurney to 30 degrees after 2 minutes of CPR.
8. Assess the adequacy of CPR by palpating peripheral pulses.

Continuously assess the location and application of the device on the patient. Readjust as necessary.

Nasogastric Tube Insertion

Clinical Indications:

- Gastric decompression in intubated patients.
- Administration of activated Charcoal in patients with altered mental status with an advanced airway.

Contraindications:

- Facial/head trauma.

Procedure:

1. Assemble all supplies. Assure function suction unit.
2. Estimate insertion length by superimposing the tube over the body from the nose to the ear, to the stomach.
3. Mark the proper insertion distance with tape.
4. Flex the neck if not contraindicated to facilitate esophageal passage.
5. Liberally lubricate the distal end of the tube and pass through the patient's nostril along the floor of the nasal passage. Do not orient the tip upward into the turbinates. This increases the difficulty of the insertion and may cause bleeding.
6. In the setting of an unconscious, intubated patient or a patient with facial trauma, oral insertion of the tube may be considered or preferred.
7. Continue to advance the tube gently until appropriate distance is reached.
8. Confirm placement by injection of 20cc of air and auscultate for the swish or bubbling of the air over the stomach. Additionally, aspirate gastric contents to confirm proper placement.
9. Secure the tube.
10. Decompress the stomach of air and food either by connecting the tube to suction or manually aspirating with the large catheter tip syringe.
11. Mechanical suction should not reach high setting, follow manufacturers recommendations.
12. Document the procedure, time, patient response, and result (success) on the Patient Care Report (PCR).

Orthostatic Blood Pressure Measurement

Clinical Indications:

- Patient situations with suspected blood/fluid loss/dehydration who have the mobility to complete the procedure.
- Patients larger than the Length Based Tape.

Procedure:

1. Assess the need for orthostatic vital sign measurement.
2. Obtain patient's pulse and blood pressure while supine.
3. Have patient stand for two minutes.
4. Obtain patient's pulse and blood pressure while standing.
5. If pulse has increased by 30 beats per minute (BPM) or systolic blood pressure decreased by 30 mmHg, the orthostatics are considered positive. If dizzy or symptomatic during procedure, consider the test positive.
6. If patient is unable to stand, orthostatics may be taken while the patient is sitting with feet dangling.
7. If positive orthostatic changes occur while sitting, **DO NOT** continue to the standing position.
8. Patients on prolonged beta-blocker therapy will not demonstrate orthostatic vital sign changes. Provider must complete assessment and utilize clinical judgement.
9. Document the time and vital signs for supine and standing positions on/with the Patient Care Report (PCR).
10. Determine appropriate treatment based on protocol.

Pain Assessment and Documentation
Adult

Clinical Indications:

- Any patient with pain.

Definitions:

- Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage.
- Pain is subjective (whatever the patient says it is).

Procedure:

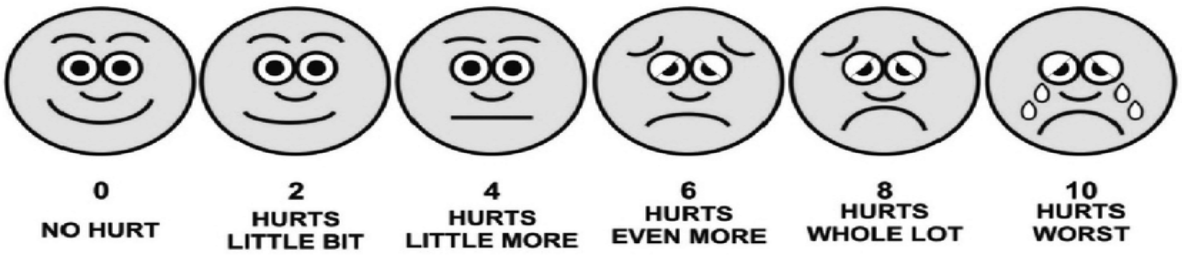
1. Initial and ongoing assessment of pain intensity and character is accomplished through the patient's self-report.
2. Pain should be assessed and documented during initial assessment, before starting pain control treatment, and with each set of vitals.
3. Pain should be assessed using the appropriate approved scale.
4. Two pain scales are available: the 0-10 and the Wong-Baker "faces" scale.
5. **0 -10 Scale:** the most familiar scale used by EMS for rating pain with patients. It is primarily for adults and is based on the patient being able to express their perception of the pain as related to numbers. Avoid coaching the patient; simply ask them to rate their pain on a scale from 0 to 10, where 0 is no pain at all and 10 is the worst pain ever.

Visual Analog Scale

0 1 2 3 4 5 6 7 8 9 10

No pain **Worst Pain**

6. **Wong – Baker "faces" scale:** may be used with geriatrics or any patient with a language barrier. The faces correspond to numeric values from 0 – 10. This scale can be documented with the numeric value or the textual pain description.



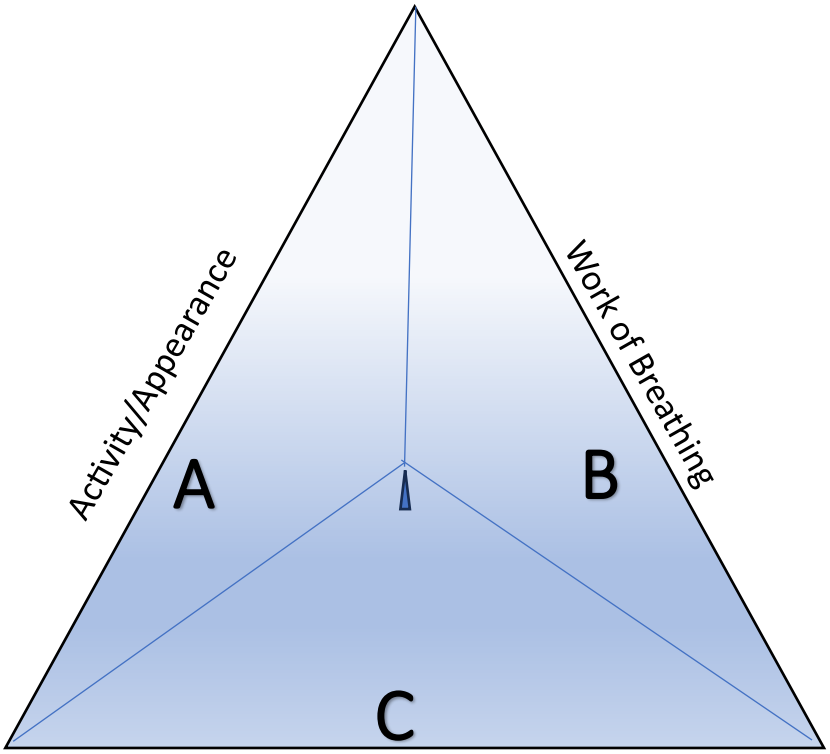
Pediatric Assessment Triangle

Airway

Open
Adjunct

Breathing

Respiratory Rate
Grunting/Flaring
Retractions
SpO2



Perfusion

Circulation

Heart Rate
Capillary Refill time
Color
Blood Pressure

Disabilities

AVPU
LOC
Blood Glucose Level

Expose

Temperature
Trauma

Pediatric Pain Assessment and Documentation

Clinical Indications:

- Any pediatric patient with pain.

Definitions:

- Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage.
- Pain is subjective (whatever the patient says it is).

Procedure:

1. Initial and ongoing assessment of pain intensity and character is accomplished through the patient's self-report.
2. Pain should be assessed and documented during initial assessment, before starting pain control treatment, and with each set of vitals.
3. Pain should be assessed using the appropriate approved scale.
4. **0 -10 Scale:** the most familiar scale used by EMS for rating pain based on the patient being able to express their perception of the pain as related to numbers. Avoid coaching the patient; ask them to rate their pain on a scale from 0 – 10, where zero is no pain at all and 10 is the worst pain ever.

Visual Analog Scale

0 1 2 3 4 5 6 7 8 9 10

No pain **Worst Pain**

5. **Wong – Baker "faces" scale:** may be used with any patient with a language barrier. The faces correspond to numeric values from 0 – 10.

CATEGORIES	SCORING 0	1	2
Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant quivering chin, clenched jaw
Legs	Normal position or relaxed	Uneasy, restless, tense	Kicking, or legs drawn up
Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid or jerking
Cry	No cry (awake or asleep)	Moans or whimpers, occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content, relaxed	Reassured by occasional touching, hugging or being talked to, distractible	Difficult to console or comfort
Each of the five categories: **(F)** Face; **(L)** Legs; **(A)** Activity; **(C)** Cry; **(C)** Consolability; is scored from 0 - 2 which results in a total score between 0 and 10 *(Merkel et al, 1997)*			

Pediatric References

Weight	4 kg grey	6 kg pink	8 kg red	10 kg purple	12 kg yellow	15 kg white	19 kg blue	24 kg orange	30 kg green
Age (approx)	Newborn - 3 mons	6 mos	9 mos	1 year	2 years	3 years	5 years	7 years	10 years
Pulse	100-160	100-160	100-160	90-150	80-140	70-120	70-120	70-120	70-120
Respiraty Rate	30-60	30-60	30-60	24-40	24-40	22-34	18-30	18-30	18-30
Blood Pressure (systolic)	*	72-104	72-104	86-106	86-106	89-112	89-112	97-115	102-120
Blood Sugar	**	60-120	60-120	60-120	60-120	60-120	60-120	60-120	60-120
Endotrachael Cuffed	2.5	3	3	3.5	4	4.5	5	5.5	6
Nasogastric Tube	5 Fr	5 Fr	8 Fr	8-10 Fr	10 Fr	10 Fr	12 fr	14 Fr	14 Fr
Defibrillation	8 J	12 J	16 J	20 J	24 J	30 J	38 J	48 J	60 J
Cardioversion	2-4 J	3-6 J	4-8 J	5-10 J	6/12 J	8-15 J	10-20 J	12-24 J	15-30 J
Fluid Challenge/ Cardiogenic Shock (10-20 mL/kg)	40-80 mL	60-120 mL	80-160 mL	100-200 mL	120-240 mL	150-300 mL	190-380 mL	240-480 mL	300-600 mL
Suction Catheter	6 Fr	8 Fr	8 Fr	10 Fr	10 Fr	10 Fr	10 Fr	10 Fr	12 Fr

*** Systolic Blood Pressure:**
Birth <12 hours: SBP 39-59
Birth >12 hours: SBP 60-76
Neonate: SBP 67-84

**** Blood Sugar:**
Birth <48 hours – Treat if less than 50
Birth >48 hours - Treat if less than 60

Pediatric Umbilical Vein Cannulation

Critical Indications:

- Emergency resuscitation and stabilization of neonates up to 10 days postpartum when unable to gain venous and/or IO access.

Equipment:

- Umbilical clamps/ Tape
- Scalpel
- 5 Fr or 3.5 Fr feeding tube (5 Fr = 14 g/ 3 Fr = 18 g at least 1 ½" catheter)
- 10 cc syringe
- IV bag
- IV tubing
- 3 way stopcock

OR commercially prepared umbilical line kit

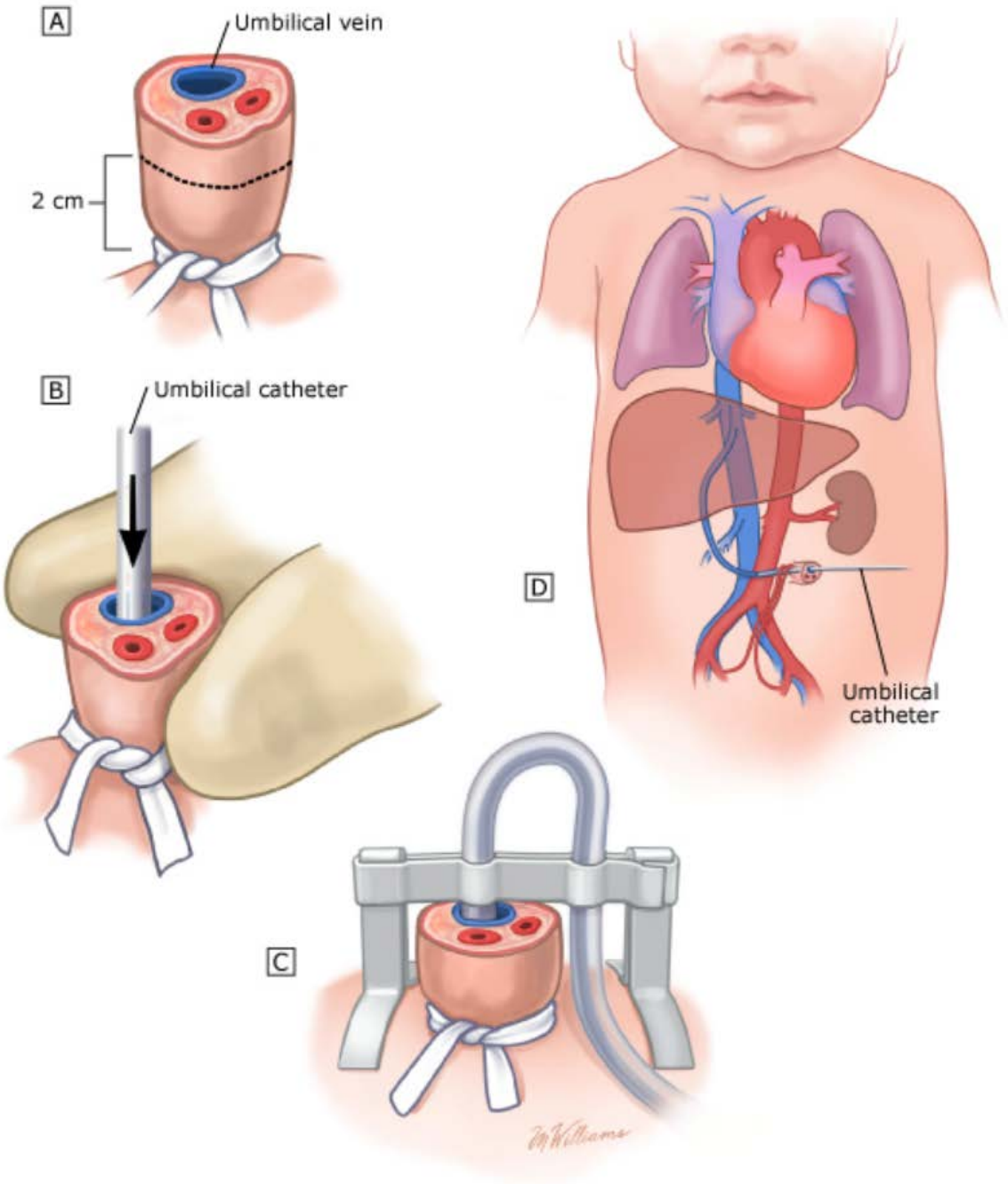
Procedure:

1. Clamp and cut cord at least 3-4 inches from the neonate's abdomen.
2. Tie umbilical tape around base of cord and gently snug it to control bleeding and clean with betadine.
3. Using scalpel, **cut cord** about 2 cm above the abdomen (take care not to cut the skin).
4. Wipe the cut end of the cord with alcohol.
5. Measure depth of insertion by measuring the distance of the cord plus 1-4 cm (2cm) to that measurement.
6. Identify umbilical vein:
   a) There are two small arteries small, thick walls.
   b) There is one larger, more "floppy "vein, typically at the 12 o'clock position.
7. Flush catheter with normal saline.
8. Only put in as far as you need to get blood return, usually 4 to 5cm max total depth (5 Fr in normal gestation, 3.5 Fr in premature neonate).
9. Gently apply negative pressure on the end of the feeding tube with syringe, watching for blood return.
10. Tape distal portion of catheter to abdomen.
11. Disconnect syringe and connect 3 way stopcock, and flushed tubbing.
12. Administer fluid and medications in bolus fashion.

TIPS:

- It may be helpful to stabilize the cord by holding it at the base and applying gentle traction.
- Angle stump toward feet so catheter is directed toward the head.
- Try loosening the umbilical tie just enough to pass the tubing.

Umbilical vein catheterization



Pediatric Venous Access Intraosseous

Clinical Indications:

- Life threatening illness or injury in a child <8 years of age (>8 years old see **Venous Access Intraosseous Adult** (PRC320).

Procedure:

1. Approved sites are the distal femur and proximal tibia.
2. Expose the leg.
3. Identify the tibial tubercle (bony prominence below the kneecap) on the proximal tibia. The insertion location will be 1-2 cm (2 finger widths) below this and medially. If using distal femur, have knee slightly flexed with roll behind the knee. Site is anterior midline one finger width above top edge of patella.
4. Prep the site as per peripheral IV site.
5. **If using a commercially prepared device, follow manufacturers' recommendation**.
    a. **Battery powered driver**- determine appropriate length of needle using manufactures recommendations. Position needle at 90° to bone. Gently advance needle until it touches bone, ensure 5mm of catheter is visible above skin. Squeeze trigger and apply pressure to bone. Release trigger when "pop" or give is felt.
    b. **Manual IO** (e.g., Jamshidi) Holding the Intraosseous needle perpendicular to the skin, twist the needle handle with a rotating grinding motion applying controlled downward force until a "pop" or give is felt indicating a loss of resistance.
6. Remove the trocar.
7. Confirm placement, needle stands firmly in bone and with aspiration of marrow.
8. Stabilize and secure.
9. Flush, observing for extravasation of fluids. Hang Normal Saline IV fluid with pressure bag to keep line open.
10. Document the procedure, time, and the result (success) on the Patient Care Report (PCR).

Pediatric: Pain related to infusion: Lidocaine 2%, 0.5 mg/kg (Max dose 20 mg). May repeat once.

Pelvic Fracture Stabilization

Clinical Indications:

- Physical exam indicates and mechanism of injury suggest a pelvic fracture.

Procedure:

1. Physical exam shows instability of pelvis with compression.
2. Assess the abdomen and neurovascular status of the lower extremities.
3. Assess for blood at the perineum.
4. Fold a sheet lengthwise into a swathe approximately 12 – 18 inches wide.
5. Pass this swathe under the patient's buttocks and clamp or tie circumferentially around the pelvis covering buttocks posteriorly. The swathe should be just below the iliac crests. Secure ends of sheet.
6. Bind feet together.

OR

1. Physical exam shows instability of pelvis with compression.
2. Assess the abdomen and neurovascular status of the lower extremities.
3. Assess for blood at the perineum.
4. Utilize a commercial pelvic stabilization device following the manufacturer's specifications.
5. Bind feet together.

Pericardiocentesis

Clinical Indications:

- Signs and symptoms of cardiac tamponade

Material:

1. Appropriate Prep Materials
2. 14g-16g, 5 ½ inch over-the-needle cath
3. Large Syringe

Procedure:

1. Prep the xiphoid area using the appropriate antiseptic technique.
2. Local anesthesia, if needed (1cc 2% Lidocaine subcutaneous.)
3. Attach a #14 gauge, 5-1/2”inch over-the-needle catheter to large syringe.
4. Puncture the skin 1-2 cm inferior to the left margin of the xiphoid process, at a 45 degree angle to the skin.
5. Carefully advance the needle/catheter cephalad aiming for the tip of the left scapula, aspirating constantly.
6. When the needle tip enters the blood filled pericardial sac, withdraw as much blood as possible (pericardial sac will not clot.) In a simple cardiac tamponade, withdrawal of a small amount of pericardial blood may result in blood pressure.
7. If the needle is advanced too far during insertion or the epicardium contacts the needle tip during aspiration, an injury pattern will appear on the cardiac monitor (ST-T wave changes, PVC’s etc.)
8. After aspiration, withdraw the needle and secure the catheter to the skin while occluding the catheter with a small syringe attached. The pericardial sac may then be repeatedly aspirated as needed.

The pediatric heart is considerably shallower than the adult.

Physician On-Scene

This procedure outlines the steps to be followed when, at the scene of an injury or illness, a bystander identifies self as a physician.

GENERAL GUIDELINES:

1. Be courteous at all times.
2. Try not to be confrontational.
3. Explain to the individual that pre-hospital providers operate under the guidelines/protocols set forth by the Medial Program Director of GHEMS.
4. If needed, provide the individual access to protocols while on scene. This can be facilitated by showing the individual the protocols that should be kept in your response units.
5. The physician must contact **Medical Control** to obtain permission to intervene and will continue care until arrival at the receiving hospital.

PHYSICIAN AT A SCENE:

When a bystander at an emergency scene identifies self as a physician, the Paramedic or EMT in charge of the scene shall utilize the following procedure:

1. Ask to see the individual's medical license, unless the individual is known by providers on scene to be licensed in the State of Washington as a physician.
2. If the physician is able to produce a copy of his/her medial license, they may participate in patient care by:
    a. Assisting the pre-hospital providers in carrying out protocols, and/or
    b. Performing additional interventions at the direction of Medical Control, and/or
    c. Give orders if…
        i. Medical control concurs with orders, **AND**
        ii. The physician accompanies the patient to the hospital.
        iii. In the event that the physician accompanies the patient to the hospital, the physician will be responsible for completing any required documentation (Patient Care Reports).

EMERGENCY AT A PHYSICAN'S OFFICE:

At a private Physician's, Physician's Assistant or Nurse Practitioner's office, the individual physician maintains the responsibility for the treatment and management decision for the patient until care is handed off to EMS. During transport, treatment rendered by the pre-hospital provider must remain within the provider's scope of practice.

Pulse Oximetry

Clinical Indications:

- Patients with suspected hypoxemia.

Procedure:

1. Turn the machine on and allow for self-tests.

2. Apply probe to patient as recommended by the device manufacturer.

3. Allow machine to register saturation level.

4. Record time and initial saturation percentage on room air, if possible, on the patient care report (PCR).

5. Verify pulse rate on machine with palpated pulse of the patient

6. Monitor critical patients continuously until arrival at the hospital. If recording a one-time reading, monitor patients for a few minutes as oxygen saturation can vary.

7. Document percent of oxygen saturation every time vital signs are recorded and in response to therapy to correct hypoxemia.

8. In general, normal saturation is SpO2 94-98%. Below 94% suspect a respiratory compromise.

9. For patients with low oximetry at baseline, treat the patient and not oximetry.

10. The pulse oximeter reading should never be used to withhold oxygen from a patient in respiratory distress or when it is the standard of care to apply oxygen.

11. Factors which may reduce the reliability of the pulse oximetry reading include:
    a. Poor peripheral circulation (blood volume, hypotension, hypothermia).
    b. Excessive pulse oximeter sensor motion.
    c. Fingernail polish (*may be removed with acetone pad).
    d. Carbon monoxide bound to hemoglobin (misses hypoxia).
    e. Irregular heart rhythms (atrial fibrillation, SVT, etc.).
    f. Jaundice.
    g. Excessive light entering the side of the probe causing “washout” of the signal.

Restraints

Clinical Indications:

- Patients with actual or potential threat to self or others.
- Involuntary hold.

Procedure:

1. **Planning:**
   a. Verbal de-escalation techniques are to be implemented and documented. If verbal de-escalation fails, providers may need to implement physical and/or chemical restraint measures.
   b. Request assistance from Law Enforcement.
   c. EMS personnel are not to knowingly place themselves at risk during the process of restraining a patient.
   d. Thorough assessment after patient has been controlled.
   e. Consult Medical Control if you have questions or concerns.

2. **Application of restraints:**
   a. Obtaining and preparing appropriate restraints
      - Soft restraints (i.e., posey, Velcro or seatbelt type)
   b. Assessing the safety of the situation:
      - Complete a visual check for potential weapons.
      - If there is suspicion of weapon involvement, request involvement of Law Enforcement prior to engaging in patient interaction.
      - Providers should remove any potential weapons from their person. (i.e., pens, flashlights, trauma shears etc.)
   c. Assigning a contact for the out of control patient:
      - Minimize the number of people speaking to the out of control patient.
      - Continue use of verbal de-escalation.
   d. Designation who will direct and cue team members in the application of restraints:
      - Assign each limb and the head to specific team members.
      - Give the signal to go hands-on (this may be a non-verbal signal).
      - Supervise the application of restraints.
      - Give the verbal signal for hands-off (**RELEASE**).
      - No team member is to release their designated limb until directed.
   e. Conduct a preliminary debriefing:
      - Assess team members and patient for any injuries.
      - Reassess restraints for appropriate application.

3. **Reassessment/Chemical Adjuncts**:
   a. EMS personnel must assess the patient to determine the need for administration of an anxiolytic, or sedative to prevent continued forceful struggling against the restraint.

Continued forceful struggling against restraints can lead to hyperkalemia, rhabdomyolysis, or cardiac arrest. See **Psychological/Emotional/Excited Delirium** (PCP200).

b. Chemical adjuncts to physical restraints are to be administered in accordance with patient care protocols and/or on line medical direction.

c. Post restraint assessment must include hemodynamic, respiratory, and neurologic systems. Restrained extremities should be evaluated for pulse quality, capillary refill, color, nerve and motor function distal to restraints a minimum of every fifteen (15) minutes.

4. Documentation:

a. In addition to standard information, the Patient Care Report (PCR) must document the following:

- Complete assessment of patient.
- Objective description of patient behavior (competence) (use BAR score).
- Use and effectiveness of verbal de-escalation techniques.
- Reason for physical restraint.
- Explanation offered to the patient.
- Type of restraint used and time applied.
- Post restraint serial extremity evaluation.
- Post evaluation of the patient's respiratory status.
- Condition of the patient enroute and on transfer to Emergency Department Staff.

5. Approved restraint devices/patient position:

a. The following forms of restraints are **NOT** to be utilized by EMS personnel:

- "Sandwiching" patients between backboards, scoop stretcher or mattresses as a restraint.
- Restraining a patient's hands and feet behind the patient (i.e., Hog- tying).
- Methods or other material applied in the manner that could cause respiratory, vascular, or neurological compromise, including the use of "choke holds".
- Locking handcuffs.
- Hard plastic ties or any restraint device requiring a key to remove.

b. Patients should not be transported in the prone position. EMS personnel must ensure that the patient's position does not compromise the patient's respiratory, circulatory, or neurological systems, and does not preclude any necessary medical intervention to protect the patient's airway should vomiting occur.

c. Occasionally, it is necessary for Law Enforcement to apply restraint devices that are not approved for EMS use (e.g., handcuffs) in order to protect the safety of the patient and the public. As soon as the situation is controlled, EMS personnel are to exchange these devices for those that are approved for EMS use. In the event that restraint exchange cannot safely occur, Law Enforcement **must** accompany patient during transport.

Simple Thoracostomy

Clinical Indications:

- Patients in traumatic cardiac arrest or peri-arrest state with ongoing positive pressure ventilation and clinical indications of pneumothorax.
- Patients presenting with a tension pneumothorax with hypoxia, hypotension, and unilaterally absent breath sounds.
- In the setting of blunt traumatic cardiac arrest, bilateral thoracostomies should be considered.

Equipment:

- Sterile gloves
- Eye protection/face shield
- Chlorhexidine prep
- Scalpel
- Hemostats or other blunt instrument
- Skin marking pen

Procedure:

1. Utilize universal precautions, especially face and eye protection.
2. With arm abducted, find and mark the area over the fifth rib at the midaxillary line (within the triangle of safety).
3. Clean the area as best as possible with an antiseptic swab stick.
4. Make a 1-2" (3-5 cm) transverse incision through the skin over the 5^{th} rib at the marked location just anterior to the mid axillary line.
5. With large forceps, rapidly dissect over the rib and through the intercostal muscles.
6. Push through the pleura and open the forceps.
7. With the forceps open, retract from the chest.
8. Insert finger along the track into the pleural cavity and perform sweep.
9. Assess for release of air or blood.
10. Each wound should be circled with a permanent marker and labeled EMS-R or EMS-L to identify incision made by EMS in the event of autopsy or criminal investigation.

Spinal Motion Restriction

Conduct a focused spinal exam:

- Can the patient focus on the exam or are they in severe distress from other injuries or emotional stressors? If No, consider full spine motion restrictions.
- Assess distal CMS/bi-lateral grips/push-pull.
- Palpate the entire spine on the boney processes one at a time from C1 to L5. Patient should not have focal midline tenderness to palpation or obvious deformity.

Focused spinal assessment reveals:

- Unresponsive
- Inability/barrier to perform focused spinal exam
- Gross motor or sensory deficits from blunt trauma

YES → **Full Spinal Motion Restriction:**

Application of a cervical collar and placement of patient on padded backboard or equivalent to immobilize patient for transport.

NO ↓

Focused Spinal Assessment reveals:

- Any abnormal findings from the focused spinal exam.
- Blunt injury from significant mechanism (high energy events such as ejection, high fall axial loading and abrupt deceleration crashes)
- Appears clinically intoxicated (drugs or alcohol, which the clinician determines is reducing pain sensorium)
- Altered level of consciousness, excluding unresponsive.
- Injury detracts from or prevents reliable history and exam.
- Gross motor or sensory deficits from penetrating injury (patient should be positioned supine)
- Midline upper third thoracic/cervical spine pain or tenderness.
- Spine deformity (patient should be positioned supine).
- Limited cervical spine active range of motion.

YES → **Focused Spinal Motion Restriction:**

Application of a cervical collar and placement of patient in a supine position on gurney with normal seat belts straps applied.

NO ↓

If no to all the above, ask the patient to rotate their head 45 degrees from side to side without assistance. **Pain free?**

NO → **Focused Spinal Motion Restriction:**

YES ↓

Focused spinal motion restriction not necessary.

Pearls:

- Consider modified restriction in any patient with arthritis, cancer, dialysis, kyphosis, or other underlying spinal or bone disease or who may have increased risk of spinal compromise
- Any patient may be motion restricted base on EMS provider discretion.

Splinting

Clinical Indications:

- Immobilization of an extremity, either due to suspected fracture, sprain or injury.
- Immobilization of an extremity to secure medically necessary devices such as intravenous catheters.

Procedure:

1. For any reduction, see Pain and Sedation Management Protocol (PCP180).
2. Remove all clothing, jewelry or restricting items from the extremity.
3. Select a site to secure the splint both proximal and distal to the area of suspected injury, or the area where the medical device will be placed.
4. Do not secure the splint directly over the injury or device.
5. Place the splint and secure with Velcro, straps, or bandage material (e.g., Kling, kerlex, cloth bandages, etc.) depending on the splint manufacturer and design.
6. Document pulses, sensation, and motor function after placement of the splint. If there has been a deterioration in any of these 3 parameters, remove the splint and reassess.
7. If a femur fracture is suspected and there is no evidence of pelvic and/or knee fracture or instability, place a traction splint as per manufacturer's specifications. The following procedure may be followed for placement of a femoral traction splint:
    a. Place the ankle device over the ankle.
    b. Place the proximal end of the traction splint on the posterior side of the affected extremity being careful to avoid placing too much pressure on genitalia or open wounds. Make certain the splint extends proximal to the suspected fracture. If the splint will not extend in such a manner, reassess possible involvement of the pelvis.
    c. Extend the distal end of the splint at least 6 inches beyond the foot.
    d. Attach the ankle device to the traction crank.
    e. Twist until moderate resistance is met.
    f. Reassess alignment, pulses, sensation, and motor function. If there has been deterioration in any of these 3 parameters, release traction and reassess.
8. Document the time, type of splint, and the pre and post assessment of pulse, sensation, and motor function in the Patient Care Report (PCR).

Stroke BEFAST Assessment

Clinical Indications:

- Suspected Stroke Patient.

Procedure:

1. If possible, prehospital care providers should establish the time of onset of stroke signs and symptoms.
2. Last known well.

Stroke Test:

1. **Balance** – Sudden change in patient's balance or equilibrium.
2. **Eyes** – Sudden loss of vision in one or both eyes.
3. **Facia**l Droop – Have patient show their teeth or smile.
    a. Normal – Both sides of face move equally.
    b. Abnormal – One side of the face does not move as well as the other.
4. **Arm Drift** – Have the patient close their eyes and hold both arms straight out with palms upward.
    a. Normal – Both arms move the same direction or do not move at all (pronator grip may be helpful).
    b. Abnormal – One arm does not move, or one arm drifts down compared to the other.
5. **Speech** – Have the patient say, "you can't teach an old dog new tricks".
    a. Normal – The patient uses the correct words with no slurring.
    b. Abnormal – The patient slurs their words, uses inappropriate words or is un able to speak.
6. **Time** – Last known well.
7. Any positive findings in steps 1-5 may indicate stroke and you should consider activating Code Stroke per **Stroke Protocol** (PCP220).
8. Reporting specific findings for example: left side facial drooping, slurred speech.
9. Perform LAMS score. A score of 4 or 5 suggest a large vessel occlusion (LVO). Activate Code Stroke per **Stroke Protocol** (PCP220).

Los Angeles Motor Scale (LAMS)

FACE	**0**	Both sides move normally
	1	One side is weak or flaccid
ARM	**0**	Both sides move normally
	1	One side is weak or flaccid
	2	One side is flaccid/doesn't move
GRIP	**0**	Both sides move normally
	1	One side is weak
	2	One side is flaccid/doesn't move

Total	**0-5**

Taser Dart Removal

Clinical Indications:

- **Taser Dart Removal can only be performed by the EMT, EMT-IV, and Paramedic.**
- When requested by LAW to remove taser barbs from an individual.

Contraindications:

1. The darts will not be removed in the field if they involve:
    - Eye, genitalia, face, head, neck, or breast.
    - Potential for vascular involvement.
2. Patients with retained darts in these areas should be transported to a hospital for removal by a physician.

Procedure:

1. Make sure that LAW has the scene secure, and it is safe to approach the patient.

2. Take all Body Substance Isolation (BSI) precautions.

3. Ensure taser wires are disconnected from the gun or the wires have been cut.

4. Perform a complete medical assessment of the patient to ensure no other medical problems are present.

5. Using a 4x4, stretch the skin around the barb so that it is taught. Grasp the barb tightly and using a quick firm motion, pull straight out from the skin.

6. Make sure to dispose of barb(s) in a sharps container.

7. If after two (2) attempts the barb does not disengage, transport patient to hospital for removal by a physician. If transported to the hospital, follow the Patient Care Procedure regarding restraints for aggressive or violent patients.

8. Apply antiseptic to the puncture area and apply dressing if needed.

9. Document completely, including the location of TASER barb(s) and your medical assessment with vital signs on Patient Care Report (PCR).

TOXIDROMES CHART

SUBSTANCE	BP	HR	RR	TEMP	LOC	SIGNS AND SYMPTOMS
Adrenergic Agonists	↑	↑	↑	↑	agitation, psychosis	Mydriasis, diaphoresis
Antihistamines	↓	↑	↑	↑	Agitation to coma, psychosis	Dry mouth, blurred vision, mydriasis, flushing
Beta-blockers	↓	↓			Lethargy, coma	Dizziness, cyanosis, seizures
Cholinergic Agents	**BOTH**	**BOTH**			Lethargy, coma	Salivation, urination, diarrhea, diaphoresis
Cyclic Antidepresants	↓	↑			Lethargy, coma	Dry mouth, blurred vision, mydriasis, flushing
Ethanol & Sedatives	↓	↓	↑	↑	Lethargy, coma	Slurred speech, ataxia, hyporeflexia
Ethanol or Sedative Withdrawal	↑	↑	↑	↑	Agitation, phychosis	Mydriasis, tremors, seizures
Hallucingogens					Agitation to coma, psychosis	Mydriasis
Opiod Compounds	↓	↓	↓	↓	Lethargy, coma	Slurred speech, ataxia, hyporeflexia
Opiod Withdrawal	↑	↑			Normal to agitated	N/V, Abd. Cramping, hyperactivity
Salicylate Compounds	↓	↑	↑	↑	Agitation to coma, psychosis	Tinnitus, N/V, diaphoresis

Venous Access Blood Draw

Clinical Indications:

- Collection of a patient's blood for laboratory analysis.

Procedure:

1. Utilize universal precautions as per **Infection Control Standards** (INT005).
2. Select vein and prep with topical antiseptic as usual.
3. Select appropriate blood-drawing devices: Vacutainer blood tubes and blood tube holders with male or female adaptors shall be available and used to obtain and transfer all blood samples.
4. Draw appropriate tubes of blood for lab testing per destination hospital protocol.
5. Assure that the blood samples are labeled with the correct information (a minimum of the patients name, along with the date and time the sample was collected as well as the name of the person drawing the samples.

Blood Draws for Law Enforcement

1. Law Enforcement may request that EMS providers draw blood for blood alcohol levels at the scene of an accident, under the following circumstances:
    a. The patient is under the care of GHEMS personnel **and**
    b. The blood draw does not interfere with patient care being provided **and**
    c. Law Enforcement provides EMS personnel with the proper blood tubes for the draw.
2. When performing a blood draw for law enforcement utilize iodine to clean the skin. Do not use alcohol wipes as this may contaminate the skin and blood sample.
3. EMS personnel shall document blood draws on the Patient Care Report (PCR).
4. Under no other circumstances will EMS provide this service – specifically EMS will:
    a. **Not** be called to an accident scene for the sole purpose of performing a blood draw.
    b. **Not** respond to a jail, police station or other holding facility to perform a blood draw.
    c. **Not** draw blood at their station.
5. It is anticipated that Law Enforcement would obtain blood draws through other resources available to them if the criteria listed in this protocol is not met.

Venous Access
External Jugular

Clinical Indications:

- External jugular vein cannulation is indicated in a critically ill patient >8 years of age who requires intravenous access for fluid or medication administration in whom an extremity vein or interosseous is not obtainable.
- External jugular cannulation can be attempted initially in life threating events where no obvious peripheral site is noted.

Procedure:

1. Utilize Universal Precautions as per **Infection Control Standards** (INT005).
2. Place the patient in a supine head down position. This helps distend the vein and prevents air embolism.
3. Turn the patient's head toward the opposite side if no risk of cervical injury exists.
4. Prep the site as per peripheral IV site.
5. "Tourniqueting" the vein lightly with one finger above the clavicle, puncture the vein midway between the angle of the jaw and the clavicle and cannulate the vein in the usual method. Keep the angle of entry shallow to prevent pneumothorax.
6. Attach the IV and secure the catheter avoiding circumferential dressing or taping.
7. Document the procedure, time, and result (success) on the patient care report (PCR).

Venous Access
Extremity

Clinical Indications:

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

Procedure:

1. Utilize universal precautions as per **Infection Control Standards** (INT005).

2. Inspect the IV solutions for expiration date, cloudiness, discoloration, leaks, or the presence of particles.

3. 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.

4. Place a tourniquet around the patient's extremity to restrict venous flow only.

5. Select a vein and an appropriate gauge catheter for the vein and the patient's condition.

6. Prep the skin with an antiseptic solution.

7. Insert the needle with the bevel up into the skin in a steady, deliberate motion until blood flash is visualized in the catheter.

8. Advance the catheter into the vein. **Never** reinsert the needle through the catheter. Dispose of the needle into the proper container without recapping.

9. Draw blood samples when appropriate.

10. Remove the tourniquet and connect the IV tubing or saline lock.

11. Open the IV to assure free flow of the fluid and then adjust the flow rate as per protocol or as clinically indicated. If using a saline lock, flush to confirm placement.

12. Cover the site with a sterile dressing and secure the IV and tubing.

13. Document the procedure time and result (success) on the Patient Care Report (PCR).

Venous Access
Intraosseous Adult

Clinical Indications:

- Inability to obtain vascular access in a patient that requires emergent access.

Contraindications:

- Fracture of the bone selected for IO infusion.
- Excessive tissue at insertion site with the absence of anatomical landmarks (consider alternative site).
- Previous significant orthopedic procedures (IO within 24 hours, prosthesis-consider alternate site).
- Infection at the site selected for insertion (consider alternate site).
- Failed IO attempt in that extremity.

Procedure:

1. Suggested approved sites are: Distal tibia, Distal femur, proximal tibia, and proximal humerus.
2. Utilize universal precautions as per **Infection Control Standards** (INT005).
3. Prep the site as per peripheral IV site.
4. If using a commercially prepared device, follow manufacturer's recommendations.
    a. **Battery powered driver** – determine appropriate length of needle using manufacturers recommendations. Position needle at 90° to bone. Gently advance needle until it touches bone, ensuring 5mm of catheter is visible above skin. Squeeze trigger and apply pressure to bone. Release trigger when a "pop" or give is felt.
    b. **Manual IO** (e.g., Jamshidi) Holding the intraosseous needle perpendicular to the skin, twist the needle handle with a rotating grinding motion applying controlled downward force until a "pop" or give is felt, indicating loss of resistance.
5. Remove the trocar.
6. Confirm placement, needle stands firmly in bone and with aspiration of marrow and flush with 10cc Normal Saline.
7. Stabilize and secure.
8. Hang Normal Saline IV fluid with pressure bag to keep line open observing for extravasation of fluids.
9. Document the procedure, time, and the result (success) on the Patient Care Report (PCR).

Paramedics Only: Pain related to infusion: Lidocaine 2%, 40 mg IO. (May repeat once, 20 mg IO)

Viral Respiratory Disease Pandemic

Trigger for Pandemic Disease Activation:

1. Activation of the EMS Viral Respiratory Disease Procedure will be by the Medical Program director in consultation with the Public Health Department and Public Health Officer.
2. Communications – 911 Dispatch Center:
    a. Dispatch Center will ask pre-arrival screening questions as recommended by the CDC or DOH.
    b. Dispatch Center will advise emergency responders of positive symptom(s) for the patient and any people that are currently with the patient or in the household.
    c. Pandemic Situations Reports:
        i. The Medical Program Director, in conjunction with the Public Health Department will provide situation reports to the emergency responder agencies for distribution to all responders.
    d. Crew Briefings – EMS agencies will provide ongoing briefings to their responders to include:
        i. Status of outbreak – epidemiology
        ii. Hospital Status – arrival procedures and facility procedures impacting EMS.
        iii. Recommended level of PPE, infection control mentions, and decontamination procedures.
        iv. GHEMS Protocol/Procedure: Updates and recommendations.
        v. Status of Special Assigned Teams, i.e., incident Management Teams.

Worker Safety/Infection Control:

1. Personal Protective Equipment (PPE):
    a. Enhanced PPE Procedures:
        i. All patient contacts – standard universal precautions of PPE including: gloves, surgical mask, and eye protection.
        ii. Patient with viral symptoms – PPE outline above, plus: N95 mask or greater, disposable gown/overalls, shoe covers, and other PPE as recommended by the CDC, County Health Department and Medical Program Director. Cover patient's mouth and nose with a surgical or procedure mask.
        iii. Change in response configuration to minimize personnel exposure at each incident:
            1. Doorway Triage
            2. Have patient go outside for assessment if possible
            3. Limit the number of providers in close contact with the patient to only those needed to provide the correct level of care.

2. Follow CDC and Public Health Department guidelines. Medical Program Director updates, and individual department Standard Operating Procedures for Viral Pandemics.

Healthcare Providers General Health and Safety:

1. Follow current CDC guidelines and Department of Health guidelines to self-screen for symptoms.
2. Use appropriate PPE prior to, during and after providing patient care.
3. If you feel sick, or have symptoms, stay home and seek medical treatment as needed.
    a. Follow up with your department supervisor per current guidelines provided by CDC or Department of Health.

Guidelines for Emergency Vaccination Administration:

1. **Scope:**
    a. This procedure provides guidance under which designated EMT's or Paramedics may administer vaccines in a declared emergency such as a pandemic.
    b. Guidelines will be issued by the MPD that are specific to each incident.
2. **Activation:**
    a. Activation of this procedure is made by the Grays Harbor County Public Health Department in conjunction with the Medical Program Director following a Declaration of Emergency by the Grays Harbor County Commissioners.
3. **Concept of Operations:**
    a. Swabs are obtained under the operational direction of the Incident Commander or Local Emergency Management Organization with the approval of the Medical Program Director.
    b. Sample collection will be confined to points of operation as designated by the IC/EMO.

MNEMONIC'S

Patient Assessment:	Newborn Assessment:	Medical:
A: Airway	A: Appearance	M: Morphine
B: Breathing	P: Pulse Rate	O: Oxygen
C: Circulation	G: Grimace (facial actions)	N: Nitrates
D: Disability	A: Activity	A: Aspirin
E: Expose	R: Respirations	

History:

S: Signs and Symptoms

A: Allergies

M: Medications:

P: Pertinent Past Medical History

L: Last oral intake

E: Events leading to injury or illness

Trauma /Pain Assessment:

O: Onset
P: Provocation, progression
Q: Quality, pain type?
R: Radiation
S: Severity
T: Time, duration

D: Deformities
C: Contusions
A: Abrasions
P: Punctures

B: Burns
T: Tenderness
L: Lacerations
S: Swelling

V: Vitals
O: Oxygen
M: Monitor
I: IV/Information
T: Transport decision
H: History
A: Allergies
M: Medications

Continued….

MNEMONIC'S (continued)

Causes of Pulseless Electrical Activity (PEA) H's and T's:

H: Hypovolemia

H: Hypoxia

H: Hydrogen ion—acidosis

H: Hypo-/Hyperkalemia

H: Hypothermia

H: Hypoglycemia

T: Toxins

T: Tamponade, cardiac

T: Tension Pneumothorax

T: Thrombosis, (Coronary or Pulmonary)

T: Thrombosis, (Hypovolemia, increased ICP)

T: Trauma

Altered Mental Status (ALOC):

A: Alcohol, Acidosis, Ammonia, Arrhythmias

E: Endocrine, Electrolytes, Epilepsy

I: Infection

O: Overdose, Oxygen deprived, Opiates

U: Uremia (2° kidney insufficiency)

T: Trauma, Temperature, Thiamine

I: Insulin

P: Psychiatric, Poisoning

S: Shock, Stroke, Seizure, Syncope, Shunt Malfunction, Space Occupying Lesion

Triage:

A: Alert

V: Responsive to Verbal

P: Responsive to Pain

U: Unresponsive

Charting:

S: Subjective

O: Objective

A: Assessment

P: Plan

Grays Harbor County EMS Formulary

+ Requires MPD Specialized Training

Paramedic	EMT-IV	EMT	EMR
Acetaminophen (Tylenol)	Acetaminophen (Tylenol) PO/SR	Acetaminophen (Tylenol) PO/SR	
Acetylsalicylic acid/Aspirin (Bayer/Ecotrin)	Acetylsalicylic Acid/Aspirin (Bayer/Ecotrin)	Acetylsalicylic acid/Aspirin (Bayer/Ecotrin)	+Acetylsalicylic acid/Aspirin (Bayer/Ecotrin)
Activated Charcoal	+Activated Charcoal	+Activated Charcoal	
Adenosine (Adenocard)			
Albuterol (Proventil/Ventolin)	Albuterol (Proventil/Ventolin)	Albuterol (Proventil/Ventolin)	
Amiodarone (Cordarone)			
Atropine (Atreza)			
Calcium Chloride (CaC12)			
Dextrose (D50W/D25W/D10W/ DGlucose)	Dextrose (D10W)		
Diazepam (Valium)			
Diltiazem (Cardizem)			
Diphenhydramine (Benadryl)	+Diphenhydramine (Benadryl) PO	+Diphenhydramine (Benadryl) PO	
Dopamine/HCL (Intropin, Dopastat)			
Epinephrine (Adrenaline) 1:10,000			
Epinephrine (Adrenaline) 1:1,000	+Epinephrine (Adrenaline) 1:1,000	+Epinephrine (Adrenaline) 1:1,000	+Epinephrine - Patient's Own Auto-injector
Famotidine			
Fentanyl (Sublimaze)			
Furosemide (Lasix)			
Glucagon	+Glucagon	+Glucagon	
Glucose Oral (Glucose Paste)	Glucose Oral (Glucose Paste)	Glucose Oral (Glucose Paste)	+Glucose Oral (Glucose Paste)
Haloperidol (Haldol)			
Heparin			
Hydromorphone (Dilaudid)			
Insulin			
Ipratropium (Atrovent/Ipramide)	Ipratropium (Atrovent/Ipramide	Ipratropium (Atrovent/Ipramide	

Grays Harbor County EMS Formulary

Paramedic	EMT-IV	EMT	EMR
Ketamine			
Ketorolac (Toradol)			
Labetalol (Trandate, Normodyne)			
Lidocaine 2% (Xylocaine)			
Lorazepam (Ativan)			
Magnesium Sulfate (MGSO4)			
Methylprednisolone (Solu-Medrol)			
Metoprolol (Lopressor)			
Midazolam (Versed)			
Morphine			
Naloxone (Narcan)	Naloxone (Narcan) IN/IM	Naloxone (Narcan) IN/IM	Naloxone (Narcan) IN
Nitroglycerine (Nitro Stat/Nitro Quick)	Nitroglycerine (Patient's own Rx)	Nitroglycerine (Patient's own Rx)	
Norepinephrine Bitartrate (Levophed)			
Ondansetron (Zofran)	+Ondansetron (Zofran) SL/PO	+Ondansetron (Zofran) SL/PO	
Oxygen	Oxygen	Oxygen	Oxygen
Oxymetazoline (Afrin)			
Oxytocin (Pitocin)			
Pancuronium Bromide (Pavulon)			
Prednisone			
Procainamide (Pronestyl)			
Promethazine (Phenergan)			
Propofol (Diprivan)			
Propranolol (Inderal)			
Rocuronium (Zemuron)			
Sodium Bicarbonate			
Succinylcholine (Anectine)			
Tenecteplase (TNKase)			
Tetracaine (Proparacaine, Ophthaine)			
Thiamine (B-1,Betaxin)			

Grays Harbor County EMS Formulary

Paramedic	EMT-IV	EMT	EMR
Tranexamic Acid (TXA, Cyclokapron)			
Vecuronium (Norcuron)			
Verapamil			
Xylocaine Jelly 2%			

Acetaminophen (Tylenol**)** **E/I/P**

Indications:	Fever , Pain
ADULT Dose	**ADULTS ONLY:** 15 mg/kg IV/PO (325-975 mg PO for adults) **TOXIC DOSE: 150 mg/kg**
Contraindications:	Documented hypersensitivity
Pediatric Considerations:	15 mg/kg IV/PO/PR Liquid solutions vary in concentration verify correct dose Do not exceed 5 doses in 24 hours
Precautions:	Use cautiously in patients with long term alcohol use. Many OTC products contain APAP-Consider Toxicity.
Adverse Effects:	Hypoglycemia Allergic reaction
Onset/Duration	20–30 minute onset 4–6-hour duration
Classification:	Antipyretic, Analgesic
Action:	Antipyretic, Analgesic
Notes:	Caution with long term alcohol ingestion

Acetylsalicylic Acid/Aspirin (Bayer/Ecotrin) R/E/I/P

Indications:	Chest Pain with Suspected MI
ADULT Dose:	81 mg x4 tabs chewable up to 325 mg PO
Contraindications:	Known Hypersensitivity
Precautions:	Contraindicated
Adverse Effects:	Angioedema Occult Blood loss Nausea-GI Upset Hepatotoxicity
Onset/Duration	Onset: 30–60 minutes Duration: 4–6 hours
Classification:	Antiplatelet, Antipyretic, Analgesic
Action	Inhibition of platelet aggregation and platelet synthesis. Reduction of risk of death in in patients with a history of myocardial infarction or unstable angina.
Notes:	Salicylate Toxicity: tinnitus, nausea, vomiting

Activated Charcoal (Actidose-Aqua/Insta-Char) **E/I/P**

Indications:	Suspected overdose or accidental ingestion of drugs or chemicals within 30 minutes
ADULT Dose:	ADULT 50 grams PO/NG
Contraindications:	ALOC (may give via NGT with secured airway) Diminished or absent gag reflex Caustic, corrosive, or petroleum distillate ingestion
Pediatric Considerations:	PED: 1 gm/kg PO/NG Do not use preparations containing sorbitol
Precautions:	Unpleasant taste, be prepared for spitting or vomiting.
Adverse Effects:	Vomiting and or Aspiration
Onset/Duration:	Immediate onset, 24-hour duration
Classifications	Chemical absorbent
Action:	Inhibits gastrointestinal absorption or drugs or chemicals
Notes:	Most effective if administered within 30 minutes of ingestion

Adenosine (Adenocard) P

Indications	Supra-ventricular tachyarrhythmias (stable)
ADULT Dose:	6 mg Rapid IVP followed with 10-20 cc NS flush Repeat dose of 12 mg as indicated
Contraindications:	2nd or 3rd degree heart block Sick sinus syndrome Hypersensitivity to adenosine Relative contraindication in WPW
Pediatric Considerations:	0.1 mg/kg initial Repeat 0.2 mg/kg
Precautions:	Some Asthma patients may experience bronchoconstriction
Adverse Effects:	Headache Dizziness Dyspnea Nausea/Vomiting Chest Pressure Transient Asystole
Onset/Duration:	Immediate Onset 10 second duration
Classifications:	Antidysrhythmic agent / Endogenous purine nucleoside
Action:	Slows conduction through the A-V node, can interrupt the re-entry path-ways through the A-V node
Notes:	Individuals with long term adjustment to nicotine or high doses of caffeine may require larger dose of Adenosine. Warn patient of unpleasant effects of medication PRIOR to administration
Drug Interactions:	Theophylline, nicotine, caffeine—may require higher doses.

Albuterol (Proventil/Ventolin) **E/I/P**

Indications	Treatment of Bronchospasm in patients with reversible obstructive airway disease.
Adult Dose	**E:** 1-2 puffs of patients OWN Metered Dose Inhaler (MDI), 2.5 mg SVN **(<u>with specialized training</u>)**. **I/P**: 2.5 mg in 3cc NS via nebulizer. May initiate continuous nebulizer for persistent distress. Do not exceed 15 mg/hr.
Contraindications	Known hypersensitivity Tachycardia (relative)
Pediatric Considerations:	2.5 - 10 mg as per Broselow tape
Precautions:	Cardiovascular disease Hyperthyroidism Diabetes mellitus
Adverse Effects:	Tachycardia Hypertension Palpitations Dizziness Dysrhythmias Restlessness Nausea
Onset/Duration:	Onset: 5-minutes Duration: 3–4 hours
Classifications:	Bronchodilator
Action	Relaxed bronchial smooth muscle by stimulating beta2 receptors resulting in bronchodilation
Drug: Drug interactions	Beta Blockers: Patient may not respond as effectively to medication. Sympathomimetics: additive effects

Amiodarone (Cordarone) **P**

Indications:	VF/pulseless VT: pulsed wide-complex. Narrow complex tachycardia, tachycardia; monomorphic sustained VT; SVT.
ADULT Dose:	VF/pulseless VT: 300 mg IV/IO (dilute in NS/D5W 20cc). May repeat 150 mg IVP x 1 in 5-10 min. Max 450 mg. VT, wide-complex tachycardia, narrow complex tachycardia: 150 mg IV infusion over 10 min (mix in NS/D5W 100cc), may repeat once. ROSC - 1 mg/min for 6 hours.
Contraindications:	Known hypersensitivity; cardiogenic shock; bradycardia with ventricular escape beats; marked sinus bradycardia; 2nd or 3rd degree AV blocks. Antiarrhythmics are not indicated for prophylactic treatment of ectopy or as a prophylactic post arrest. **Do not use medications that prolong QT interval (procainamide).**
Pediatric Considerations:	VF/pulseless VT: 5mg/kg IV/IO (dilute in NS/D5W 15cc). May repeat q 5-10 min to max 15 mg/kg. VT, wide-complex tachycardia, Narrow complex tachycardia: 5 mg/kg IV/IO infusion over 20-60 (mix in NS/D5W 100cc).
Precautions:	Dosing varies for specific arrhythmias, pay attention to dosing concentration for specific patient age and clinical presentation. May potentiate effects of oral anticoagulants, digoxin, antiarrhythmics and cyclosporine. Amiodarone will affect lidocaine if the two agents are used together.
Adverse Effects	Flushing; N/V; HA: tinnitus; blurred vision; dizziness; restlessness; confusion; tremors; numbness; hypotension; edema; CHF; dysrhythmias; SA node dysfunction; bradycardia (may be resistant to atropine and require pacing); Q-T prolongation; heart block; sinus arrest; abdominal pain; muscle twitching; seizures; respiratory depression. Phlebitis may occur at IV site with higher concentrations. May cause grayish-blue skin discoloration.
Onset/Durations:	Onset via IV: 15min/half-life 40 days.
Classifications:	Antiarrhythmic Class III has effects in all four classes. Class I - sodium channel blockade; Class II - noncompetitive alpha and beta-adrenergic inhibition; Class III - prolonged repolarization and refractoriness by increased action potential duration; and Class IV-slight calcium channel blockade.

Continued …….

Amiodarone (Cordarone) continued **P**

Action:	Suppresses ventricular ectopy, increases ventricular fibrillation threshold; increases cardiac refractory period without influencing resting membrane potential; relaxes vascular smooth muscle, reduces peripheral vascular resistance, and slightly increases cardiac index.
Notes:	Amiodarone will form precipitate in IV lines if combined with aminophylline, heparin sodium or sodium bicarbonate. If sodium bicarbonate needs to be administered, after amiodarone flush IV line with NS 10-20cc. Also precipitates with cefamandole nafate, cefazolin sodium and mezlocillin sodium. Amiodarone leeches plasticizers from IV tubing and IV bags; bags should be mixed and run when needed. Do not premix or save unused mixed bags. **Amiodarone should be used preferentially in patients using Amiodarone.**

Atropine (Atreza) **P**

Indications:	Symptomatic bradycardia Pulseless electrical activity <60 (PEA) Organophosphate poisoning (OPP) Oral secretions for palliative care
ADULT Dose:	Bradycardia: 1mg Rapid IV/IO q 3-5 min to maximum of 3mg Organophosphate poisoning: 2 mg IV/IO q 3-5 min until oral secretions improve.
Contraindications:	Non symptomatic bradycardia (Relative: Asthma, Myasthenia Gravis, narrow angle glaucoma)
Pediatric Considerations:	**Organophosphate poisoning:** 0.08 mg/kg IV/IO **Sequenced intubation adjunct:** 0.02 mg/kg to a maximum of 1 mg **Symptomatic Bradycardia**: (Minimum dose 0.1 mg) **Child:** 0.02 mg/kg up to 0.5 mg. May repeat 5 minutes later **Adolescent:** (usually 8+ years) 0.02 mg/kg to a max of 1 mg **Contraindicated in neonates**
Precautions:	Use with caution in patients with suspected acute myocardial infarction (AMI) Will not be effective for Type II AV block and new Third Degree Block with wide QRS complexes (In these patients may cause paradoxical slowing, be prepared to pace).
Adverse Effects:	Tachycardia Increased myocardial 02 demand Palpations Nausea/Vomiting Dilated pupils Increased intraocular pressure
Onset/ Durations:	Onset: 2-5 minutes Duration: 20 minutes
Classifications:	Parasympathetic blocker (Anticholinergic) Antidysrhythmic agent
Action:	Blocks acetylcholine receptors, decreases vagal tone resulting in increased heart rate and AV conduction. Dilates bronchioles and decreases respiratory tract secretions. Decreases gastrointestinal secretions and motility.

Calcium Chloride (CaC12) **P**

Indications:	Hyperkalemia specific arachnid envenomation Overdose of calcium channel blockers Hypermagnesemia Crush Syndrome
ADULT Dose:	10 to 20 mg/kg slow IV/IO
Contraindications:	VF (unless due to hyperkalemia) Hypercalcemia
Pediatric Considerations:	Dose: 10 mg/kg IV/IO
Precautions:	Causes tissue necrosis if injected into interstitial space Precipitates with sodium bicarbonate May increase digoxin toxicity. Clear IV with 20cc NS before and after administration
Adverse Effects:	Bradycardia, hypotension, syncope
Onset/Duration:	Onset: 5 to 15 minutes Duration: is dose dependent; effects may persist for up to 4 hours.
Classifications:	Electrolyte
Classifications:	Couples electrical and mechanical events of the myocardium. Increases myocardial contractility. Increases ventricular irritability.
Notes:	200mg IV prophylactic to diltiazem admin in elderly dehydrated or drug induced hypotension.

Dextrose - D50W/ D25W/D10W (DGlucose) I/P

Indications:	Hypoglycemia Hyperkalemia with concurrent insulin administration Altered level of consciousness due to suspected or confirmed hypoglycemia
ADULT Dose:	P: D50W/D25W/D10W 12.5 to 25g IV/IO. Repeat dose to maintain blood sugar in normal range. I: D10W 25-50g IV/IO (consider starting with 25g).
Contraindications:	Hyperglycemia
Pediatric Dose:	<1 y/o D10 5-10 mL/kg 1-8 y/o D25 2-4 mL/kg >8 y/o D50 1-2 mL/kg
Precautions:	Causes tissue necrosis if injected into interstitial space May increase cerebral ischemia in CVA Caution with intracranial hemorrhage
Adverse Effects:	Thrombophlebitis Osmotic Diuresis Pulmonary Edema May worsen Wernicke's encephalopathy
Onset/Durations:	Onset: 30 to 60 seconds Duration: Depends on severity of hypoglycemia
Classifications:	Hyperglycemic agent Hypotonic solution
Action:	Provide immediate source of glucose for rapid utilization for cellular metabolism
Notes	Follow with complex carbohydrate if leaving patient at home. In the event of a shortage of D50W, D10W may be substituted and administered as per protocol.

PEDIATRIC CONVERSION of D50W to D25W or D10W:

D50W to D25W: Discard 25mL of Dextrose, draw in 25mL sterile water or saline to complete solution.

D50 to D10: Discard 40mL of Dextrose, draw in 40mL sterile water or saline to complete solution.

ADULT CONVERSION of D50W to D10W:

Box D50W (25g) put into 250 mL Normal Saline or Sterile Water = D10W (25g)
Titrate to effect.

Diazepam (Valium, Diastat) **E/I/P**

Indications:	Major motor seizures, status epilepticus, premedication for painful procedures, combative patients, anxiety
ADULT Dose:	**P: Sedation and Pain Management:** 2-5 mg IV/IO for procedural **P: Seizures:** 2-5 mg IV over 2 minutes. 10 mg PR or 2-5 mg IM **P: Eclamptic seizures**: 2-5 mg IV q5min for effect or 10 mg PR
Contraindications:	Hypotension
Pediatric Considerations:	**P: Sedation and Pain Management:** 0.1 mg/kg IV/IO **P: Seizures:** 0.1 mg/kg IV over 2 minutes, or 0.5 mg/kg PR **Max Doses:** 5 mg in children and 10 mg in adolescents
Precautions:	Inject slowly, do not use small veins. Use caution in elderly patients.
Adverse Effects:	Hypotension Respiratory depression
Onset/Durations:	**IV:** 1-5 minute onset, 15-60 minute duration **IM:** 15-30 minutes onset, 15-60 minute duration
Classifications:	Benzodiazepine
Action:	Suppresses spread of seizure activity through the motor cortex, skeletal muscle relaxant, reduces anxiety and causes sedation
Notes:	Intramuscular administration leads to widely variable absorption and should be avoided if possible. **E/I: *Diastat—EMT, IV/EMT may administer patients own prescription ONLY with specialized training.**

Diltiazem (Cardizem) **P**

Indications:	Atrial Fibrillation Atrial Flutter
ADULT Dose:	10-25 mg IV/IO may repeat dose, max dose 0.25 to 0.35mg/kg
Contraindica-tions:	Concurrent use of IV beta-blockers Wide complex tachycardia of unknown etiology Sick Sinus Syndrome, WPW, High Degree AV Blocks
Precautions:	May precipitate with the use of Furosemide. Use cautiously in elderly patients Congestive Heart Failure Not recommended in pediatric patients Calcium chloride 200 mg IV prophylactic in elderly dehydrated or drug induced hypotension If patient is already on Amiodarone, consider Amiodarone.
Adverse Effects:	Arrhythmias Bradycardia Hypotension Heart Failure AV block Pulmonary edema
Onset/Durations:	Onset: 2 to 10 minute. Duration: 1-3 hours.
Classifications:	Calcium channel blocker
Action:	Inhibit calcium ion passage across cell membrane. Slows SA and AV node con-duction velocity. Decreases myocardial contractility. Decreases peripheral vascular resistance.
Drug Interactions:	Potentiates with Beta-Blocker, Lithium, Tegretol, cyclosporin's.

Diphenhydramine (Benadryl)	**E / I / P**
Indications:	Anaphylaxis Allergic reactions Nausea Dystonia Sedation Headache
ADULT Dose:	**E/I:** 12.5 to 50 mg PO **(with specialized training)** **P:** 12.5 to 50 mg IV/IO/IM
Contraindications:	Known hypersensitivity Newborns Acute asthma COPD exacerbation Relative: narrow angle glaucoma
Pediatric Considerations:	DOSE: 1 mg/kg IV/IO/IM **E:** 1 mg/kg PO (**with specialized training**)
Precautions:	Reduce dose for elderly
Adverse Effects:	Seizures Sedation Thickening of Bronchial Secretions
Onset/Durations:	IV administration has immediate onset. Duration: 6-8 hours
Classifications:	Antihistamine
Action:	Prevents, but does not reverse histamine mediated responses. Suppresses cough reflex.
Drug Interactions:	Potentiates CNS depressants

Dopamine/HCL (Intropin, Dopastat) P

Indications:	Correct hypoperfusion (BP <90mmHg) after fluid resuscitation and rate problems have been corrected. Cardiogenic Shock Septic Shock Neurogenic Shock
ADULT Dose:	**Adult/Peds:** 2-20 mcg/kg/min infusion 2-5 mcg/kg/min—Renal/Gastric Effects 5-10 mcg/kg/min—Cardiac Effects 10-20 mcg/kg/min—Vasopressor Effects
Contraindications:	Hypovolemic Shock Hypotensive CHF with Pulmonary Edema (PVR)
Pediatric Considerations:	**Call Medical Control if Considering**
Precautions:	Inactivated by alkaline medications (Calcium Chloride, sodium Bicarb) Reduce to 1/10th dose when on MAO inhibitors Dilantin + Dopamine = Hypertension
Adverse Effects:	Chest Pain Palpitations & Tachycardia Nausea & Vomiting Dyspnea & Headache Sloughing with infiltration
Onset/Duration:	Onset: 2-4 minutes Duration 10-20 minutes
Classifications:	Sympathomimetic Amine
Action:	Therapeutic Action: Increased renal and gastric flow; Increases BP; Mild Chronotropy Mechanical Action: Alpha-1; Beta-1; Dopaminergic receptor stimulation
Notes:	Epinephrine is the pressor of choice in the case of pediatric shock states. Dopamine

Patient's Weight in Kilograms

mcg/kg/min	2.5	5	10	20	30	40	50	60	70	80	90	100
2 mcg	-	-	1	2	2	3	4	5	5	6	7	8
5 mcg	-	1	2	4	6	8	9	11	13	15	17	19
10 mcg	1	2	4	8	11	15	19	23	26	30	34	38
15 mcg	1	3	6	11	17	23	28	34	39	45	51	56
20 mcg	2	4	8	15	23	30	28	45	53	60	68	75
With a 60 drop per mL drip set this is the number of drops/minute (or mL/hr)												
Observe for extravasatoin - swelling, pallor, pain, etc. at IV site												

Epinephrine (Adrenaline) **R/E/I/P**

Indications:	Cardiopulmonary arrest: Ventricular Fibrillation Pulseless Ventricular Tachycardia Pulseless Electrical Activity Asystole Anaphylaxis Status Asthmaticus Profound Refractory Hypotension Croup/severe bronchospasm
ADULT Dose:	**Cardiopulmonary Arrest**: **P:** 1 mg of 1:10,000 IV/IO q 3-5 minutes. Follow AHA Guidelines. **Anaphylaxis: E/I:** 0.3 mg of 1:1,000 IM q 10-20 minutes X2. **R: (Auto Injector)** **Status Asthmaticus: P:** 0.3 mg of 1:1,000 SQ q 20 minutes X2 **Profound Refractory Hypotension: P:** 2-10 mcg/min IV infusion mix one milligram of 1:1,000 epinephrine in 250 cc normal saline for a concentration of 4 mcg/cc **Croup/Severe Bronchospasm: P:** SVN**:** 1:1,000 5mL with 3mL NS.
Pediatric Considerations:	**Anaphylaxis: E/1:** 0.15 mg of 1:1,000 IM q 10-20 minutes X2. **R: (Auto Injector)** **P:** 0.1 mg/kg of 1:1,000 IM q 5 minutes **Cardiopulmonary Arrest: P:** 0.01 mg/kg 1:10,000 IM/IV/IO. Max 1 mg Nebulized for respiratory emergencies see pediatric protocols; **Croup/Severe Bronchospasm**: **P:** SVN: 1:1,000 0.5 mL/kg up to 5 mL undiluted. **Persistent Bradycardia/Profound Refractory Hypotension**: **P:** For persistent brady-cardia, consider a continuous infusion of epinephrine (0.1 to 0.3 mcg/kg per mi-nute). A continuous epinephrine infusion may be useful, particularly if the child has responded to a bolus of epinephrine. Titrate the infusion dose to clinical response.
Precautions:	Use caution when given IV in anaphylactic shock as myocardial ischemia and /or cardiac arrest may occur.
Adverse Effects:	Hypertension, Tachycardia, Increased myocardial oxygen demand
Onset/Durations:	Onset: Immediate if given IVP / 5-10 minutes SQ/IM Duration: 3-5 minutes IVP / 20 minutes SQ/IM
Classifications:	Sympathomimetic agent (catecholamine)
Action:	Beta effect is more profound than Alpha effect
Notes:	Epinephrine is the pressor of choice in the case of pediatric shock states. Dopamine may be ineffective.

1 mg epinephrine 1:1,000 in 250 cc= 4mcg/cc **use 60gtt tubing**

Mcg/min	2	4	6	8	10
Administer	30 gtt/min	60 gtt/ min	90 gtt/min	120 gtt/min	150 gtt/min

Push Dose Pressor of Epinephrine:

10 mcg/mL = 1:10,000 1 mL + 9 mL of NS **Dose: 0.5-1 mL q2-5 minutes**

Famotidine	{Alternative for Benadryl}	P
Indications:	Allergic reaction, anaphylaxis	
ADULT Dose:	20 mg IV/IO	
Contraindications:	Known allergy to Famotidine or anti-histamines	
Pediatric Considerations:	0.25 mg/kg IV/IO	
Precautions:	May interact with antiviral, oral antifungals	
Adverse Effects:	Headache, dizziness	
Onset/Durations:	Onset 20 min. Duration (half-life) 4hours.	
Classifications:	Histamine-2blocker, antihistamine	
Action:	Blocks Histamine-2 receptors and prevents histamine mediated responses.	

Fentanyl (Sublimaze) **P**

Indications:	Analgesia, Pulmonary Edema, Acute MI, Palliative Care
ADULT Dose:	1 mcg/kg IV/IO/IM/IN, max initial dose 100 mcg, max accumulative dose of 3 mcg/kg
Contraindications:	Known hypersensitivity
Pediatric Considerations:	DOSE: 1 mcg/kg IV/IO/IM/IN, max initial dose 100 mcg, max accumulative dose 3 mcg/kg.
Precautions:	Head injuries, COPD, ALOC, Hypotension
Adverse Effects:	CNS depression, resp. depression, hallucinations, hypotension, hypertension, arrythmias, n/v, constipation, chest wall rigidity
Onset/Durations:	Onset: 1-2min **IV**, 7-15 min **IM** Duration: 1/2-1hr **IV**,1-2hr **IM**
Classifications:	Opioid agonist/narcotic analgesic
Action:	Binds to opiate receptors as an agonist to alter pt's perception of painful stimuli.
Notes:	CNS and resp. depressant effects are similar to Morphine. Drug has little hypnotic activity and rarely and causes histamine release.

Furosemide (Lasix) **P**

Indications:	Pulmonary edema
ADULT Dose:	40-80 mg (or double patients daily dose up to 100mg) slowly *can be dosed at 0.5-1.0mg/kg
Contraindications:	Dehydration/ hypovolemia, hypokalemia., hepatic coma
Ped. Considerations:	2 mg/kg **Contact Medical Control prior to Peds Administration**
Precautions:	Patients using potassium depleting steroids, Hx of lupus, Hx of hepatic cirrhosis, increased risk of hypokalemia in patients taking digoxin, dehydration, or pneumonia.
Adverse Effects:	Hypotension, electrolyte imbalance, transient hearing loss
Onset/Durations:	Onset: 5 minutes for preload reduction, 30 minutes for diuresis Duration: 2 hours
Classifications:	Non-potassium sparing loop diuretic
Action:	Inhibits sodium and chloride re-absorption in the proximal Loop of Henle promoting excretion of sodium, water, chloride, and potassium. Also reduces cardiac preload by increasing venous capacitance.

Glucagon E/I/ P

Indications:	Hypoglycemia, Beta-blocker OD, Calcium channel blocker OD
ADULT Dose:	**E/I**: Hypoglycemia 1.0mg IM/IN **P:** Ca++ and beta-blocker OD: 3-5mg IV/IM/IN
Contraindications:	None in emergency setting
Pediatric Considerations:	Dose: 0.1mg/kg up to 1mg IM/IN
Precautions:	**Do not dilute with saline solutions, will form a precipitate**
Adverse Effects:	Nausea & vomiting, hyperglycemia, hypersensitivity reactions
Onset/Durations:	Onset is 5-10 minutes, peak effect at 30 minutes. Duration is 1-1.5 hours
Classifications:	Polypeptide hormone
Action:	Accelerates liver glycogenolysis and inhibits glycogen synthesis resulting in blood glucose elevation. Stimulates hepatic gluconeogenesis and causes in inotropic myocardial effect. Relaxes GI smooth muscle.
Notes:	Reconstitute powdered solution with supplied dilutant. **Only given IV**, **flush line with D-5W instead of NS solution.**

Glucose Oral (Glucose Paste) **R / E / I / P**

Indications:	Hypoglycemia in conscious patient that is able to swallow.
ADULT Dose:	One tube PO - between cheek and gum, may repeat as needed.
Contraindications:	Unconsciousness, inability to swallow, hyperglycemia.
Pediatric Dose:	1/2 tube PO - between cheek and gum, may repeat as needed.
Precautions:	Not tasty, watch for spitting
Adverse Effects:	Choking if not properly administered
Classifications:	Carbohydrate
Action:	Rapidly metabolized source of calories in patients with inadequate oral intake.
Notes:	Perform glucose check before and after administration of Glucose. Follow with complex carbohydrate if leaving patient at home.

Haloperidol (Haldol) **P**

Indications:	Acute psychotic episode, which needs to be treated for the safety of the patients, public, or response personnel. Excited delirium.
Adult Dose:	2-5 mg IM/IV (IM is preferred)
Contraindications:	CNS depression or coma or suspected brain damage Hypersensitivity to Haloperidol Pregnancy Alcohol or barbiturate withdrawals Parkinson's disease
Pediatric Dose:	**Not recommended**
Precautions:	Potentiates other CNS depressants Toxicity: EPI, Lithium = Brain Damage Increases both drugs: Beta-blockers, Alcohol and Anti-cholinergic
Adverse Effects:	Hypotension (orthostatic) Dystonia's Akathisia Blurred vision Cardiac Arrest Respiratory depression Seizures Nausea/Vomiting
Onset/Duration:	**Onset:** 15 - 60 minutes IM **Duration:** 12 - 24 hours
Classifications:	Tranquilizer, Anti-Psychotic
Action:	Controls aggression and activity in psychotic patients. Exact mechanism in brain is not clear, however, it does block dopamine receptors and suppresses the cerebral cortex, limbic system, and an anti-cholinergic blocking component is present. It also exhibits a strong Alpha-adrenergic effect.

Heparin	{IFT }	P

Indications:	• Acute Myocardial infarction • DIC (disseminated intravascular coagulation) • Atrial fibrillation (to prevent formation of blood clots) •Prophylactically for prevention of blood clots. • DVT (deep vein thrombosis) • Pulmonary embolism
ADULT Dose:	Continue Heparin infusion at rate set by transferring physician. Recommended mixing instructions are 25,000 units in 250cc of NS. Heparin may be mixed with NS or D5W.
Contraindications:	Bleeding
Precautions:	Increased risk of bleeding w/ bleeding/clotting disorders (hemophilia), GI ulceration, bacterial endocarditis. Recent surgery. Derived from porcine intestinal mucosa, avoid if allergic to pork. **If patient has history of HIT Antibodies**, **do not give**. HIT Antibodies = Heparin induced Thrombocytopenia. It is not a rare disorder so ask patient if they have a positive history of it.
Adverse Effects:	Care should be used when handling patients who are receiving Heparin infusion, as rough handling can cause bleeding Heparin should not be used with patients who are actively bleeding. Heparin should not be used on patients with known or suspected intracranial hemorrhage. Concurrent use of Heparin and oral anticoagulants, thrombolytic and salicylates or IIb/IIIa antagonists may increase the chances of bleeding and some patients may be on 2 or more agents.
Classifications:	Injectable anticoagulant
Action:	Prevents the formation and treatment of blood clots. Acts at multiple sites in coagulation process; binds to antithrombin III, catalyzing in-activation of thrombin and other clotting factors.
Notes:	Invert infusion solution periodically to prevent pooling.

Hydromorphone (Dilaudid) {**Alternative Medicine for Morphine & Fentanyl**} **P**

Indications:	Moderate to severe pain.
ADULT Dose:	0.5mg IV q 3-5 min, total of 4mg (caution in elderly). 1-2mg IV/IO/IM
Contraindications:	Hypotension SBP <110 CNS depression Respiratory depression RR<12 Head Injury Current nausea or vomiting (prior to anti-emetics)
Pediatric Dose:	0.015 mg/kg IV/IO/IM
Precautions:	Caution should be used in patients who have taken other CNS depressants, narcotic analgesics, sedative/hypnotics, or tricyclic antidepressants.
Adverse Effects:	Respiratory depression Increased sedation Headache Abdominal pain Decreased LOC Impaired mental status Nausea/vomiting
Onset/Durations:	Onset: IV: Immediate IM: 7-15 minutes Duration: 4-5 hours
Classifications:	Narcotic analgesic, Opiate
Action:	Decreases sensitivity to pain. Stimulates variety of opioid receptors
Notes:	This is a strong narcotic. Start with low doses given slowly and add additional low doses as needed. **1 mg of Hydromorphone is equal to 7 mg of Morphine**

Insulin {IFT} P

Indications:	• Diabetic Ketoacidosis (DKA) • Hyperglycemia (BS >200) • Hyperkalemia
Adult Dose:	• Dose to be determined by transferring physician • Rate should not require adjusting during transfer. • Insulin infusion concentrations are generally 1 unit per 1 mL, confirm any variations with the sending Physician. • Blood sugars shall be checked at a minimum of every 30 minutes
Contraindications:	Hypoglycemia
Adverse Effects:	Metabolic: Hypoglycemia, Hypokalemia
Onset/Duration:	Onset - 5-10 minutes Duration - Half life 5-10 minutes
Action:	Hypokalemia (low blood potassium) may occur. Insulin stimulates movement of potassium from lood into cells. Combining insulin with potassium lowering drugs may increase the risk of hypokalemia.
Notes:	**For Critical Care Inter-facility Transport Only.** Regular Insulin must be infused via an infusion pump. Be sure to get a separate vial in order to bolus from the hospital prior to leaving hospital.

Ipratropium (Atrovent/Ipramide) **E/I/P**

Indications:	Bronchial spasm associated with COPD (Chronic Bronchitis & Emphysema) Bronchial Asthma *Administration with Albuterol will improve affects and duration of relaxed bronchial tree.*
ADULT Dose:	0.5 mg (1 unit-dose phish) in a hand-held nebulizer with Albuterol.
Contraindications:	Known allergies to Ipratropium Bromide or Atropine. Use caution in patients with Narrow Angle Glaucoma, Prostatic hypertrophy, and bladder neck obstruction.
Pediatric Dose:	0.25 mg SVN **under** 6 years old (half phish) 0.5 mg SVN **over** 6 years old (full phish)
Precautions:	Should be used with caution in patients with narrow-angle glaucoma.
Adverse Effects:	Bronchospasms Headache Dry mouth Tachycardia Palpitations Urinary retention Temporary blurred vision (keep away from eyes)
Onset/Durations:	Onset: 1-3 minutes Duration: 4-6 hours
Classifications:	Anticholinergic bronchodilator
Action:	• Relaxes bronchial contrition associated with COPD (chronic bronchitis & Emphysema). • Dries bronchial secretions. • Inhibits acetylcholine and Vagal-mediated reflexes in the bronchial smooth muscles.
Notes:	

Ketamine P

Indications:	Excited Delirium or severe agitation that interferes with patient care Sedation for painful procedures Sedation in RSI
Adult Dose:	**Pain Dose:** 0.1-0.25 mg/kg IM/IV Max dose 50 mg q 10 min., based on ideal weight **RSI**: 1-2 mg/kg IV push **Sedation Infusion:** 1,000 mg in 250 mL NS (4 mg/mL) Titrate 0.5-2 mg/kg/hr **Excited Delirium: IM:** 3-5 mg/kg; Max dose 500 mg. **IV/IO:** 0.5-1 mg/kg; Max dose of 200 mg.
Contraindications:	Age less than 3 months, Acute globe/ocular injuries, severe liver disease, SBP >200, Patient with a significant elevation in BP could cause harm (CHF,ICH, aneurysm, ACS).
Pediatric Considerations:	**Not to be given to patients under 3 months of age.** **Pain:** 0.1 mg/kg IV/IO max cumulative dose 1.5 mg/kg **RSI:** 0.5 to 1 mg/kg IV/IO over 1 minute **Sedation:** Infusion 0.5 to 2 mg/kg/hr
Precautions:	RSI: Increased blood pressure due to catecholamine release. Re-emergence phenomenon. Continued sedation must be provided before the induction agent has worn off. Increased intercranial pressure (ICP) studies have not shown a significant increase in ICP with Ketamine and is felt to be an appropriate induction agent for patients with possible increased ICP ***unless*** they have markedly elevated blood pressure.
Adverse Effects:	Excited Delirium: Laryngospasm, hyper salivation, nausea/vomiting, arrhythmias, emergence delirium, hallucination, elevated BP, hypotension, documentation observation of worsening hyperthermia
Onset/Durations:	Excited Delirium: **Adults**- **IV:** 30 sec: duration 5-10 min for 2 mg/kg; **IM:** 3-4 min, duration 12-25 min; **Pediatrics**- **IV:** 30-120 sec; duration 20-60min; **IM** 5-10 min, duration 30-90 min
Classifications:	General dissociative anesthetic
Action:	Dissociative anesthetic agent, structurally like phencyclidine (PCP), interrupting the connection between the thalamocortical tracts & limbic system, stimulating different receptors, including the opioid & catecholamine receptors. It also provides analgesia in addition to the amnestic and sedative effects. The sympathomimetic effects cause an increase in heat rate, blood pressure, and cardiac output. It is also a bronchodilator and thus may be beneficial in patients with bronchospasm requiring intubation.
Notes:	Consider Versed 1-2 mg or Lorazepam 0.5-1 mg for adverse reaction, anxiety or hallucinations.When elevated ICP is suspected, consider using a low dose along with midazolam. Avoid in patients with severely elevated blood pressure; may increase respiratory secretions. Consider adjuvant use of anti-sialagogue such as atropine minimum dose 0.1 mg. Not to be given to patients under 3 months of age.

Ketorolac (Toradol) **P**

Indications:	Renal colic/calculi (abdominal/flank pain) Muscular skeletal pain
ADULT Dose:	Renal colic/calculi 30mg IM, 15 mg IV 1/2 dose for >65 years old
Contraindications:	Documented hypersensitivity to ASA or other NSAID's , bleeding disorders, renal impairment, active peptic ulcer, nursing mothers, labor & delivery. Suspected or possible dissecting AAA . On any anti-coagulant.
Pediatric Considerations:	Pain 1 mg/kg IM or 0.5 mg/kg IV . Maximum dose of 30 mg IM or 15 mg IV
Precautions:	Patients that are >65 y/o or <50 kg should receive 1/2 dose. Use extreme caution in elderly and hepatic dysfunction patients.
Adverse Effects:	Possible anticoagulation effects, anaphylaxis, drowsiness, sweating/diaphoresis, nausea, pain at injection site.
Onset/Durations:	Onset: 30 minutes IV/IM Duration: 4-6 hours
Classifications:	NSAID, analgesic, antipyretic
Action:	Inhibits synthesis or prostaglandins

Labetalol (Trandate, Normodyne) **P**

Indications	Hypertensive Crisis Blood Pressure management for Stroke patients during IFT's
ADULT Dose:	5-20 mg IV over 2 minutes. If no response in 10 minutes give double dose over 2 minutes. If still no response contact Medical Control. Max dose 300 mg.
Contraindications	Bradycardia, 2nd and 3rd degree AV blocks Cardiogenic shock and hypotension Cardiac Failure (CHF) Asthma and COPD
Precautions	Patient placed in supine position. BP, HR & EKG monitored. Atropine and TCP available. Use caution in Stimulant overdose
Adverse Effects:	Orthostatic hypotension Bradycardia AV Blocks Bronchospasms Pulmonary Edema CHF Ventricular dysrhythmias
Onset/Durations:	**Onset:** Within 10 minutes **Duration:** 2-6 hours
Classifications:	Alpha and Beta adrenergic blocker
Action	**Therapeutic Action**: Lowers blood pressure without reflex tachycardia. **Mechanism Action:** Competitive Alpha receptor blocker and a non-selective Beta blocker. Reduces Renin Plasma levels. Vasodilation and Beta blocker blockade of heart and lungs are the main effects.
Drug Interactions:	Blocks effects of beta-adrenergic bronchodilators in Asthma and COPD patients. Severe Bradycardias if given after Verapamil or other Calcium Channel Blockers. Potentiates hypotension with Nitroglycerine.
Notes:	Consider 1/2 dose for patients over 65 years old. **IFT Doses:** **(Continued on next page)** **Ischemic/TIA (non-TPA):**

Labetalol (Trandate, Normodyne) **{IFT}** **P**	
Ischemic/TIA (Non-TPA)	If SBP > 220 mmHg - Labetalol 10 mg IV/IO q 10 min x 2 doses (monitor HR). If SBP <90 mmHg or DBP <50 mmHg - treat with IV bolus per protocol.
Ischemic (with or S/P TPA Treatment)	If SBP >180 mmHg or DBP >100 mmHg-treat with Labetalol 10 mg IV/IO q10 min x 2 doses. If SBP <105 mmHg or DBP <50 mmHg treat with IV fluid bolus per protocol.
Intraparenchymal Hemorrhage	If SBP >160 mmHg or DBP >110 mmHg-treat with Labetalol 10 mg IV/IO q10 min x 2 doses.
Subarachnoid Hemorrhage:	SBP >140 mmHg or DBP >100 mmHg - treat with Labetalol 10 mg IV/IO q 10 min x 2 doses.
Orolingual Angioedema:	• **STOP TPA Infusion immediately** • Administer **Diphenhydramine** 50 mg IV/IO x 1 • Administer **Famotidine** 20 mg IV/IO x 1 • Administer **Methylprednisolone** 125 mg IV/IO x 1 • IF symptoms **Do Not resolve** with initial treatment: **Administer Epinephrine 0.3 mg** (0.3 mL) IM
Notes:	Monitor blood pressure within parameters to ensure the patient has adequate perfusion and decrease risk for cerebral injury. Monitor for orolingual angioedema: Most common during the TPA infusing and up to 2 hours post infusing, but monitor for delayed reaction. Monitor neuro checks at a minimum q 15 minutes to determine patient tolerance to treatments. Any neurological deterioration, new headache, nausea/vomiting, new atrial fibrillation may require call to medical Control if patient has TPA infusing during transport.

Lidocaine 2% (Xylocaine)	**P**
Indications:	First line antiarrhythmic in pregnancy VT/VF, VT with pulse Symptomatic PVCs IO Procedure
ADULT Dose:	**VT/VF** - 1.0 - 1.5 mg/kg IV/IO q 5-10 min. Max 3 mg/kg. **VT w/ pulse** - 1 mg/kg IV/IO, then 0.5-0.75 mg/kg q 5-10 min. up to 3 mg/kg **Run of 6 or more symptomatic PVC's** - 0.5-1mg/kg IV/IO, then 0.5-0.75 mg/kg q 5-10 min. up to 3 mg/kg. Drip 2-4 mg/min following cardioversion IO infusion for Pain Control: 40 mg IO (may repeat once, 20 mg IO)
Contraindications:	**High degree heart block** **Hypotension** **WPW** **Bradycardia** **SVT**
Pediatric Considerations:	**VT/VF** - 1 mg/kg IV/IO q 10 min. Max 3 mg/kg. **VT w/ pulse** - 1 mg/kg IV/IO q 10 min up to 3 mg/kg Drip: 20-50 mcg/kg/min, not to exceed 4 mg/min for profusing rhythm. IO infusion for Pain Control: 0.5 mg/kg (max dose 20 mg.) May repeat once.
Precautions:	Caution in use with patients >70 y/o or with liver or renal disease, CHF, Respiratory depression, or shock. Reduce maintenance infusion by 50%
Adverse Effects:	Seizures, slurred speech, altered mental status
Onset/Durations:	Onset: 45-90 seconds Duration: 10-20 minutes
Classifications:	Amide derivative, antiarrhythmic
Action:	As an antiarrhythmic, it suppresses automaticity and shortens the effective refractory period and action potential duration of His-Purkinje fibers and suppresses spontaneous ventricular depolarization during diastole by altering sodium permeability through cellular fast channel membranes. The drug acts preferentially on diseased of ischemic myocardial tissue, exerting its effect on the conduction system by inhibition re-entry mechanisms and halts ventricular arrythmias.
Notes:	If flushing IO, 40 mg IV/IO x 1

Drip—mix 1G/250mL D5W using 60gtt set				
4mg/mL:	1 mg	2 mg	3 mg	4 mg
Gtts/min:	15gtt/min	30gtt/min	45gtt/min	60gtt/min

Lorazepam (Ativan) P

Indications:	Anxiety Intubation maintenance Sedation Seizures
ADULT Dose:	0.5 -2 mg IV/IO/IN/IM. May repeat PRN
Contraindications:	Narrow angle glaucoma, pregnancy (except for eclamptic seizures)
Pediatric Dose:	0.05-0.1 mg/kg IV/IO/IM/IN; Max dose 2 mg
Precautions:	Caution in use with patients with renal or hepatic impairment. Increased CNS depression in patients intoxicated or on other depressant type drugs.
Adverse Effects:	Orthostatic hypotension, drowsiness, respiratory depression, tachycardia, confusion.
Onset/Durations:	Onset: 1-5 minutes **IV**, 15-30 minutes **IM** Duration: 12-24 hours
Classification:	Benzodiazepine hypnotic
Action:	CNS depressant via facilitation of inhibitory neurotransmitter gamma aminobutyric acid (GABA) at benzodiazepine receptor sites in the ascending reticular activating system. Effects include muscle relaxation, anticonvulsant activity and emotional behavior anxiolytic effects.

Magnesium Sulfate (MGSO4) **P**

Indications:	Eclamptic seizures Torsade's de Pointes Refractory VF/VT Refractory bronchospasm
ADULT Dose:	**TdP/VF/FT:** 1-2g IVP/IOP **Breathing diff/RAD**: 2g/100cc NS/D5W IV/IO - over 20 minutes **Eclamptic Seizures:** 3-4g IVP/IOP (1g/min)
Contraindications:	Renal disease, heart block, hypermagnesemia
Pediatric Considerations:	**TdP/VF/VT:** 25-50 mg/kg IV/IO **Breathing Difficulty: Over 6 years old:** 25-50 mg/kg in 100cc IV/IO over 20 minutes
Precautions:	Caution should be used in patients receiving digitalis as it may cause severe hypotension or cardiac arrest. Calcium chloride should be readily available as an antidote if respiratory depression results from treatment.
Adverse Effects:	Hypotension, respiratory depression, bradycardia, dysrhythmias, cardiac arrest, CNS depression, flushing, sweating
Onset/Durations:	Onset: 1-5 minutes Duration: approx. 30 minutes
Classifications:	Electrolyte, anticonvulsant, antidysrhythmic
Action:	Decreased acetylcholine at neuromuscular junction (motor end plate), which is responsible for anticonvulsant properties; reduces SA node impulse formation and prolongs conduction time in the myocardium; Attracts and retains water in the intestinal lumen which distends the bowel to promote mass movement and relieve constipation
Drug Interactions:	Potentiates neuromuscular blockade produced by nondepolarizing paralytics (Rocuronium/Zemuron, Vecuronium/Norcuron)

Methylprednisolone (Solu-Medrol/Amethapred) **P**

Indications:	Allergic reactions Anaphylaxis Reactive airway disease COPD exacerbations
ADULT Dose:	125 mg IV/IO/IM
Contraindications:	Preterm Infants, Newborn, systemic fungal infections
Pediatric Considerations:	2 mg/kg IV/IO/IM
Precautions:	Use with caution in patients with GI bleeding, diabetes mellitus & severe infection
Adverse Effects:	Alkalosis, CHF, headache, hypertension, hypokalemia, seizures, nausea, and vomiting
Onset/Durations:	Onset: 20 minutes -2 hours Duration: 18-36 hours
Classifications:	Corticosteroid, glucocorticoid steroid, anti-inflammatory
Action:	Decreases inflammation by depressing migration of polymorphonuclear leukocytes and activity of endogenous mediators of inflammation. Potentiates vascular smooth muscle relaxation by beta adrenergic agonists.
Notes:	Hypoglycemic responses to insulin and oral hypoglycemic agents may be blunted. Potassium depleting agents may potentiate hypokalemia induced by cortico-steroids.

Metoprolol (Lopressor) **P**

Indications	Hyperdynamic ACS/STEMI, Tachycardia
ADULT Dose:	5 mg slow IV q 5min; to a maximum dose of 15 mg
Contraindications:	Documented hypersensitivity Uncompensated congestive heart failure Cardiogenic shock AV conduction abnormalities Bradycardia Asthma Systolic Blood Pressure <100. Pediatric
Precautions	During IV administration, carefully monitor blood pressure, heart rate and ECG. Goal of treatment is to reduce heat rate to 60-90 beats/min.
Adverse Effects:	Hypotension, CHF, dizziness, chest pain, headache, bronchospasm, bradycardia **Avoid using beta blockers and calcium blockers together**.
Onset/Durations:	Onset: Immediate, peaks in 20 min IV Duration: 5-8 hours
Classifications:	Beta-blocker
Action:	Selective beta-1-adrenergic receptor blocker that decreases the automaticity of contractions (and thus heart rate). Negative inotropic and chronotropic effects are manifested by slowed AV conduction, antidysrhythmic effects and decreased myocardial oxygen demand.
Notes:	Use of Calcium channel blockers may potentiate side effects/adverse effects; toxicity of metoprolol may increase with co-administration of phenothiazines and calcium channel blockers; metoprolol may increase toxicity of digoxin, flecainide, clonidine, epinephrine, nifedipine, prazosin, verapamil, and lidocaine.

Midazolam (Versed) **P**

Indications:	Sedation Seizure Chemical restraint
ADULT Dose:	**RSI:** 2.5-10 mg IV/IO over 2 minutes PRN **Chemical restraint and sedation**: 2.5 - 5 mg IV/IO/IM/IN over 2 min, repeat PRN **Seizure:** 2.5 - 5 mg IV/IO/IN/IM PRN
Contraindications:	Hypersensitivity, OD of alcohol or other CNS depressants, depressed vital signs/ hypoperfusion, acute narrow angle glaucoma, pregnancy (except for eclamptic seizures)
Pediatric Dose:	0.05-0.1 mg/kg IV/IO/IN/IM PRN
Precautions:	Use caution in patients with renal impairment, history of COPD; may wish to double the IV dose when administering IM
Adverse Effects:	Respiratory depression or arrest, hypotension, bradycardia, HA, N/V, pain at the injection site, hiccups
Onset/Durations:	Onset: IV/IO: 1-3 min IM: approx. 10-20 min Duration of action is dose dependent
Classifications:	Benzodiazepine, CNS depressant, anticonvulsant, amnestic, muscle relaxant
Action:	Potentiation of gamma aminobutyric acid (GABBA) by binding to specific benzodiazepine receptors in the CNS; may act on limbic system and on the reticular formation
Notes:	Sedative effect potentiated by barbiturates, alcohol and narcotics

Morphine	P
Indications:	Pain management, Pulmonary edema, Procedural sedation, Analgesia, ACS
ADULT Dose:	0.1 mg/kg IV/IM/IO Max initial dose 10 mg IV and 15 mg IM May repeat q 10 minutes.
Contraindications:	Head injury, exacerbated COPD, depressed respiratory drive, Hypotension, ALOC
Pediatric Considerations:	0.1 mg/kg IV/IO/IM/IO, max initial dose 3 mg Max cumulative dose 0.3mg/kg
Precautions:	Patients with acute bronchial asthma, chronic pulmonary diseases, severe respiratory depression, and pulmonary edema induced by chemical irritants.
Adverse Effects:	Respiratory depression, hypotension, ALOC, nausea and vomiting
Onset/Durations:	**IV:** immediate onset, peak effect 20 minutes **IM/SQ:** 15-30 minute onset, peak effect 30-60 minutes Duration: 2-7 hours
Classifications:	Narcotic analgesic
Action:	Narcotic agonist with activity at u-receptors (supraspinal analgesia, euphoria, respiratory and physical depression), K-receptors (sedation and myosis), and delta – receptors (dysphonia, hallucinations, respiratory and vasomotor stimulation)
Notes:	Naloxone and respiratory equipment should be immediately accessible.

Naloxone (Narcan)	R/E/I/P
Indications:	Suspected or known opiate overdose Altered level of consciousness Respiratory Arrest/Cardiac Arrest
ADULT Dose:	**R:** 2 mg IN prn* **E:** 2 mg IN/IM prn* **I/P:** 2 mg IN/IM/IV/IO prn* *May repeat every 5 minutes up to 8 mg
Contraindications:	None in the emergent setting
Pediatric Dose:	**P:** Dose: 0.1mg/kg Max dose 2 mg Use caution in newborns (**Physician order needed**) May repeat every 5 minutes up to 8 mg.
Precautions:	Rapid reversal of narcotic effects may lead to combative behavior and vomiting May not reverse hypotension For patients with chronic pain issues, administer 0.4 mg increments until respirations improve.
Adverse Effects:	Hypertension, Nausea, Vomiting, Tremors, Dysrhythmias
Onset/Durations:	**Onset: IV/IO** immediate , **SQ/IM** 5-10 minutes, **IN** 2-3 minutes **Duration:** 20-30 minutes
Classifications:	Narcotic Antagonist
Action:	Competitively binds with opiate receptor sties in the CNS
Notes:	Synthetic opioids may need higher and repeated doses for clinical effect. Airway management and ventilatory support cannot be replaced with Naloxone therapy.

Nitroglycerine (Nitro Stat/Nitro Quick) **E/I/P**

Indications:	ACS, Acute angina, MI, CHF with pulmonary edema
ADULT Dose:	**E/I:** Assist patient with **their** Nitro 0.4mg every 3-5 min **SBP >100.** After 3rd dose call Medical Control for additional doses **P:** 0.4 mg SL q 3-5 minutes SBP >100 and patient is symptomatic **P:** **Drip**: Start at 10 mcg/min increase q 4-5 min titrate to effect to max 100 mcg/min. **P:** **PASTE:** 1-2 inches PRN
Contraindications:	SBP <100, Intracranial bleeding/head trauma. **Within 24 hours** of erectile dysfunction or pulmonary hypertension medication Sildenafil (Viagra/Revation) or Vardenafil (Levitra) **Within 48 hours** of erectile dysfunction medication Tadalafil (Cialis)
Precautions:	Will cause severe loss of blood pressure if administered to a patient experiencing an inferior MI
Adverse Effects:	Hypotension, HA, syncope, reflex tachycardia, skin flushing
Onset/Durations:	Onset: immediate, 0-3 minutes Duration: up to 30 mins
Classifications:	Nitrate
Action:	Causes relaxation of the vascular smooth muscle via stimulation of intracellular cyclic guanosine monophosphate production. This results in decreased preload, afterload. blood pressure, left ventricular workload and myocardial oxygen demand. Relaxes esophageal smooth muscle.
Notes:	Aspirin may increase nitrate serum concentrations; marked symptomatic hypotension may occur with co-administration of calcium channel blockers or beta-blockers (dose adjustment of either agent may be necessary).

Nitroglycerine Drip Chart 50 mg in 250 mL D5W

mcg/min	Gtt/min (mL/hr)		mcg/min	Gtt/min (mL/hr)		mcg/min	Gtt/min (mL/hr)
5	1.5 gtt/min		64	19.5 gtt/min		125	37.5 gtt/min
10	3.0 gtt/min		70	21.0 gtt/min		130	39.0 gtt/min
15	4.5 gtt/min		75	22.5 gtt/min		135	40.5 gtt/min
20	6.0 gtt/min		80	24.0 gtt/min		140	42.0 gtt/min
25	7.5 gtt/min		85	25.5 gtt/min		145	43.5 gtt/min
30	9.0 gtt/min		90	27.0 gtt/min		150	45.0 gtt/min
35	10.5 gtt/min		95	28.5 gtt/min		155	46.5 gtt/min
40	12.0 gtt/min		100	30.0 gtt/min		160	48.0 gtt/min
45	13.5 gtt/min		105	31.5 gtt/min		170	51.0 gtt/min
50	15.0 gtt/min		110	33.0 gtt/min		180	54.0 gtt/min
55	16.5 gtt/min		115	34.5 gtt/min		190	57.0 gtt/min
60	18.0 gtt/min		120	36.0 gtt/min		200	60.0 gtt/min

Norepinephrine Bitartrate (Levophed) **P**

Indications	Hypotension Sepsis Shock persisting after adequate fluid volume replacement
ADULT Dose:	4 mg 250cc of D5W then titrate 2-12 mcg/min IV/IO. Adjust rate of flow to establish and maintain low normal BP (80-100mmHg systolic) sufficient to maintain vital organ perfusion: In previously HTN pt, recommend BP rise no higher than 40mmHg below pre-existing systolic BP. Turn drip off if blood pressure maintains at normal levels. Monitor BP q 2min until reach desired BP, then q 5 min with continued infusion.
Contraindications:	Sulfite allergy Inadequate Fluid Resuscitation
Ped Consideration:	0.05-0.1 mcg/kg/min IV drip only (rarely used.) Usual max dose of 2 mcg/Kg/min.
Precautions:	Can be deactivated by alkaline solutions. Infusion site in upper extremity large vein, AC if possible. Extravasation can cause tissue necrosis. Caution with occlusive vascular disease, elderly. Infusion site checked frequently for free flow. Blanching along course of infused vein, sometimes without obvious extravasation, attributed to vasa vasorum constriction with increased permeability of vein wall, permitting leakage. Extreme caution with MAIO or antidepressant triptyline or imipramine types per severe, prolonged hypertension. If continuous administration to maintain BP in absence of blood volume replacement, the following may occur: severe peripheral, visceral vasoconstriction; decreased renal perfusion, urine output, poor systemic blood flow despite "normal" BP, tissue hypoxia, lactatic acidosis. Avoid abrupt cessation of medication.
Adverse Effects:	Anxiety, palpations, hypertension, reflex bradycardia. VT/VF in patients with profound hypoxia or hypercarbia. Conventional dose with hypersensitive patient (hyperthyroid) or overdose may cause sever HTN, violent HA, photophobia. stabbing retrosternal pain, pallor, intense sweating, vomiting.
Onset/Durations:	Rapid 1-2minutes following discontinuation of infusion.
Classifications:	Sympathomimetic/Adreneric Vasopressor
Action:	Peripheral vasoconstrictor (alpha-adrenergic). Inotropic stimulator of heart and coronary artery dilator (beta-adrenergic).
Notes:	Elderly patient dose, start at lower end, reflecting greater frequency of decreased hepatic, renal, and cardiac function. **Recommend buying in premixed boxes.**

Mix 4 mg into 250mL D5W	Final Concentration 16 mcg/mL
Usual dose range 2-12 mcg/min	Maximum dose 20 mcg/min

Desired Dose (mcg/min)	2 mcg/min	4 mcg/min	8 mcg/min	12 mcg/min
Drip Rate (drops/min)	7.5 gtts/min	15 gtts/min	30 gtts/min	45 gtts/min

Ondansetron (Zofran) **E/I/P**

Indications:	Nausea/Vomiting
ADULT Dose:	**E/I:** 4-8 mg PO/SL (**with specialized training**) **P:** 4-8 mg IV/IO/IM/PO/SL
Contraindications:	Hypersensitivity, Prolonged QT, liver disease (reduce dose)
Pediatric Dose:	**E/I:** 0.15 mg/kg SL/PO **(with specialized training)** **P:** 0.15 mg/kg IV/IO/IM/PO/SL Recommended for use in children **greater** than 2 years old
Precautions:	Maintain lower dose with amiodarone Maintain lower dose with liver disease Use with caution in pregnancy (Class B)
Adverse Effects:	Rare hypersensitivity, fatigue, pyrexia, dizziness, headache, constipation, urinary retention
Onset/Durations:	Onset: Rapid Duration: 5 hours
Classifications:	Antiemetic
Action:	Selective serotonin blocking agent
Notes:	May precipitate with Sodium Bicarbonate

Oxygen (O2) R/E/I/P

Indications	Known or suspected hypoxia or hypoxemia, respiratory insufficiency, prophylactically, Carbon monoxide poisoning. Oxygen saturations of >94%.
Adult DOSE	**BVM/Supraglottic**: 15L/min (100%) **Non-Rebreather Mask**: 10-15L/min (60-100%) **Nasal Cannula**: 2-6L/min (24 - 44%)
Contraindications:	None in emergent patient care. O2 saturation greater than 94% in acute coronary syndrome of patient without complaint of dyspnea.
Pediatric Dose:	Consider blow-by (2 liters via nasal cannula is too high).
Precautions:	Do not over oxygenate patient.
Adverse Effects	Depression of respiratory drive in COPD patients.
Onset/Duration	Onset: Immediately Duration: Less than 2 minutes
Classification:	Inhaled gas
Action:	Therapeutic: Increased inspired oxygen levels, alveolar oxygen levels, and oxygen within the blood stream.

Oxymetazoline (Afrin) **P**

Indications	Pre-medication for nasal intubation, Epistaxis
Adult DOSE	2-3 puffs each nostril (on inhalation)
Contraindications	Known hypersensitivity
Pediatric Considerations	Children under 12 require diluted concentration
Precautions:	Hyperthyroidism, Cardiac Disease, Hypertension, Diabetes Mellitus. Simultaneous use of MAOI and ephedrine may result in Hypertensive Crisis.
Adverse Effects	Cardiovascular collapse Hypertension Palpitations
Onset/Duration	**Onset**: Immediate **Duration:** 30 minute - 4 hr duration
Classification:	Vasoconstrictor
Action:	Local vasoconstriction of dilated arterioles causing reduction of blood flow and reduction of nasal congestion

Oxytocin (Pitocin) P

Indications	Control of postpartum hemorrhage
Adult DOSE	10 units IM then mix 20 units in 1000cc NS administered IV at 50 - 1000cc/hr to control postpartum hemorrhage.
Contraindications	Hypersensitivity, Toxemia of pregnancy, undelivered placenta, undelivered baby.
Precautions:	Status post cervical or uterine surgery, uterine sepsis, primipara after age 35.
Adverse Effects	Hypertension, subarachnoid hemorrhage, anxiety, dysrhythmias, tetany, uterine rupture, hyponatremia.
Onset/Duration	**Onset:** **IV**: 1 minute **IM:** 3-7 minutes **Duration: IV:** 30 minutes with half-life of 12-17 minutes **IM:** 60 minutes with half-life of 12-17 minutes
Classification:	Hormone
Action:	A synthetic water-soluble protein pharmacologically identical to the naturally-occurring oxytocin secreted by the posterior pituitary. Directly produces phasic uterine contractions characteristic of normal labor and delivery and to treat uterine atony.
Notes:	Additive effects with other vasopressors and ephedra, amphetamine or methamphetamines resulting in severe hypertension; rule out multiple fetuses.

Pancuronium Bromide (Pavulon) {**ALTERNATIVE for Rocuronium & Vecuronium**} **P**	
Indications:	Intubated patients requiring the need to be paralyzed for prolonged periods of time.
ADULT Dose:	0.06 - 0.1 mg/kg IV/IO
Contraindications:	Hypersensitivity to Pancuronium or Bromide products. Patients with Unsecured Airways. Patients which require a Neuro examination upon arrival to ER. Patients need to be adequately sedated prior to and during paralysis.
PEDIATRIC Dose:	0.04 - 0.1 mg/kg IV/IO
Precautions:	Prior administration of Succinylcholine may enhance the neuromuscular blocking effect of Pancuronium Bromide and increase its duration of action. If Succinylcholine is used before Pancuronium Bromide, the administration of Pancuronium Bromide should be delayed until the patient starts recovering from Succinylcholine-induced neuromuscular blockage.
Adverse Effects:	Increased salivation Hypertension Tachyarrhythmia Prolonged neuromuscular block Apnea Bronchospasm (rare) Respiratory Failure
Onset/Durations:	**Onset**: Approximately 4 minutes **Duration**: 90 - 160 minutes. Doubled in patients with cirrhosis, biliary obstruction and rental failure.
Action:	Nondepolarizing, neuromuscular blocking agent belonging to the curaroform class of drugs. Its' activity leads to neuromuscular blockage by competing for cholinergic receptors at the motor end-plate.
Classifications:	Nondepolarizing, neuromuscular blocking agent

Prednisone {ALTERNATIVE for Methylprednisolone} P

Indications:	Reactive airway disease
ADULT Dose:	60 mg PO
Contraindications:	Systemic fungal infections
Pediatric Dose:	1-2 mg/kg PO
Adverse Effects:	Prolonged wound healing, nausea & vomiting
Classification:	Glucocorticoid
Action:	Decreases inflammation by depressing migration of polymorphonuclear leukocytes and activity of endogenous mediators of inflammation.
Notes:	Attempt to administer medication with pudding or palatable substance

Procainamide (Pronestyl) **P**

Indications:	Suppressing PVCs refractory to Lidocaine Suppressing ventricular tachycardia (with a pulse) refractory to Lidocaine Suppressing ventricular fibrillation refractory to Lidocaine PSVT with wide-complex tachycardia of unknown origin (drug of choice when associated with WPW)
ADULT Dose:	Perfusing rhythm: loading dose 20 mg/min IV/IO infusion up to 17 mg/kg followed by drip of 1-4 mg/min (mix 2 grams/250cc NS for 8 mg/cc) **STOP** if hypotension occurs or if QRS widens by 50%.
Contraindications:	2nd & 3rd AV block, Bradycardias, Torsades, Prolonged QT, Lupus
PEDIATRIC Dose:	15 mg/kg slow IV/IO over 30-60 minutes.
Precautions:	May exacerbate arrythmias or produce paradoxical VT in Afib/Aflutter patients.
Adverse Effects:	Anxiety, nausea, seizures, widening QRS, hypotension, and CNS toxicity.
Onset/Duration:	**Onset:** 10-30 minutes **Duration:** 3-6 hours
Classification:	Anti-arrhythmic
Action	Class 1A membrane stabilizer inhibits recovery after repolarization resulting in decreasing myocardial excitability and conduction velocity.
Notes	Caution with concomitant use of other class 1A antiarrhythmics (Quinidine, TCAs), Digoxin. Do Not use with Amiodarone. Consider Cardiology Consultation.

Promethazine (Phenergan)	**{Alternative for Ondansetron}**	**P**
Indications:	Nausea/Vomiting	
Adult Dose:	12.5-25 mg IV or IM; Dosing every 4 hours. (Max concentration is 25 mg/mL; max rate is 25 mg/min) **Geriatric patients**: starting dose 6.25 mg IV Decrease dosing of narcotic medications by 25-50%	
Contraindications:	Decreased LOC Other sedating medications History of dystonic reaction Subcutaneous or intra-arterial administration Pediatric patient (especially less than 2 years of age) Lower respiratory infection Avoid in Parkinson's disease	
Precautions:	Potentiates opioids and other CNS depressants, IV incompatible with cephalosporins, clindamycin, diazepam, heparin, haloperidol, ketorolac, methyl prednisone, nitroprusside, pantoprazole, bicarb.	
Adverse Effects:	Sedation Dystonic reaction Respiratory suppression Lower seizure threshold Neuroleptic malignant syndrome Soft tissue/skin injury	
Onset/Duration:	**Onset: IV:** In minutes; **IM:** 5-15 minutes, peaks at 3 hours **Duration:** 4-6 hours	
Classifications:	Antiemetic, phenothiazine class	
Action:	Alleviation of nausea and vomiting. Phenothiazine derivative that competitively blocks histamine H1 receptors without blocking secretion of histamine. Drug has sedative, antimotion-sickness, antiemetic, and anticholinergic effect, but no dopaminergic effects.	

Propofol (Diprivan)	**P**
Indications:	Induction Sedation Conscious Sedation
ADULT DOSE:	**Adult Sedation/Induction**: 50-100 mg IV (1-2.5 mg/kg) Dose varies **Adult Sedation/Maintenance**: (Only for intubated patients) 10-20 mcg/kg/min (may titrate up to 50 mcg/kg/min)
Contraindications:	Hypersensitivity to Propofol, Soy, Peanuts or Eggs
PEDIATRIC DOSE:	**Peds Induction:** (3-16 years of age) 3 mg/kg IV/IO
Adverse/Side Effects:	Nausea & Vomiting Involuntary muscle movement Anaphylaxis (rare) - soy & peanut allergy Respiratory Acidosis Bradycardia Hypertension Hypotension Torsades de Pointes—Responds well to Magnesium Sulfate
Onset/Duration:	**Onset:** 30-60 seconds **Duration:** 3 minutes
Classifications:	Sedative-Hypnotic
Action:	Short acting hypnotic Mechanism of action not well defined, agonism of GABA receptors
Drug interactions:	Attempt to have a dedicated line for propofol.
Monitoring:	Continuously; Hypotension; Apnea; Airway Obstruction; Oxygen Desaturation

Propranolol (Inderal) **{Alternative for Labetalol & Metoprolol}**	**P**
Indications:	Supraventricular Arrhythmias
Adult Dose:	1mg slow IV/IO (I mg/min) Repeat every 2 minutes as needed up to 3 doses. Sufficient time should be allowed for the drug to reach the site of action even when a slow circulation is present. A second dose may be given after 2 minutes. Thereafter, addition drug should not be given in less than 4 hours. Additional propranolol should not be given when the desired alteration in rate and/or rhythm is achieved.
Contraindications:	Cardiogenic shock Sinus Bradycardia and greater than 1st degree block Bronchial Asthma Patients with known hypersensitivity to Propranolol Use cautiously with hypoglycemia and diabetes, thyrotoxicosis, and hepatic dysfunction. Hypotension
Pediatric Dose:	0.01 to 0.1 mg/kg slow IV/IO over 10 minutes; Maximum dose 1 mg **(infants)** Maximum dose 3 mg **(children)**
Precautions:	Drug interactions: Other beta-blockers Disopyramide
Adverse Effects:	Hypotension Dizziness Bradycardia
Onset/Duration:	**Onset:** Immediate **Duration:** 4 hours
Classifications:	Beta-adrenergic blocker (nonselective), Antiarrhythmic
Action:	Non selected Beta Blockade Competitively blocks beta-adrenergic receptors decreasing the influence of the sympathetic nervous system, the excitability of the heart, cardiac workload and oxygen consumption, and the release of renin and lowering BP; has membrane-stabilizing (local anesthetic) effects that contribute to its antiarrhythmic action; acts in the CNS to reduce sympathetic outflow and vasoconstrictor tone. The mechanism by which it prevents migraine headaches is unknown.
Notes:	

Rocuronium (Zemuron) **P**

Indications:	Need for aggressive airway control and maintenance using RSI. Initial means of paralysis for adult and pediatric patients with contraindications for succinylcholine (i.e., crush injury patients, personal or family history of malignant hyperthermia, inherited myopathies such as muscular dystrophy and pre-existing hyperkalemia).
Adult Dose:	Induction: 0.6 - 1.2 mg/kg IV/IO Ongoing Paralysis: 0.1 - 0.2 mg/kg IV/IO
Contraindications:	Known sensitivity to Rocuronium Muscular disorders Expected difficult airway
Pediatric Dose:	Induction: 0.6 - 1.2 mg/kg IV/IO Ongoing Paralysis: 0.075 - 0.125 mg/kg IV/IO (3 months—14 years)
Precautions:	**Not** recommended for RSI in caesarean patient or those over 65 years of age.
Adverse Effects:	Patients with neuromuscular diseases such as myasthenia gravis or myasthenic syndrome may have prolonged periods of paralysis. May cause tachycardia in up to 30% of patients. May cause temporary hypotension. Increased pulmonary resistance. Altered Mental Status.
Onset/Duration:	**Onset:** 60-70 seconds. **Duration:** 20 - 60 minutes.
Classifications:	Non-depolarizing neuromuscular blocker.
Action:	Neuromuscular blockage (Paralysis)
Notes:	Airway control equipment must be readily available. Intubation conditions expected in 1-2 minutes after injection. Consider lower doses in extremely debilitated patients. Ensure that drug is kept refrigerated or replaced every 60 days. Do not push in same IV line as Versed.

Sodium Bicarbonate P

Indications:	Metabolic Acidosis Prolonged Resuscitation Situations Tricyclic Anti-Depressant OD class IIa Cardiac Arrest 2° to pre-existing Hyperkalemia (dialysis)
Adult Dose:	1 mEq/kg slow IV/IO. May repeat in 10 minutes with 0.5 mEq/kg slow IV/IO
Contraindications:	CHF and Kidney failure Before Respiratory alterations have been accomplished
Pediatric Dose:	1 mEq/kg of pediatric mixture (8.4%). Repeat in 10 minutes with 0.5 mEq/kg slow IV/IO. If under 2 years old use 4.2% if available.
Precautions:	Do NOT administer in the same IV with Calcium chloride. Prepare to ventilate patient.
Adverse Effects:	Metabolic alkalosis, electrolyte imbalance, fluid overload. Decreased O2 delivery at cellular level, Hypernatremia, CNS acidosis.
Onset/Duration:	**Onset:** 2-10 minutes **Duration:** 30-60 minutes
Classifications:	Electrolyte
Action:	**Therapeutic**: Increases pH in blood. Buffering agent. **Mechanism:** Acts as a bicarbonate ion and binds with H ions to form Carbonic acid.
Notes:	Most catecholamines and vasopressors (dopamine, epinephrine) can be deactivated by alkaline solutions like sodium bicarbonate. When administered with calcium chloride, a precipitate may form that will clog the IV line.

Succinylcholine (Anectine) **P**

Indications:	An adjunct to general anesthesia, to facilitate tracheal intubation and to provide skeletal muscle relaxation.
ADULT Dose:	1-2 mg/kg IV/IO
Contraindications:	Hyperkalemia, burns >24 hours, penetrating eye injury, neuromuscular disease (Myasthenia Gravis), major crush injuries.
Pediatric Dose:	1-2 mg/kg IV/IO
Precautions:	Caution should be observed if succinylcholine is administered to patients during the acute phase of injury following major burns, multiple trauma, extensive denervation of skeletal muscle or upper motor neuron injury.
Adverse Effects:	Anaphylaxis Hyperkalemia Malignant Hyperthermia Malignant Hyperpyrexia (rare, muscle rigidity, tachycardia, hypertension) Increased intraocular pressure Muscle fasciculations Hypersalivation Bradycardia Trismus (locking of jaw & teeth clenching) Do Not give more Succinylcholine
Onset/Durations:	**Onset:** 1 minute **Duration:** 4-6 minutes
Classification:	Depolarizing neuromuscular blocking agent
Action:	Short acting depolarizing-type, skeletal muscle relaxant
Notes:	**Should not be mixed with alkaline solutions.** **Always use sedation before administration.** Oxytocin, Beta-blockers, Procainamide, Lidocaine, Magnesium salts and Organophosphates may potentiate effects. Diazepam may reduce duration of action. Digoxin may cause dysrhythmias.

Tenecteplase (TNKase) **{IFT}** **P**	
Indications	Acute MI Lysis of intracoronary emboli
Adult Dose	Continue dose rate set by transferring physician. Weight based one-time dose, administered over 5 seconds: <60 kg (30 mg) 60 kg - <70 kg (35 mg) 70 kg - <80 kg (40 mg) 80 kg - <90 kg (45 mg) 90+ kg (50 mg) Occasionally used as a continuous infusion for peripheral arterial thrombus 0.25 mg - 0.50 mg/hr: up to 48 hours.
Contraindications	• Intracranial aneurysm or AVM • Intracranial surgery or trauma with in 3 months • Intraspinal surgery or trauma with in 3 months • HTN, severe uncontrolled • Stroke within 3 months • Active Internal Bleeding • Intracranial neoplasm • Chronic hepatic or rental insufficiency
Precautions	Anti-coagulants; may cause severe hemorrhage if used in conjunction.
Adverse Effects	Minor hemorrhages from IV site and gums Collection of blood under skin Bloody or black, tarry stools Allergic reactions including anaphylaxis may occur with Streptokinase or APSAC.
Onset/Duration	**Onset:** 30 minutes IV **Duration:** 2-4 hours
Classifications	Tissue plasminogen activator
Action	Promotes thrombolysis by converting plasminogen to plasmin which degrades fibrin and fibrinogen. Genetically engineered variant of alteplase with multiple point mutations of tPA molecule resulting in longer plasma half-life, enhanced fibrin specificity and increased
Notes	**Neuro checks and Vitals, at minimum, every 15 minutes.**

Tetracaine (Proparacaine/Ophthaine)	**P**
Indications:	Suspected UV injury (Arc welding). Apply before eye irrigation.
ADULT Dose:	1-2 gtts in eye
Contraindications:	Suspicion of eye injury Hypersensitivity of Para-aminobenzoic Acid (PABA) Caution with Hypothyroidism, Hypertension, CAD, and Pregnancy.
PEDIATRIC Dose:	1-2 gtts in eye
Precautions:	Decreases antibacterial action of sulfonamides. **Do Not** let the patient rub their eyes.
Adverse Effects:	Blurred Vision Stinging Burning Lacrimation Cornea ulceration with prolonged use
Onset/Duration:	**Onset:** 15-30 seconds **Duration:** 15-20 minutes
Classification:	Ophthalmic Anesthetic
Action:	**Therapeutic:** Suppresses sensory-input from conjunctiva and eye. **Mechanism:** Decreases ion (Na+) permeability by stabilizing neuronal membrane. Inhibits nerve impulses from sensory nerves.

Thiamine (B-1, Betaxin) **P**

Indications:	Coma and seizures of unknown origin especially if alcohol use is suspected. Concurrent use with D50 for patients with history of alcohol abuse. Malnutrition or thiamine deficiency. Suspected Wernicke or Korsakoff Syndrome. Delirium Tremens.
Adult Dose:	100 mg slow **IV/IO** 100 mg **IM**
Contraindications:	None in the pre-hospital setting.
Adverse Effects:	Hypotension (from rapid administration or excessive dose) Dyspnea Respiratory Failure Nausea/Vomiting Diaphoresis
Onset/Duration:	**Onset:** Rapid **Duration:** Variable, depends on deficiency
Classifications:	B Complex vitamin
Action:	Converts pyruvic acid to acetyl-coenzyme-A. This allows cells to use the glucose on hand to fuel the body. Prevents Wernicke's syndrome (acute & reversible encephalopathy) and Korsakoff's psychosis (mental derangement which may not be reversible).

Tranexamic Acid (TXA, Cyclokapron) **P**

Indications:	TXA is approved for use in patients with known of suspected hemorrhage/internal bleeding. Blunt or penetrating trauma (multi-system, major pelvic fractures, solid organ injuries) with evidence of marked blood loss. Evidence of injury consistent with non-compressible hemorrhage (e.g., penetrating thoraco-abdominal trauma or unstable pelvis fractures) along with heart rate >120 bpm and systolic blood pressure (SBP) <90mmHg are suggested criteria. Consider vital sign adjustments for the geriatric population (>65 yrs old with systolic BP <110mmHg). Sustained tachycardia HR>120/min with signs of hypo-perfusion (ALOC, cool extremities…) or if the provider determines the patient to be high risk for significant hemorrhage. Traumatic injury occurs within the immediately preceding 3 hrs (preferable within the 1st hr). Traumatic amputation major arterial bleeding requiring tourniquet. Patients with suspected significant bleeding, regardless of cause. Epistaxis and Post-partum Hemorrhage. ****Pregnant patients and patients on anti-coagulation medications are eligible***
ADULT Dose:	1 gram in 100ml NS/LR IV over 10 minutes. 1gm in 100ml LR/NS= 10 mg/mL, followed by 1gm in 250ml NS/LR IV over 1 hour. 100-200 mg topical via cotton or gauze for external wound. 100-200 mg SVN for hemoptysis.
Pediatric Dose:	15 mg/kg (max 1gm) in 100ml NS/LR IV over 10 minutes, followed by 2 mg/kg in 250mL NS/LR IV over 1 hour.
Contraindications:	Greater then 3 hours since traumatic event Non-hemorrhagic shock Evidence of Disseminated Intravascular Coagulation Isolated head injury Neurogenic Shock (no evidence of hemorrhage) Known history of severe renal failure Known history of thromboembolism (relative) Known hypersensitivity (allergy) to TXA Hemorrhagic shock controlled with other hemostatic agents/measure
Precautions:	Begin infusion as soon as possible after injury but no later than 3 hours after injury. Do not give through the same IV as Hextend or blood products. Patients taking oral tretinoin for treatment of leukemia may have enhanced effects. **Do not give IV push**– will cause hypotension. Must be given over 10 minutes. Use with caution with patients with a history of DVT, PE, known clotting disorders or severe renal failure. (CONTINUED ON NEXT PAGE)

Tranexamic Acid (TXA, Cyclokapron) continued **P**

Adverse Effects:	**TXA has not been shown** to cause significant increase in deep vein thrombosis (DVT), pulmonary embolus, myocardial infarction, or stroke in published trials to date. Dizziness Headache Nausea/Vomiting Diarrhea Orthostasis Hypotension (with rapid administration) Seizures (seen mainly in the pediatric cardiac surgery population) Female patients taking or using any form of birth control containing estrogen and progestin are at increased risk for blood clots (enhanced thrombogenic effects) and TXA increases that risk.
Onset/Duration:	Onset: Within 4 hrs after IV administration, exact time of onset unclear and variable. Delayed effects up to 48 hours are consistent with anti-inflammatory actions.
Classification:	Anti-Fibrinolytic
Action:	Tranexamic acid (TXA) is a synthetic lysine analog that competitively inhibits the activation of plasminogen to plasmin. TXA may help stabilize clot formation and decrease extravascular bleeding.

Vecuronium (Norcuron) {**Alternative for Rocuronium**} **P**	
Indications:	Paralysis to facilitate intubation
ADULT Dose:	0.1 mg/kg IV/IO Defasciculating dose 0.01 mg/kg IV/IO
Contraindications:	Newborn infants, myasthenia gravis
Pediatric Dose:	0.1 mg/kg IV/IO
Precautions:	Patient must be sedated
Adverse Effects:	Apnea
Onset/Duration:	Onset: 1-2 minutes Duration: 30 minutes
Classification:	Nondepolarizing neuromuscular blocking agent
Action:	Prevents acetylcholine from binding to receptors on the motor end plate, thus blocking depolarization

Verapamil {Alternative for Diltiazem} P

Indications:	Narrow complex tachycardia
ADULT Dose:	5 mg IV/IO
Contraindications:	Heart failure, AV block, Sick sinus syndrome, WPW, LGL syndrome
Precautions:	Digoxin, avoid polypharmacy with other rate related medications
Adverse Effects:	Bradycardia, hypotension
Onset/Duration:	Onset: 3-5 min Duration: up to 6 hours
Classification:	Calcium channel blocker, class IV antiarrhythmic
Action:	Inhibits calcium ion from entering the “slow channels” for select voltage sensitive areas, slow automaticity, and conductions of the AV node.

Xylocaine Jelly (2%) P

Indications:	Nasal/Oral Endotracheal Intubation Nasogastric tube placement
Adult Dose:	Apply moderate amount to external surfaces of endotracheal/nasogastric tubes prior to placement.
Contraindications:	Known hypersensitivity to local Anesthetics
Pediatric Dose:	Apply moderate amount to external surfaces of endotracheal/nasogastric tubes prior to placement.
Precautions:	Reduce dose with elderly/young. Wear protective gloves when handling to prevent numbing. Do NOT apply to stylet or inner lumens of ET or Nasogastric tubes.
Adverse Effects:	Impaired swallowing may lead to aspiration. Numbness of tongue or buccal mucosa may enhance possibility of unintentional biting trauma. Allergic Reaction Bradycardia Hypotension Drowsiness Blurred/Double Vision Light Headedness
Onset/Duration:	**Onset:** 3-5 minutes after contact with topical region or mucosa **Duration:** 1.5 - 2 hours. Can vary with dosage and site of application
Classifications:	Topical Anesthetic
Action:	Topical Anesthetic

Drug Reference

Equivalents:

1kg = 2.2lb	**1mL = 60 mcgtts (micro tubing)**	**1 gm = 1000 mg**
1kg = 1000 gm	**1mL = 10, 15, 20 gtts (macro tubing)**	**1 mg = 1000 mcg**
	1mL and 1cc are interchangeable 1gm = 1000 mg	

Conversions:

MULTIPLY to convert a larger unit into a smaller unit using the above table.

DIVIDE to convert a smaller unit into a larger unit using the above table.

Dosage Calculations:

To calculate the amount of drug to be drawn up or administered, use the following formula:

WHAT (type and amount of drug ordered) multiplied by the **QUANTITY** (volume of fluid in the container) divided by what you **HAVE** (amount of the drug in the container) = the amount to be administered.

$$\frac{\text{WHAT} \times \text{QUANTITY}}{\text{HAVE}} = \textbf{amount to be administered}$$

IV RATE:

To calculate an IV drip rate based on the volume of fluid to be infused over time. (Make sure the unit measurement of the concentration and dosage are the same. [e.g. both in milligrams])

$$\text{Drops per minute} = \frac{\text{VOLUME to be infused in cc } \mathbf{X} \text{ Drop factor od IV set}}{\text{Time in minutes}}$$

To calculate and IV drip rate for a medication that is administered based on a specified dosage to be infused per minute:

$$\text{Drops per minute} = \frac{\text{Dosage per minute to administered } \mathbf{X} \text{ Drop factor (60)}}{\text{Concentration of medication per mL}}$$

To calculate an IV drip rate for a medication that is administered based on a specified dosage per kilogram of body weight per minute:

$$\text{Drops per minute} = \frac{\text{Desired dosage per minute } \mathbf{X} \text{ Weight in kg } \mathbf{X} \text{ Drop factor of IV set}}{\text{Concentration of medication per mL}}$$