State of Florida
All Hazards Medical Disaster Procedures and Protocols

Florida Department of Health

Bureau of Preparedness and Response

Bureau of Emergency Medical Oversight

November 1, 2013

DRAFT

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Introduction

These All Hazards Medical Disaster Protocols have been developed to support and delineate emergency services care under austere circumstances. Normal EMS operations may need to be suspended if all available resources are required to manage the disaster event. "Alternative Care/ Austere Care" refers to medical care delivered to individuals under conditions of duress, such as after a disaster or when medical supplies are insufficient to meet the demand for emergency care and local medical direction can not be provided. Planning for these catastrophic events allows the EMS system to provide a certain level of care to every individual who needs it, instead of a high level of care to only a few people. Alternative/Austere care under these protocols is only rendered in the setting of disaster or isolation where no local medical direction exist.

The potential of opening an Alternate Medical Treatment Site (AMTS) is considered in this document. The opening of an AMTS normally occurs in conjunction with the hospital facilities, Florida Department of Health and Emergency Medical Services leadership in which medical direction is provided. In this instance, local and state EMS medical directors shall work in unison to support the needs of the community and support the optimal functioning of the EMS Providers. At times, certain suspected contagious diseases, hazmat and other mass casualty or toxic events may be the preceding factor that creates this scenario and medical direction may not be available.

This document is intended to be an encyclopedic document. It attempts to cover many perceived problems that may be encountered in disaster circumstances and to provide a common framework for providing emergency care. Some patients may require treatment not specified in these protocols. It is recommended that the EMT / Paramedic make all attempts to contact local medical direction within the austere environment for medical direction. When an EMT / Paramedic is unable to make contact with local medical direction within an austere environment, he or she may administer BLS and/or ALS only as authorized in these treatment protocols.

These protocols are not mandatory and should only be use during a state or nationally declared disaster while under the direction of state or federal officials. These protocols are only valid within the State of Florida. Any use of these protocols outside the State of Florida shall be governed by the state in which the EMT / Paramedic is providing treatment. In addition, all attempts should be made to contact the local medical direction for the area in which the EMT / Paramedic is providing care.

Statutory Authority

Pursuant to Chapter 252, Florida Statutes and Rule 9G, Florida Administrative Code, the state Comprehensive Emergency Management Plan (CEMP) is the master operations document for the State of Florida in responding to all emergencies, and all catastrophic, major, and minor disaster. These protocols are a supplemental order to the CEMP.

Authorization For Use in a State or Federally Declared Disaster or Event of National Significance: November 1, 2013

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State of Florida All Hazards Medical Disaster Procedures and Protocols

Scope of Practice

The EMT and Paramedic are expected to provide the care within their training and under the protocols that apply to the event. It is noted that Florida currently does not have a mandated scope of practice for all EMT and Paramedics to utilize. All other care providers that may be utilized for direct care or as adjunct team members are expected to practice within their certification or licensure and scope of practice. Certification and licensure is directed by the State of Florida and an EMT and Paramedic's scope of practice is confirmed under the Medical Director of the individual's agency.

Use of Protocols

The EMT / Paramedic must use his/her judgment in administering treatment in the following manner:
The EMT / Paramedic may determine that no specific treatment is needed; or follow the appropriate treatment protocol and contact medical direction at any time deemed necessary. It is recommended that the EMT / Paramedic make all attempts to contact local medical direction for consultation on patients whenever possible. When the EMT / Paramedic is unable to make contact with a local physician for medical direction, the paramedic may administer BLS treatment according to his/her judgment. In this instance, the paramedic may administer ALS treatment only as authorized in the treatment protocols. If a situation does not fall within one of these specific protocols, attempts to contact local medical direction have failed, the EMT / Paramedic should revert to the protocol normally used by his/her home agency in daily EMS operations or may contact medical direction for consultation on the proper course of action. Section 2 "Medical" and section 3 "Trauma" contain protocols appropriate to adult patients or both adults and pediatric patients. Section 4 "Pediatric" contains protocols with specific reference to "pediatric" patients and drug/therapeutic recommendations. For the purposes of this document, a patient is to be considered "pediatric" if the patient is under the age of 18 years. The EMT / Paramedic must use his/her judgment of weight and size of the patient when following pediatric protocols. In the interest of simplicity, these protocols contain no drug summaries or procedures.

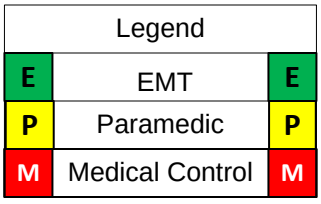
Legend Indication of permitted actions by Level of Training and Certification

The following legend appears on the protocol page to indicate the level of provider (EMT or Paramedic) permitted to perform procedures and /or administer medications. If a procedure or medication administration is not specifically indicated by a color code, it may be done at individual's level of training approved by the EMT / Paramedic medical director and certification issued by the State of Florida. The Advanced EMT level is not currently recognized in Florida, therefore the Advanced EMT must function at the level of EMT as defined in Florida Statues 401.23(11).

E Indicates EMT level permitted

P Indicates Paramedic level permitted

M Indicates Medical Control Physician must be contacted



Medications and Narcotics Control
In the event that the National Stockpile is utilized, the inventory control of medications from the cache will be under the supervision of the EMS Medical Director who has authority at the geographic site of the event or the AMTS. Narcotic control and accountability will also be under the DEA license of the EMS Medical Director. Accountability of use must be documented in patient record and under the protocol of the cache that is released to the site.

Records Management
All patients treated must be logged for future tracking and fiscal accountability. The interventions provided and responses to care must be documented. Minimal standards for pre-hospital documentation are noted in State of Florida Department of Health Administrative Rule. Discharge instructions or a summary of care provided for transport to an acute care center and a copy of treatment should be provided to the patient for continuation of care post the event.

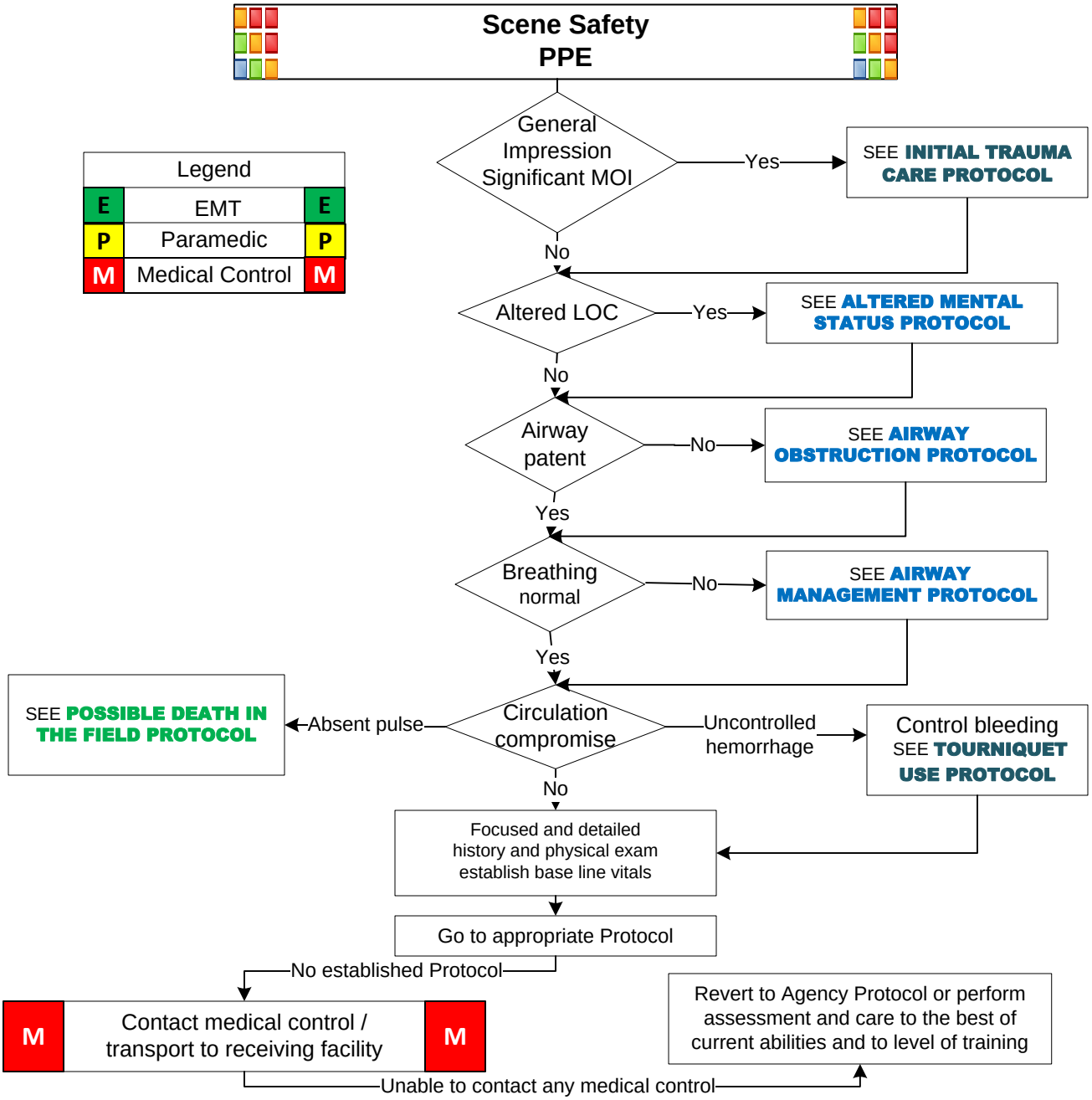
Deactivation
Deactivation will be coordinated through State or Federal and local authorities after a review of the ability of the healthcare system to return to daily functioning.

Palliative Care
Dignity, pain relief and comfort measures in all medical situations are a basic human right. All attempts to assure the patient's rights are protected are a minimum expectation. Withholding pain medication or other comfort measures even in a disaster-catastrophe situation should not be sanctioned. Patients with conditions that are deemed non-survivable due to the effects of the disaster-catastrophe should be placed in a separate area whenever possible. Family members and spiritual support should be allowed access to the patient whenever the situation, such as in the case of a contaminate agent or radioactive agent, is deemed safe.

Psychological Support for Community, Patients and Care Providers
Psychological support for all patients, family members and care providers is a major concern in a disaster-catastrophe. The elevated pre-morbid signs and symptoms of previously minor mental health issues, including those that were explicit may become exacerbated. Other anxiety reactions may also be manifested in previously mentally healthy individuals. Mental health counselors, chaplains and spiritual support counselors should be activated as part of the medical team.
An ongoing assessment of the front line care provider's mental health concerns should also be addressed on an ongoing basis. There may be situations in which a care provider is reassigned or relieved of duty in the best interest of the individual or for the safety of the patient and other team members. Traumatic Stress Disorders are often cumulative effects. These individuals should be directed to access post-event counseling to assure a return to a mentally healthy state of performance.

Transport Destination during MCI and Disaster-Catastrophe Events
The non-critical patients should be transported to a different initial receiving hospital to support surge capacity issues. Ground units may become overburdened and may need air transport to facilitate movement of multiple patients to initial receiving hospitals. This decision will be made by the Incident Commander on the scene, in consultation with Medical Section Chief. If a trauma center or an initial receiving hospital nearest the scene of the incident notifies EMS that it is temporarily unable to provide adequate care for the trauma alert patient, EMS personnel under the direction of Medical Control will determine which hospital is in the patient's best interest.

Universal Patient Care Protocol



Pearls

- Focused and detailed to include:
  History of present illness or injury, past medical history, drugs, allergies, systematic head to toe exam
  Vital signs taken every 5 - 10 minutes
- Perform initial medical care simultaneously with therapies:
- Establish IV if indicated with 0.9% normal saline. Attempt IV access only twice unless condition critical
- Cardiac monitor in LDII or MCL1, or via 12 lead if available. Record strip every 5-10 min
- Lack of IV site does not preclude medication therapy
- Apply pulse oximetry to all cardiac or respiratory patients whenever possible
- Apply ETCO2 monitor device to patients with potential cardiac or respiratory emergencies

Refusal of Care

- Obtain history from the patient and / or others in the area
- Obtain and record at least one (1) set of vital signs for each patient
- If unobtainable, justify on report
- Perform a brief physical examination, paying particular attention to alterations in mental status and to any traumatic injury or medical illness that may represent a threat to the well-being of the patient

Determine If the Patient Has An "Emergency Medical Condition":

Florida Statute 395.002 (9) A medical condition manifesting itself by acute symptoms of sufficient severity, which may include severe pain, such that the absence of immediate medical attention could reasonably be expected to result in any of the following:

- Serious jeopardy to patient health, including a pregnant woman or fetus
- Serious impairment to bodily functions
- Serious dysfunction of any bodily organ or part

Assess the Competency of the Patient:

- Over 18 years of age*
- Awake, Alert and oriented to person, place, time and event (AAOX4)
- Has no signs of injury or illness, which may impair the ability to make an informed decision
- Is not apparently intoxicated by drugs or alcohol and has no evidence of mental incapacitation

Universal Patient Care Protocol

- Patient refusing to allow the proper evaluation, treatment, or transport
- Determine the mental status and extent and history of injury or illness
- Conscious, alert, and oriented and understands (mental reasoning) his/her condition (patient GCS = 15)

Competent patient ?

Yes

E

- Unless the patient specifically refuses, do a complete assessment
- Inform the patient and/or responsible party (parent or guardian) of potential consequences of the decision to refuse treatment and/or transport (loss of life or limb, irreversible sequelae)
- Ensure that the patient or responsible party fully understands the explanation
- All measures should be taken to convince the patient to consent, including enlisting the help of family or friends.

P

No

Refusal Instructions

If the patient continues to refuse, the patient and/or responsible party may then sign a "Refusal of Care" form. Ensure that

- The release is against medical advice
- The release applies to this instance only
- EMS should be requested again if necessary or desired

May not refuse:

- Altered level of consciousness (e.g., head injury or under the influence of alcohol and/or drugs)
- Suicide (attempt or verbal threat)
- Severely altered vital signs
- Mental retardation and/or deficiency
- Not acting as "a reasonable person would do, given the same circumstances."
- Younger than eighteen (18) years of age*

Sign Refusal

Refuses to sign

Outcome

M Contact medical control / transport to receiving facility **M**

Legend		
E	EMT	E
P	Paramedic	P
M	Medical Control	M

- Document an INFORMED Refusal **(See REFUSAL FORM – APPENDIX F)**
- *Under 18 and able to refuse:
  - An emancipated minor
  - A married minor
  - A minor in the military
- Refusal by individuals under the age of 18 years must be consistent with Florida Statutes Chapters 39 and 414

Possible Death in the Field

IN A LEVEL 3 OR GREATER MASS CASUALTY EVENT* THE PATIENT WHO IS FOUND IN CARDIAC ARREST WILL BE TRIAGED TO A BLACK CATEGORY AND CARE WILL BE SUSPENDED

Use START TRIAGE PROTOCOL

*** See MCI PROCEDURE – SECTION 6**

If adequate resources exist for attempts at resuscitation, this Protocol may be used to determine whether or not to begin or cease efforts already started

The EMT/Paramedic should otherwise attempt to contact local medical control for permission to cease resuscitation in the field, if such action is contemplated

DO NOT RESUSCITATE ORDERS (DNRO)

- Section 401.45, Florida Statutes (F.S.) authorizes EMS personnel to honor a Prehospital Do Not Resuscitate Order (DNRO)
- Resuscitative efforts may be withheld or discontinued upon presentation/discovery of a valid DNRO

Legend		
E	EMT	E
P	Paramedic	P
M	Medical Control	M

Universal Patient Care Protocol

Dead/Non-salvageable - Pulseless and injuries or illness incompatible with life (e.g., decapitation, massive crush injury, incineration)

No

The four presumptive signs of death MUST be present:

- Unresponsiveness
- Apnea
- Pulseless
- Fixed dilated pupils

Signs Not Present

E Begin BLS/ALS care per appropriate protocol P

M Contact medical control / transport to receiving facility M

Yes

Discontinue or do not begin resuscitation

Notify law enforcement

- Limit entry to the immediate location of the deceased
- No physical contact except to confirm presumptive signs of death
- No removal or cutting of restraints / ligature / nooses / knots
- Do not reposition, remove, or relocate body or
- items associated with the body such as weapons, personal property, notes, or any other items comprising elements of the scene.
- Do not place blankets or other items on the body
- Document your actions and interactions with the body
- If you may have left any body fluid (including sweat, saliva and blood) on or near the victim, record this information in your notes and inform the criminal investigator

- Do not introduce any items not directly related to medical treatment
- Blankets/Coverings should not be moved if in place
- Do not attempt to replace in original position.
- Food, beverages, tobacco or personal items should not be handled or moved
- Do not cut through bullet holes or other defects in the victim's clothing
- Do not remove clothing items from the scene
- ETT, IVs, EKG electrodes, TCP electrodes, etc. should be left in place

Valid Do Not Resuscitate Orders

- An original yellow DNRO (DOH Form 1896) executed as required by Florida Statute (with original signatures)
- A copy on yellow paper
- A DNRO document from a licensed healthcare facility or hospice facility, either the original or a copy
- Victims with signs of life should be treated with the primary and overwhelming objective of preservation of life

Return to TOC

Universal Approach to Hazardous Materials Incidents

It is imperative that the SAFETY of civilians and emergency personnel be maintained while dealing with hazardous materials.

PROTECT YOURSELF !!

Legend		
E	EMT	E
P	Paramedic	P
M	Medical Control	M

- **Do not attempt to treat or remove the patient from exposure without appropriate personal protective equipment**
- Request response of specialty units / haz-mat team
- Maintain safe zone and assess scene from appropriate distance
- Request information from haz-mat incident commander as to when it is safe to approach victims
- After obtaining clearance from haz-mat team and / or after the patient is decontaminated

Universal Patient Care Protocol

While wearing heavy rubber gloves or two pair of regular exam gloves, remove ALL patients' clothing and place all materials, including the gloves, in a red biohazard bag

Advise initial receiving facility of situation as soon as possible to facilitate early hospital preparations

E — Follow Appropriate Protocol in the Florida State Emergency Response Commission (SERC) **HAZARDOUS MATERIAL MEDICAL TREATMENT PROTOCOLS SECTION 7** — P

E — REASSESS AND RECORD VITAL SIGNS
EVERY 5 – 10 Minutes
Monitor for "trends" — P

M — Contact medical control / transport to receiving facility — M

Pearls
- Various hazardous materials references are available including Material Safety Data Sheets (MSDS)
- See State Hazardous Materials Protocols for detailed treatment options

Psychological / Behavioral Emergencies

Universal Patient Care Protocol

CONSIDER MEDICAL ETIOLOGY OF PSYCHOLOGICAL / BEHAVIORAL DISORDER AND REFER TO APPROPRIATE PROTOCOL:

SCENE CONSIDERATIONS

- Establish SCENE and PERSONAL SAFETY – Call law enforcement personnel to scene if needed
- DO NOTHING TO JEOPARDIZE YOUR OWN SAFETY
- Determine and document if patient is a threat to self or others or if patient is unable to care or provide for self.
- Protect patient from harm to self and others.
- Attempt to calm the patient verbally as able and encourage patient to leave current environment.

Substance abuse — Yes → SEE **DRUG OVERDOSE / POISONING PROTOCOL**

No

Neurologic disease — Yes → SEE **STROKE PROTOCOL**

No

Metabolic derangements — Yes → SEE appropriate protocol

No known protocol → SEE **UNIVERSAL PATIENT CARE PROTOCOL**

No

Acute alcohol withdrawal — Yes → **P**

Lorazepam (Ativan) 0.5 – 1.0 mg slow IVP or IM or IN
- or -
Midazolam (Versed) 2-5 mg slow IVP or IM or IN
- or -
Diazepam (Valium) 5-10 mg slow IVP

No

Legend	
E	EMT
P	Paramedic
M	Medical Control

E

- If applicable, consult law enforcement for assistance with transport of the unwilling patient.
- If patient becomes severely agitated to the point of interfering with patient care and/or becomes a physical danger to the crew : physically restrain as necessary, in a safe manner. Monitor restraint use to prevent injury to patient

P

If needed:

- Administer Midazolam (Versed) 2-5 mg IVP or 0.07-0.08 mg/kg IM or IV or Lorazepam (Ativan) 0.5 – 1.0 MG slow IV or IM or Diazepam (Valium) 5-10 mg slow IVP
- IM injection of Midazolam (Versed) requires immediate IV access upon sedation.

P

Reassess and record vital signs
- Every 5 – 10 minutes
- Monitor for trends

M Contact Medical Control / transport to receiving facility **M**

Pearls:

- Never place a patient in the prone position
- Document use, type, time applied, and reasons for application
- Document distal circulation, sensory and motor assessments every 5 minutes
- In some instances, IV administration may present a safety concern; in these cases, IM administration of sedatives may be the more desirable route

EXCITED DELIRIUM SYNDROME / DRUG INDUCED AGITATION

Universal Patient Care Protocol

CONSIDER MEDICAL ETIOLOGY OF PSYCHOLOGICAL / BEHAVIORAL DISORDER AND REFER TO APPPROPRIATE PROTOCOL:

SCENE CONSIDERATIONS

- Establish SCENE and PERSONAL SAFETY – Call law enforcement personnel to scene if needed
- DO NOTHING TO JEOPARDIZE YOUR OWN SAFETY
- Determine and document if patient is a threat to self or others or if patient is unable to care or provide for self.
- Protect patient from harm to self and others.
- Attempt to calm the patient verbally as able and encourage patient to leave current environment.

Combative agitated?

- No → SEE **MEDICAL CARE PROTOCOLS** and/or **TRAUMA PROTOCOLS**
- Yes → Patients **MUST NOT** be transported with hands cuffed behind the patient or in a position that is likely to restrict or limit the patient's ability to breathe

E

- If applicable, consult law enforcement for assistance with transport of the unwilling patient.
- If patient becomes severely agitated to the point of interfering with patient care and/or becomes a physical danger to the crew : physically restrain as necessary, in a safe manner. Monitor restraint use to prevent injury to patient
- Patients **MUST NEVER** be transported face down or prone on the stretcher

P

If needed:

- Administer Midazolam (Versed) 2-5 mg IVP or 0.07-0.08 mg/kg IM or IV or Lorazepam (Ativan) 0.5 – 1.0 MG slow IV or IM
  - or -
  Diazepam (Valium) 5-10 mg slow IVP
- IM injection of Midazolam (Versed) requires immediate IV access upon sedation.

Suspected hyperthermia*?

- No → SEE **MEDICAL CARE PROTOCOLS** and/or **TRAUMA PROTOCOLS**
- Yes → *If the patient is hot to the touch, with severe perspiration, begin treatment

E

- Remove all excessive clothing, cool body with room temperature water.
- May apply ice packs to groin, axillae and neck.
- Move patient to the back of the rescue – turn patient area AC to cool.

P

Mix sodium bicarbonate syringe (50 mEq) in one liter of cooled Normal Saline and infuse at a "wide open" rate.

Reassess and record vital signs

- Every 5 – 10 minutes
- Monitor for trends

M Contact Medical Control / transport to receiving facility **M**

Legend		
E	EMT	E
P	Paramedic	P
M	Medical Control	M

Pearls

Excited Delirium is defined as an acute state of behavioral disinhibition where an individual displays agitation, aggressiveness or aberrant behavior requiring the use of force to restrain the patient. This behavioral state is likely associated or precipitated with the use of recreational drugs primarily cocaine, methamphetamines or other hallucinogenic drugs. Following a struggle to restrain the patient, his/her demeanor calms down and the condition may deteriorate quickly into respiratory arrest and death.

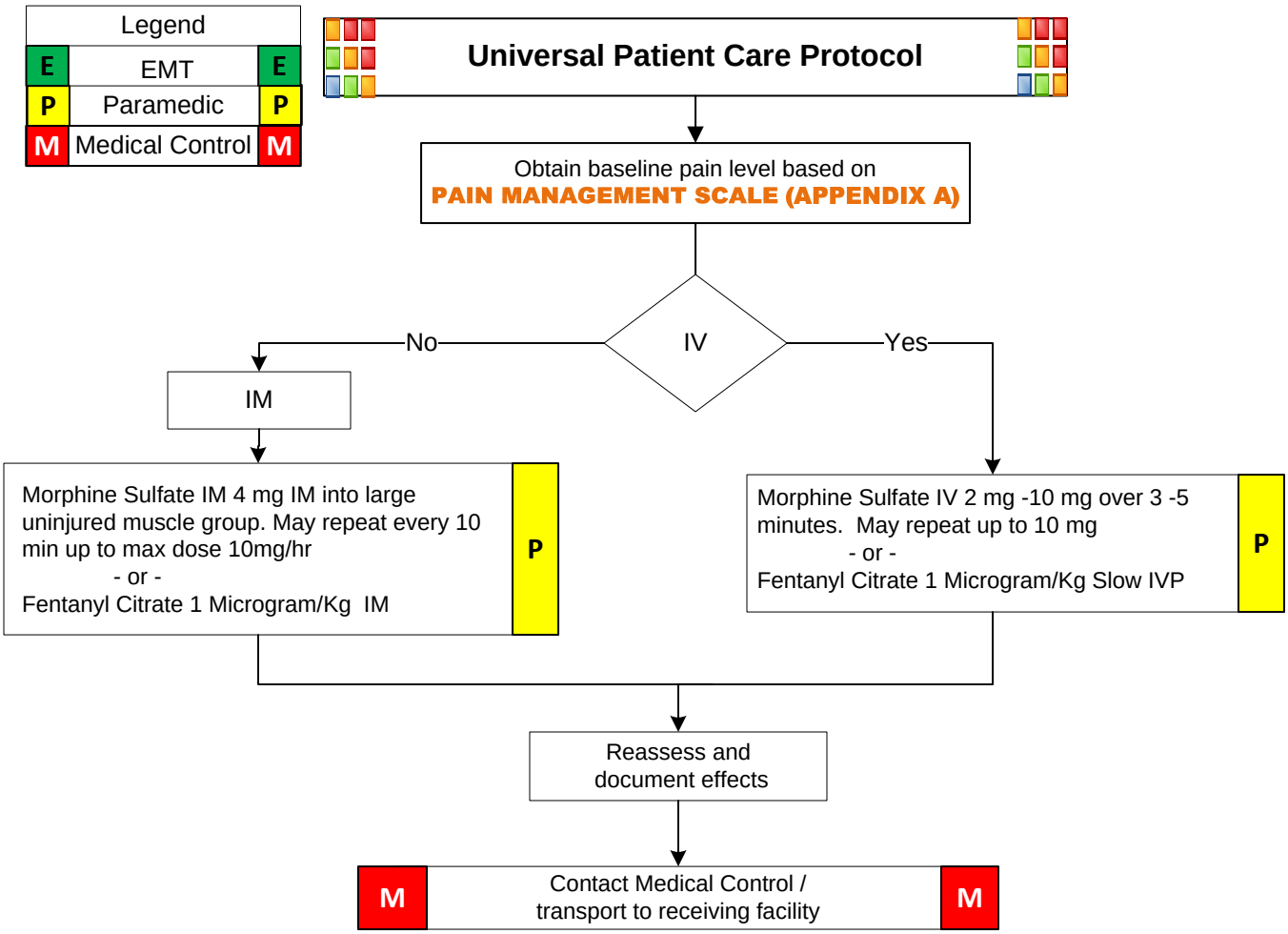
- Document use, type, time applied, and reasons for application
- Document distal circulation, sensory and motor assessments every 5 minutes
- In some instances, IV administration may present a safety concern; in these cases, IM or IN administration of sedatives may be the more desirable route
- Cardiac monitoring and pulse oximetry should be used due to the risk of sudden cardiac arrest

Acute Pain Management

Provide Acute Pain Management with the following recommended medications and dosages
Conditions:

- Acute MI (reference also ACLS)
- Acute abdominal pain – attempt to contact local medical control
- Blast injury / barotrauma
- Blunt trauma
- Combative or suspected head injury
- Crush injury
- Environmental – frost bite
- Musculoskeletal pain / extremity pain
- Penetrating trauma
- Procedural sedation- cardioversion, cardiac pacing, intubation
- Renal colic
- Sickle cell crisis

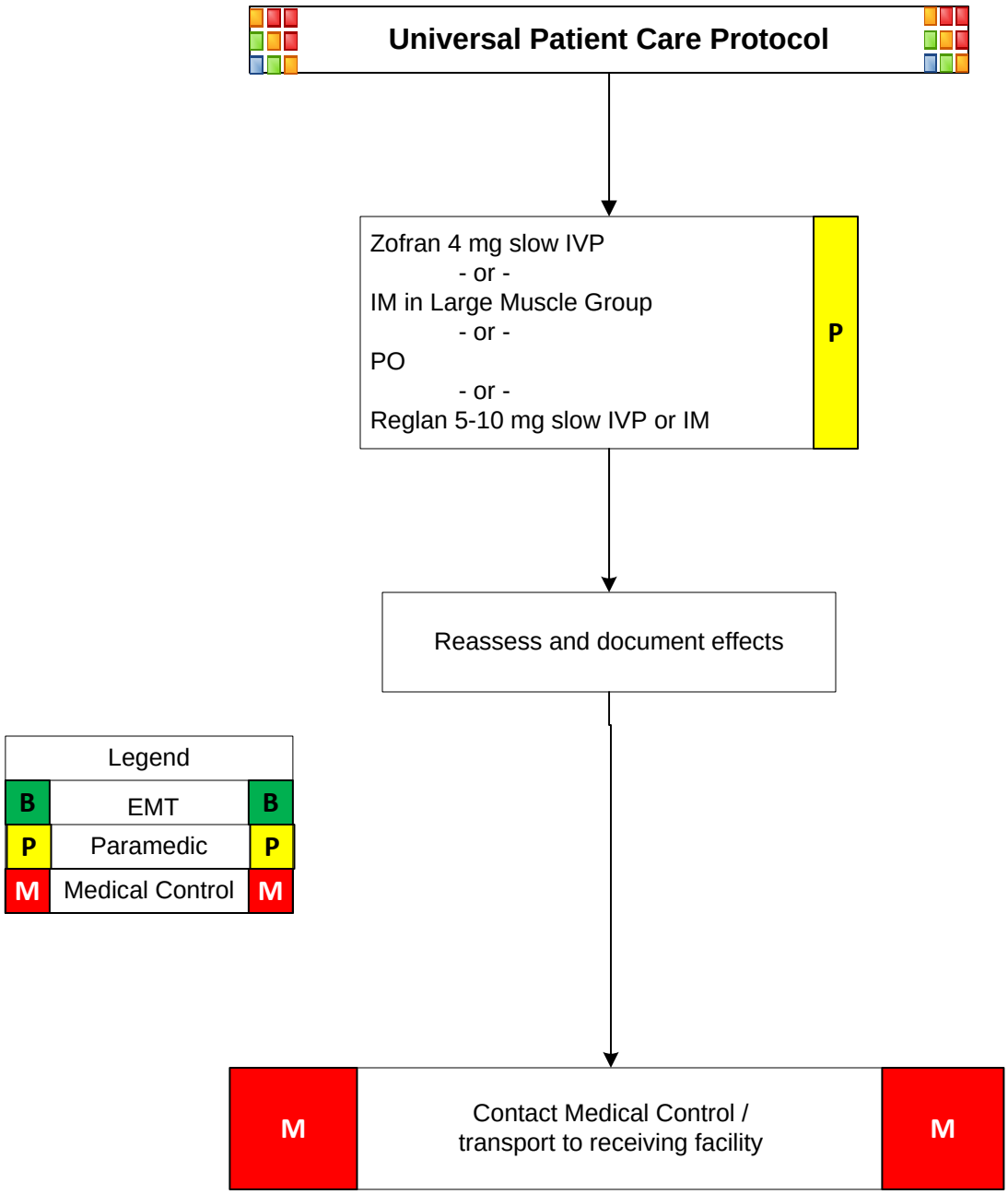
M



Pearls

- Ventilation and oxygenation always precede drug therapy
- Apply cardiac monitor and pulse oximetry as soon as possible
- Attempt to contact local medical control if additional pain management medications are required
- Antiemetic Treatment may also be required
- Unconscious or pharmacologically paralyzed:
  - Closely monitor vital sign trends for indicators of pain and medicate according to protocol
- Burns/Electrical Burns: due to rapid metabolism *additional* analgesia may be required

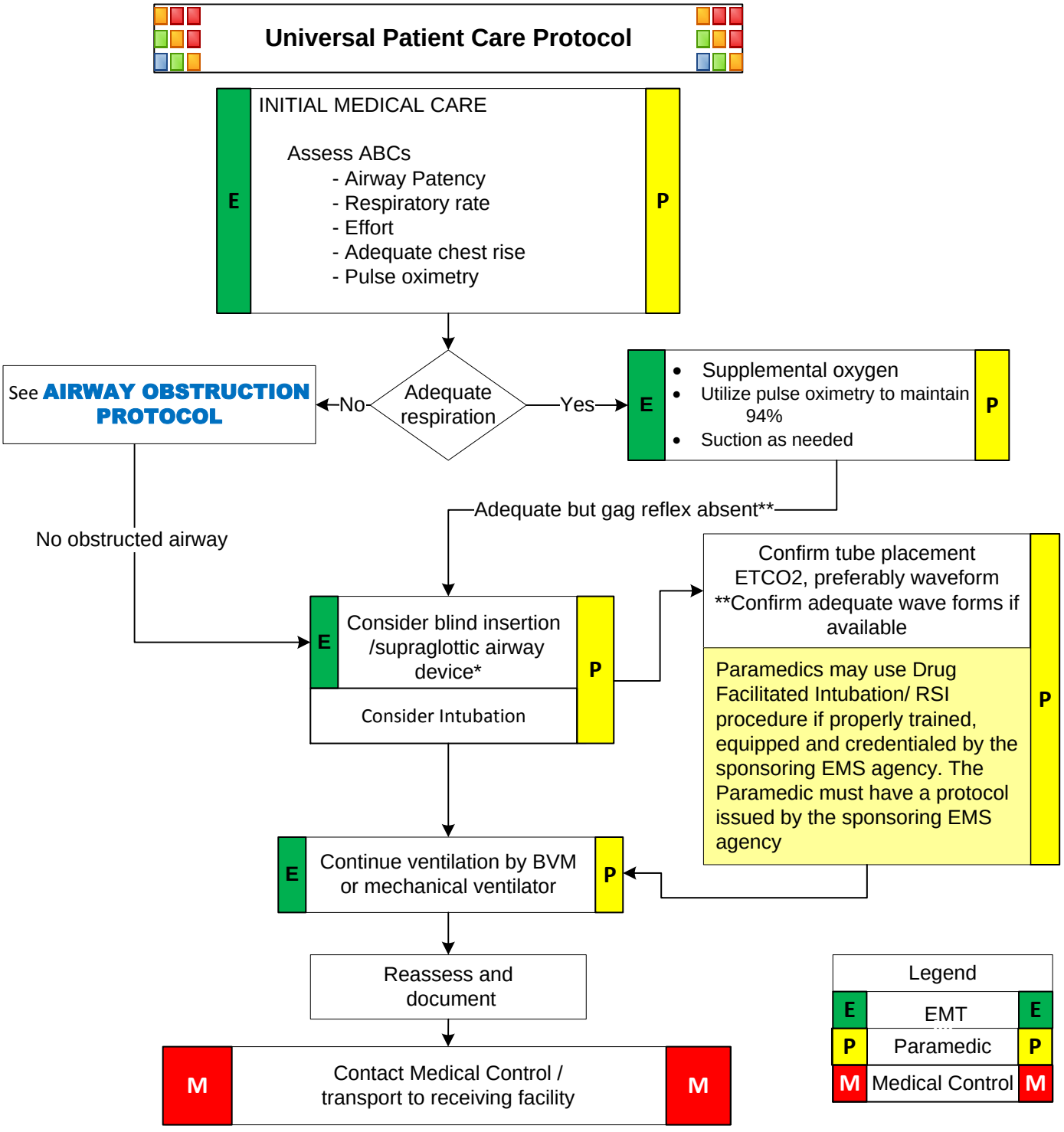
Antiemetic For Nausea Control



Pearls

- Refer to Broselow Tape or other length / weight based tool for pediatric medication administration
- Ventilation and oxygenation always precede drug therapy
- Apply cardiac monitor and pulse oximetry as soon as possible
- Contact Medical Control if additional pain management medications are required

Airway Management



Pearls

- Manual spinal immobilization may be indicated in trauma
- Utilize commercial tube holder for ETT to prevent ETT dislodgement
- * Blind insertion/Supraglottic airway devices : LMA, King airway, Combitube or similar device
- Use cervical and head immobilization devices to prevent ETT dislodgement
- **Adequate respirations and spO2 of ≥ 94% but has no gag reflex

Sepsis/Pneumonia

Signs and Symptoms

- Altered Mental State
- Fever
- Tachycardia
- Tachypnea
- Joint Pain
- Dizziness

Universal Patient Care Protocol

INDICATIONS

- Temperature greater than 38°C (100.4°F) or less than 36°C (96.8°F)
- Heart rate (HR) greater than 90 beats per minute (bpm)
- Respiratory rate (RR) greater than 20 breaths per minute or carbon dioxide tension ($PaCO_2$) by waveform capnography lower than 32 mm Hg
- Hypoxemia (arterial oxygen tension [PaO_2] < 72 mm Hg by pulse oximetry at fraction of inspired oxygen [FiO_2] 0.21; overt pulmonary disease not the direct cause of hypoxemia)
- Elevated plasma lactate level
- Decreased urination
- Respiratory tract infection and urinary tract infection
- Immunosuppressive
- Diabetes, AIDS, or cirrhosis

Legend	
E	EMT
P	Paramedic
M	Medical Control

E

- Pulse oximetry
- Blood sugar
- Support the airway
- High flow oxygen
- Prevent hypothermia
- Trend the vital signs

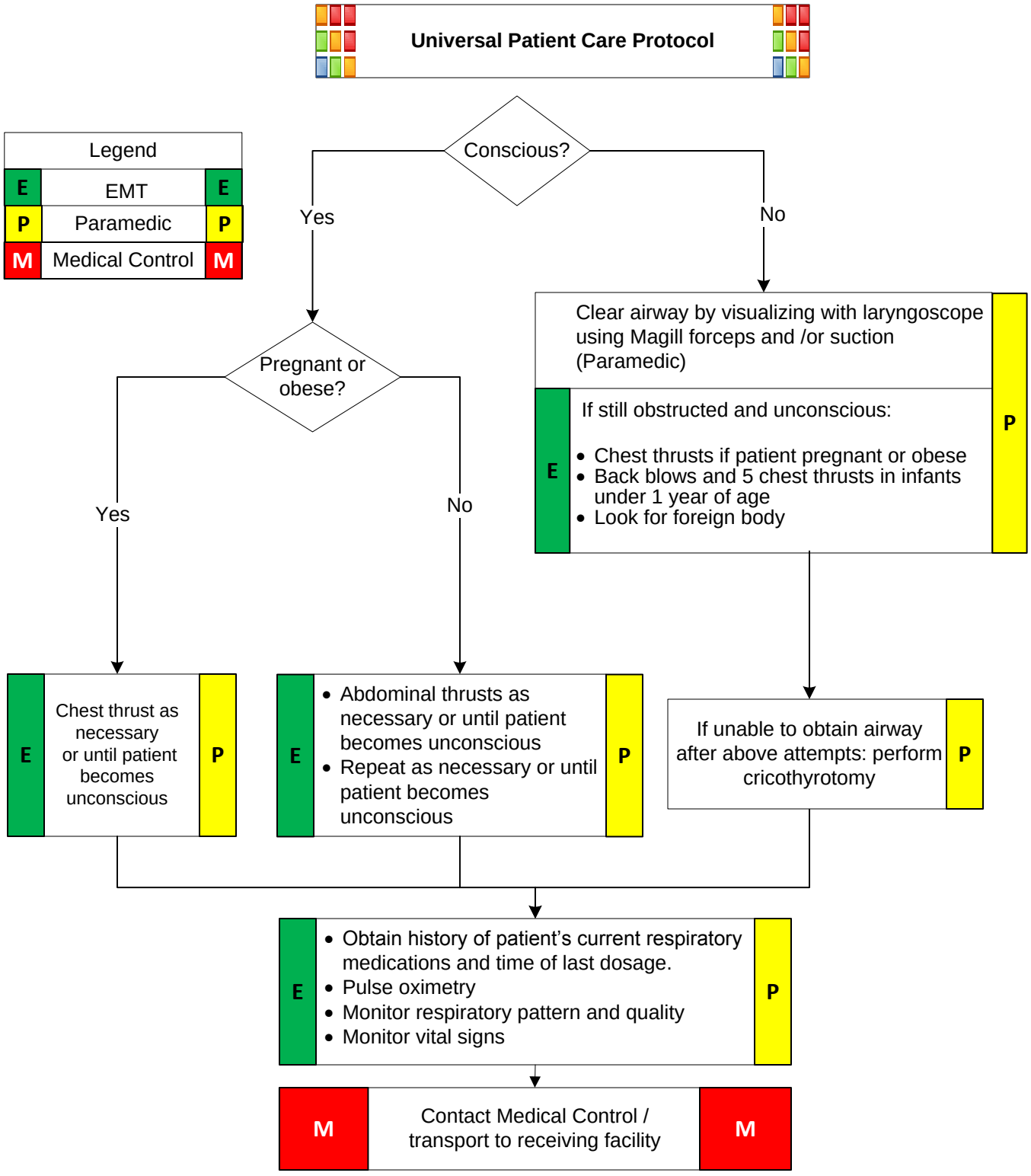
P

P

- Aggressive fluid resuscitation NSS
- Establish IV access with two large-bore angiocaths and draw blood samples
- Baseline blood values will be important
- Administer IV fluid boluses (20 cc/kg), rapid infusion
- Reassess after infusing 500-ml increments:
- Waveform capnography
- Monitor cardiac rhythm
- Scene times should be less than 15 minutes, with emergent transport to definitive care
- Consider emergent return with these patients.

M Contact Medical Control / transport to receiving facility **M**

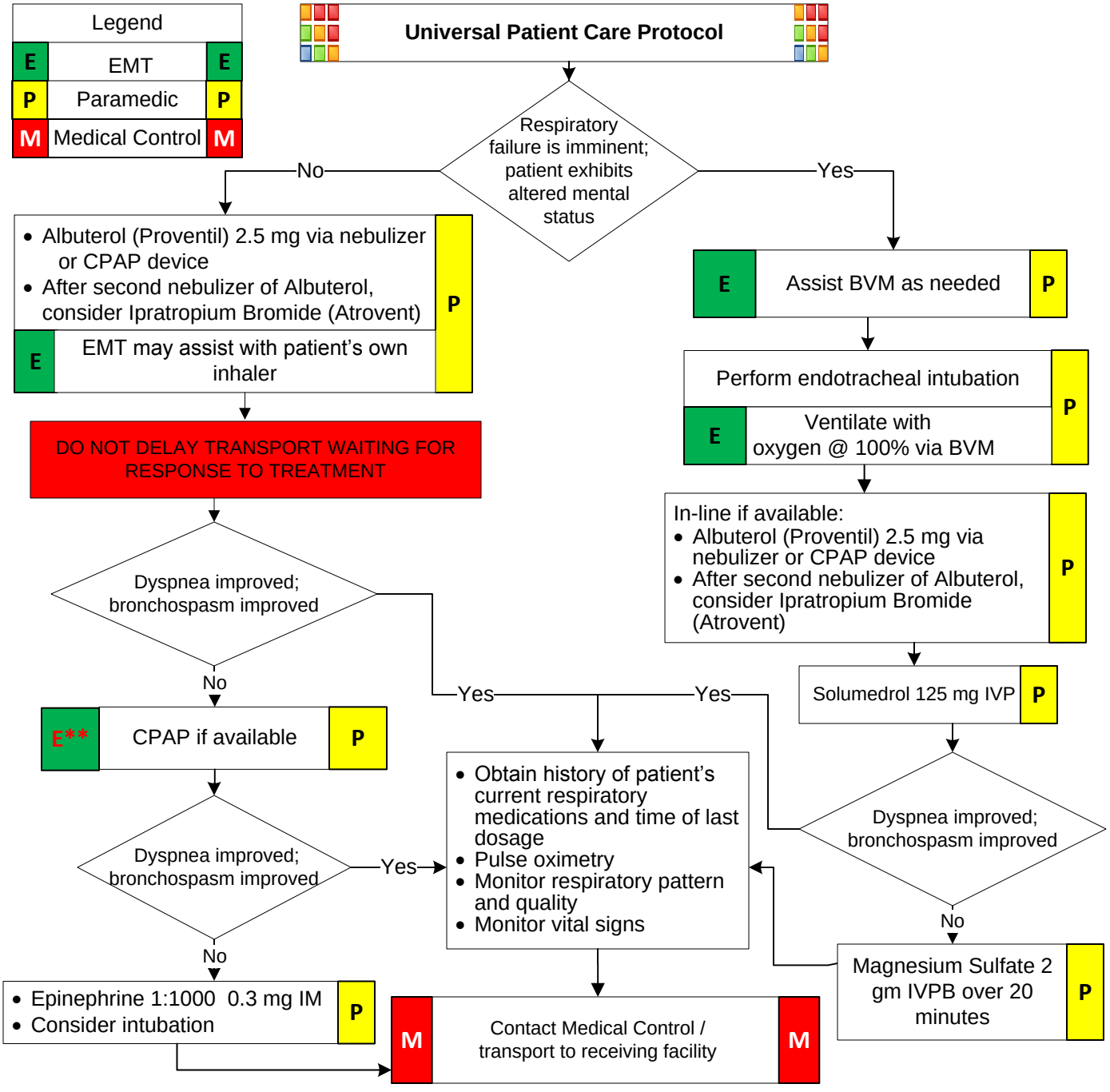
Airway Obstruction



Pearls

- Perform surgical cricothyrotomy or utilize commercial cricothyrotomy kit

Acute Asthma and COPD



Pearls

- For deteriorating or non-responding asthma patients (if no renal disease and CHF is not suspected) give Magnesium Sulfate 2 gm IV in 100 ml NS, over 10-15 minutes
- If unimproved or patient exhibits acute hypoxia, give Epinephrine: 1:1000 0.3 - 0.5 mg IM
- Beware if the patient exhibits "silent" lung sounds, as this indicates impending respiratory failure

E** If an an EMT has been trained and previously approved by a local medical director, he or she may perform the following: use an automatic or semi-automatic defibrillator; use a glucometer; perform the administration of aspirin; use any medicated auto injector; perform airway patency techniques including airway adjuncts, not to include endotracheal intubation; and on routine inter-facility transports, the monitoring and maintenance of non-medicated IVs

Carbon Monoxide Poisoning

Signs and Symptoms

- Headache
- Weakness
- Dizziness
- Flushing
- Nausea
- Parasthesia
- Vomiting
- Anesthesia
- Ringing in the ears; tinnitus

DO NOT DELAY TRANSPORT WAITING FOR RESPONSE TO TREATMENT

Universal Patient Care Protocol

Monitor CO if available
Pulse oximetry (may be a false reading) — P

Cardiac arrest?
- Yes → Refer to appropriate Protocol and transport to closest facility
- No ↓

Altered mental status?
- Yes →
  - For local protocol assistance and to locate open appropriate chamber call the Divers Alert Network (DAN) Emergency Hotline 1•919•684•9111
  - Work with hospital or local medical control to contact hyperbaric chamber
- No ↓

Wheezing?
- Yes →
  - Albuterol (Proventil) 2.5 mg via nebulizer or CPAP device
  - After second nebulizer of Albuterol, consider Ipratropium Bromide (Atrovent — P
- No ↓

E
- Obtain history of patient's current respiratory medications and time of last dosage.
- Monitor respiratory pattern and quality
- Keep patient calm, minimize oxygen demand
- Monitor vital signs
- Draw blood tubes if available, COVER with COLD PACKS
- Advance to CPAP if indicated and available

P

→ **M** Contact Medical Control / transport to receiving facility **M**

Legend	
E	EMT
P	Paramedic
M	Medical Control

Pearls

- Initiate high-flow 100% Oxygen to reduce half-life of CO
- CO monitoring should be used if available
- CO poisoning can cause cardiac ischemia, obtain 12 lead EKG if possible
- Cyanide poisoning can occur in smoke inhalation cases, in addition to CO poisoning; Cyanokit should be considered in these cases, if available. See **HAZMAT PROTOCOL**.
- All headaches should be assessed for a differential cause including carbon monoxide poisoning

Drug Overdose / Poisoning

Return to TOC

Physician's Order:
Call Poison Control: 1 800-222-1222 for additional POISON CONTROL INFORMATION and begin subsequent treatment

Legend	
E	EMT
P	Paramedic
M	Medical Control

Universal Patient Care Protocol

- Provide oxygen or assist ventilations as appropriate for patient condition.
- Draw blood tubes if available
- Obtain and record blood sugar level - If altered sensorium, refer to **ALTERED MENTAL STATUS PROTOCOL**

Narcotic/opiate overdose, refer to **ALTERED MENTAL STATUS PROTOCOL**

Corrosive ingestion?
- Yes → Administer an antiemetic medication as appropriate, SEE **ANTIEMETIC PROTOCOL**
- No →

Tricyclic / Tetracyclic antidepressant?
- Yes → P
  - If wide complex (QRS>0.10 sec) hypotension and /or any other arrhythmias
  - Administer Soduim Bicarbonate, 1mEq/kg IVP. Repeat in 5 to 10 min
- No →

Torsades de Pointes?
- Yes → P: Administer Magnesium Sulfate 2gm, IV slow bolus over 5 minutes (if no renal disease) Min in NS to make 20cc injection, 4cc/min
- No →

Antipsychotics / acute dystonic reaction
- Yes → P
  - Administer Diphenhydramine (Benadryl) 25 gm, IV slow bolus
  - If there is an inadequate response, repeat in 10 minutes
- No →

Calcium channel blockers?
- Yes → P
  - Cardiovascular toxicity, as manifested by one or more of the following:
  - Hemodynamically significant bradycardia
  - Heartblock, including 3rd degree heartblock and high grade 2nd degree heartblock
  - If no response, Calcium Chloride 1 gm IV slow push
  - If no response, repeat x1
  - If no response, Glucagon 2 to 3 mg IV ; may repeat Glucagon 2mg IV one time
  - If no response, repeat x;1 if no response, begin transcutaneous pacing (TCP)
  - If hypotensive, give 200- 300 cc NS bolus, repeat as needed
  - May repeat Calcium Chloride 1gm IV slow push if no response. Avoid if patient is on Digoxin/Lanoxin
- No →

Beta blockers?
- Yes → P
  - Cardiovascular toxicity, as manifested by one or more of the following:
  - Hemodynamically significant bradycardia
  - Heartblock, including 3rd degree and high grade 2nd degree HB
  - Administer Atropine 0.5 mg IV, may repeat x2 if no response
  - If no response, Glucagon 2 to 3 mg IV, may repeat x1
  - If no response begin transcutaneous pacing (TCP)
  - If hypotensive give 200-300 cc NS bolus, repeat as needed
  - Administer Glucagon 2 mg IV, may repeat x1
- No →

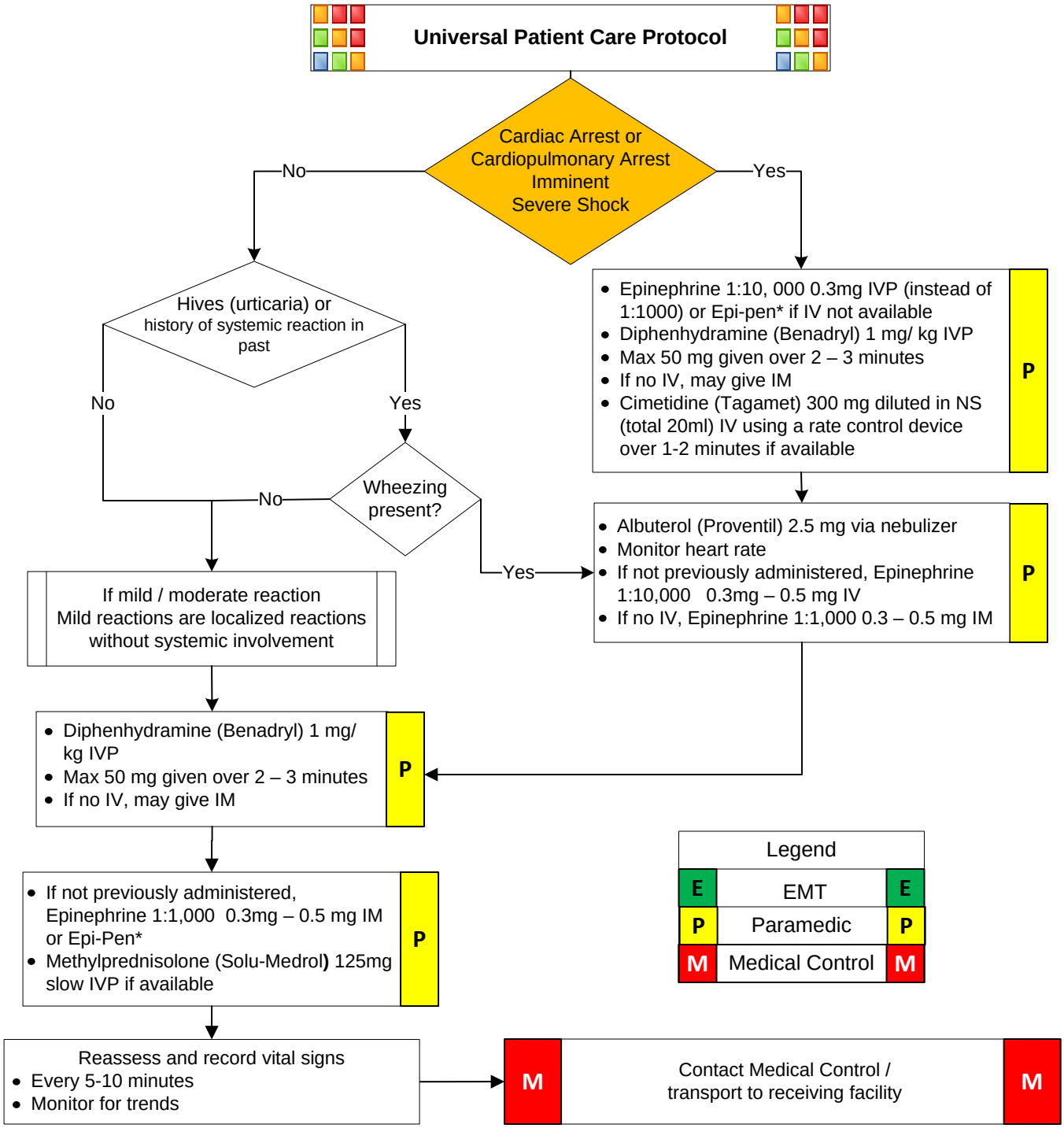
Narcotic overdose?
- Yes → P: Narcan (Naloxone) 2mg IVP every 3 min as needed, maximum dose 8 mg
- No →

Reassess and record vital signs
- Every 5 – 10 minutes
- Monitor for trends

M — Contact Medical Control / transport to receiving facility — M

Pearls
- Must have at least an 18–gauge IV access. Avoid multiple attempts and/or IO's

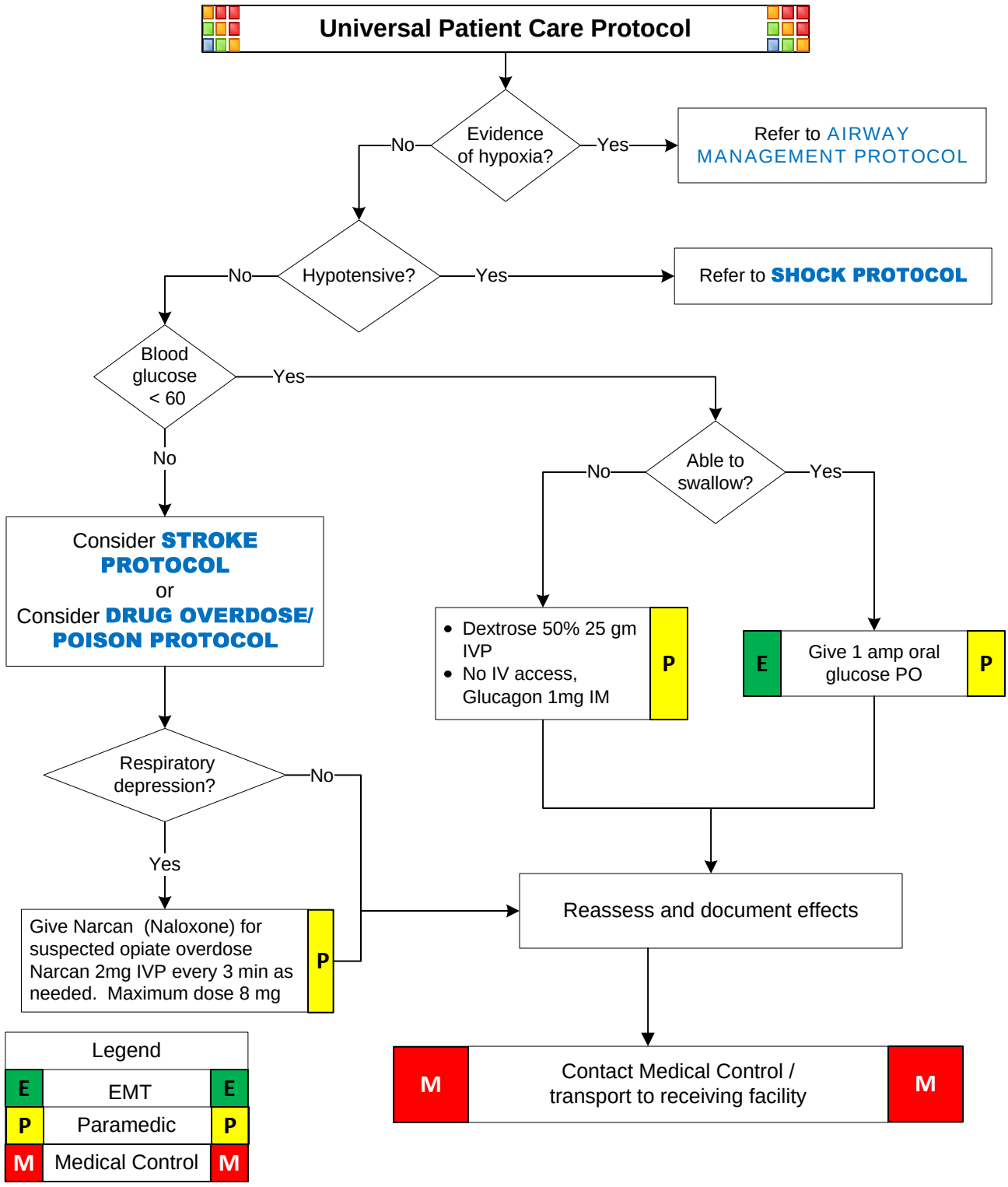
Allergic Reaction or Anaphylactic Shock



Pearls

- Initiate high-flow 100% Oxygen
- Fluid boluses in increments of 200 – 300 ml Normal Saline, to titrate systolic BP >90 mm Hg
- May repeat Epinephrine 1:1,000 0.3 – 0.5 mg IM
- The EpiPen® or EpiPen Jr.® or similar Epi auto injector device may be used by EMT or Paramedic if other means of epinephrine administration are not available E P

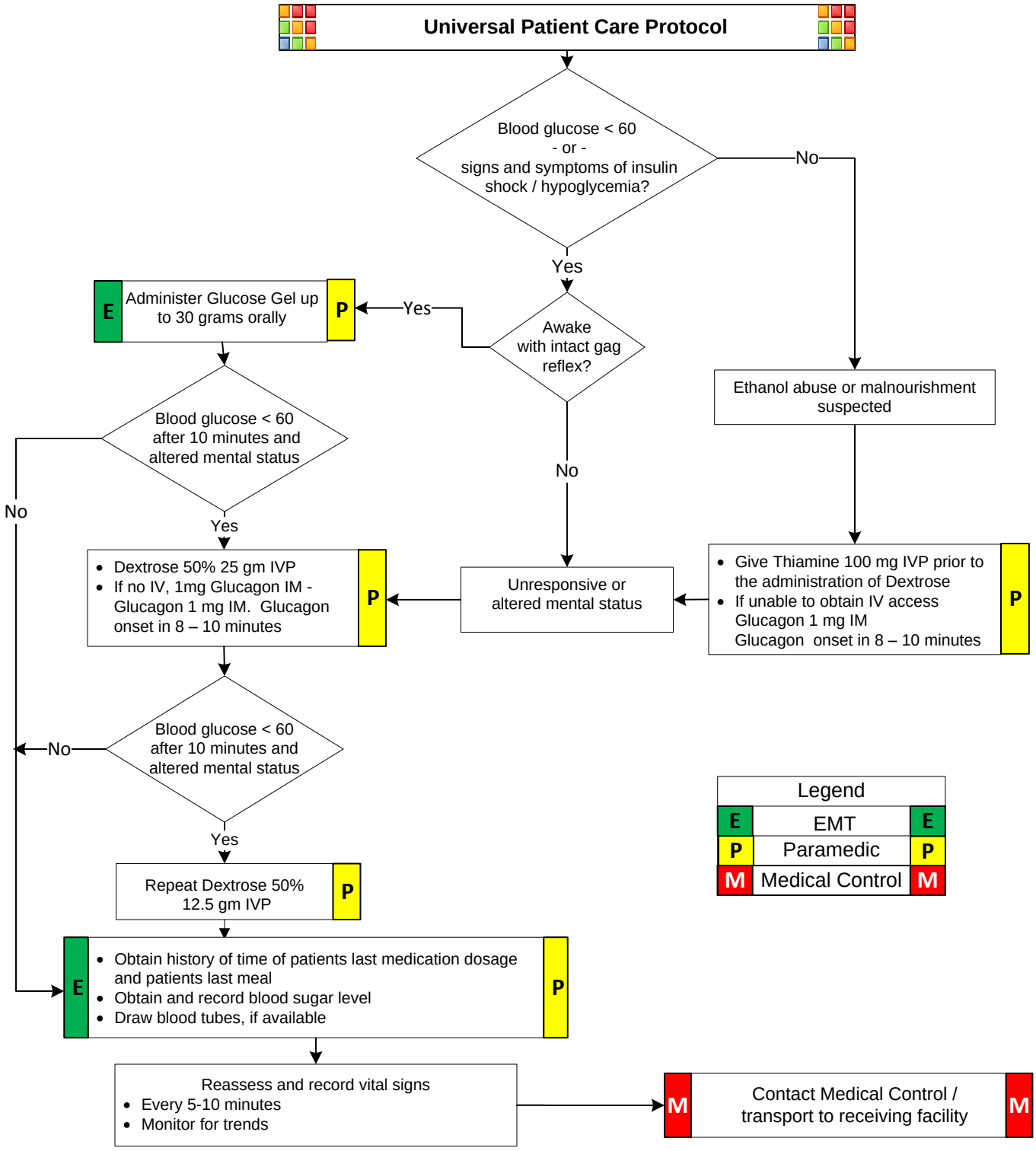
Altered Mental Status



Pearls

- Ventilation and oxygenation always precede drug therapy
- Only administer enough Naloxone (Narcan) to improve respiratory effort if diminished
- Consider soft restraints for the patient suspected of a narcotic overdose

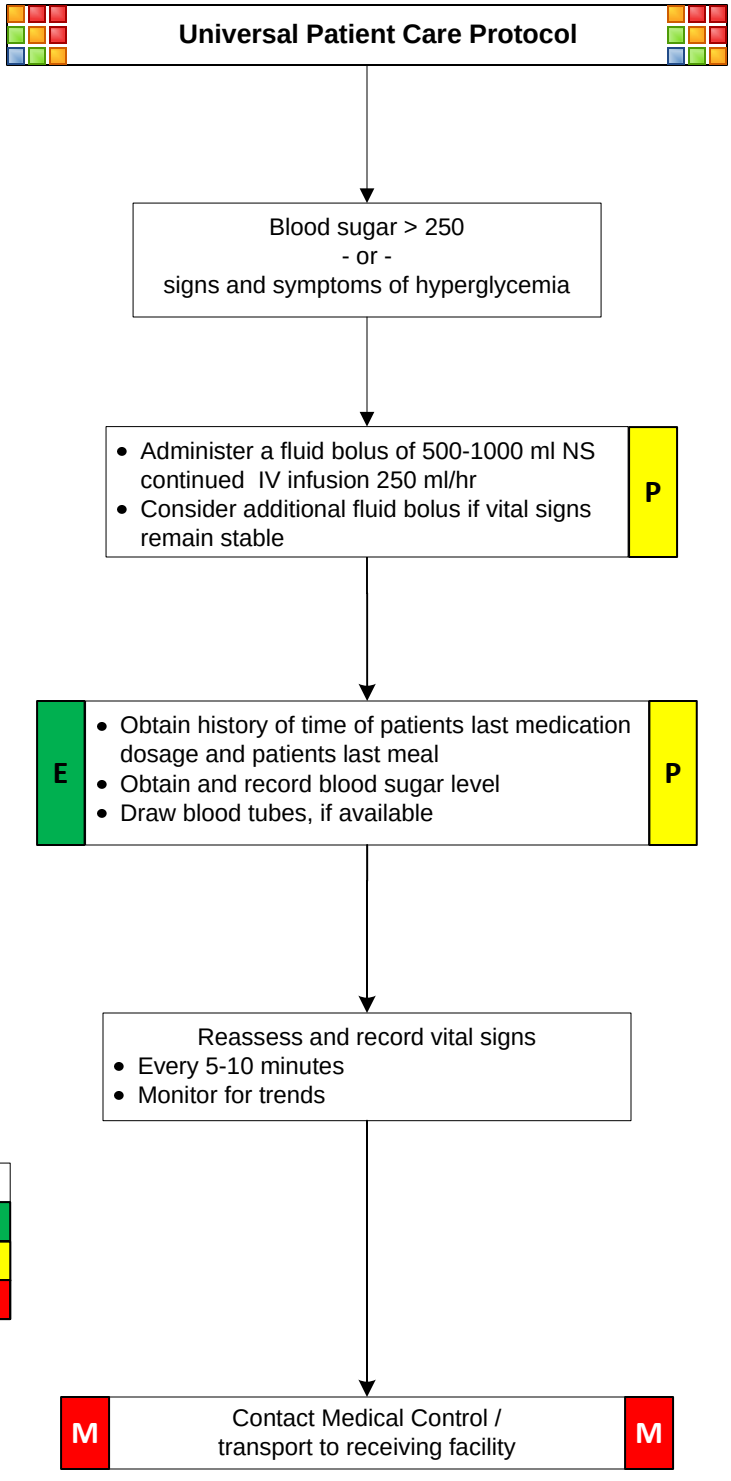
Hypoglycemia Protocol



Pearls

- If the patient is a trauma patient or a stroke is suspected, consider administration of ½ dose of D50 following blood sugar monitoring
- Patient refusals – if patient has been treated for hypoglycemia or seizures, transport is not required if:
  - The patient is stable
  - The patient is adult or pediatric and has a competent adult that will remain with the patient for hours.
  - The patient understands and agrees to eat, re-check blood sugar and call back if necessary

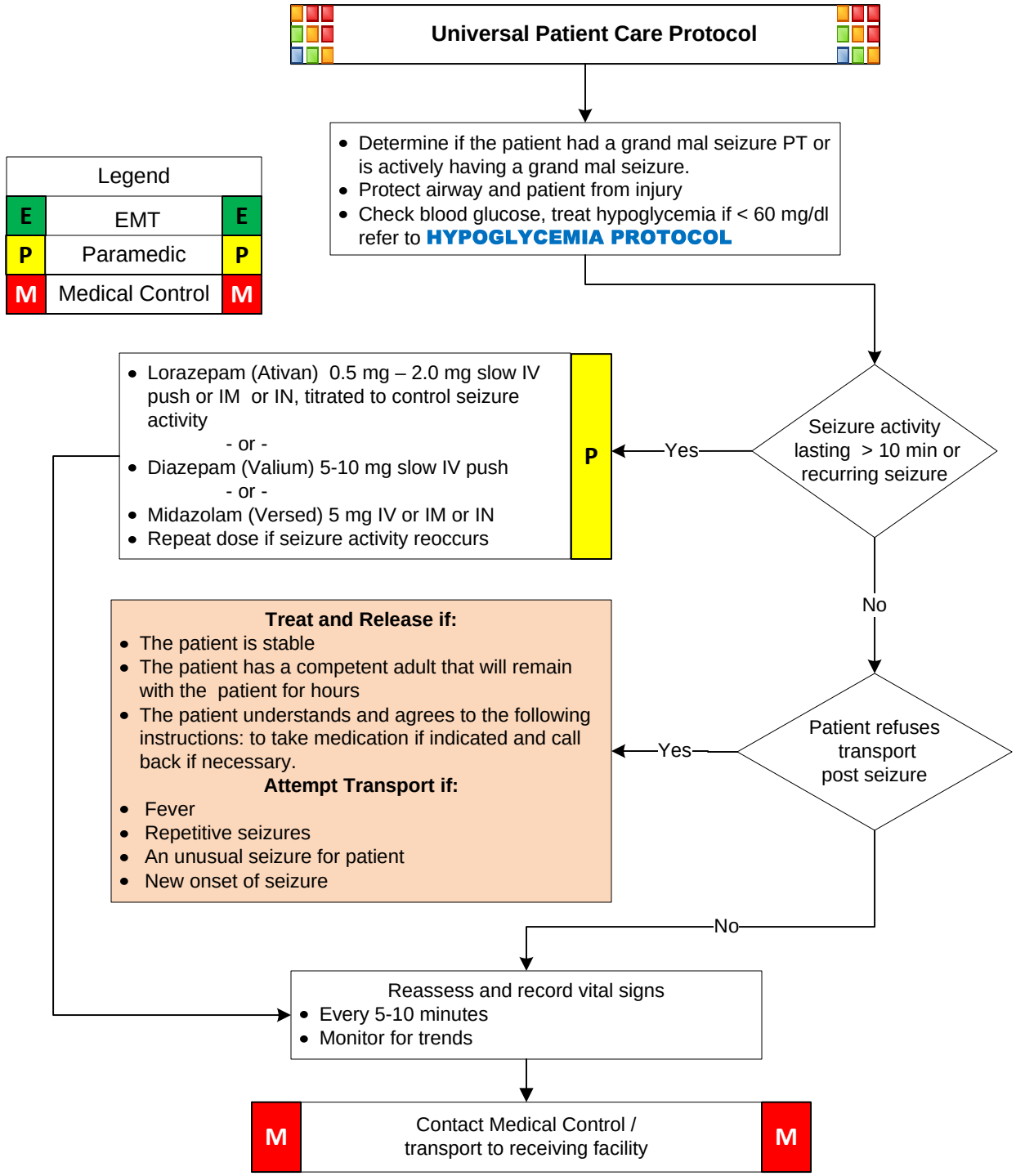
Hyperglycemia Protocol



Pearls

- Ketoacidosis: blood sugar level > 250 with signs and symptoms of hyperglycemia / ketoacidosis

Seizure



Pearls

- Observe patient's sensorium and airway during post-ictal periods.
- Note any injury sustained during seizure and / or any incontinence.
- If the patient is female and in eclampsia, administer Magnesium Sulfate 4 g IV (mixed in 50 mL of D5W given over 5–10 minutes). Consider in females in their second or third trimester of pregnancy (> 20 weeks gestation)
- Any questions, refer to REFUSAL OF CARE PROTOCOL, contact medical control
- Consider Magnesium Sulfate 2 gm IVPB over 20 minutes in suspected alcohol withdrawal related seizure

Suspected Stroke / Transient Ischemic Attack

Return to TOC

Universal Patient Care Protocol

E
- Provide oxygen only if SaO2 < 95%
- Perform Cincinnati Pre-hospital Stroke exam
  - Facial smile/grimace – ask patient to smile
  - Arm drift – close eyes and hold out arms for count of 5
  - Speech -"you can't teach an old dog new tricks"

P

Determine – LAST TIME SEEN NORMAL

If altered sensorium, refer to **ALTERED MENTAL STATUS PROTOCOL**

If seizure activity present, refer to **SEIZURE PROTOCOL**

Perform stroke neurologic deficit exam using the stroke alert checklist found in **APPENDIX** or something substantially similar

The exam includes:
- Demographic data
- Basic data
- VS examination
- History: LAST SEEN NORMAL
- TPA exclusions
- SAMPLE history
- Management
- Stroke-specific ED report detail
- Physical for mental status, cranial nerves, limbs

Legend	
E	EMT
P	Paramedic
M	Medical Control

E
Begin immediate transport and initiate a "STROKE ALERT" if:
- Patient has signs & symptoms consistent with stroke or T.I.A.
- LAST SEEN NORMAL is < 4.5 hours

P

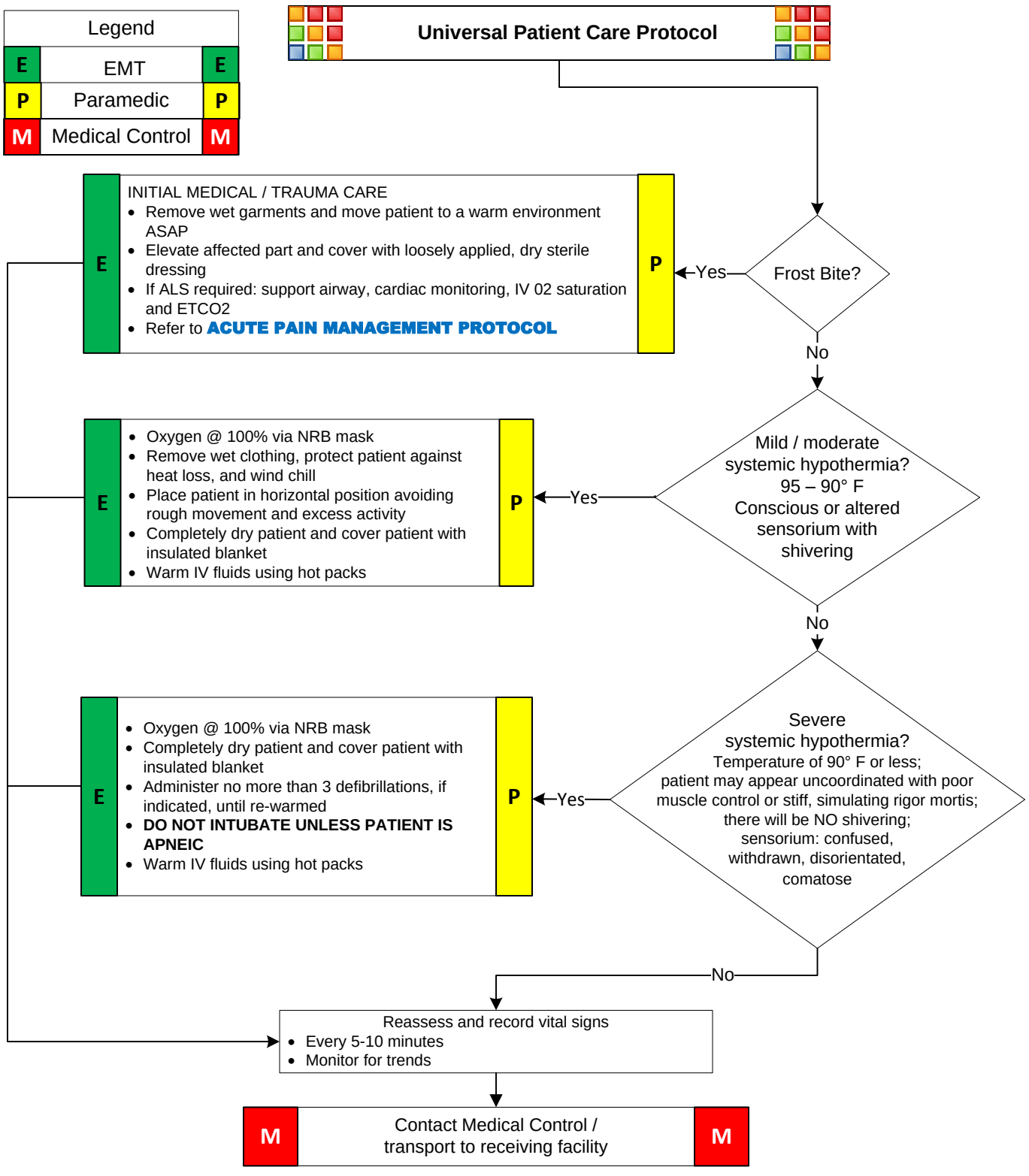
Management:
- Do not treat hypertension
- Do not allow aspiration – elevate head of stretcher 15 -30 degrees if systolic BP >100 mm Hg; maintain head and neck in neutral alignment, without flexing the neck.
- Protect paralyzed limbs from injury
- IV Normal Saline (avoid multiple IV attempts)
- Do not use IO unless the patient needs immediate treatment
- Obtain 12-lead EKG
- Complete Stroke Checklist leave copy with hospital – forward one to EMS agency

Reassess and record vital signs
- Every 5-10 minutes
- Monitor for trends

M Contact Medical Control / transport to receiving facility **M**

Pearls
- Must have at least an 18-gauge IV access. Avoid multiple attempts and/or IO's
- If greater than 5 hours, a "STROKE ALERT" is not indicated
- Patients presenting with the following neurological findings should be transported directly to the nearest stroke center: Severe hemiparesis or hemiplegia; dysconjugate gaze, forced or crossed gaze (if patient is unable to voluntarily respond to exam, makes no discernible effort to respond, or LOC is such as there is no response) AND Last Seen Normal (<) less than 4.5 hours or signs of a hemorrhagic stroke (severe headache, neck pain/stiffness, sensitivity to light)
- Use normal radio protocol and transport to the nearest stroke-receiving facility
- NOTE: Last Seen Normal – must be specific. If the patient was last seen normal prior to bedtime the night before, this is the time to be documented. (Not time the patient woke up with symptoms present)
- Refer to www.strokeassociation.org for training details

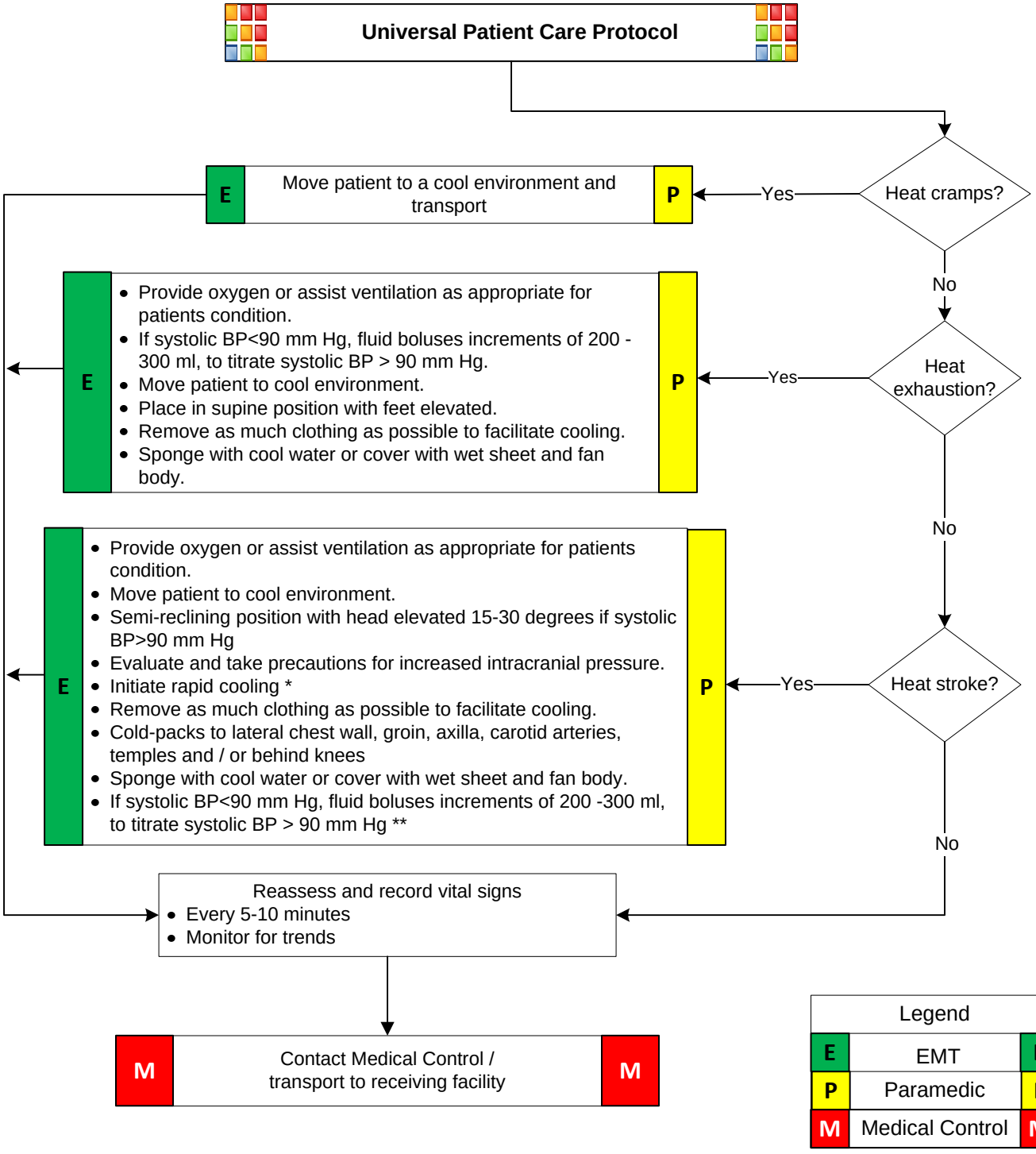
Environmental Cold Emergencies



Pearls

- Must have at least an 18-gauge IV access. Avoid multiple IV and/or IO attempts

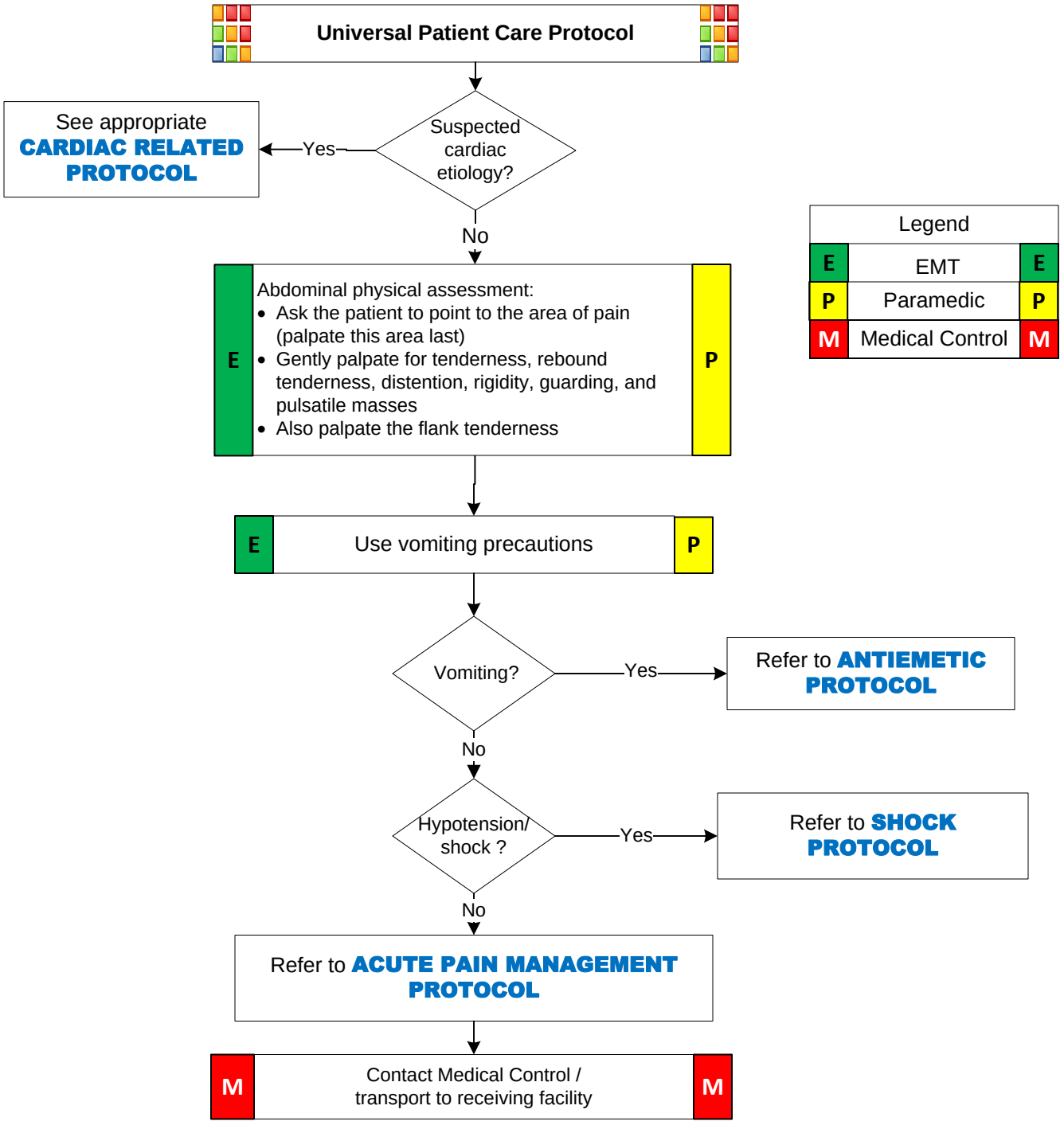
Environmental Heat Emergencies



Pearls

- * Recommended goal is to actively and rapidly cool the victim to just below 39° C (102.2° F) core temp. Once the victim gets down to 38.9° C, then discontinue active cooling in order to avoid inducing hypothermia. Continue to monitor temperature to avoid hyper- or hypothermia.
- ** Cold normal saline IV may be given in heat stroke to facilitate cooling

Abdominal Pain



Pearls

- Women of childbearing age and capability should be considered ectopic pregnancy until proven otherwise
- Abdominal history:
  - History of pain (OPQRST)
  - History of nausea/vomiting (color, bloody, coffee grounds)
  - History of bowel movement (last BM, diarrhea, bloody, tarry)
  - History of urine output (painful, dark, bloody)
  - History of abdominal surgery
  - History of acute onset of back pain
  - SAMPLE history (attention to last meal)

Sickle Cell Crisis

POSSIBLE SIGNS AND SYMPTOMS:
- Severe dyspnea
- Severe pain secondary to hypoxia or vaso-occlusive disease process
- Pain may include any large muscle mass

Universal Patient Care Protocol

Legend
- E – EMT
- P – Paramedic
- M – Medical Control

Refer to **CHEST PAIN PROTOCOL** for any symptoms, chief complaint, or 12-lead diagnostic ECG evaluation that suggests angina / myocardial infarction

Wheezing present?
- Yes → P:
  - Albuterol (Proventil) 2.5 mg via nebulizer
  - Monitor heart rate
- No

Altered mental status?
- Yes → E: Consider blind insertion /supraglottic airway device*; P: Consider Intubation
- No

E:
- Keep patient as quiet as possible to minimize oxygen needs

P:
- Administer a fluid bolus of 500-1000ml
- Continue IV infusion @ 250 ml/hr.
- Draw blood tubes, if available

Abdominal pain?
- Yes → Refer to **ABDOMINAL PAIN PROTOCOL**
- No → Refer to **ACUTE PAIN MANAGEMENT PROTOCOL**

M: Contact Medical Control / transport to receiving facility

Pearls
- Try to make patient as comfortable as possible
- * Blind insertion/Supraglottic airway devices : LMA, King airway, Combitube or similar device

Severe Hypertension

Systolic BP > 230 mm Hg and / or diastolic BP > 120 mm Hg

Legend	
E	EMT
P	Paramedic
M	Medical Control

Universal Patient Care Protocol

E
- Immediate transport
- Monitor and document BP every 5 minutes

P

Vomiting or severe nausea?

No

Yes

Zofran 4 mg IVP slowly IV or IM in large muscle group or PO
- or -
Reglan 5-10 mg IV or IM

P

Neurological deficits?

No

Yes

Refer to **STROKE PROTOCOL**

Hypertension persists?

No

Yes

- Nitro 0.4mg SL x 3 five minutes apart, monitor BP prior to each administration or Nitro spray.
- Labetalol 10 mg slow IVP if pulse > 60 and lung sounds are clear; may repeat once

P

Chest Pain?

No

Yes

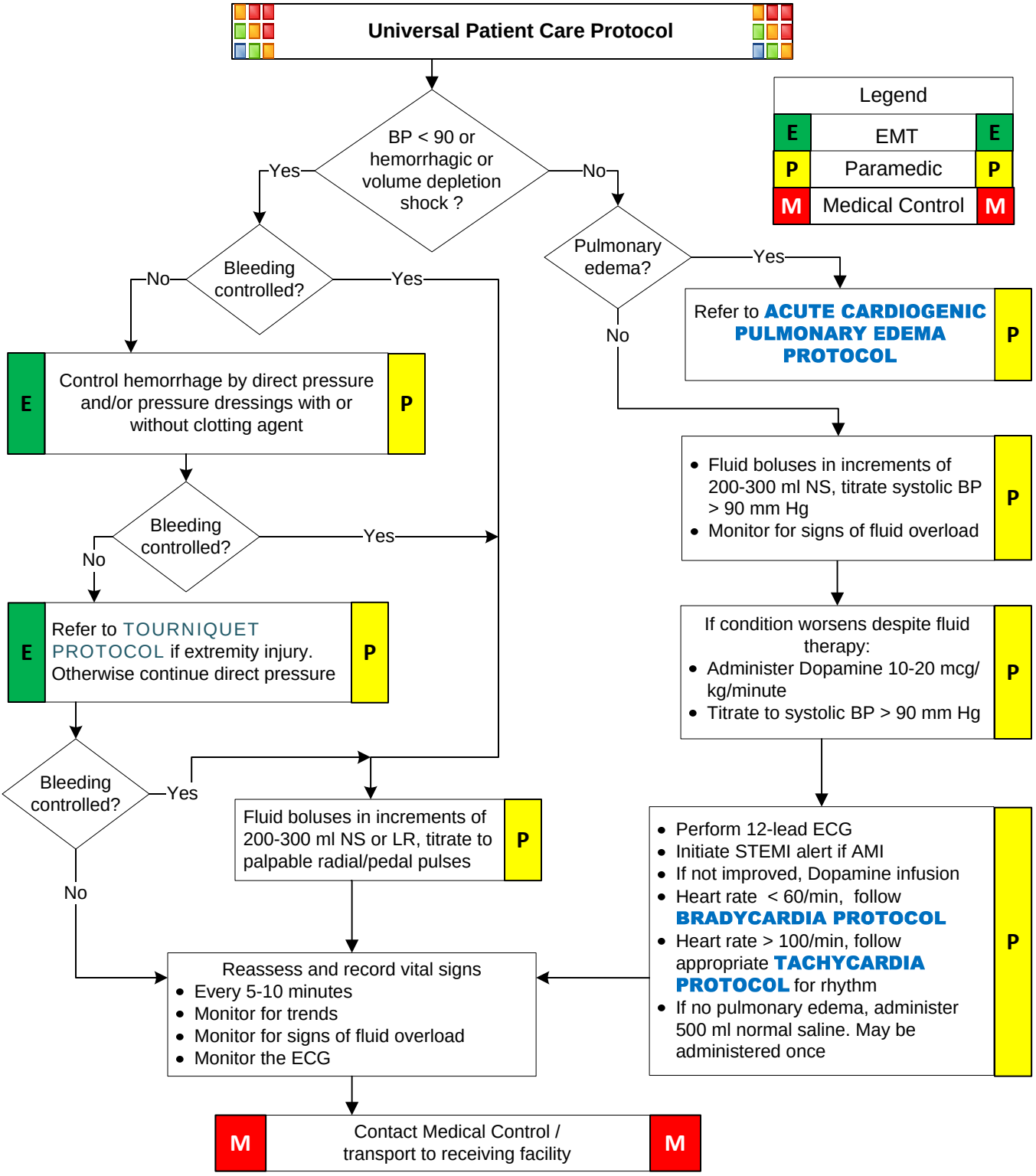
Refer to **CHEST PAIN PROTOCOL**

Reassess and record vital signs
- Every 5-10 minutes
- Monitor for trends

M Contact Medical Control / transport to receiving facility **M**

Pearls
- Semi-urgent
- Hypertension with no associated symptoms. (Systolic above 150, diastolic 100 or above)
- Mild hypertension (Systolic between 140 – 150 and/or diastolic between 90 – 100)

Shock/Bleeding Control



Pearls

- Hypotension with signs of decreased tissue perfusion SECONDARY TO FLUID LOSS
- Cardiogenic shock: avoid giving fluids if an anterior wall MI is suspected (evidenced by ST elevations in leads I, AVL, V1 through V6)
- Dopamine 1600 mcg/ml infusion concentration = 15–60 gtts/min with a 60-gtt set. The maximum dose is 20 mcg/kg/minute

Chest Pain/Suspected AMI
Acute Coronary Syndrome

Legend	
E	EMT
P	Paramedic
M	Medical Control

Universal Patient Care Protocol

12-Lead EKG Acute MI?

No

AMI is probable:
- A minimum of 1-mm ST elevation in two or more related leads on the 12-lead
- ECG with a history suggestive of AMI
- A left bundle branch block (LBBB) on the ECG with signs/symptoms and history suggestive of AMI V4R EKG if inferior MI
- Use caution with Nitro if inferior MI

Yes

E Initiate STEMI Alert if AMI P

- Establish 2 large bore IV lines
- Fluid boluses 200-300 ml NS, to systolic BP>90 mm Hg

P

Suspected Cardiogenic Shock?

Yes

If condition worsens despite fluid therapy:
- Administer Dopamine
- See **SHOCK PROTOCOL**

P

No

Bradycardia or Tachycardia?

Yes

See appropriate **BRADY/ TACHYCARDIA PROTOCOL**

No

E

EMT
- Assist self-administration of aspirin 324 mg.
- Assist the patient in self-administration of previously prescribed Nitroglycerin; total three doses (tablets or spray), including doses taken prior to your arrival

PARAMEDIC may administer aspirin 324 mg including doses taken prior to your arrival
- Nitroglycerin (tab / spray) 0.4 mg SL every 3–5 minutes maximum dose 1.2 mg
- If pain reduced or relieved with Nitroglycerin SL, apply 1 inch of nitro paste or Nitroglycerin drip (25 mg in 500cc) if available

P

If pain persists, Morphine Sulfate via slow IV in 2-mg increments every 3–5 minutes, titrated to pain and BP > 90 mm Hg, maximum of 10 mg

P

E
- Monitor the ECG; perform 12-lead EKG
- Monitor for signs of fluid overload.
- Perform a SAMPLE history
- Perform an OPQRST evaluation

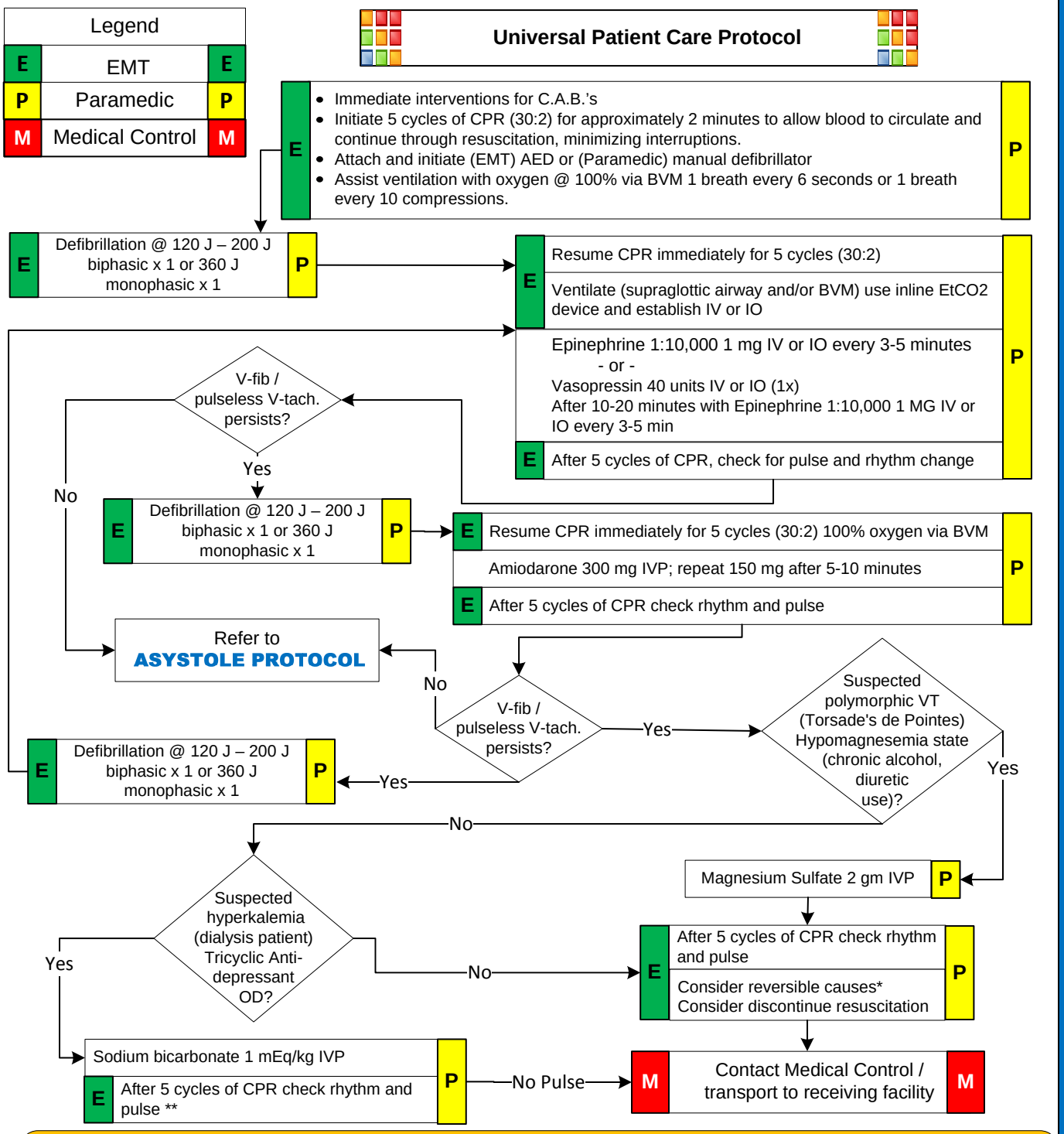
P

Reassess and record vital signs
- Every 5-10 minutes
- Monitor for trends

M Contact Medical Control / transport to receiving facility M

Pearls
- Do not administer Nitroglycerin if:
  - SBP < 90 mm Hg
  - The patient has taken erectile dysfunction medications within the last 24 hours (Viagra) or within the last 48 hours (Levitra or Cialis).
- Cardiogenic Shock: Avoid giving fluids if an anterior wall MI is suspected (evidenced by ST elevations in leads I, AVL, V1 through V6)
- Dopamine 1600 mcg/mL infusion concentration = 15–60 gtts/min with a 60-gtt set. The maximum dose is 20 mcg/kg/minute

Ventricular Fibrillation / Pulseless Ventricular Tachycardia



* Reversible causes: hypoxia, hypovolemia, hydrogen ion acidosis, hypo/hyperkalemia, hypothermia tension pneumothorax, tamponade (cardiac), toxins, thrombosis coronary, thrombosis pulmonary

** If at any time a pulse returns (ROSC) go to POST CARDIAC ARREST CARE PROTOCOL

Pearls

- Patients with an Automatic Implanted Cardioverter Defibrillator (AICD): deliver all defibrillations at 360 joules monophasic or 200 joules biphasic. Use Anterior/Posterior position if possible for defibrillator pads – do not place pads over device
- Confirm airway adjunct placement with electronic EtCO2 and waveform on scene, during transport, and during transfer at the hospital.
- Calcium-channel blocker or known renal failure, give Calcium Chloride 10% 1 g IV or IO in addition to Sodium Bicarbonate for renal failure

Asystole /Pulseless Electrical Activity

Universal Patient Care Protocol

E
- Immediate interventions for C.A.B.'s
- Initiate 5 cycles of CPR (30:2) for approximately 2 minutes to allow blood to circulate and continue through resuscitation, minimizing interruptions.
- Attach and initiate (EMT) AED or (Paramedic) manual defibrillator
- Assist ventilation with oxygen @ 100% via BVM 1 breath every 6 seconds or 1 breath every 10 compressions.

P

Shock indicated?

Yes
V-fib /pulseless V-tach. at any point in cycle

Refer to **VENTRICULAR FIBRILLATION PROTOCOL**

No

E Resume CPR immediately for 5 cycles (30:2)

E Ventilate (supraglottic airway and/or BVM) use inline EtCO2 device and establish IV or IO

P
Epinephrine 1:10,000 1 mg IV or IO every 3-5 minutes
- or -
Vasopressin 40 units IV or IO (1x)
After 10-20 minutes with Epinephrine 1:10,000 1 MG IV or IO every 3-5 min

E After 5 cycles of CPR, check for pulse and rhythm change

Pulse present?

Yes

Go to appropriate **CARDIAC PROTOCOL**

No

E Resume CPR immediately for 5 cycles (30:2) 100% oxygen via BVM

Consider ETT or supraglottic airway device if not yet done

E After 5 cycles of CPR check rhythm and pulse

P

Pulse present?

Yes

No

E Consider reversible causes*
Consider discontinue resuscitation

After 5 cycles of CPR check rhythm and pulse

P

Suspected hyperkalemia (dialysis patient) Tricyclic Antidepressant OD

No

Yes

Sodium Bicarbonate 1 mEq/kg IVP **P**

Pulse present?

No

Yes

M Contact Medical Control / transport to receiving facility **M**

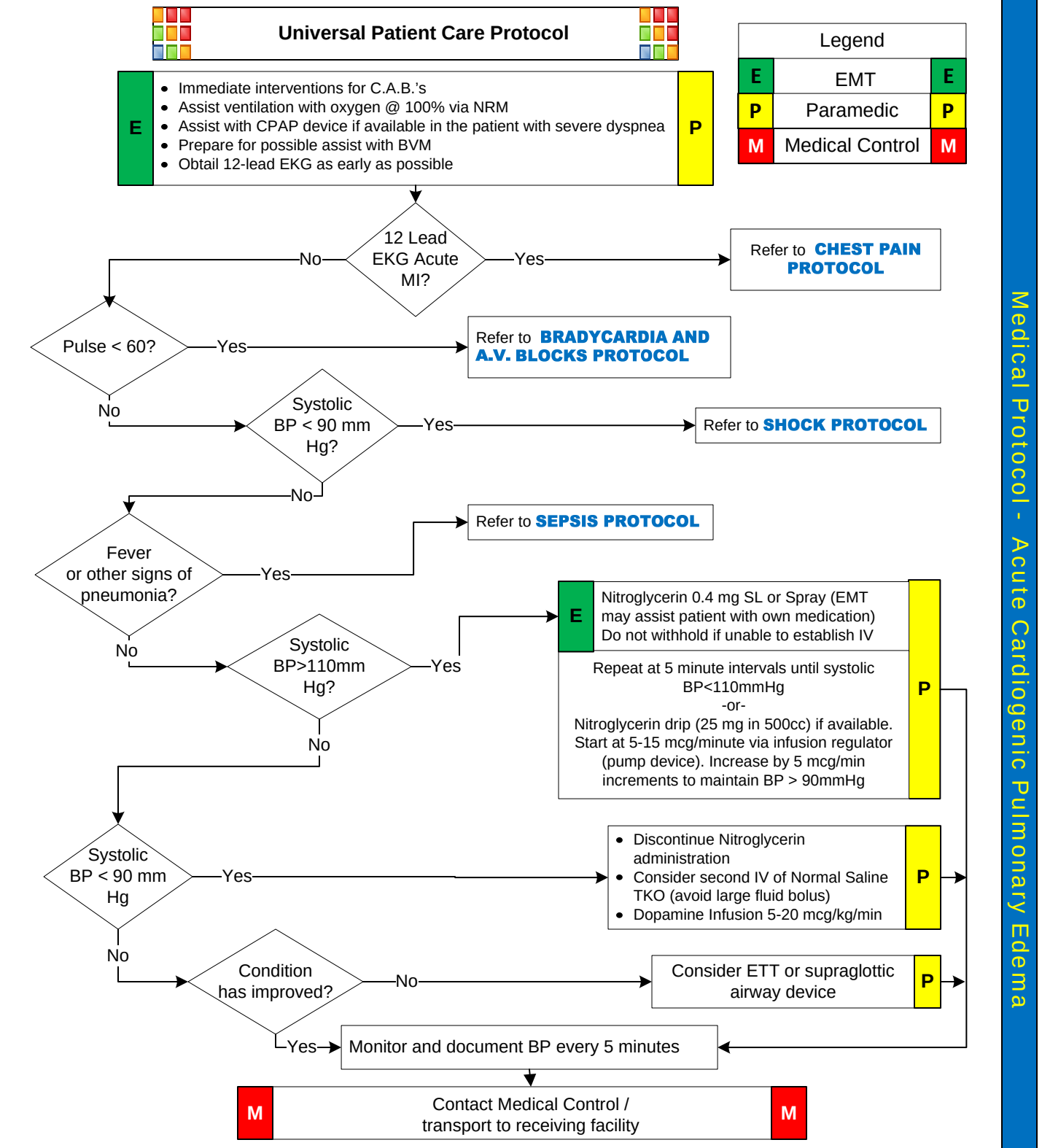
Legend	
E	EMT
P	Paramedic
M	Medical Control

* Reversible causes: hypoxia, hypovolemia, hydrogen ion acidosis, hypo/hyperkalemia, hypothermia tension pneumothorax, tamponade (cardiac), toxins, thrombosis coronary, thrombosis pulmonary

If at any time a pulse returns (ROSC) go to **POST CARDIAC ARREST CARE PROTOCOL**

Pearls
- Confirm airway adjunct placement with electronic EtCO2 and waveform on scene, during transport, and during transfer at the hospital.
- If the patient is taking a calcium-channel blocker or has known renal failure, give Calcium Chloride 10% 1 g IV or IO in addition to Sodium Bicarbonate for renal failure

Acute Cardiogenic Pulmonary Edema



Pearls

- Establish a team member as the "Nitro-time keeper" and BP monitor
- Nitro is contraindicated if patient states use of Viagra (or any Erectile Dysfunction class of drugs) in the past 24-36 hours; document as a pertinent negative
- Care goal: B/P reduction to approximately 160/90 without an increase in pulse; the BP goal is for patients with no neurological involvement only

Bradycardia and AV Blocks

CONSIDER MEDICAL ETIOLOGY AND REFER TO APPROPRIATE PROTOCOL

Universal Patient Care Protocol

Drug-induced?

Yes → Refer to **DRUG OVERDOSE/ POISONING PROTOCOL**

No → Unstable*?

Yes → Unstable*?

- Administer Atropine sulfate 0.5 – 1.0 mg rapid IVP
- Apply TCP on stand-by mode

P

Transient increase in heart rate and improved?

No → Initiate transcutaneous pacer (TCP)

Yes → Repeat Atropine Sufate as needed every 3 minutes to a total dose of 3.0 mg **P**

Improved?

No → Initiate transcutaneous pacer (TCP)

Yes → Obtain 12 Lead EKG **P**

12 Lead EKG Acute MI?

Yes → Refer to **CHEST PAIN PROTOCOL**

No → Reassess and record vital signs

*UNSTABLE:

- Significant cardiac symptoms
- Significant dyspnea
- Altered mental status
- Hypotension with signs of decreased tissue perfusion

No → Apply transcutaneous pacer (TCP) on stand-by mode **P**

Exhibits acute distress as evidenced by AMS and/or presents with a 2nd degree, type II or 3rd degree heart block?

Yes → Initiate transcutaneous pacer (TCP)

- Administer Diazepam (Valium) 5 mg
  -or-
  Midazolam (Versed) 2-5 mg initial dose then 2 mg every 30 seconds to 1 minute
  -or-
  Lorazepam (Ativan) 1-2 mg IVP for conscious sedation

P

No → Mechanical, capture present and symptoms resolved?

No → Increase TCP by 10 BPM until improvement noted or TCP set at 80 BPM

- Administer 0.9% Normal Saline 200-300ml fluid bolus

P

Mechanical, capture present and symptoms resolved?

Yes → Reassess and record vital signs

No → Dopamine 5 -20 mcg /kg /minute titrated to systolic BP > 90 mmHg
-or-
Epinephrine 2-10 mcg/minute drip titrated to systolic BP > 90 mmHg **P**

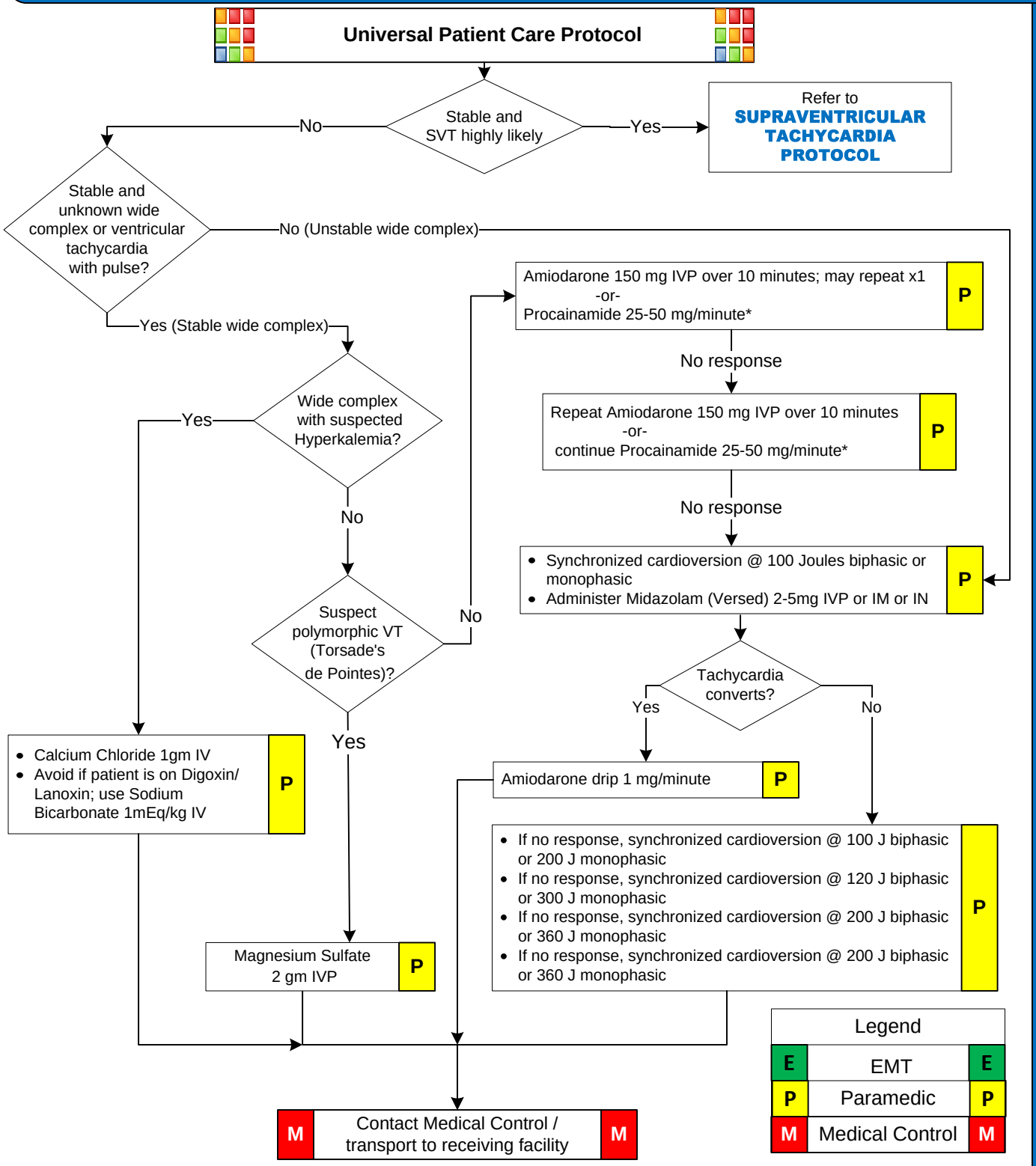
M Contact Medical Control / transport to receiving facility **M**

Legend	
E	EMT
P	Paramedic
M	Medical Control

Pearls

- Tricyclic such as Amitriptyline (Elavil), Amoxapine, Imipramine (Tofranil), Nortriptyline (Pamelor)
- Pacemaker output may cause excessive pain/distress in the conscious patient

Wide Complex Tachycardia (HR>160 bpm)



Pearls

- *Discontinue Procainamide IV in patients who develop:
  - Arrhythmia is suppressed
  - Hypotension
  - Widening of the QRS Complex by 50 or more
  - Maximum dose 17 mg/kg
  - Maintenance drip is 1-4 mg/minute

Atrial Fibrillation / Atrial Flutter

CONSIDER MEDICAL ETIOLOGY AND REFER TO APPROPRIATE PROTOCOL:

Universal Patient Care Protocol

Rate > 150 narrow complex?
- No → Refer to **WIDE COMPLEX TACHYCARDIA PROTOCOL**
- Yes → Regular R to R?
  - Yes → Refer to **SUPRAVENTRICULAR TACHYCARDIA PROTOCOL**
  - No → Unstable? *
    - No →
      - Administer Diltiazem (Cardizem) 0.25 mg/kg IV or IO (20 mg IVP average)
      - Administer Diltiazem (Cardizem) 10 mg IVP (if patient less than 45 kgs or 100lbs)
      - If no response in 30 minutes and heart rate >150, DILTIAZEM 0.35mg/kg IVP

      P

      Improved?
      - No →
        - Synchronized cardioversion @ 50 J biphasic or monophasic
        - Consider premedication with Midazolam (Versed)
        - Start at Midazolam (Versed) 2-5 mg IVP or IN then 2 mg every 30 seconds to 1 minute
          - or -
          Lorazepam (Ativan) 1-2 mg IVP or IO if patient is conscious
        - May repeat as necessary to allow for sedation

        P

        - If no response, increase synchronized cardioversion to 100 J biphasic or monophasic
        - If no response, increase synchronized cardioversion to 120 biphasic or 200 J monophasic
        - If no response, increase synchronized cardioversion to 200 biphasic or 300 J monophasic
        - Contact Medical Control if no response

        P
      - Yes →
    - Yes →

*UNSTABLE:
- Significant cardiac symptoms
- Significant dyspnea
- Altered mental status
- Hypotension with signs of decreased tissue perfusion

M Contact Medical Control / transport to receiving facility **M**

Legend	
E	EMT
P	Paramedic
M	Medical Control

Pearls
- Wide complex tachycardia (QRS > 0.12 seconds) should initially be considered as ventricular in origin, unless proven otherwise

Supraventricular Tachycardia (HR>160bpm)

CONSIDER MEDICAL ETIOLOGY AND REFER TO APPROPRIATE PROTOCOL:

Universal Patient Care Protocol

*UNSTABLE:
- Significant cardiac symptoms
- Significant dyspnea
- Altered mental status
- Hypotension with signs of decreased tissue perfusion, compromised airway, breathing or circulation

Stable SVT?*

Yes →
- Initiate large bore IV, preferably at antecubital area
- Adenosine 6mg rapid IVP, administered at a port closest to the IV site, followed immediately by rapid 10 ml flush. Wait 2 minutes for conversion

P

Conversion?

No → Adenosine 12mg rapid IVP, followed by a rapid 10 ml flush (P)

Yes

No → Conscious?

Yes →
- If IV established prior to patient becoming UNSTABLE, may administer Adenosine 12 mg rapid IVP
- If unrelieved, consider sedation with Midazolam (Versed) 2-5 mg IVP or IM or IN

– or –

- Lorazepam (Ativan) 1-2 mg IVP prior to synchronized cardioversion

(P)

Conversion?

No →
- Synchronized cardioversion @ 50 Joules
- May repeat Midazolam (Versed) or Lorazepam (Ativan) dose, if necessary

(P)

Conversion?

No →
- If no response, increase synchronized cardioversion to 100 Joules
- If no response, increase synchronized cardioversion to 200 Joules
- If no response, increase synchronized cardioversion to 300 Joules

(P)

Conversion?

Yes → Reassess and record vital signs

No → Contact Medical Control / transport to receiving facility (M)

Conversion?

Yes → Contact Medical Control / transport to receiving facility (M)

Legend	
E	EMT
P	Paramedic
M	Medical Control

Pearls
- Consider Reversible Causes (H's and T's):
  - Hypoxia, Hypovolemia, Hydrogen Ion acidosis, Hypo/Hyperkalemia, Hypothermia
  - Tension pneumothorax, Tamponade (cardiac), Toxins, Thrombosis coronary, Thrombosis pulmonary

Post Cardiac Arrest Care

History
- ROSC after cardiac arrest
- Potentially unstable patient

Goals
- Optimize perfusion
- Stabilize cardiac rhythm
- Mitigate cause of arrest
- Transport to appropriate facility
- Provide post arrest hypothermia if indicated

Universal Patient Care Protocol

E Secure or monitor airway, maintain SpO2 > 94%, monitor EtCO2 with electronic capnography/ waveform **P**

Blood pressure > 90 systolic?

No → **P** If clear lung sounds: fluid bolus IV NS 500 mL; may repeat once to blood pressure > 90 mm Hg

P If no improvement, administer Dopamine infusion at 10 mcg/ kg/min; titrate to maintain blood pressure > 90 mm Hg

Yes

Stable cardiac rhythm

No → **P** Treat rhythm per appropriate **CARDIAC PROTOCOL**

Yes

Is patient conscious?

Yes → **M** Contact Medical Control / transport to receiving facility **M**

No → **Post Cardiac Arrest Therapeutic Hypothermia Protocol**

If meets inclusion criteria
- Apply cold packs to the patient's head, axilla, and groin
- Sedate the patient with one of the following:
  Diazepam (Valium) 5 mg IV, IO, maximum dose of 10 mg
  - or -
  Midazolam (Versed) 2-mg increments IV, IO, up to a dose of 10 mg
  - or -
  Lorazepam (Ativan) 2 mg IV, IO, up to a dose of 4 mg
- If available, give Vecuronium 0.1 mg/kg IV or IO, up to a maximum dose of 10 mg, to prevent shivering
- Start a cold IV/IO saline bolus at 30 mL/kg, up to a maximum of 2 L, if available
- If systolic blood pressure becomes < 90 mm Hg, begin Dopamine drip at10 mcg/kg/min. Titrate to systolic blood pressure > 100 mm Hg
- If patient has a loss of spontaneous circulation, discontinue cooling and refer to the appropriate **CARDIAC PROTOCOL**

Pearls
- Hypothermia Inclusion Criteria :
  - ROSC after a non traumatic witnessed cardiac arrest
  - rhythm was V-Fib/pulseless V-Tach
  - Adults > 18 years old
  - No purposeful pain response following neurological assessment
  - Supraglottic/endotracheal intubation, EtCO2 > 20 mm Hg and patient remains comatose
  - Initial temperature > 98° F (34° C)
- Hypothermia Exclusion Criteria:
  - Pregnant
  - Age < 18 years old
  - Down time > 15 minutes prior to EMS arrival
  - Known history of drugs and/or alcohol addiction
  - Terminal illness

Legend	
E	EMT
P	Paramedic
M	Medical Control

Near-Drowning
(Non-Fatal Drowning)

Legend	
E	EMT
P	Paramedic
M	Medical Control

Universal Patient Care Protocol

E
- CAB CPR as needed
- Provide oxygen/ventilation as needed
- Consider CPAP for conscious patients with pulse oximetry saturation < 92%
- Supportive care including spinal precautions

P

Determine any pertinent history (e.g., duration of submersion, depth, water temperature, possible seizure, drug and/or alcohol use)

Evidence or circumstances of hypothermia?

Yes →

E
- Oxygen @ 100% via NRB mask
- Remove wet clothing, protect patient against heat loss, and wind chill. Completely dry patient and cover patient with insulated blanket
- See **ENVIRONMENTAL COLD EMERGENCIES PROTOCOL**

P

No ↓

All near-drowning patients should be transported to the hospital, regardless of how well they may seem to have recovered

Delayed death or complications due to pulmonary edema or aspiration pneumonia can occur

E
- Maintain the patient's body temperature; dry and warm the patient
- Treat for shock if needed
- Treat hypoxia
- Monitor pulse oximetry and waveform capnography

P

- Treat cardiac dysrhythmias per specific **CARDIAC PROTOCOL**

E
Reassess and record vital signs
- Every 5-10 minutes
- Monitor for trends

P

M Contact Medical Control / transport to receiving facility **M**

Pearls
- Near-drowning patients are those persons who have been submerged in fresh or salt water and may or may not be conscious
- If the patient is still in the water upon arrival of EMS, a Dive Rescue Team should be used to remove the patient from the water when possible
- Additional protocols may be needed for treatment decisions:
  - **DYSBARISM**
  - **ENVIRONMENTAL COLD EMERGENCIES**
  - **CARDIAC**
  - SUSPECTED SPINAL INJURY

Dysbarism

Concomitant Decompression Sickness
- Sudden onset of illness related to extremes of altitude, either upper atmospheric or from descending atmospheric / diving events.

General Symptoms:
- Ringing or roaring in the ears
- Loss of hearing
- Vertigo
- Dizziness
- Nausea or vomiting
- Paresis
- Paralysis
- Paresthesia
- Joint pain
- Dyspnea
- Rash
- Any symptom that occurs after diving (from minutes to days) should be presumed to be related to diving.

Pulmonary Symptoms:
- Pneumothorax
- Pulmonary edema
- Pneumomediastinum
- Exacerbation of asthma
- Subcutaneous emphysema
- Barotrauma and arterial gas embolism
- Potential rupture into the pulmonary vein causing a large air embolism

Ear Squeeze:
- Middle ear barotitis
- Failure to equalize pressures
- Severe ear pain
- Eustachian tube rupture
- Sudden loss of hearing
- Tinnitus and vertigo
- Tympanic membrane hemorrhage or rupture
- Damage to the ossicles and round window

Tooth Squeeze:
- Severe pain caused by trapped air under dental process
- May require hyperbaric chamber if dental procedure does not resolve

Mask Squeeze:
- Petechiae of the face
- Hemorrhage into the sclerae from capillary rupture
- Severe headache lasting for hours

Eye Injury:
- Pericorneal tear if wearing hard contacts
- Decreased visual acuity and seeing halos around lights

Gastrointestinal Problems:
- Excessive amounts of gastric air or intestinal air trapped by constipated stool or external issues, such as adhesions, can yield rupture
- Pneumoperitoneum and/or gastric rupture
- Strong consideration should be given to hyperbaric (HBO) therapy

E

Initial Prehospital Care:
- Extricate the person from the water
- Immobilize the person if trauma is suspected or a history of cause of injuries is unknown
- 100% oxygen

Cardiopulmonary resuscitation (CPR) may be necessary
- DO NOT put the patient into the Trendelenburg position
- Transport the patient to an emergency department with a hyperbaric facility, If feasible, and try to keep all diving gear with the diver

P

Legend	
E	EMT
P	Paramedic
M	Medical Control

- Advanced cardiac life support (ACLS) and/or intubation or supraglottic airway device may be necessary
- Intravenous (IV) fluids with isotonic saline or lactated ringer solution should be considered
- Aspirin therapy also should be considered for antiplatelet activity if the patient is not actively bleeding
- Needle decompression of the chest should be performed if tension pneumothorax is suspected

P

Pearls
- All headaches should be assessed for a differential cause including carbon monoxide poisoning.
- For local protocol assistance and to locate open appropriate chamber call the Divers Alert Network (DAN) Emergency Hotline 1-919-684-9111
- Work with hospital or Medical Control to contact hyperbaric chamber and possibly divert to hyperbaric chamber

Maternal Care

Universal Patient Care Protocol

Legend	
E	EMT
P	Paramedic
M	Medical Control

Pregnancy Induced Hypertension (PIH)

- Oxygen @100% via NRB mask or assist with BVM
- Seizure precautions
- Gentle handling
- Minimal CNS stimulation
- Position patient on left side or raise right side of backboard approximately 30 degrees

Systolic BP >160 on two readings?

Yes

- Adminsiter magnesium sulfate 5-6 gm IV added to 100cc NS using a dial-a-flow or buretrol over 10 minutes (Contraindicated if renal disease)
- If seizure occurs and the patient is hypertensive, refer to SEIZURE PROTOCOL

No

Preterm Labor

- Patient must confirm POSITIVE pregnancy test and be between 20 and 35 weeks gestation
- If patient states she is having regular contractions and is not having any SEVERE PAIN or HEAVY BLEEDING (suspected Placenta Previa or Abruptio Placenta) administer Albuterol 2.5mg via updraft every 10 minutes while monitoring heart rate

Obstetrical Transport Decision:

Patient has known gestation or possible gestation < 20 weeks gestation

- Last menstrual periods < 20 weeks or verifiable ultrasound proven dates or other proof of < 20 weeks gestation
- Transport to the closest Emergency Department (not closest obstetric facility)

Patient has known gestation or possible gestation > 20 weeks gestation.

- If imminent delivery or medically unstable mother, transport to the closest ED, not the closest obstetric facility
- If patients with non-traumatic abdominal, pelvic or back complaints (including bleeding or vaginal fluid leak), transport to the closest appropriate obstetric facility
- Contact appropriate obstetric facility ED for radio report and any additional directions/assistance

Contact Medical Control / transport to receiving facility

Pearls:

- *Call for orders on administration of Magnesium Sulfate 4 mg IV over 30 minutes to be given after seizure is controlled

If patient is a TRAUMA ALERT / TRAUMA RED

- Transport to Trauma Center (as per protocol)
- Trauma yellow and green are to be transported to the ED of closest OB receiving facility

Emergency Childbirth

Universal Patient Care Protocol

E

INITIAL MEDICAL CARE
- Oxygen @ 100% via NRB Mask or assist with BVM
- All initial general medical care
- Pulse oximetry

- Cardiac monitor
- IV 0.9% NS at KVO

P

Legend		
E	EMT	E
P	Paramedic	P
M	Medical Control	M

E

Umbilical Cord Precautions
- Feel around the infant's neck for the umbilical cord (nuchal cord)
- If present, attempt to gently lift it over the baby's head
- If unsuccessful, double clamp and cut the cord between the clamps

Shoulder-Torso Delivery
- To facilitate delivery of the upper shoulder, gently guide the head downwards
- Support and lift the head and neck slightly to deliver the lower shoulder
- The rest of the infant should deliver quickly with one contraction
- Firmly grasp the infant as it emerges
- The baby will be wet and slippery
- Keep newborn level with the perineum until the cord stops pulsating and is double clamped
- If able, mother may hold infant on chest / abdomen during transport
- Refer to **POST PARTUM CARE PROTOCOL**

P

Childbirth Complications:

E

Breech Birth
- NEVER ATTEMPT TO PULL THE INFANT FROM THE VAGINA
- As soon as the legs are delivered, support the infant's body wrapped in a towel
- After shoulders are delivered, if face down, gently elevate the legs and trunk to facilitate delivery of the head
- Head should deliver in 30 seconds
- If not, reach two sterile gloved fingers into vagina to locate infant's mouth
- Push vaginal wall away from infant's mouth to form an airway
- Apply gentle pressure to the fundus
- If head does not deliver in 2 minutes, keep your fingers in place to maintain the airway

P

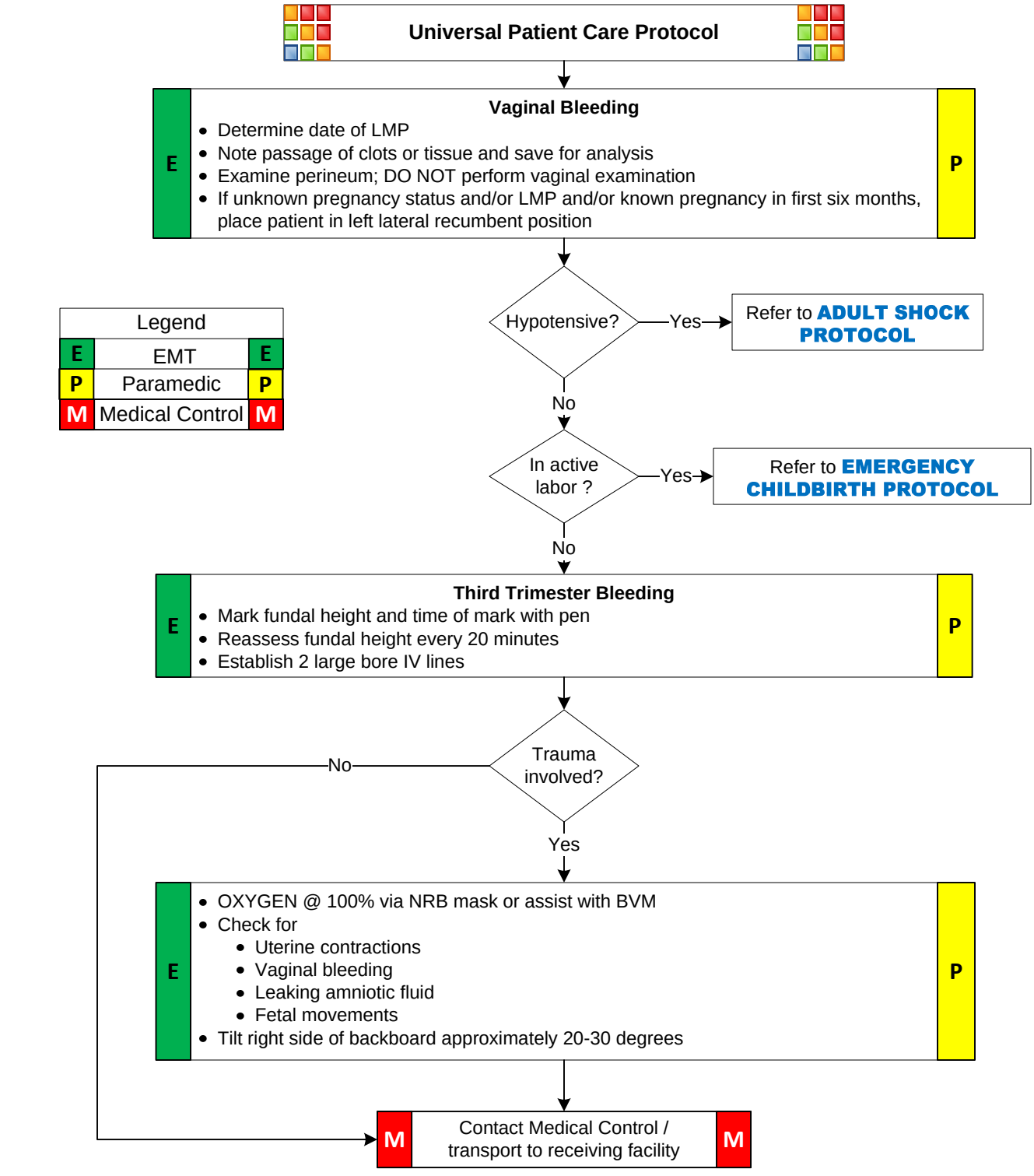
E

Prolapsed Cord
- Elevate mother's hips
- Place sterile gloved hand into vagina between pubic bone and presenting part with cord between two fingers to monitor cord pulsations and exert counter-pressure on presenting part
- Cover exposed cord with moist dressing and keep warm

P

M Contact Medical Control / transport to receiving facility **M**

Vaginal Bleeding



Pearls

- Pregnant trauma patients may require additional IV fluids due to expanded blood volume

If patient is a TRAUMA ALERT / TRAUMA RED

- Transport to Trauma Center (as per protocol)
- Trauma yellow and green are to be transported to the ED of closest OB receiving facility

Post Partum Care

Universal Patient Care Protocol

Post Partum Care

- Placenta should deliver in 20 -30 minutes
- If delivered collect in plastic bag
- DO NOT pull on cord to facilitate delivery of the placenta
- Transport as soon as possible, even if placenta has not delivered
- If perineum torn and bleeding, apply direct pressure with sanitary pads and have patient bring her legs together

Significant blood loss or signs of shock?

Yes

- Refer to **SHOCK PROTOCOL**
- Gently massage abdomen over uterus, until uterus firm
- Fluid boluses in increments of 500 ml titrate to systolic BP>90 mm Hg

No

Altered mental status?

Yes

Refer to **ALTERED MENTAL STATUS PROTOCOL**

No

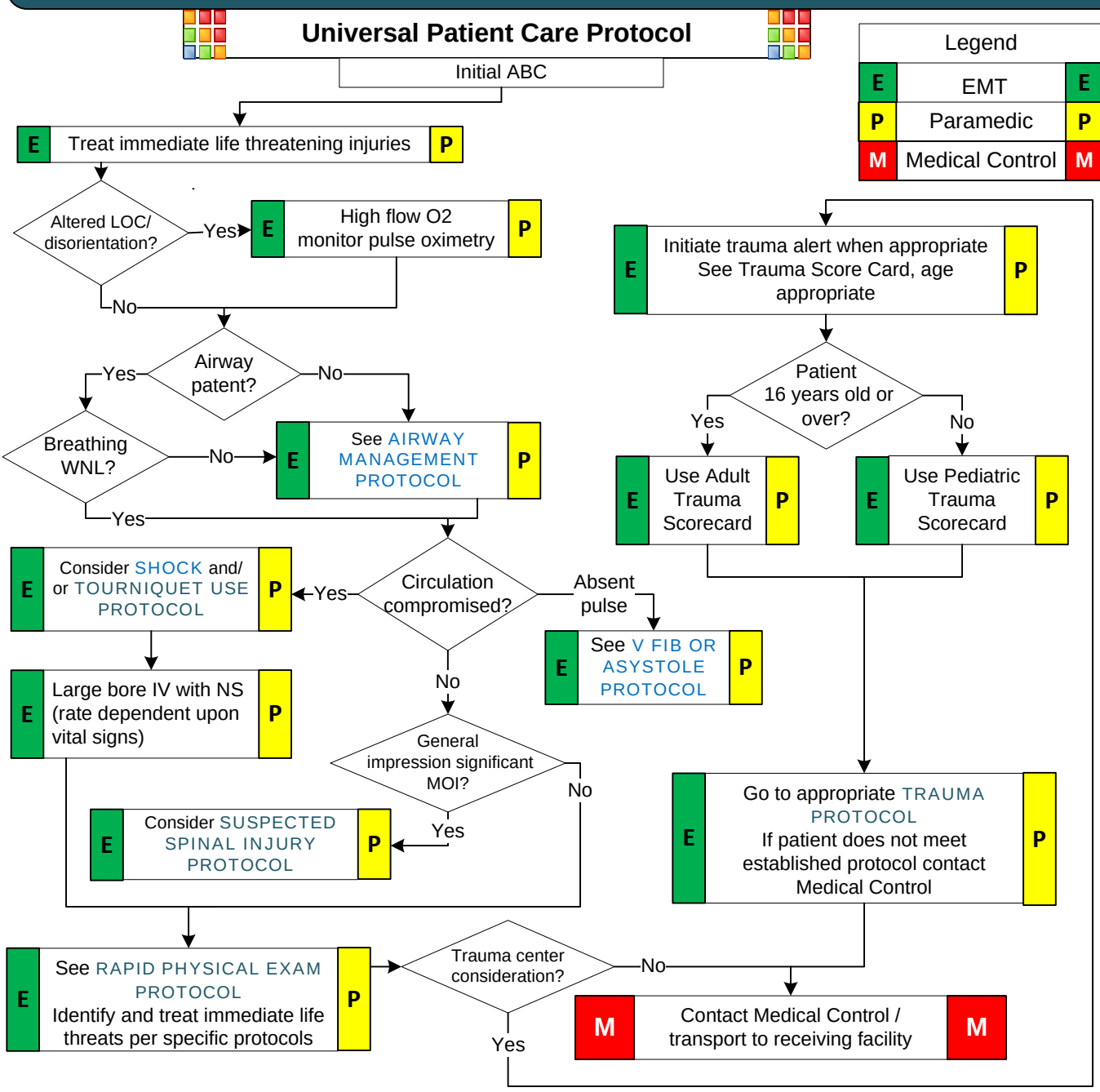
Contact Medical Control / transport to receiving facility

Legend	
E	EMT
P	Paramedic
M	Medical Control

Pearls

- Hypotension may be a late sign of shock in bleeding at full term

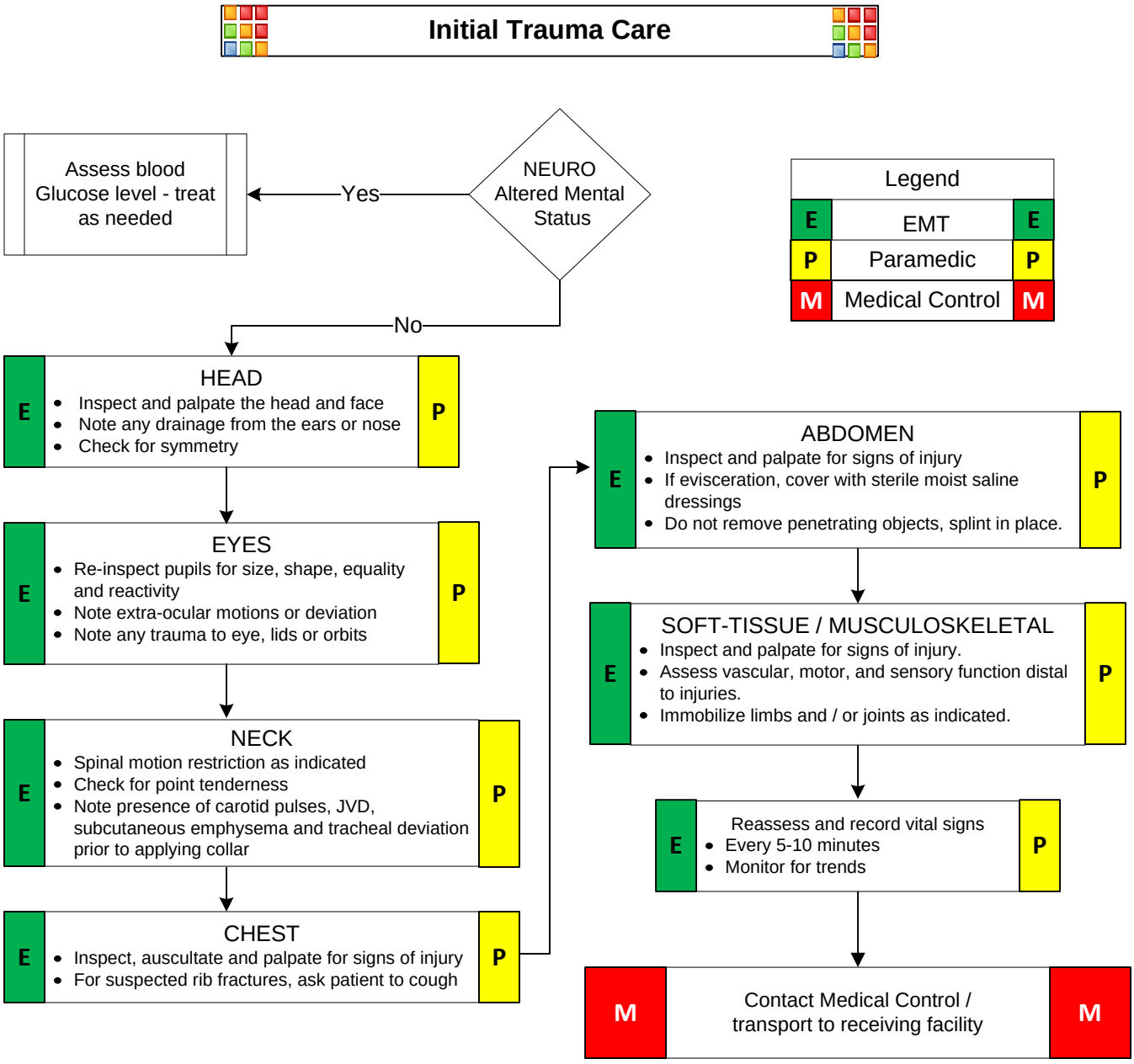
Initial Trauma Care



Pearls

- Orientation: (**A**) = Alert to person, *place, time and incident*; (**V**) = Responds to *Verbal Stimuli*; (**P**) = Responds to *Painful Stimuli*; (**U**) = *Unconsciousness*
- Altered Mental Status (**AMS**) = An alteration in either the patient's LOC or orientation
- Maintain spinal immobilization with any injury indicative of spinal loading, stretching, head injury resulting in AMS or significant MOI
- If patient has AMS or diabetes, assess blood glucose level. For blood sugar results less then 60 mg /dl give IV or PO Glucose supplements
- Establish large bore IV if indicated with 0.9% Normal Saline. Attempt IV access only twice unless condition critical.
- Cardiac monitor in LDII or MCL1, or via 12 lead if available. Record strip every 5-10 min
- Lack of IV site does not preclude medication therapy
- Apply pulse oximetry to all cardiac or respiratory patients whenever possible
- Apply ETCO2 monitor device to patients with potential cardiac or respiratory emergencies

Rapid Trauma Assessment
Focused History and Physical Exam



Pearls

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- Cardiac monitor in LDII or MCL1, or via 12 lead if available. Record strip every 5-10 min

Burns: Thermal, Electrical and Chemical Electrical Injury

SCENE SAFETY! FIRE SCENES ARE DANGEROUS PLACES/ ELECTRICAL CURRENT CAN KILL RESCUERS

E **INITIAL TRAUMA CARE:** **P**

- Evaluate depth of burn and estimate extent using Rule-Of-Nines. (See APPENDIX C / APPENDIX D)
- Wear sterile gloves and mask until burn wounds are covered
- Do not break blisters
- Cover burn wounds with dry sterile dressings
- Open sterile sheet on stretcher before placing patient for transport
- Cover patient with dry, sterile sheet and blanket to maintain body temperature
- Refer to ACUTE PAIN MANAGEMENT PROTOCOL

THERMAL BURNS: → Involves > 10% body surface?

No → **E** Apply sterile saline soaked dressing **P**

Yes → **E** Apply sterile dry dressing **P**

INHALATION BURNS:
Note presence of :

- Wheezing
- Hoarseness
- Strider
- Carbonaceous/sputum/cough

→ **E** Increase Oxygen 100% by NRB mask or assist ventilations with BVM **P**

- Intubate if severe respiratory distress
- If intubation unsuccessful consider cricothyrotomy

Parkland Fluid Resuscitation Calculation:

- Fluid Requirements = TBSA burned(%) x Wt (kg) x 4mL
- Give 1/2 of total requirements in 1st 8 hours, then give 2nd half over next 16 hours.

P

IV Normal Saline or Lactated Ringer's. First half of total: Give this amount over the first 8 hours

IV Normal Saline or Lactated Ringer's. Second half of total Give this amount over the next 16 hours

i.e.: 20% burn X 50 kg x 4 = 4000 = 2000 ml. 250ml/hr for first 8 hours (2000/8 = 175)
(2000/16 = 125) 125 ml/hr over 16 hours

Reassess and document effect

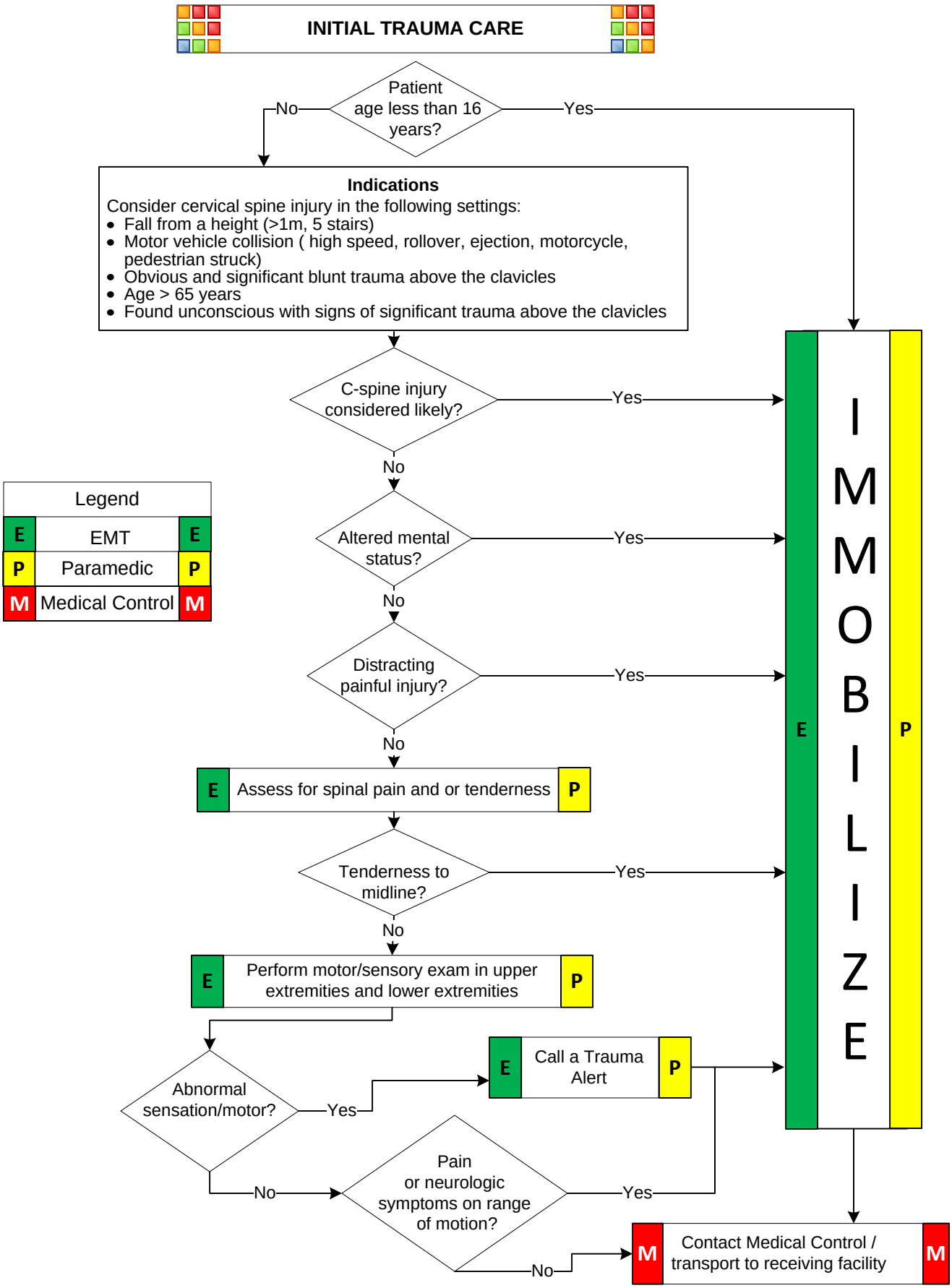
M Contact Medical Control / transport to receiving facility **M**

Legend	
E	EMT
P	Paramedic
M	Medical Control

Pearls

- See also:
  - BLAST INJURIES / DYSBARISM
  - State Trauma Alert Protocols (APPENDIX C / APPENDIX D)
- Asystole is a common presentation with lightning strikes. These patients should be aggressively resuscitated unless their injuries are incompatible with life
- Morphine Sulfate is the analgesic of 1st choice for burns
- Electrical injuries: attempt to determine the amps, volts, and duration of contact with the electricity
- Always consider spinal injury in electrical current contact or lightening strike injuries
- Consider the need to transport the patient to a trauma center
- Treat dysrhythmias per specific protocol

Suspected Spinal Injury



Blast Injuries

Primary Blast Injury (PBI)

- Pulmonary barotrauma is the most common fatal primary blast injury
- Pulmonary contusion
- Systemic air embolism
- Associated injuries such as:
  - Thrombosis
  - Lipoxygenation
  - Disseminated intravascular coagulation (DIC)
  - Acute Respiratory Distress Syndrome (ARDS) may be a result of direct lung injury or of shock from other body injuries

Immediate cardiovascular response to PBI

- Decrease in heart rate, stroke volume and cardiac index
- Normal reflex increase in systemic vascular resistance does not occur, so blood pressure falls
- This effect occurs within seconds
- If this response is not fatal, recovery usually occurs within 15 minutes to 3 hours
- However, even non-lethal PBI can impair pulmonary performance for hours to days

INITIAL MEDICAL CARE

E

- Obtain history
- Examine lungs for evidence of pulmonary contusion and pneumothorax
- Assume that wheezing associated with a blast injury is from pulmonary contusion
- Other causes of wheezing in this setting may include inhalation of irritant gases or dusts, pulmonary edema from myocardial contusion, and ARDS
- Tympanic membrane rupture may indicate exposure to significant overpressure
- Pulse oximetry: Note- due to potential CO poisoning, results can be false
- Monitor respiratory pattern and quality of respiratory system and document trends
- Monitor vital signs
- Provide supplemental 02 as required by oximetry trends
- 100% NRB face mask
- Maintain PPE
- Report any information regarding the nature and size of the explosion:
  - Time of occurrence
  - Proximity of the victim to the epicenter of the blast
  - Victim displacement by the blast wind
  - Presence of secondary fires, smoke, dust or chemical or radioactive contamination
  - History of entrapment in collapsed structures
- Activate appropriate disaster and or hazardous material responses as early as possible
- Screen for radioactive contamination with a hand-held Geiger counter
- Examine the lungs, abdomen, and TMs for all patients exposed to a significant explosion
- Penetrating wounds (secondary blast injury), blunt trauma (tertiary/secondary blast injury) and burns receive standard treatment
- Shrapnel wounds are treated as low velocity gunshot wounds
- Because pulmonary contusions tend to evolve over several hours, a period of observation and repeat radiography may be necessary if indicated

P

- Place the patient on a cardiac monitor
- Intravenous (IV) calcium may be required. (Contact Medical Control)
- Moistened facemasks and good ventilation help protect patients and medical personnel from the pulmonary effects of phosphorus pentoxide gas
- Avoid the use of flammable anesthetic agents and excessive oxygen around White Phosphorus (WP)
- Other problems to be considered:
- Cardiac tamponade
- Flail chest
- If abdominal pain persists or vomiting develops, consider admitting the patient for observation

M White phosphorus (WP) burns require unique management

Continued On Next Page

M

Legend		
E	EMT	E
P	Paramedic	P
M	Medical Control	M

Blast Injuries (Continued)

E	Initial Medical Management of WP – contaminated burns	P

- Copious lavage of the area
- Removing identifiable particles (which should be placed in water to prevent further combustion)
- Cover the area with saline-soaked gauze to prevent further combustion

WP injury can lead to:

- Hypokalemia
- Hypophosphatemia with ECG changes
- Cardiac arrhythmias and death

Note: Pregnant Patients

- Pregnant patients with blast injuries warrant special consideration
- Because the fetus is surrounded by relatively incompressible amniotic fluid, direct injury to the fetus should be uncommon
- Injuries to the placenta, however, are probably more common and must be detected
- The placental attachment is at risk for primary blast injury because of the effects of spalling, which occurs when a blast wave passing from a higher density medium (endometrial muscle) to a lower density medium (placenta) is partially reflected, potentially damaging tissues at the interface

Legend		
E	EMT	E
P	Paramedic	P
M	Medical Control	M

Pearls

- Primary Blast Injury (PBI) is organ and tissue damage caused solely by the blast wave associated with High Energy Blast exposure. Thoracic PBI produces a unique cardiovascular response, observed nowhere else in medicine which is sufficient to cause death in the absence of any demonstrable physical injury
- Acute Gas Embolism (AGE), a form of pulmonary barotrauma, requires special attention. Air emboli most commonly occlude vessels in the brain or spinal cord. Resulting neurologic symptoms must be differentiated from the direct effect of trauma
- Intestinal barotrauma is more common with underwater than air blast injuries. Although the colon usually is affected most, any portion of the GI tract may be injured
- Acoustic barotrauma of the ear is the organ most susceptible to primary blast injury. Acoustic barotrauma commonly consists of TM rupture. Hemotympanum without perforation also has been reported. Ossicle fracture or dislocation may occur with very high-energy explosives
- Secondary Blast Injuries (SBI) are caused by flying objects striking individuals
- Tertiary blast injuries are caused by individuals flying through the air and striking other objects, generally from high-energy explosions
- Miscellaneous Blast Injuries result from minor injuries that are not life-threatening
- For WP:
  - Definitive treatment consists of a rinse using 1% copper sulfate ($CuSO_4$) solution and removing the White Phosphorus (WP) particles
  - Copper sulfate combines with phosphorous particles to create a blue black cupric phosphide coating
  - This impedes further WP combustion and makes particles easier to find
  - Rinse the contaminated burn with copper sulfate solution, remove WP particles, and then use copious saline lavage to rinse off the copper sulfate. Never apply copper sulfate as a dressing
  - Excess copper sulfate absorption can cause intravascular hemolysis and renal failure

Insect Bites and Stings

Universal Patient Assessment

Initial Care (E / P)
- Initial trauma care
- Attempt to identify insect if possible
- Oxygen to keep pulse oximetry saturation greater than 94%
- Immobilize affected part, position lower than chest if possible
- Remove jewelry distal to site
- Pour copious amount of sterile water or saline over wound to irrigate
- Remove embedded stinger by scraping with a card

Legend
- E — EMT
- P — Paramedic
- M — Medical Control

Multiple stings or allergic reaction (E / P)
Evaluate for specific signs/symptoms such as:
- Swelling or pain at the site
- Weakness, nausea or vomiting
- Hypotension and shock
- Allergic reaction /Anaphylaxis
- Wheezing

Brown Recluse spider bite (E / P)
Evaluate for specific signs/symptoms such as:
- Small bleb surrounded by a white ring
- Localized tissue necrosis

Black Widow spider bite (E / P)
Evaluate for specific signs/symptoms such as:
- Immediate severe pain
- Severe muscle spasms administer treatment

- See ALLERGIC REACTION OR ANAPHYLACTIC SHOCK PROTOCOL
- IV NS to keep systolic BP > 90 mm Hg
- Consider need for Diphenhydramine (Benadryl)
- Consider need for pain management
- See ACUTE PAIN MANAGEMENT PROTOCOL
- Treat wheezing per Allergic Reaction Protocol

(P)

Adult (P)
- Midazolam (Versed) 2 mg IV, IO,IM titrate to effect
- Maximum dose 10 mg

  - or -
- Diazepam (Valium) 5 mg IV, IO,IM titrate to effect
- Maximum dose 10 mg

  - or -
- Lorazepam (Ativan) 2 mg IV, IO, IM titrate to effect
- Maximum dose 10 mg

Pediatric (P)
- Midazolam (Versed) 0.1 mg/kg
- Maximum dose 2.5 mg slow IVP or IO

  - or -
- Lorazepam (Ativan) 0.05 mg/kg
- Maximum dose 2 mg slow IVP or IO
- If NO IV Access
  - Midazolam (Versed) 0.1 mg/kg IM
  - Maximum dose 3 mg

Severe muscle spasms? — Yes → Patient over 12 years of age? — Yes → Adult; No → Pediatric

Severe muscle spasms? — No → See ACUTE PAIN MANAGEMENT PROTOCOL (P)

Reassess and document

(M) Contact Medical Control / Transport to Receiving Facility (M)

Pearls
- Brown Recluse bites may appear to be very mild early in the course of the injury
- DO NOT APPLY ICE OR COLD PACKS, TOURNIQUETS, MAKE INCISIONS AROUND THE AREA OR ATTEMPT TO SUCTION BITES OR STINGS

Animal Bites/Snake Bite/Scorpion Stings

Legend	
E	EMT
P	Paramedic
M	Medical Control

E

Animal / Rodent / Dog / Cat Bites
- Initial trauma care
- Attempt to identify animal if possible
- Obtain location and direction animal went if possible
- Obtain owner's name and number if domestic animal
- Confirm rabies status of domestic animal if owner on scene
- Pour copious amount of sterile water or saline over open wound to irrigate
- Cover with moist sterile dressing
- Ask when patient received last tetanus shot or if allergic to tetanus
- Notify Animal Control (trap may be required)

P

E

Viperids (Pit Vipers)
Includes Rattlesnakes, Copperheads, Cottonmouths

Evaluate for specific signs / symptoms such as:
- Distinct "fang marks" or puncture wounds
- Swelling or pain at the site
- Weakness, nausea or vomiting
- Paresthesias and fasciculations
- Numbness and tingling around the face and head
- Metallic taste, change in taste sensation
- Hypotension and shock
- Allergic reaction / anaphylaxis

P

E

Elapids:
Includes Coral Snakes, Cobras and Mambas

Evaluate for specific signs / symptoms such as:
- Most signs/symptoms may be delayed up to 12 hours and are related to the type of venom (a neurotoxin)
- CNS disturbances may be observed
- Respiratory paralysis may develop
- Follow treatment for pit vipers **THERE IS NO SPECIFIC TREATMENT FOR ELAPIDS**

P

E

Scorpion Stings:

Evaluate for specific signs / symptoms such as:
- Mild to sharp pain which progresses to numbness
- Salivation
- Slurred speech or muscle twitching
- Allergic reaction
- For severe muscle spasms administer treatment as below

P

Suspected shock?

Yes

No

P
- See ALLERGIC REACTION OR ANAPHYLACTIC SHOCK PROTOCOL
- IV NS to keep systolic BP > 90 mm Hg
- Consider need for Diphenhydramine (Benadryl)
- Consider need for pain management
- See ACUTE PAIN MANAGEMENT PROTOCOL
- Treat wheezing per ALLERGIC REACTION PROTOCOL

Severe muscle spasms

Yes

No

Age over 12?

Yes

No

P
ADULTS:
- Midazolam (Versed) IV, IM, IO, or IN
- 2-10 mg, titrate to effect

P
PEDIATRICS:
- Midazolam (Versed) IV, IM, or IN
- 0.1 mg/kg IV (maximum dose 2.5mg/dose)

P
Midazolam (Versed) 0.2mg/kg IM or IN Maximum dose 5 mg

Reassess and document

M
Contact Medical Control / transport to receiving facility

M

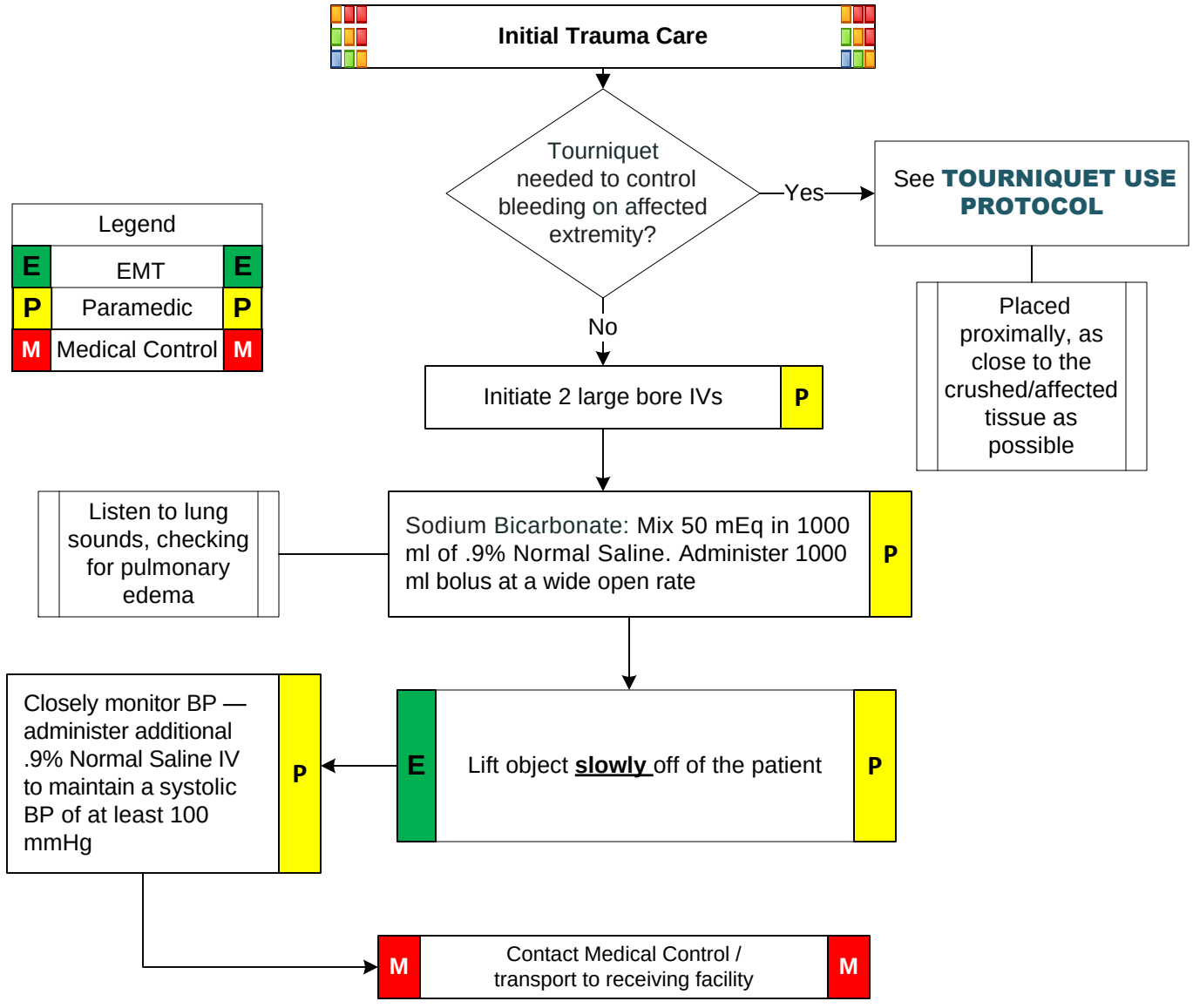
Pearls
- Rapid transportation and alert the receiving facility of the specific bite/sting
- Do not apply ice or cold packs or tourniquets, make incisions around the area, or attempt to suction bites or marine stings

Crush Syndrome

- Crush Syndrome occurs in prolonged entrapments
- Lactic acid builds up causing the affected tissue to become acidotic
- When the crushed tissue is released and circulation restored, the acidotic blood dumps into the central circulation
- Can cause cardiac arrhythmias and electrolyte imbalances

Care is directed at:

- Assessing the situation
- Assure airway, breathing and circulation
- Personal safety
- Care should also be given to preventing the flush of toxins back into the patient's core
- Responder safety is paramount



Pearls

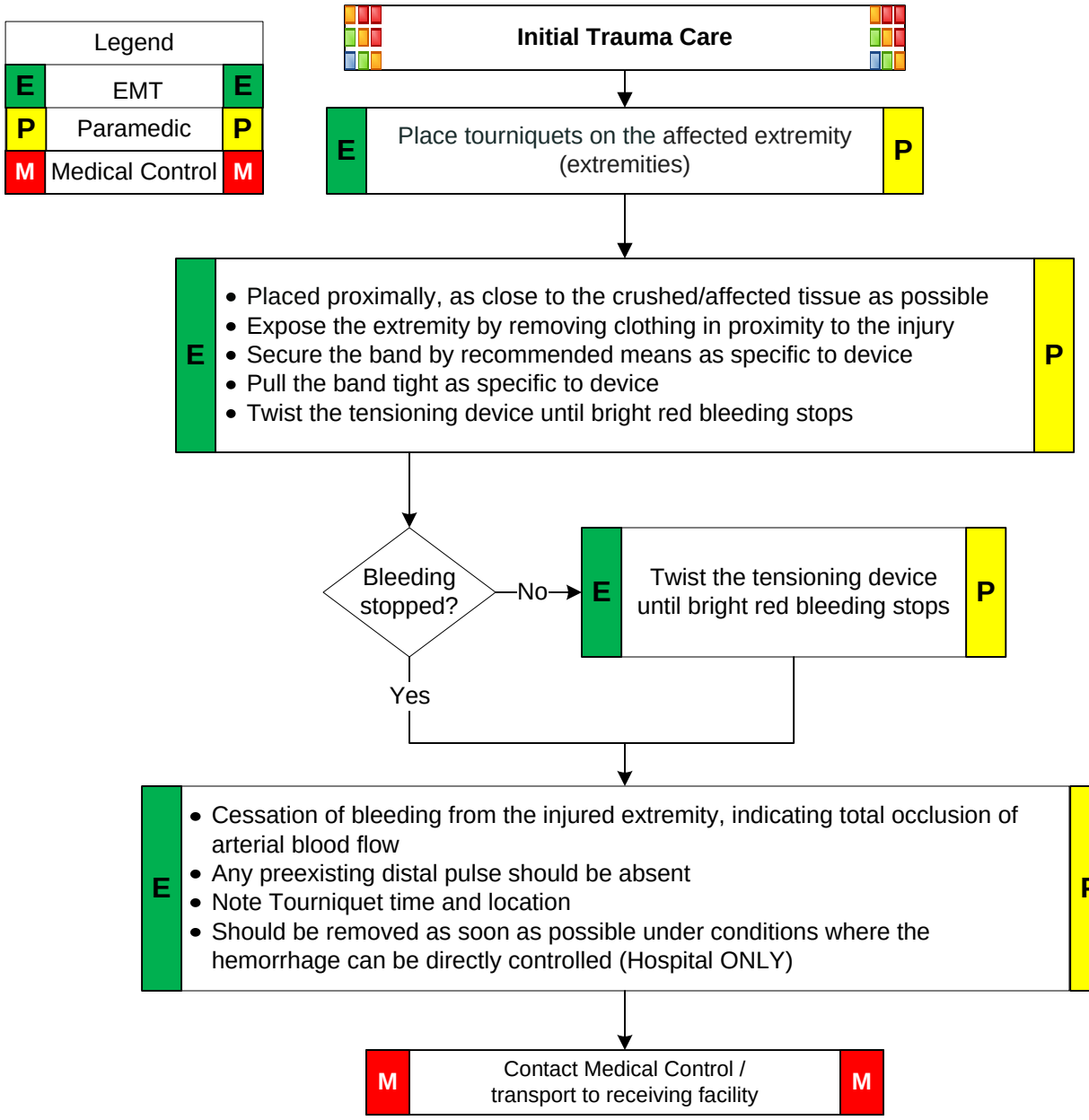
- Expect sudden shifts in BP and/or cardiac arrhythmias. Treat per the appropriate protocol
- Patients who are trapped under debris can appear hemodynamically stable until the debris is moved, at which point, toxins enter the core circulation. When the debris is lifted off of the patient, he/she can become very unstable
- Monitor vitals every 5 minutes
- Have airway equipment ready

Tourniquet Use

Indications for tourniquet use

To stop bleeding when:

- Life-threatening limb hemorrhage is not controlled with direct pressure or other simple measures, as may occur with a mangled extremity
- Traumatic amputation has occurred
- Crush syndrome with uncontrolled bleeding



Pearls

- Tourniquet placement must be communicated in the patient report for all pre-hospital to hospital and inter-hospital transfers
- Tourniquet time > 6 hours is associated with distal tissue loss
- Record the date/time of application on the tourniquet
- Monitor vitals every 5 minutes

Marine Envenomation

Initial Trauma Care

Consider allergic reactions/anaphylaxis

No → STINGRAY, SCORPIONFISH, LIONFISH, ZEBRAFISH, STONEFISH, CATFISH, WEEVERFISH, STARFISH, SEA URCHIN

No → JELLYFISH, MAN-OF-WAR, SEA NETTLE, IRUKANDJI, ANEMONE, HYDROID, FIRE CORAL

Yes → See **ADULT ALLERGIC REACTION / ANAPHYLACTIC SHOCK PROTOCOL** OR **PEDIATRIC ALLERGIC REACTION / ANAPHYLACTIC SHOCK PROTOCOL**

E

- Immerse the punctures in non scalding hot water to tolerance (110–113°F) to achieve pain relief (30–90 minutes)
- Transport should not be delayed
- Immersion in hot water may be continued during transport
- Remove any visible pieces of the spine(s) or sheath
- Gently wash the wound with soap and water
- Irrigate vigorously with fresh water (avoid scrubbing)
- Contact the Poison Information Center (1-800-222-1222)

P

E

- Rinse the skin with sea water. (Do not use fresh water; do not apply ice; do not rub the skin)
- Apply soaks of acetic acid 5% (vinegar) until the pain is relieved. If vinegar is not available, use a paste of baking soda or unseasoned meat tenderizer
- Remove large tentacle fragments using forceps (use gloves to avoid contact with your bare hands)
- Apply a lather of shaving cream or a paste of baking soda, and shave the affected area with the edge of a flat surface (e.g. a credit card) to remove stingers
- Contact the Poison Information Center (1-800-222-1222)

P

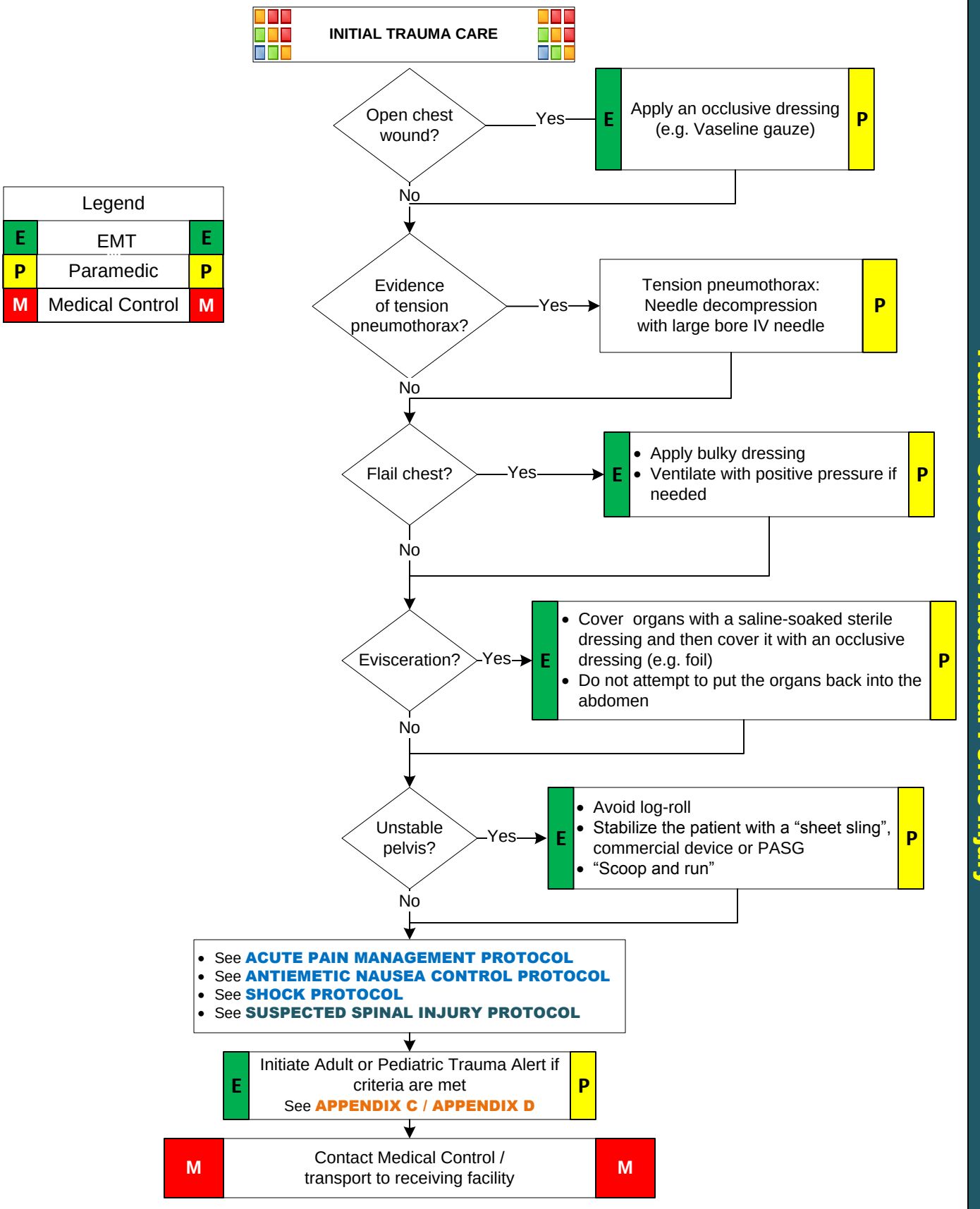
Pain management necessary?

Yes → See **ADULT ACUTE PAIN MANAGEMENT PROTOCOL** OR **PEDIATRIC ACUTE PAIN MANAGEMENT PROTOCOL**

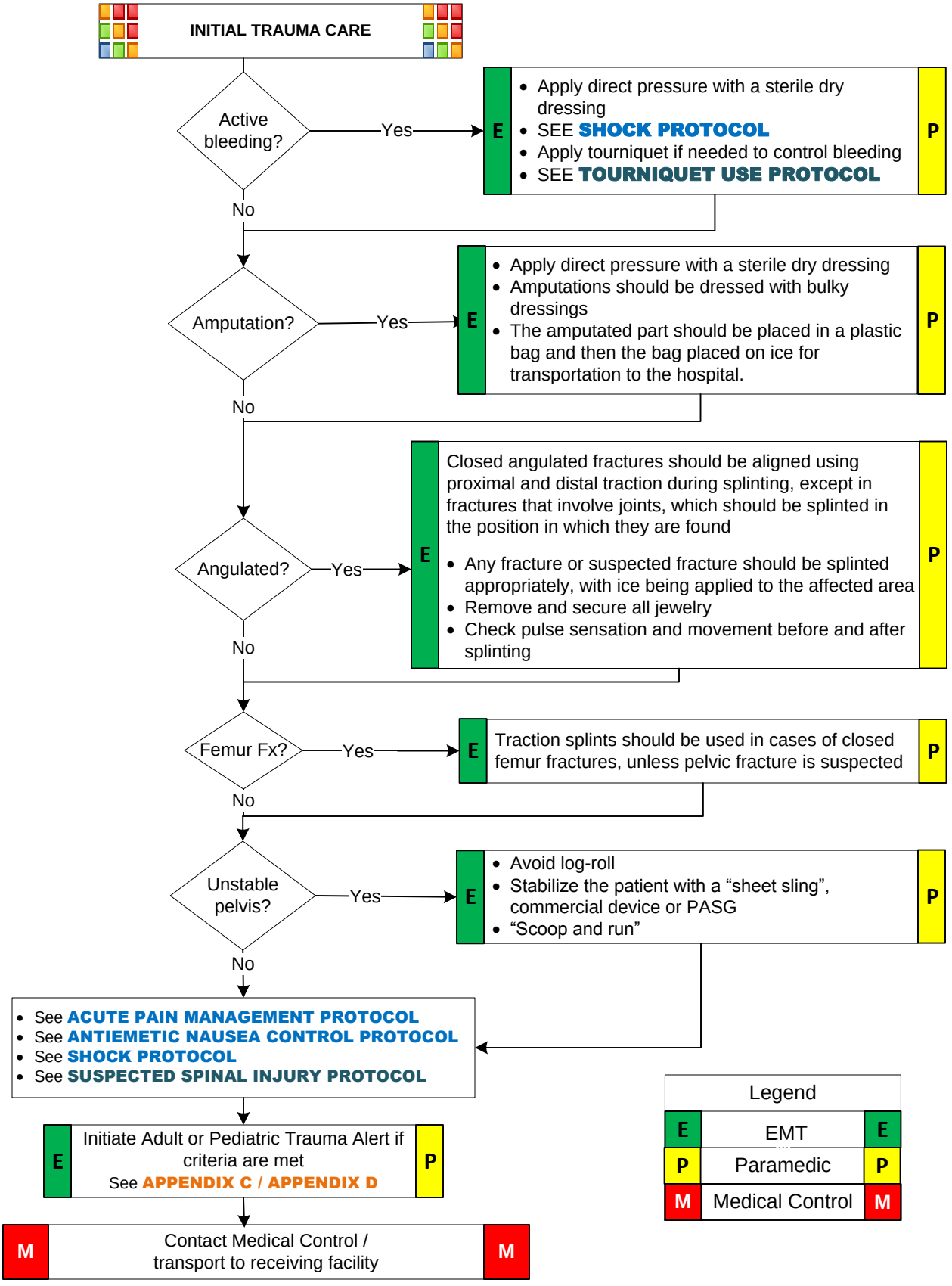
No → **M** Contact Medical Control / transport to receiving facility **M**

Legend	
E	EMT
P	Paramedic
M	Medical Control

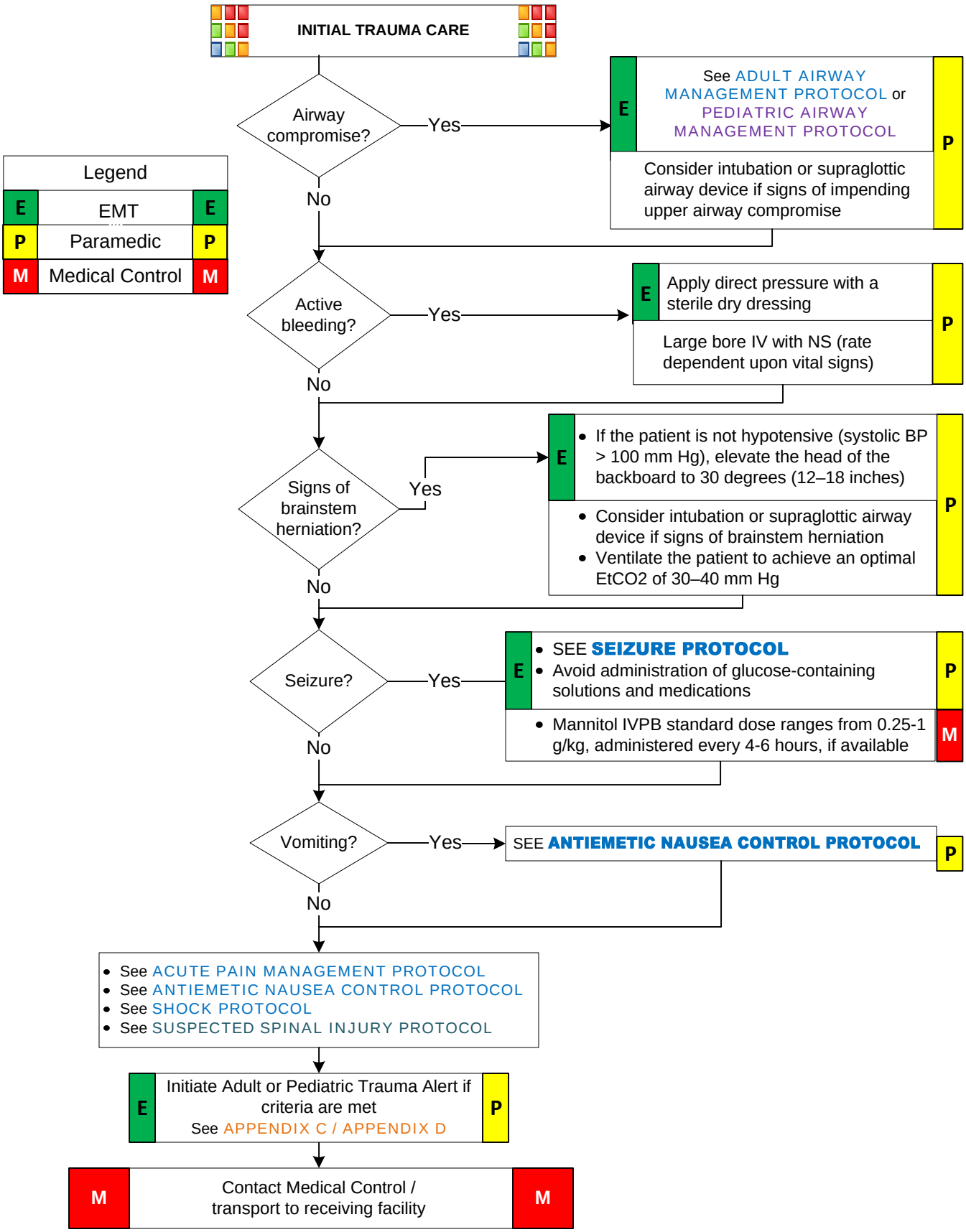
Chest and Abdominal-Pelvic Injury



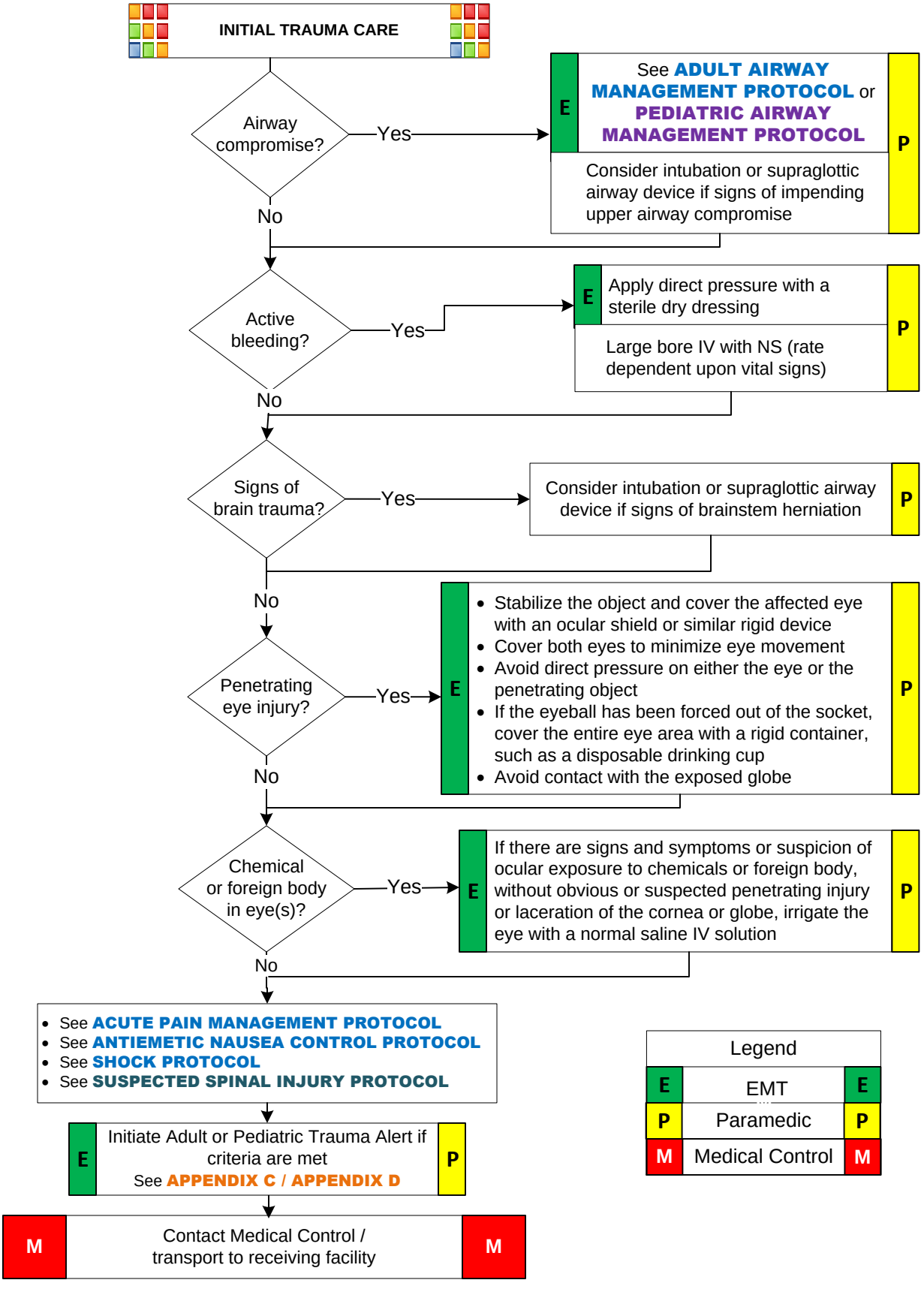
Extremity Injury



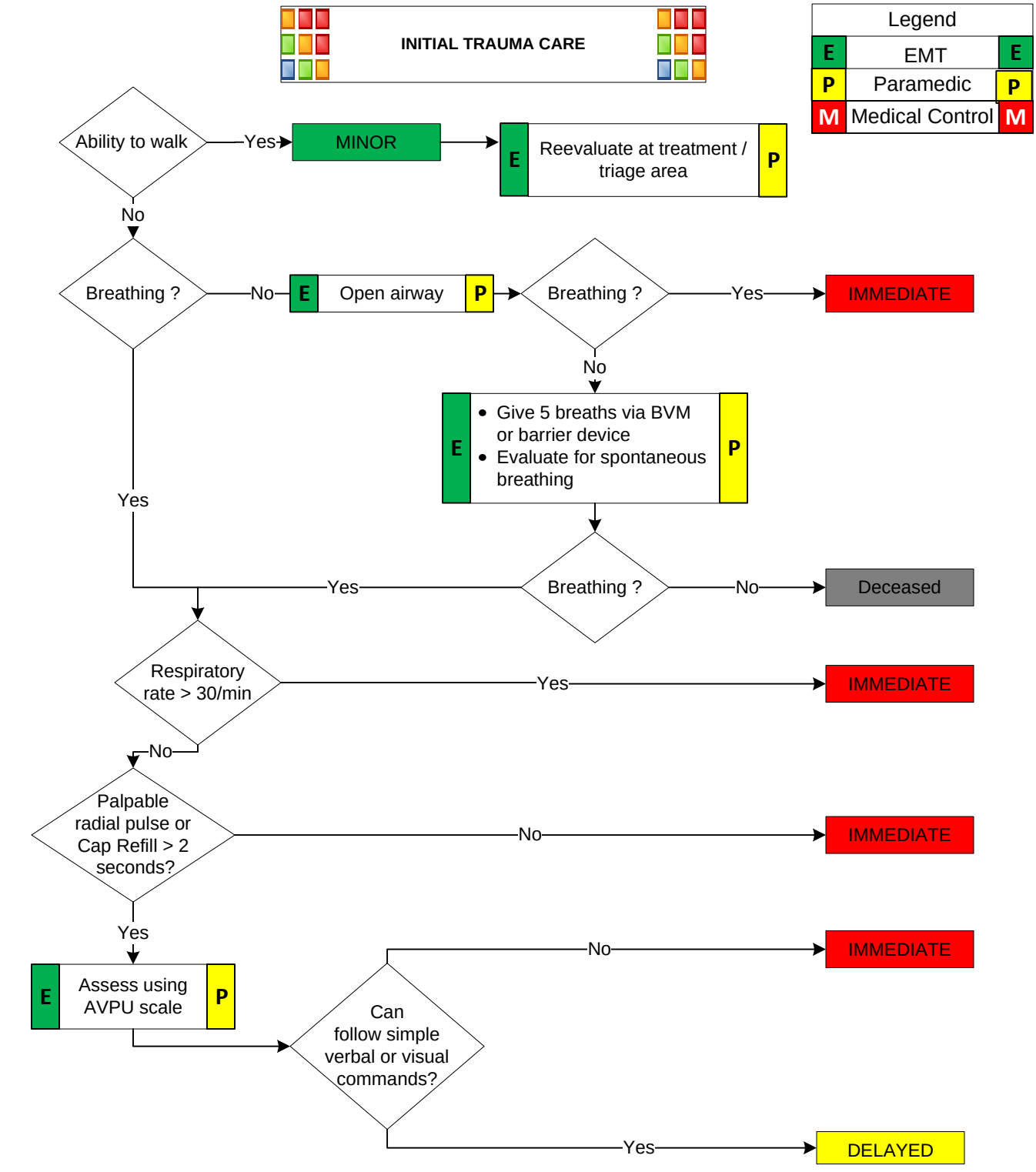
Head Injury



Eye and Facial Injury



START Triage



Pearls

- *AVPU Scale
  - (A) Alert = Spontaneous eye opening and correct verbal response
  - (V) Verbal = Only opens eyes to respond to verbal commands
  - (P) Pain = Only responds to painful stimuli
  - (U) Unconscious = Does not respond to any of the above methods

Pediatric Assessment

Universal Patient Care Protocol

Appearance
- Muscle tone (limp, listless, or flaccid)
- Interactive
- Consolable
- Look or gaze (eye contact)
- Speech or cry (normal or weak)

This component is influenced by developmental issues

Circulation to Skin
- Pallor
- Mottling
- Cyanosis

General assessment (pediatric assessment triangle [PAT])
- Appearance
- Work of Breathing
- Circulation

Work of Breathing
- Abnormal airway sounds, snoring, muffled or hoarse speech, stridor, grunting, wheezing
- Abnormal positioning
- Sniffing position, tripod position refusing to lie down
- Retractions
- Supraclavicular, intercostal, or substernal retractions of the chest
- Head bobbing in infants
- Nasal flaring

E
- Assess airway, c-spine, initial level of consciousness (AVPU: Alert, responds to Verbal stimuli, responds to Pain, Unresponsive).
- Assess breathing
- Assess circulation and presence of hemorrhage
- Assess disability—movement of extremities.
- Expose and examine the patient's head, neck, chest, abdomen, and pelvis (check the back when the patient is rolled on his/her side).
- Identify priority patients.
- Assess the vital signs including blood pressure
- SpO2
- Glucose
- Monitor ECG

P

E Initial management per findings **SEE APPROPRIATE PROTOCOL** **P**

S—Symptoms; assessment of chief complaint
A—Allergies
M—Medications
P—Past medical history
L—Last oral intake
E—Events leading to illness or injury

E

Secondary Assessment
- Conduct a toe-to-head survey
- Neurological assessment
- Pupillary response
- Pediatric Glasgow Coma Scale
- Repeat Initial Assessment and rapid cardiopulmonary assessment

P

E

Ongoing Assessment
- Reassess every fifteen (15) minutes, every five (5) minutes for critical patients
- Continually monitor:
  - Respiratory effort
  - Skin color
  - Mental status
  - Temperature
  - Pulse oximetry
- Reevaluate vital signs and compare with baseline vital signs

P

Legend		
E	EMT	E
P	Paramedic	P
M	Medical Control	M

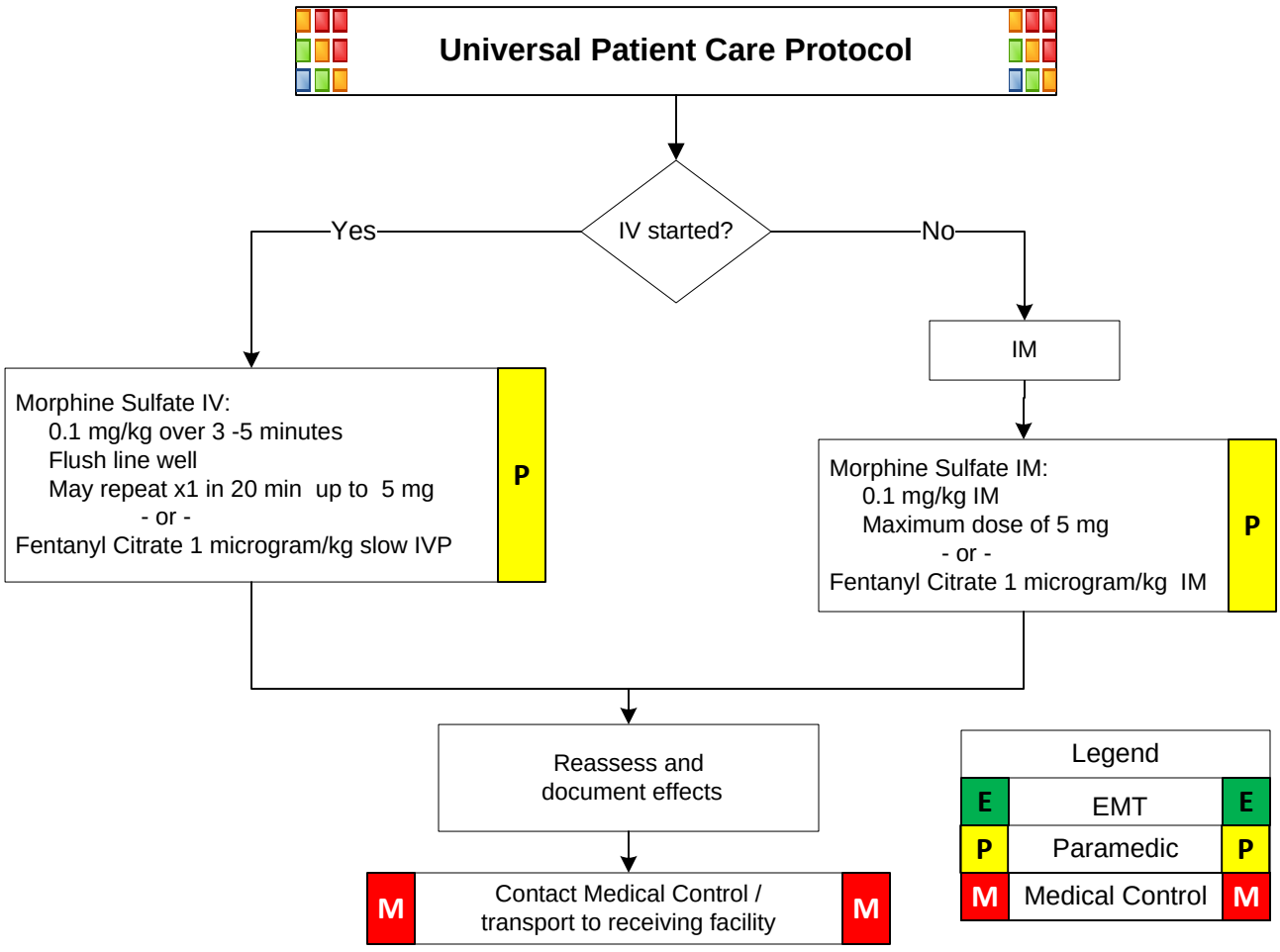
Pearls
- A limp, pale child unable to make eye contact or a child with retractions may be critically ill or injured

Pediatric Acute Pain Management

Provide acute pain management with the following recommended medications and dosages

Conditions:

- Acute MI (Reference also ACLS)
- Acute abdominal pain – provide cautiously If acute care center is on-line and available to receive
- Blast injury / Barotrauma
- Blunt trauma
- Combative or suspected head injury
- Crush injury
- Environmental – Frostbite
- Musculoskeletal pain / Extremity pain
- Penetrating trauma
- Procedural Sedation- cardioversion, cardiac pacing, intubation
- Renal colic
- Sickle cell crisis



Pearls

- Refer to Broselow Tape or other length / weight based tool for pediatric medication administration
- Ventilation and oxygenation always precede drug therapy
- Apply cardiac monitor and pulse oximetry as soon as possible
- Contact on-scene or online Medical Direction if additional pain management medications are required
- Antiemetic treatment may also be required
- Unconscious or pharmacologically paralyzed: closely monitor vital sign trends for indicators of pain and medicate according to protocol
- Burns/electrical burns: due to rapid metabolism *additional* analgesia may be required

Pediatric Airway Management

Universal Patient Care Protocol

E

INITIAL MEDICAL CARE

Assess ABCs

- Airway Patency
  - Align airway, infants/children's airway are very fragile - inline neutral position
- Respiratory rate
- Effort
- Adequate chest rise

P

Adequate respiration/gag reflex present?**

No

E

Basic airway procedures

- Open airway
- Head tilt/chin lift
- Modified jaw thrust
- Nasal/oral adjunct
- BVM to assist ventilation
- Utilize pulse oximetry – goal 94%

P

Yes

E

- Supplemental oxygen
- Utilize pulse oximetry to maintain 94%
- Suction as needed

P

Obstructed airway?

No

BVM able to maintain 94%?

No

- Consider blind insertion/supraglottic airway device (SGA)*
- Consider intubation
- Only 1 attempt
- O2 <90% STOP and BVM to >94%

P

Yes

Yes

E

See **PEDIATRIC OBSTRUCTED AIRWAY PROTOCOL**

P

E

- Rapid transport
- Confirm ETT or SGA placement
- ETCO2, preferably waveform
- Confirm adequate wave forms

P

E

- Continue ventilation by BVM or mechanical ventilator
- Maintain warmth

P

Reassess and document

M

Contact Medical Control / transport to receiving facility

M

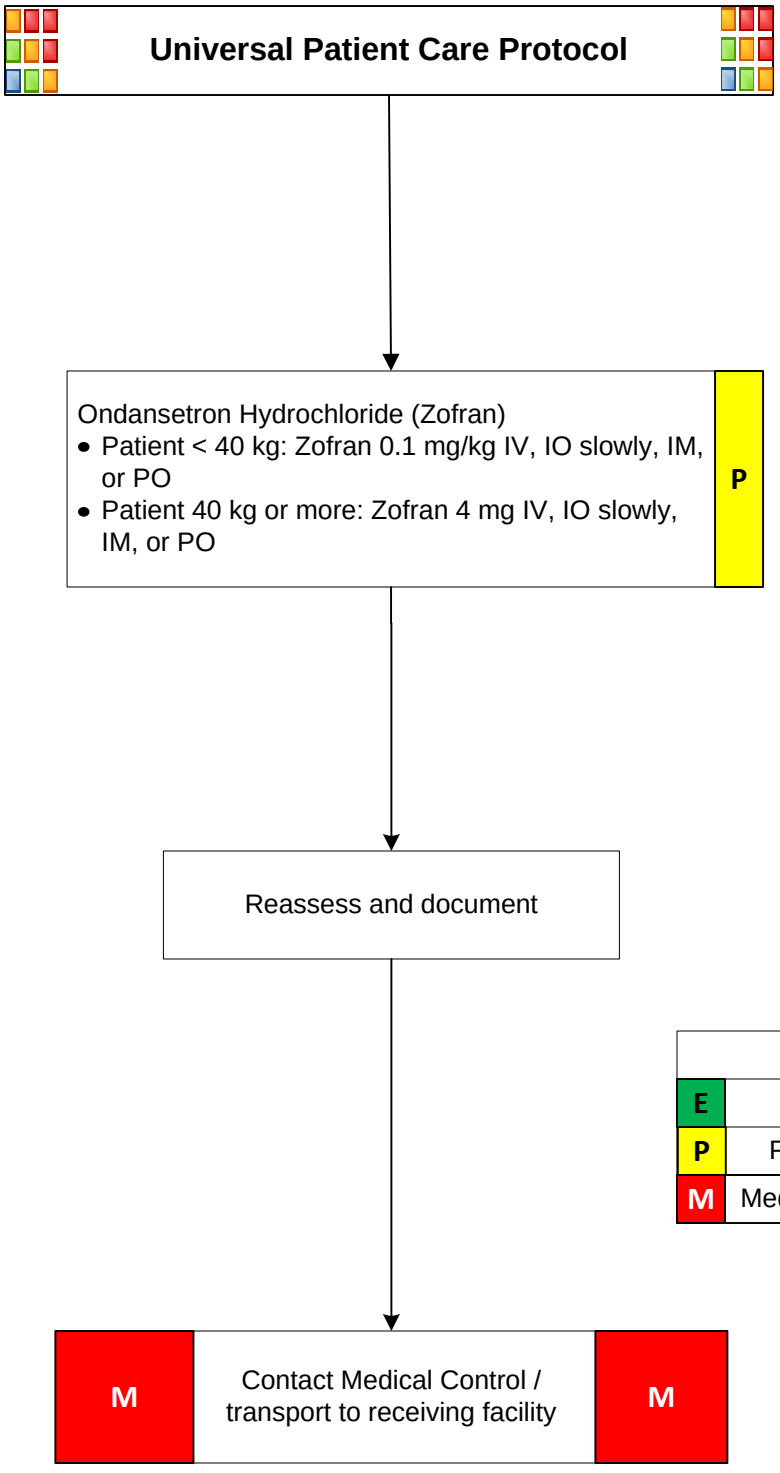
Paramedics may use Drug Facilitated Intubation/ RSI procedure if properly trained, equipped and credentialed by the sponsoring EMS agency. The Paramedic must have a protocol issued by the sponsoring EMS agency

Legend	
E	EMT
P	Paramedic
M	Medical Control

Pearls

- Infant BVM's should be of 450 – 500 ml with pop-off valve
- Respiratory failure / exhaustion usually precedes most incidents of pediatric cardiac arrest and arrhythmias, in most cases can be prevented / treated
- Also reference **PEDIATRIC DYSPNEA PROTOCOL**
- Intubate only as a last resort
- **Adequate respirations and spO2 of ≥ 94% but has no gag reflex

Antiemetic For Nausea Control



Pearls

- Refer to Broselow tape or other length / weight based tool for pediatric medication administration
- Ventilation and oxygenation always precede drug therapy
- Apply cardiac monitor and pulse oximetry as soon as possible

Pediatric Cardiac Arrest

History
- Time of arrest
- Medical history
- Medications
- Possibility of foreign body
- Hypothermia

Signs and Symptoms
- Unresponsive
- Respiratory arrest
- Cardiac arrest

Differential
- Hypoxia / acidosis
- Chest & other traumatic injuries
- Suffocation caused by foreign body (FBAO)
- Smoke inhalation
- SIDS/ALTE
  * Sepsis/hypovolemia, SHOCK
  * Hypothermia
  * Submersion injury
  * Bronchospasm

Universal Patient Care Protocol

Legend	
E	EMT
P	Paramedic
M	Medical Control

CPR needed?

- Yes
- No

No:
- Place patient on O2 100%, package, monitor and transport
- Assist ventilations with 100% oxygen via BVM if needed
- If unable to ventilate adequately with BVM **REFER TO PEDIATRIC AIRWAY MANAGEMENT PROTOCOL**

Yes (E / P):
- Initiate 5 Cycles of CPR
- One rescuer – 30:2 for 2 min Two rescuers – 15:2 for 2 min; 1/3 chest depth 100/min
- Assist ventilations with 100% oxygen via BVM
- DO NOT HYPERVENTILATE
- If unable to ventilate adequately with BVM **REFER TO PEDIATRIC AIRWAY MANAGEMENT PROTOCOL**
- Utilize in line ETCO2

AED/Manual defib shockable rhythm?

- Yes
- No

Yes:
- VF or pulseless VT defibrillate 2 J/kg
- Then 4 J/kg
- Subsequent shocks up to 10 J/kg

(P)

- Establish IV or IO line
- Consider fluid bolus 20 ml/kg NS

(P)

- Epinephrine 1:10,000 – 0.01 mg/kg IV/IO
- Repeat Epinephrine every 3-5 min

(P)

- Amiodarone 5 mg/kg IV or IO
- May repeat x 2 during VF/VT arrest

(P)

No: Asystole or PEA

- Establish IV or IO line
- Consider fluid bolus 20 ml/kg NS

(P)

- Epinephrine 1:10,000 – 0.01 mg/kg IV/IO
- Repeat Epinephrine every 3-5 min

(P)

Consider reversible causes for all pulseless rhythms

(M) Contact Medical Control / transport to receiving facility (M)

Pearls
- Consider reversible causes: Hypoxia, Hypovolemia, Hydrogen Ion acidosis, Hypo/Hyperkalemia, Hypothermia, Tension pneumothorax, Tamponade (cardiac), Toxins, Thrombosis coronary, Thrombosis pulmonary
- If at any time a pulse returns (ROSC) go to **PEDIATRIC POST CARDIAC ARREST CARE PROTOCOL**
- Refer to Broselow tape or other length / weight based tool for pediatric medication administration
- Ventilation and oxygenation always precede drug therapy
- Apply cardiac monitor and pulse oximetry as soon as possible

Pediatric Post Cardiac Arrest Care

History
- ROSC after cardiac arrest
- Potentially unstable patient

Goals
- Optimize perfusion
- Stabilize cardiac rhythm
- Mitigate cause of arrest
- Transport to appropriate facility
- Provide post arrest hypothermia if indicated

Universal Patient Care Protocol

E — **Secure airway or monitor airway** — P
- maintain SpO2 > 94%
- monitor EtCO2 with waveform capnography

Blood pressure > 90 systolic?

No →
- Fluid bolus IV NS 500 mL
- May repeat once to blood pressure > 90 mm Hg

P

- If no improvement administer Dopamine infusion at 10 mcg/kg/min
- Titrate to maintain blood pressure > 90 mm Hg

P

Yes ↓

Stable cardiac rhythm?

No →
Treat rhythm per appropriate **CARDIAC PROTOCOL** — P

Yes ↓

Is patient conscious?

Yes →
M — Contact Medical Control / transport to receiving facility — M

No →
E — **Monitor airway** — P
- Maintain SpO2 > 94%
- Monitor EtCO2 with waveform capnography

P

- If systolic blood pressure becomes < 90 mm Hg, begin Dopamine drip at 10 mcg/kg/min.
- Titrate to systolic blood pressure > 100 mm Hg

P

E — If patient has a loss of spontaneous circulation, refer to the appropriate **PEDIATRIC CARDIAC ARREST PROTOCOL** — P

Legend	
E	EMT
P	Paramedic
M	Medical Control

Pediatric Dyspnea/Epiglottis/ Bronchiolitis/Croup

Return to TOC

Universal Patient Patient Care Protocol

Normal Rates
Infant 25–50
Toddler 20–30
Preschool 20–25
School Age 15–20
Adolescent 12–16

E INITIAL MEDICAL CARE
Assess ABCs
- Airway Patency
  - Align airway, infants/children's airway are very fragile - inline neutral position
- Respiratory rate
- Effort
- Adequate chest rise

P

Epiglottis Score
Category 1: (Severe)
- Imminent or actual respiratory arrest.
- Brief history with a rapid illness

Category 2: (Moderate)
- High risk for potential airway blockage
- Significant sore throat
- Inability to swallow, difficulty in laying flat
- Muffled voice - stridor
- Use of accessory respiratory muscles

Category 3: (Mild – usually adult vs. pediatric)
- Without signs of potential airway blockage
- Complaints of sore throat and pain upon swallowing

Lung sounds

Lung sounds clear or absent

Absent

Clear

Airway obstruction?

Yes

SEE **PEDIATRIC OBSTRUCTED AIRWAY PROTOCOL**

No

E
- Infants via Infant Mask @ 2–4 L/min.
- Small Child (1–8 years) via Pediatric Mask @ 6–8 L/min.
- Older Child (9–15 years) via Non-Rebreather Mask @ 10–15 L/min.

P

Stridor, wheezes, rales

Wheezes

Asthma suspected See **PEDIATRIC ACUTE ASTHMA PROTOCOL**

Rales

Stridor

Wheezes

E Humidified Oxygen nebulizer **P**

- Nebulizer treatment Albuterol (Proventil) 2.5 mg via nebulizer (< 6 years via nebulizer "blow by") **P**
- Repeat if needed

Improved?

Yes

No

E BVM-assisted ventilations with OPA/NPA/ Supraglottic Device (if tolerated) **P**

Improved?

No

Yes

Oral endotracheal tube (As a last resort if BVM support is unsuccessful) **P**

Acute dyspnea, as evidenced by altered mental status: Epinephrine 1:1000 0.1 – 0.3 mg IM (0.01 mg/kg) **P**

M Contact Medical Control / transport to receiving facility **M**

Legend

E	EMT	E
P	Paramedic	P
M	Medical Control	M

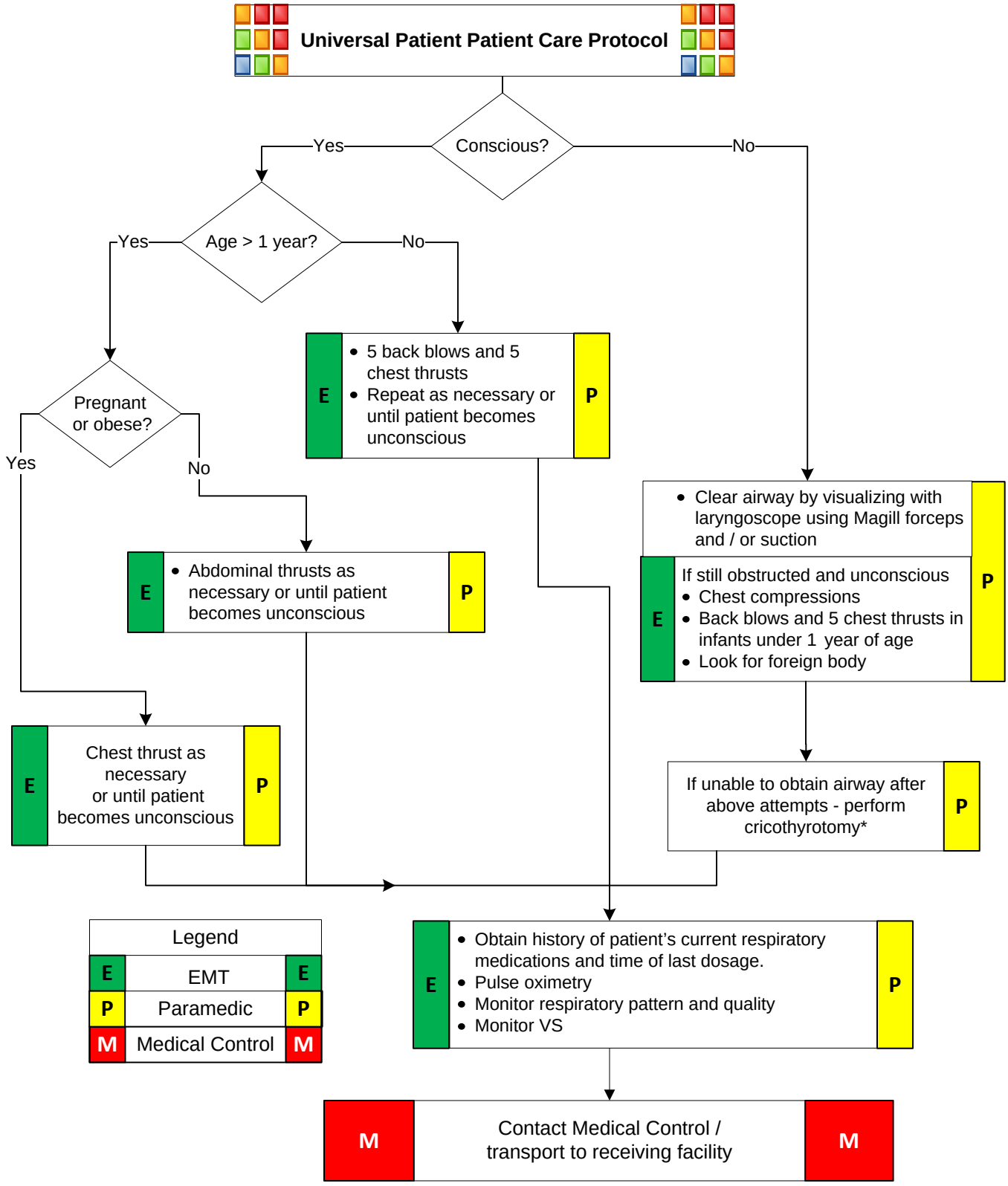
Pearls

Epiglottitis Symptoms: Sudden onset, sore throat, rapid shallow breathing, retractions, inspiratory stridor, tachycardia, difficulty swallowing, drooling, muffling or changes in the voice with difficulty speaking, fever. **Keep patient CALM**

Bronchiolitis Symptoms: Initial similar to common cold; seasonal viral illness in winter and spring. Cough, wheezing, retractions, nasal flaring, tachypnea, mucous blockage of bronchioles, fatigue, vomiting – dehydration, infants, young children most often 3-6 months – 2 yrs.

Croup Symptoms: Runny nose; brassy cough, develop about 2-6 days after being exposed to someone with croup. Low-grade fever (but can be up to 104 degrees F), sudden onset of symptoms (usually appear at night), cough sounds like barking seal, hoarse voice, inspiratory stridor, caused by inflammation in the larger airways: trachea, larynx, and bronchial tubes. Symptoms worsen with anxiety and agitation. Younger infants and small children have more dramatic symptoms due to smaller airways.

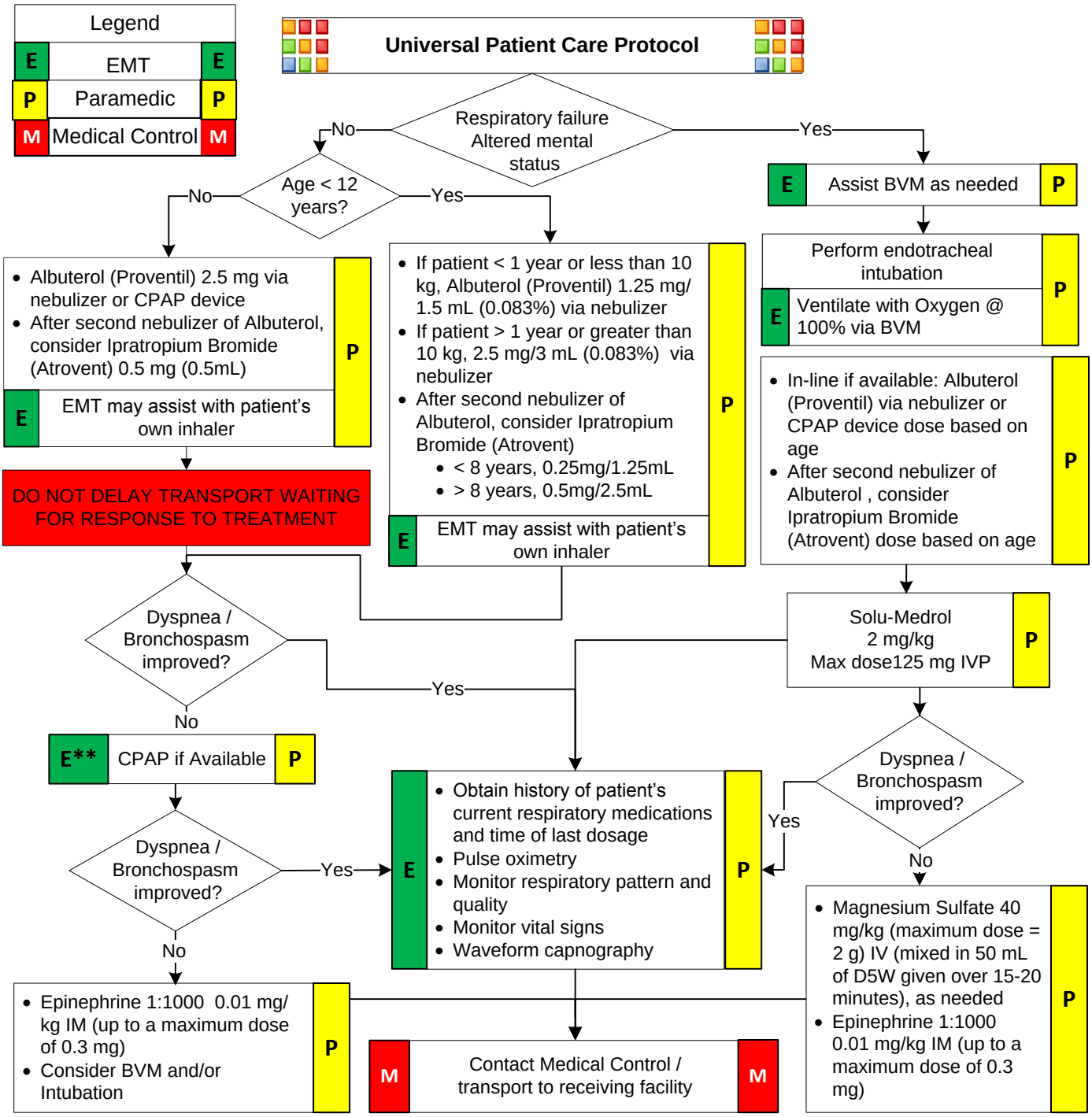
Pediatric Airway Obstruction



Pearls

- *Pediatric < age 8: perform needle cricothyrotomy
- *Child > age 8: perform surgical cricothyrotomy or utilize commercial cricothyrotomy kit

Pediatric Acute Asthma

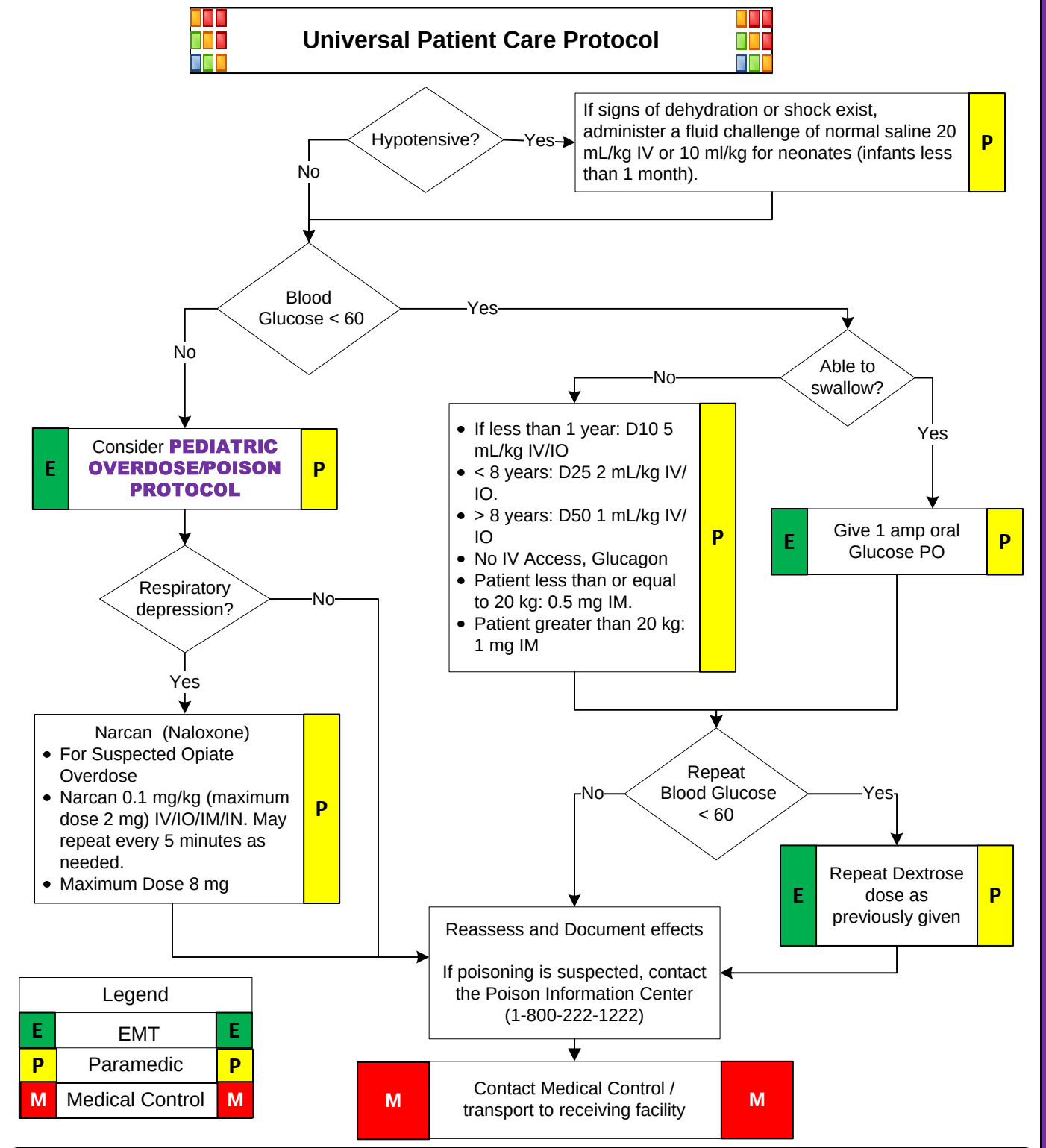


Pearls

- Beware if the patient exhibits "silent" lung sounds, as this indicates impending respiratory failure

E** If an EMT has been trained and previously approved by a local medical director, he or she may perform the following: use an automatic or semi-automatic defibrillator; use a glucometer; perform the administration of aspirin; use any medicated auto injector; perform airway patency techniques including airway adjuncts and CPAP, not to include endotracheal intubation; monitoring and maintenance of non-medicated I.V.s

Pediatric Altered Mental Status



Pearls

- Ventilation and oxygenation always precede drug therapy
- Only administer enough Naloxone (Narcan) to improve respiratory effort if diminished
- Consider soft restraints for the patient suspected of a narcotic overdose

Pediatric Overdose or Poisoning

Universal Patient Care Protocol

INITIAL MEDICAL CARE (E / P)

- Perform airway management
- Keep child warm
- Contact Poison Control 1-800-222-1222
- Follow appropriate care protocol based on current symptioms
- Do not elicit vomiting unless directed by Poison Control or Medical Control
- Bring poison or medication bottle with patient if possible
- Protect care providers (PPE) if any remnants may be inhaled or absorbed via skin

DO NOT ELICIT VOMITING UNLESS DIRECTED BY POISON CONTROL OR MEDICAL CONTROL AND CHILD IS CONSCIOUS

Pharmaceutical Interventions:

E — If ordered by Poison Control Activated Charcoal 1 – 2 grams/kg — P

Legend

E	EMT	E
P	Paramedic	P
M	Medical Control	M

Opiate ingestion?
- Yes → Naloxone (Narcan) 0.1 mg/kg IM maximum dose 2.0 mg — P
- No ↓

Organophosphate ?
- Yes → (P)
  - High dose Atropine 0.05 mg/kg IV IO or IM
  - Maximum single dose of 2 mg
  - May be repeated every 5 minutes
  - Monitor for SLUDGE and resolution
  - Contact Medical Control to administer more than 2 doses
- No ↓

Tricyclic ?
- Yes → Sodium Bicarbonate 1 mEq/kg diluted 1:1 slow IV or IO — P
- No ↓

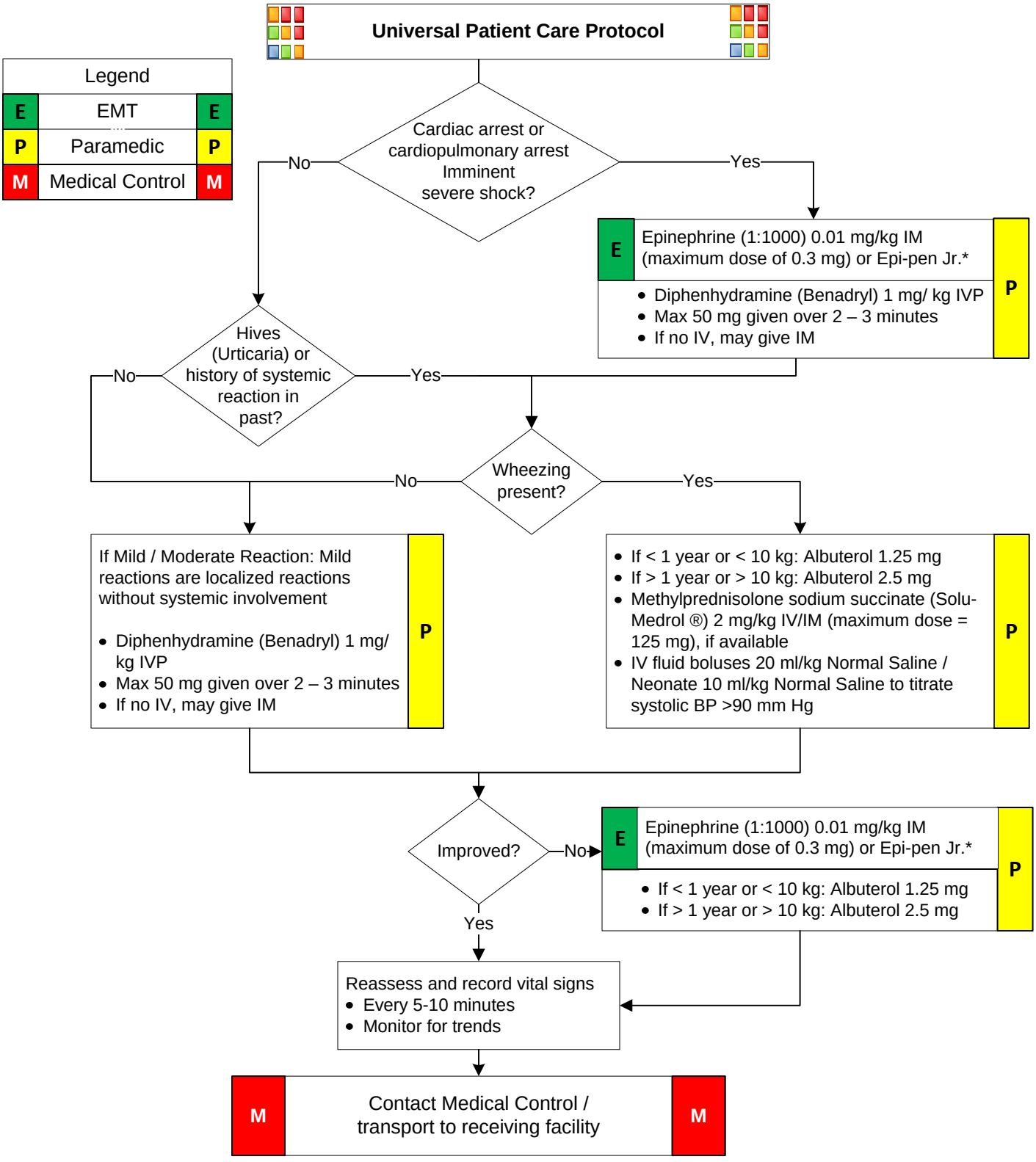
Beta Blocker?
- Yes → (P)
  - Less than 25 kg child – Glucagon 0.5 mg IVP
  - 20 – 40 kg child – Glucagon 1 mg IVP
  - May be repeated every 5 minutes up to a max dose of 3mg
- No ↓

Calcium Channel Blocker ?
- Yes → (P)
  - Calcium Chloride 20 mg/kg (0.2 ml/kg) Slow IV or IO
  - Maximum dose of 1 gram or 10 ml
- No ↓

Dystonic or extrapyramidal reaction?
- Yes → (P)
  - Diphenhydramine (Benedryl) 1mg/kg IV or I/O or IM
  - Maximum single dose 25 mg
- No → M — Contact Medical Control / transport to receiving facility — M

Pearls
- Contact Poison Control 1-800-222-1222
- Do not elicit vomiting unless directed by Poison Control or Medical Control and child is conscious

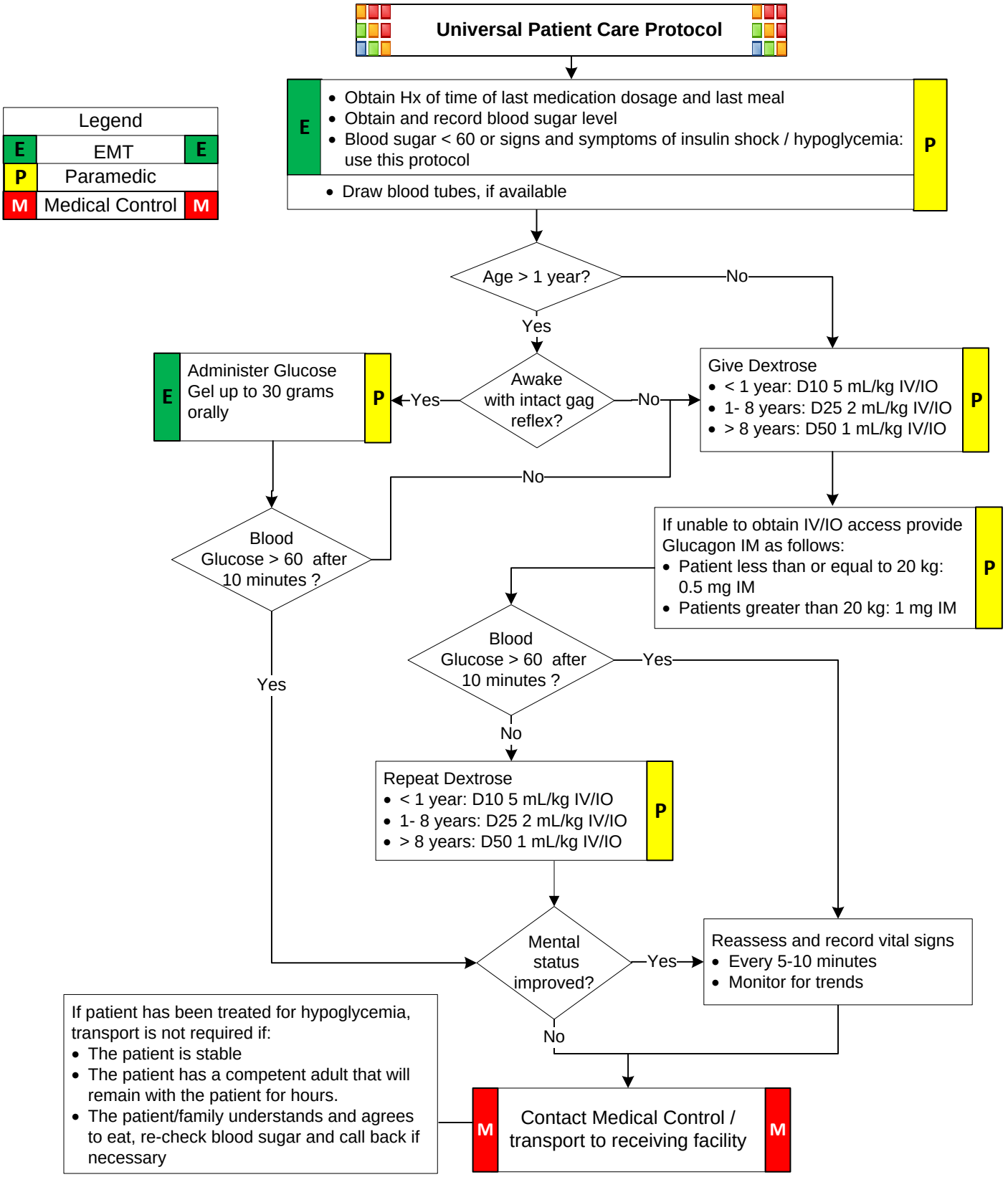
Pediatric
Allergic Reaction or Anaphylactic Shock



Pearls

- The EpiPen (greater than 8 yrs) or EpiPen Jr (1-8 yrs) may be used by the EMT or Paramedic if other means of Epinephrine administration are not available.

Pediatric Hypoglycemia



Pearls

- See **REFUSAL OF CARE PROTOCOL**

Pediatric Seizure

Legend	
E	EMT
P	Paramedic
M	Medical Control

Universal Patient Care Protocol

E

Initial Medical Care
- Oxygen 100% via NRB Mask
- Institute this protocol if had or is actively having a grand mal seizure
- Protect airway and patient from injury
- Check blood glucose, treat hypoglycemia if < 60 mg/dl

P

Febrile?

Yes → If febrile, may administer Acetaminophen Suppositories, if available, if no Acetaminophen in last four hours **P**
- 3 -36 months 80 mg rectal
- 3 – 6 years 120 mg rectal
- 6 years 325 mg rectal

No

Seizure activity lasting > 10 min or multiple seizures?

No → Monitor and Reassess

Yes → Diazepam (Valium ®) 0.2 mg/kg IV or IO or 0.5 mg/kg (maximum 10 mg)
- or -
Lorazepam (Ativan ®) 0.1 mg/kg (maximum dose 2 mg) IV or IO
- or -
Midazolam (Versed) 0.1 mg/kg (maximum dose = 2 mg) IV or IO

If no IV access:
Midazolam (Versed) 0.1 mg/kg IM; maximum dose 3 mg
- or -
Diazepam Rectal Gel (Diastat)
- 2 – 5 year old give Diazepam Rectal Gel 0.5 mg/kg
- 6 – 11 year old give Diazepam Rectal Gel 0.3 mg/kg

P

Parent/ Guardian agrees to transport post seizure*?

No → Treated?

May treat and release if:
- Not a first time seizure
- The patient is stable
- The patient has a competent adult that will remain with the patient
- The patient/family understands and agrees to take medication if indicated and call back if necessary

Treated? No → (same as above)

Treated? Yes → **Transport if***
- Fever
- Repetitive seizures
- An unusual seizure for patient
- New onset of seizure

Yes → Reassess and record vital signs
- Every 5-10 minutes
- Monitor for trends

M Contact Medical Control / transport to receiving facility **M**

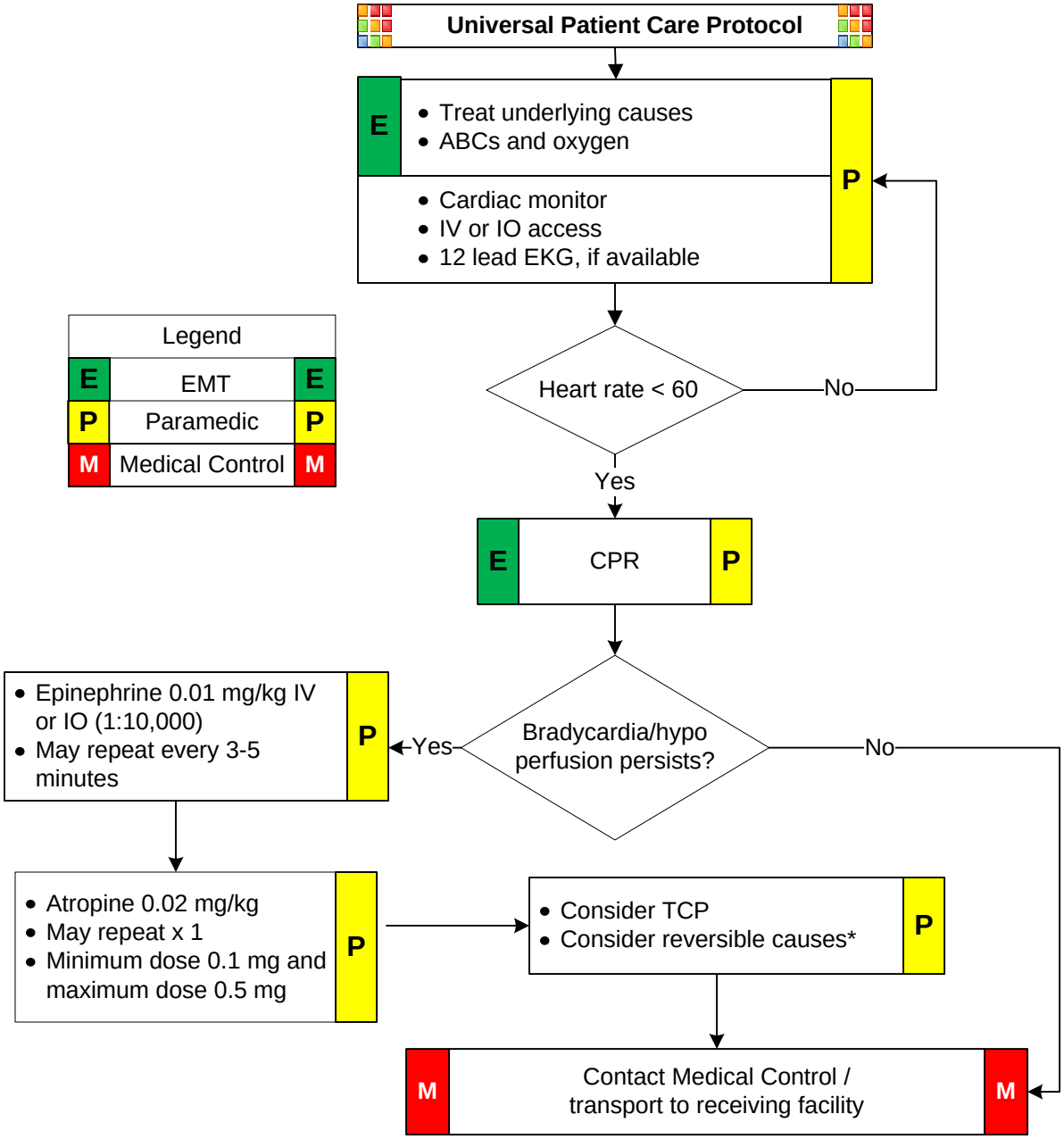
Pearls
- Refer to Broselow Tape or other length / weight based tool for administration. If no IV access, rectal administration may be used per guidelines.
- Observe patient's sensorium and airway during post-ictal periods
- Note any injury sustained during seizure and / or any incontinence
- If the patient is female and may be eclamptic administer magnesium sulfate 4 g IV (mixed in 50 ml of D5W given over 5–10 minutes). Consider in females in their second or third trimester of pregnancy (> 20 weeks gestation)
- *Refer to **REFUSAL OF CARE PROTOCOL** and contact Medical Control if needed

Pediatric Bradycardia

Bradycardia
- With pulse and poor perfusion

Signs and Symptoms
- Hypotension
- Altered mental status
- Signs of shock

- DO NOT DELAY TRANSPORT WAITING FOR RESPONSE TO TREATMENT
- If pulseless arrest occurs, go to **PEDIATRIC CARDIAC ARREST PROTOCOL**



*Reversible Causes: Hypoxia, Hypovolemia, Hydrogen Ion acidosis, Hypo/Hyperkalemia, Hypothermia Tension pneumothorax, Tamponade (cardiac), Toxins, Thrombosis coronary, Thrombosis pulmonary

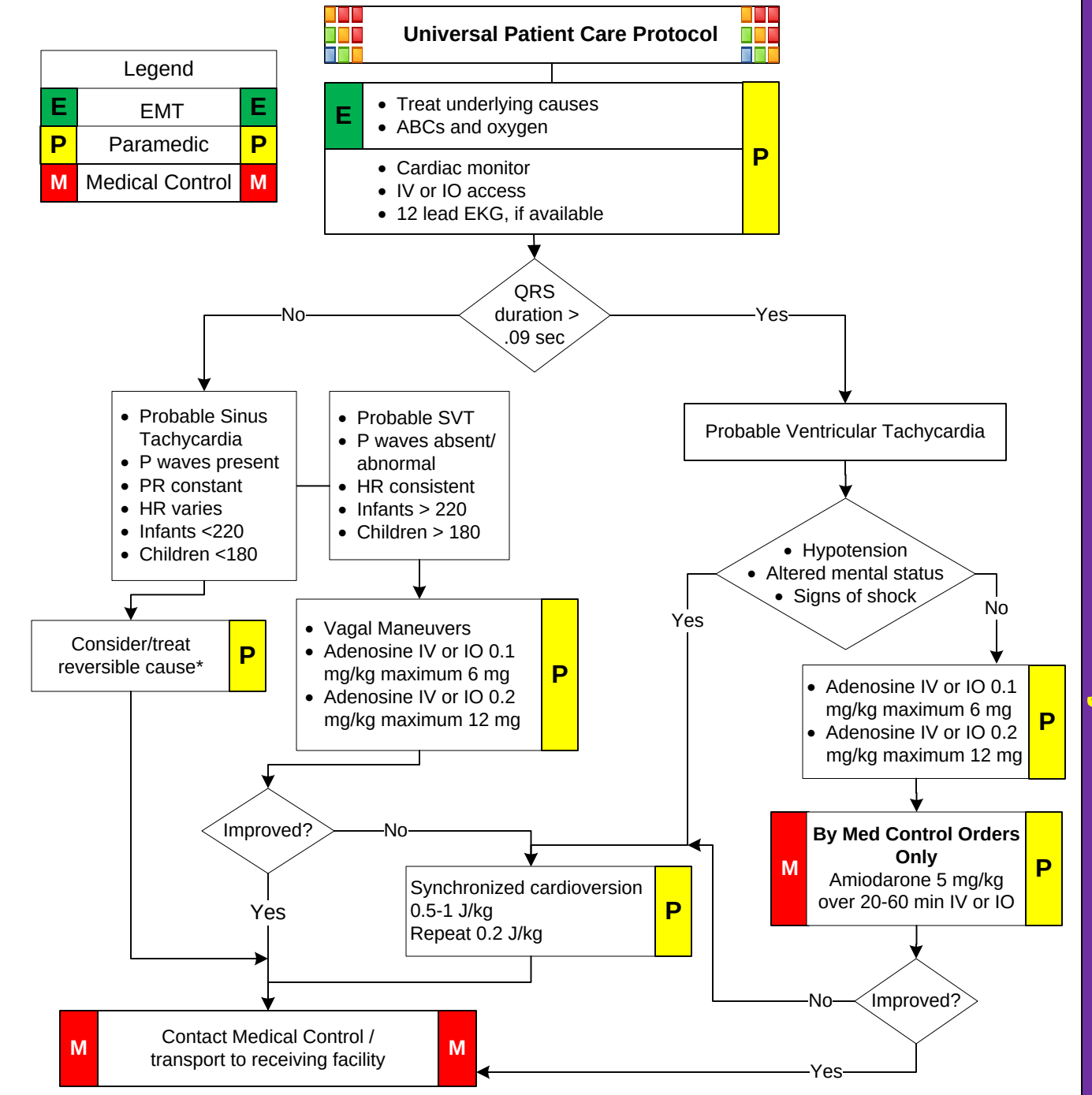
Pearls
- If at any time the pulse is lost go to **PEDIATRIC CARDIAC ARREST PROTOCOL**

Pediatric Tachycardia

Tachycardia
- With pulse and poor perfusion

Signs and Symptoms
- Hypotension
- Altered mental status
- Signs of shock

- DO NOT DELAY TRANSPORT WAITING FOR RESPONSE TO TREATMENT
- If pulseless arrest occurs, go to **PEDIATRIC CARDIAC ARREST PROTOCOL**



*Reversible Causes: Hypoxia, Hypovolemia, Hydrogen Ion acidosis, Hypo/Hyperkalemia, Hypothermia Tension pneumothorax, Tamponade (cardiac), Toxins, Thrombosis coronary, Thrombosis pulmonary

Pearls
- If at any time the pulse is lost go to **PEDIATRIC CARDIAC ARREST PROTOCOL**

Pediatric Apparent Life Threatening Event (ALTE)

Defined: Formally Known as "Near SIDS"
- The experience is very concerning to parents and child care providers
- Often the infant will look much better than originally called in
- All of these events must be transported to closest appropriate facility for work up

Presenting Clinical Picture:
- Sudden color change: mottled, pale or cyanotic
- Muscle tone decreased or rigid
- Gasping or absent respirations
- May be febrile or hypothermic (both indicate possible infant sepsis)
- Fontanel may be sunken or bulging

Causative Factors Include:
- Sepsis
- Cardiac Defect
- Neurological Defect/ Seizures
- Respiratory Deficit/ Hypoxia
- Alcohol Syndrome
- Genetic Birth Defects
- Gastroesophageal Regurgitation / GI Disorder
- Medication Overdose / Mother's Ingestion
- Hypothermia
- Child Abuse

Universal Patient Care Protocol

E	Assist ventilations with oxygen@100% via BVM if needed DO NOT HYPERVENTILATE	P
E	Begin CPR if needed	P
E	• Appropriate protocol based on presenting symptoms • * See **PEDIATRIC CARDIAC ARREST PROTOCOL** • MUST KEEP PATIENT WARM	P
E	• Treat reversible causes* • Note surroundings for possible neglect/abuse	P
M	Contact Medical Control / transport to receiving facility	M

Legend		
E	EMT	E
P	Paramedic	P
M	Medical Control	M

*Reversible Causes: Hypoxia, Hypovolemia, Hydrogen Ion acidosis, Hypo/Hyperkalemia, Hypothermia Tension pneumothorax, Tamponade (cardiac), Toxins, Thrombosis coronary, Thrombosis pulmonary

Pearls
- **Contact Poison Control 1-800-222-1222**
- *If at any time a pulse returns (ROSC) go to **PEDIATRIC POST CARDIAC ARREST PROTOCOL**
- Refer to Broselow Tape or other length / weight based tool for pediatric medication administration
- Ventilation and oxygenation always precede drug therapy
- Apply cardiac monitor and pulse oximetry as soon as possible

Newborn Care

Universal Patient Care Protocol

E
Newborn Care:
- Deliver infant according to EMERGENCY CHILDBIRTH PROTOCOL
- Note the TIME of delivery
- Record APGAR score at 1 and 5 minutes
- Suction mouth FIRST, then nose of infants with bulb syringe

P

Meconium stained?

Yes

E
Meconium Stained Infants/ Precipitous Delivery:
- Suction upon delivery of the head PRIOR to deliver of the baby
- Use 12 -14 Fr cath or bulb suction
- After delivery, if evidence of airway obstruction by meconium, intubate infant and apply suction to the lumen of the ETT while withdrawing from the trachea

P

No

Legend		
E	EMT	E
P	Paramedic	P
M	Medical Control	M

Respiratory distress?

Yes

E
- Place infant on side in Trendelenburg position
- Suction mouth and then nose
- Continue to stimulate by warming and rubbing back and feet
- Assist ventilations with BVM Oxygen @ 100%
- Assess color and provide Oxygen @ 100%
- Provide Oxygen @100 % via NRB mask if central cyanosis present
- If respiration improves, administer "blow-by" Oxygen

P

E
Infants in Extremis:
- Perform all the above initial interventions
- HR <60 BPM, immediately start chest compression (15:2) with hand thumbs to sternum and hands wrapped around chest.
- Never check pulse in carotid due to possible inadvertent airway obstruction

P

No

E
- After establishing airway and warming infant, clamp and cut cord provided pulsation has ceased
- Assess respiratory rate (neonate 40 – 60)
- Assess heart rate (neonate 110 – 150 HR)

P

- Obtain IV/IO access and administer fluid boluses @ 10 mg/kg
- Obtain Blood Sugar
- Consider Naloxone (Narcan) 0.1 mg/kg IVP maximum 2 mg dose
- Epinephrine 0.1 -0.3ml/kg IV of a 1:10,000 solution
- Repeat same dose Epinephrine every 3-5 minutes if no response

P

M Contact Medical Control / transport to receiving facility **M**

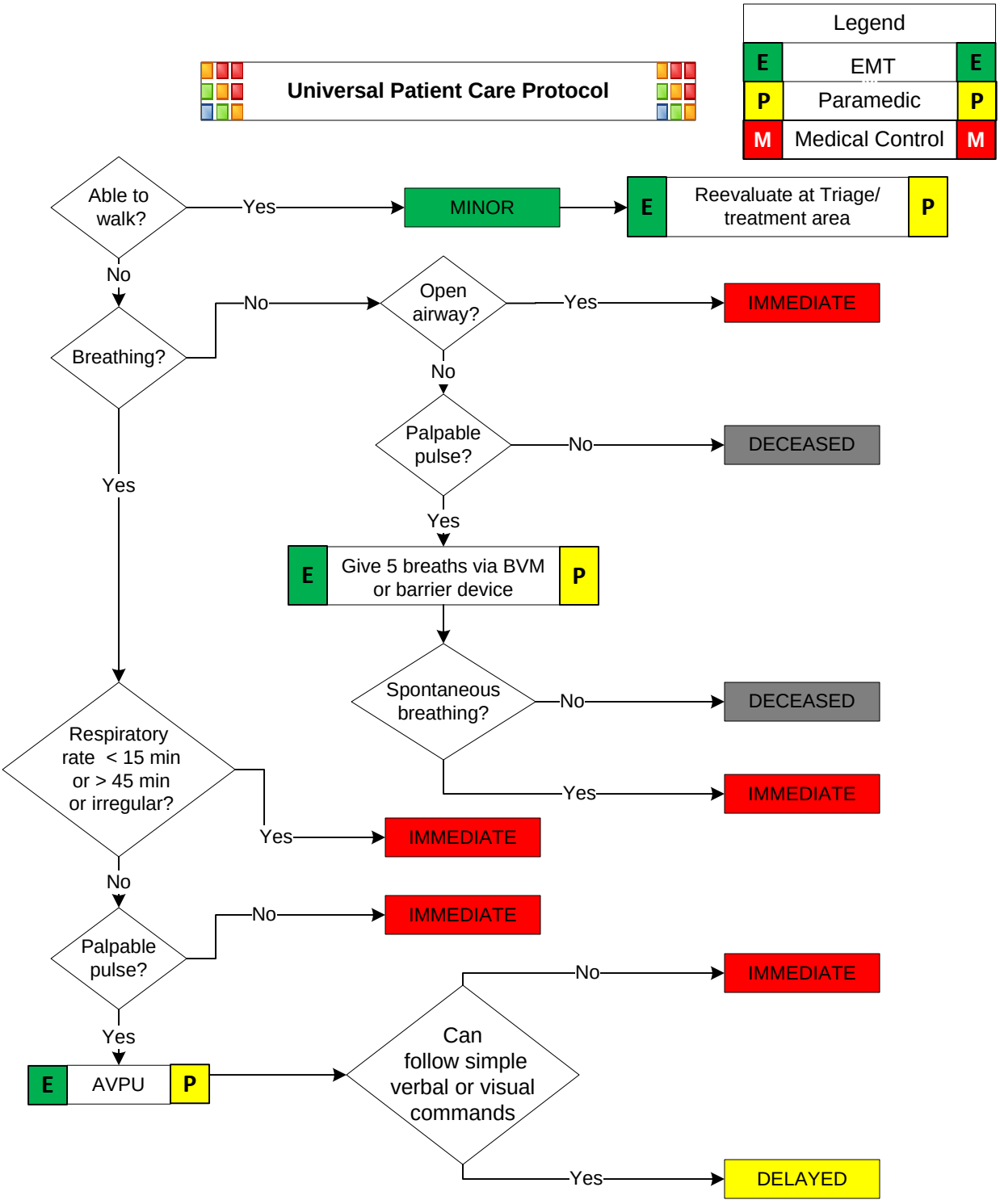
APGAR SCORE:

Evaluate 1 minute and 5 minutes after delivery of Infant

Sign	0	1	2
Appearance	Pale/Blue	Pink body, blue extremities	Pink body, pink extremities
Pulse	Absent	Less than 100	100 or greater
Grimace	No response	Grimace	Cough, sneeze
Activity	Limp	Some flexion	Action
Respiratory Effort	Absent	Slow, irregular	Strong, crying

Pearls
- Nasal flaring and retractions are abnormal findings and indicate respiratory distress

JumpSTART Pediatric Triage



Pearls

- AVPU Scale
  - (A) Alert = Spontaneous eye opening and correct verbal response
  - (V) Verbal = Only opens eyes to responds to verbal commands
  - (P) Pain = Only responds to painful stimuli
  - (U) Unconscious = Does not respond to any of the above methods

State of Florida All Hazards Medical Disaster-Catastrophe Pre-Hospital Emergency Medical Services Administrative Standard Operating Procedures and Protocols

The purpose of the State of Florida All Hazards Medical Disaster-Catastrophe Pre-Hospital Emergency Medical Services Administrative Standard Operating Procedures and Protocols are to support and delineate emergency services care under austere circumstances.

Normal EMS operations may need to be suspended if all available resources are required to manage the disaster event. "Alternative Care/ Austere Care" refers to medical care delivered to individuals under conditions of duress, such as after a disaster or when medical supplies are insufficient to meet the demand for emergency care. Planning for these catastrophic events allows the EMS system to provide a certain level of care to every individual who needs it, instead of a high level of care to only a few people. Alternative/Austere care is only rendered in the setting of disaster or isolation and requires activation as described in this protocol.

The potential of an opening of an Alternate Medical Treatment Site (AMTS) may be considered in conjunction with the hospital facilities, Florida Department of Health and Emergency Medical Services leadership. Certain suspected contagious diseases, hazmat and other mass casualty or toxic events may be the preceding factor that creates this scenario. The Local and State EMS Medical Directors will work in unison to support the needs of the community and support the optimal functioning of the EMS Care Providers.

In the event of an AMTS opening, EMS may be directed to take specific patient groups to that area instead of the local emergency department. This decision will be based upon a two-fold event. First to contain surge capacity, also to prevent acute care center contamination from toxic, hazmat or virulent biologicals.

Release Post Treatment

In the event of a disaster-catastrophe, there may be an extremely large number of citizens seeking confirmation that they are not ill or injured and may have been outside the area of the event. There may also be a large number of potential patients that were within the area of the event but who are not ill or injured or have sustained minor injury. Pre-hospital triaging and treat and release scenarios may be involved within the setting of the disaster-catastrophe. Ongoing assessment and documentation will require the potential use of ancillary healthcare professionals to carry out this community service.

The following protocols may be used to mitigate the number of minor injuries presenting to health care facilities in a disaster zone and to minimize the number of transports, thus easing the burden on overwhelmed EMS transport agencies. These Protocols cover common minor complaints and illnesses but are by no means comprehensive. The EMT or Paramedic is urged to contact a Medical Control Physician at any time a course of action or treatment plan is uncertain.

Medication Usage

The EMT or Paramedic may recommend certain Over The Counter (OTC) medications for minor complaints found in these Protocols. A list of recommended medications and their classification is found within this section. EMTs and Paramedics are also authorized to assist patients with their own prescriptions (EMTs are limited to aspirin, nitroglycerin, metered dose inhalers, oral glucose and automated epinephrine injectors) without being obligated to transport those patients for further care unless warranted by the circumstances or continued symptoms.

Over-the-Counter Medications Authorized by the Alternative Care Protocols

Pain and Fever

Acetaminophen
- Used for pain or to lower fever
- Will not help with elevated temperature from heat stroke
- Causes liver damage in overdose

Aspirin
- Non steroidal anti-inflammatory and pain medicine
- Can also be used to lower fever

Excedrin
- Medication containing acetaminophen, aspirin and caffeine
- The caffeine can be helpful in relieving headaches, especially migraine type

Ibuprofen
- Non steroidal anti-inflammatory pain medication
- Can cause stomach upset
- Should not be taken by people with ulcer disease or gastritis
- Take with food
- Do not exceed 2400 mg/ day

Topical Scabicides

Nix, Rix, Kwell
- Lotion or Cream
- Treatment for scabies infection
- Shampoo for Head Lice
- Use only as directed on container

GI Preparations

Dramamine
- Medication used to treat motion sickness
- May have some benefit in nausea (Inapsine is much more effective)

Imodium Antidiarrheal medication

Metamucil
- Fiber containing product. Can help with both constipation and diarrhea
- There are many other brands of fiber agents
- Must be mixed in at least 8 oz. water

Milk of Magnesia
- For constipation
- Will usually work in 8-12 hours

PeptoBismol
- For diarrhea and stomach upset

Zantac, Pepcid, Tagamet
- For Acid Reflux/heartburn

Topicals (Skin)

Calamine
- Lotion or ointment
- Drying and soothing action
- For use on sunburn or poison oak, sumac or ivy

Desenex
- Antifungal ointment or cream

Hydrocortisone
- Steroid cream or ointment
- Do not use on the face!

Lotrimin
- Antifungal and anti-yeast medication
- Comes in both skin and vaginal preparations
- Be sure to use the right preparation in the right place!

Triamcinolone
- Steroid cream or ointment
- Do not use on the face!

Antihistamine/Decongestants/Cough

Actifed
- Decongestant anticholinergic
- Should not be used with other antihistamines or decongestants

Benadryl
- Itching and allergic reactions
- Because it is sedating, it can be used for sleep
- Persons using Benadryl should be cautioned about doing dangerous activities
- Because it is anticholinergic, it should not be used with other antihistamines or decongestants
- In combination, can cause urinary retention

Pseudoephedrine
- Decongestant anticholinergic
- Should not be used with other antihistamines or decongestants

Robitussin DM
- Contains dextromethorphan, a cough suppressant and guaifenesin, an expectorant.
- Some other cough medications contain a decongestant as well and should be avoided if other decongestants are used

Ear Nose Throat

Auralgan
- Local anesthetic for use in the ear

Cerumenex, Debrox
- Used to soften impacted ear wax

Oil of Clove
- Local anesthetic for dental pain

Opthaine
- Local anesthetic for the eye
- Can be used for temporary eye relief
- Should never be used repeatedly because it is a slight irritant and the eye cannot heal while using it

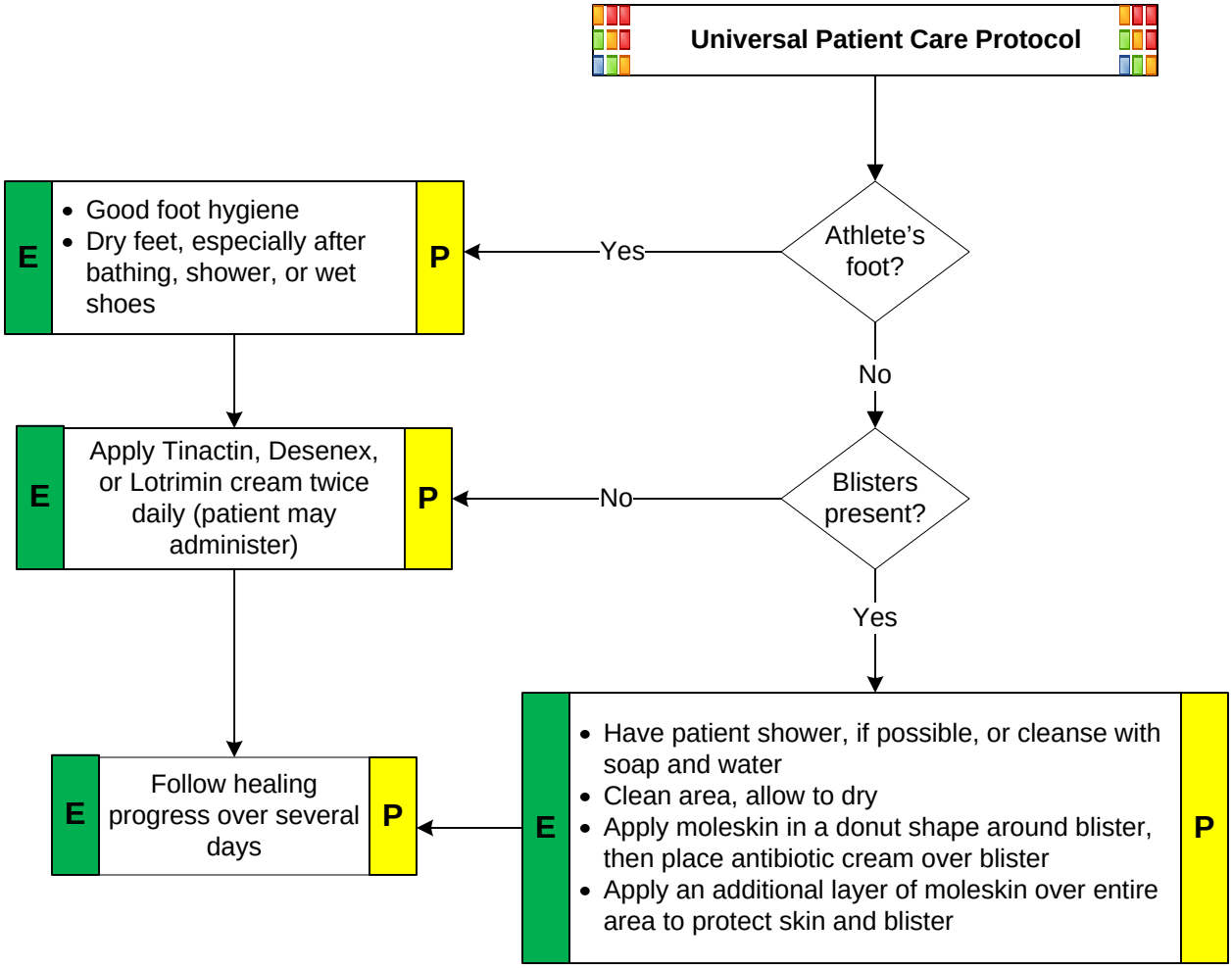
Pearls
- Note: Although brand names are often used in these protocols for ease of recognition, a generic equivalent may be used

Foot Complaints

History
- Non-burn related blisters
- Patients with blisters to their feet, ankles, or hands should have their foot or hand wear evaluated for proper fit

Signs and Symptoms
- Cracks between toes, itching
- Non-burn related blisters

Differential
- Chemical burns
- Infectious process



Legend	
E	EMT
P	Paramedic
M	Medical Control

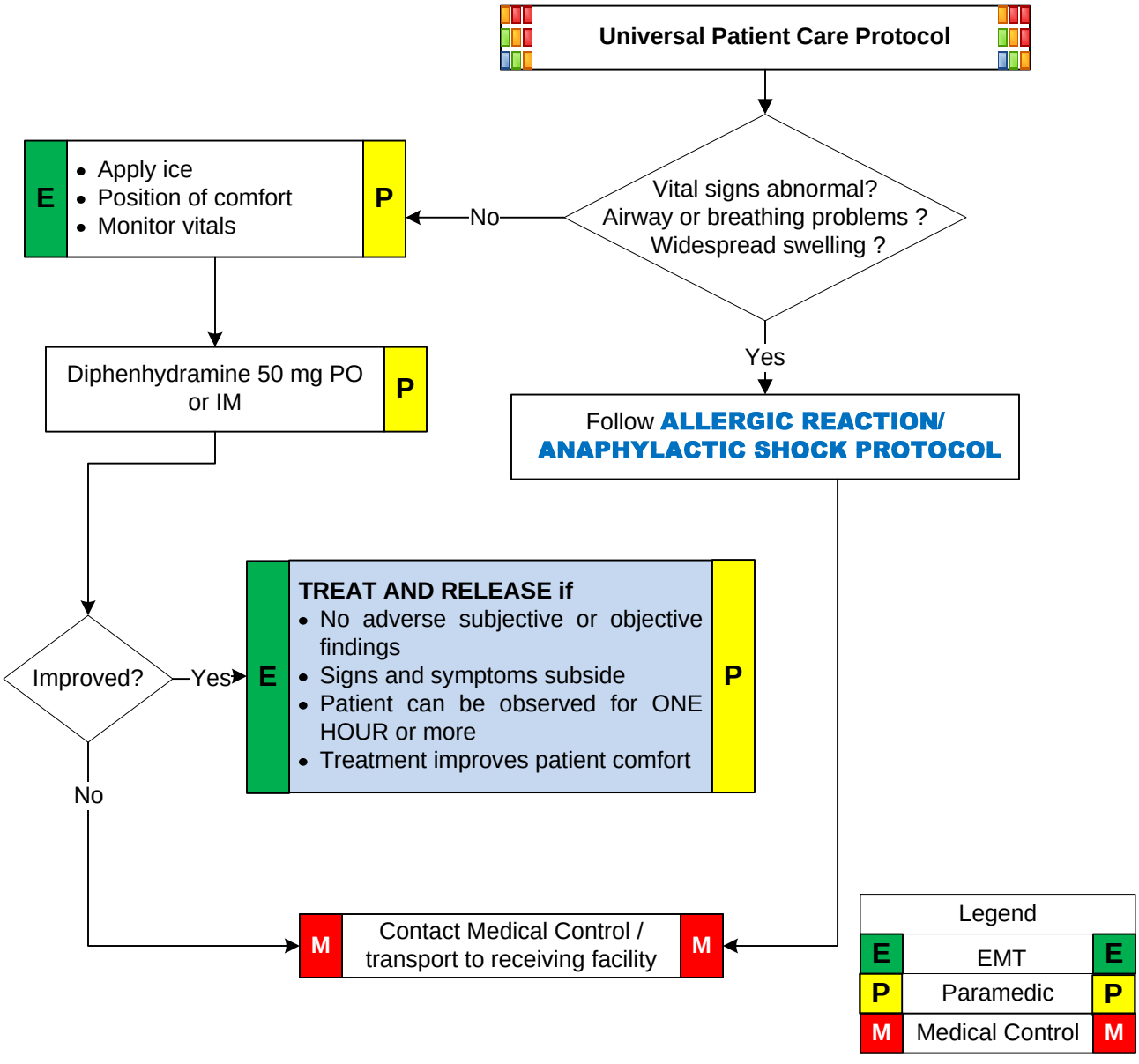
Pearls
- Watch for signs of infection
- Explain to patient signs of infection

Mild Allergic Reaction

History
- Exposure to insect sting, penicillin, seafood, etc.
- Route of exposure
- How long ago?
- Known allergies or allergic reactions

Signs and Symptoms
- Localized reaction
- Itching
- Difficulty breathing
- Chest tightness
- Localized rash
- Nausea, abdominal cramps
- Numbness and tingling
- Patient condition stable

Differential
- Asthma
- Non-allergic skin rash
- Cardiac problem
- Infectious process



Pearls
- Topical antihistamine lotion or hydrocortisone (over the counter) may help alleviate itching
- If symptoms are not resolved within 48 hours, patient should seek further medical care

Dental Pain Injury or Infection

Urgent Conditions
- Avulsed tooth
- Abscess tooth or gum
- Oral / dental injuries

Semi Urgent
- Toothache

Signs and Symptoms
- Non traumatic dental pain
- Pain and swelling at gum line
- Tooth is tender to touch
- Hot/cold sensitivity

For Injuries
- Airway intact
- Vital signs within normal limits
- Bleeding controlled
- Does the wound require sutures?
- Are teeth broken and/or avulsed?
- Tooth avulsion within one hour ?

Differential
- Other infectious process
- Referred cardiac pain in jaw
- Referred pain originating in ear

Legend		
E	EMT	E
P	Paramedic	P
M	Medical Control	M

Universal Patient Care Protocol

Traumatic dental injury?

Yes

E Tooth avulsion (< 1 hr since injury)
- If patient is alert and oriented (will not aspirate tooth)
- GENTLY rinse debris from tooth with normal saline
- Firmly place tooth back into socket, have patient bite down on tooth to seat in place

P

No

E
- Apply compress to wound(s)
- Apply ice pack as needed
- Rinse with ½ hydrogen peroxide and ½ water
- Collect broken tooth parts (if any)

P

E **Non Traumatic Dental Pain**
- Rinse mouth with ½ hydrogen peroxide, ½ water or salt water; do not allow patient to swallow
- If drainage present, position for drainage out of mouth and be prepared for emesis
- Hot packs as needed to area

P

E Recommend Ibuprofen, 400-600 mg q 6 hours for pain (maximum of 2400 mg/day) **P**

E **Traumatic Oral/Dental Injury Transport**
- Wounds requiring sutures
- Dental work required (take tooth parts)
- Avulsed tooth (place in saline-moistened gauze if > 1 hr since injury)
- Pain intolerable

Treat and Release
- No adverse objective or subjective findings
- Wounds do not require sutures
- No broken teeth
- Pain tolerable

P

M Contact Medical Control
Arrange for dentist
& patient transport **M**

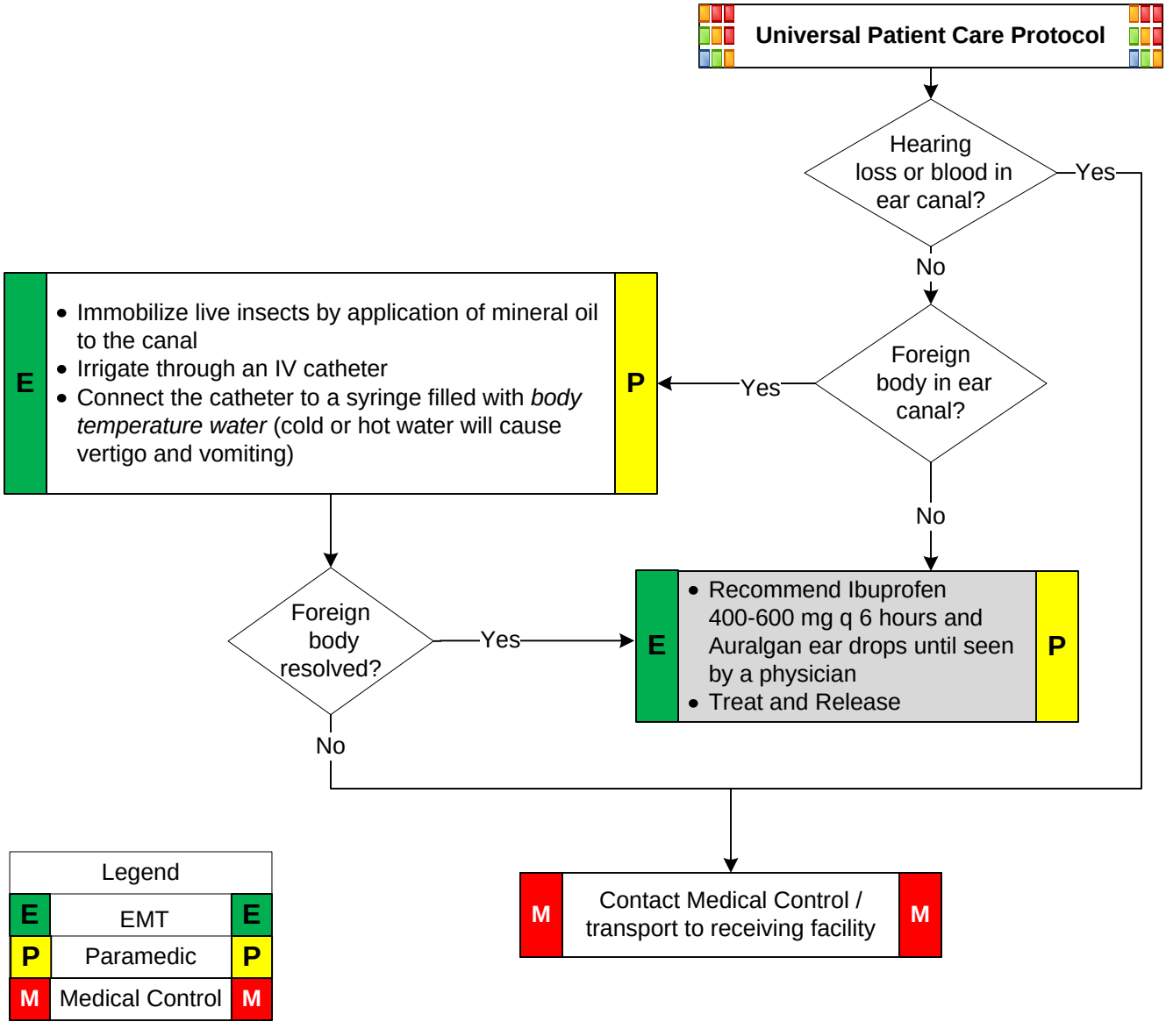
Pearls
- Consider dental service contact early in process to facilitate patient arrangements
- Isolated dental injuries may be treated in a dental office; Combined injuries should be evaluated by a physician first
- Almost all facial lacerations should be evaluated for sutures because of possibility of scarring
- Any wound that crosses the vermillion border of the lip must be sutured

Ear Conditions

Urgent conditions
- Fever above 101.5 F
- Acute hearing loss
- Patients with diabetes and significant ear complaints
- Elderly patients with significant ear complaints

Semi-Urgent
- Acute tympanic membrane perforation
- Otitis Media/Externa
- Foreign body in canal

Signs and Symptoms
- Sharp pain inside ear
- Current upper respiratory infection
- Hearing loss
- Fever
- Severe ear pain, tender to touch
- Swelling of ear canal, purulent material in canal, normal hearing
- Visualization of foreign body in ear



Pearls
- Examination of the ear requires the proper equipment (otoscope) for illumination and magnification. This protocol provides temporary measures until physician evaluation
- Urgent conditions require immediate physician evaluation

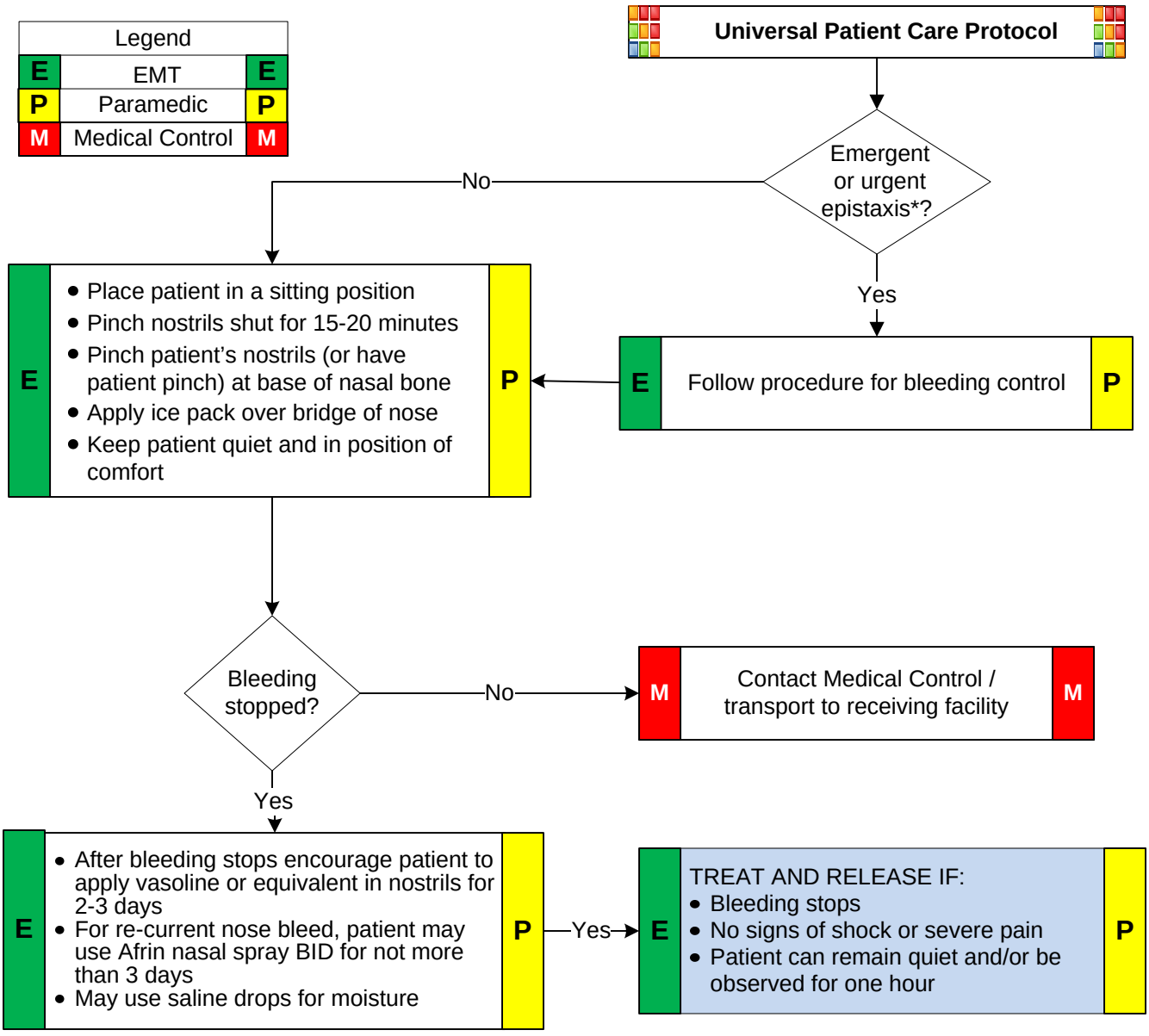
Epistaxis

***Emergency condition**
- Hemodynamically unstable patient

***Urgent conditions**
- Bleeding does not stop after 30 minutes of treatment
- Recurrent epistaxis - more than twice in 24 hours
- Blood pressure greater than 160/100

Signs and Symptoms
- Vital signs within normal limits
- Blood does not go down patient's throat

History
- Onset of symptoms and duration
- Spontaneous or due to trauma
- Past history: hypertension, bleeding disorder or nosebleeds



Pearls
- Inform patient to return or see a physician if condition worsens

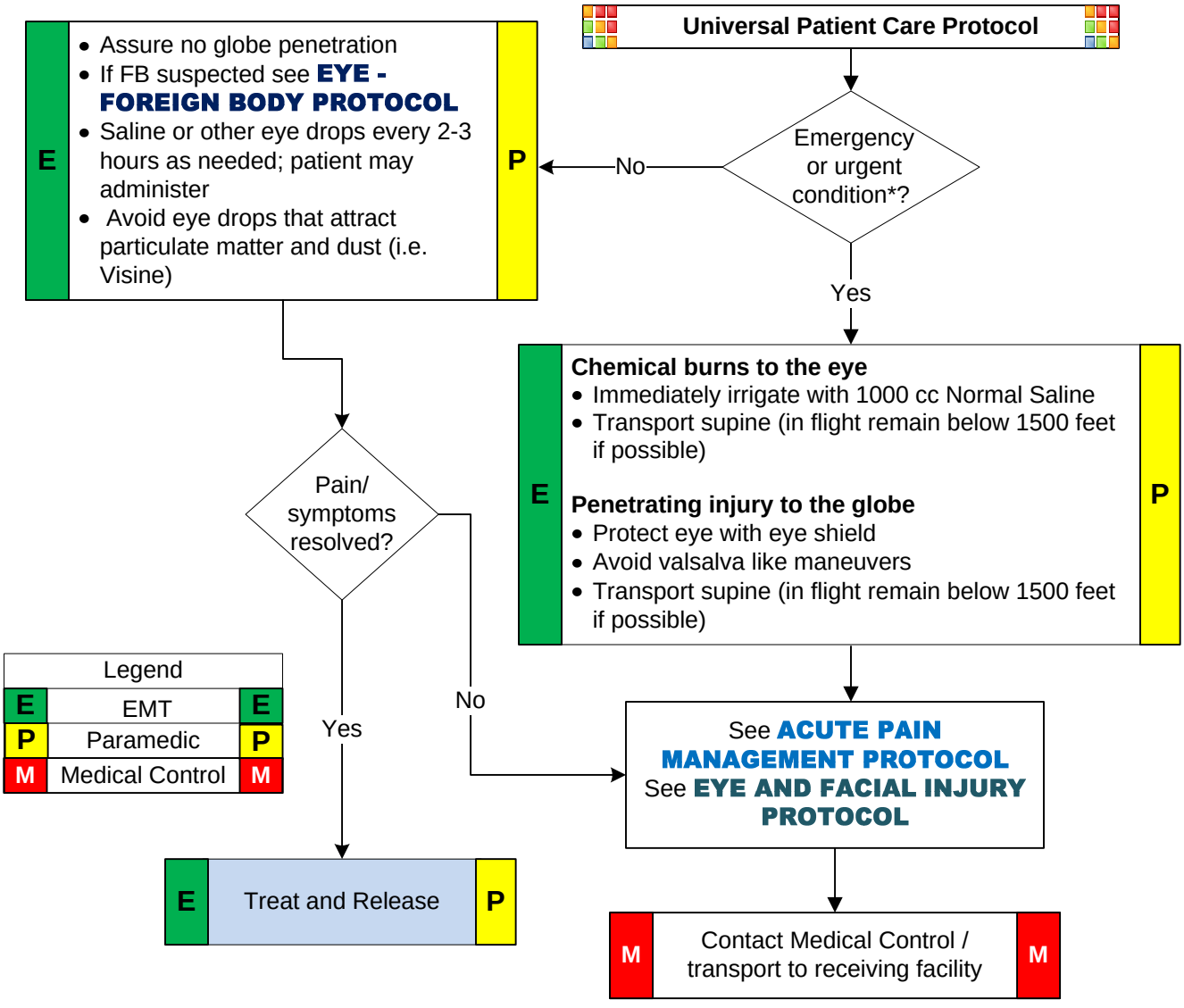
Eye Conditions

***Emergency conditions**
- Sudden loss of vision
- Penetrating injury to the globe
- Chemical burns to the eye
- Sudden, severe, unexplained eye pain

***Urgent conditions**
- Retained foreign body
- Trauma to the eye or surrounding structures
- Conjunctivitis

Signs and Symptoms
- Red, irritated eye with or without purulent material
- Foreign body sensation
- Chemical burns to the eye
- Dry or irritated eyes without signs of infection
- Trauma to the eye or surrounding structures

Differential
- Acute glaucoma
- Retina detachment
- Retinal arterial or venous thrombosis
- Foreign body
- Corneal abrasion
- Dry eye
- Conjunctivitis
- Penetrating globe injury
- Chemical burn



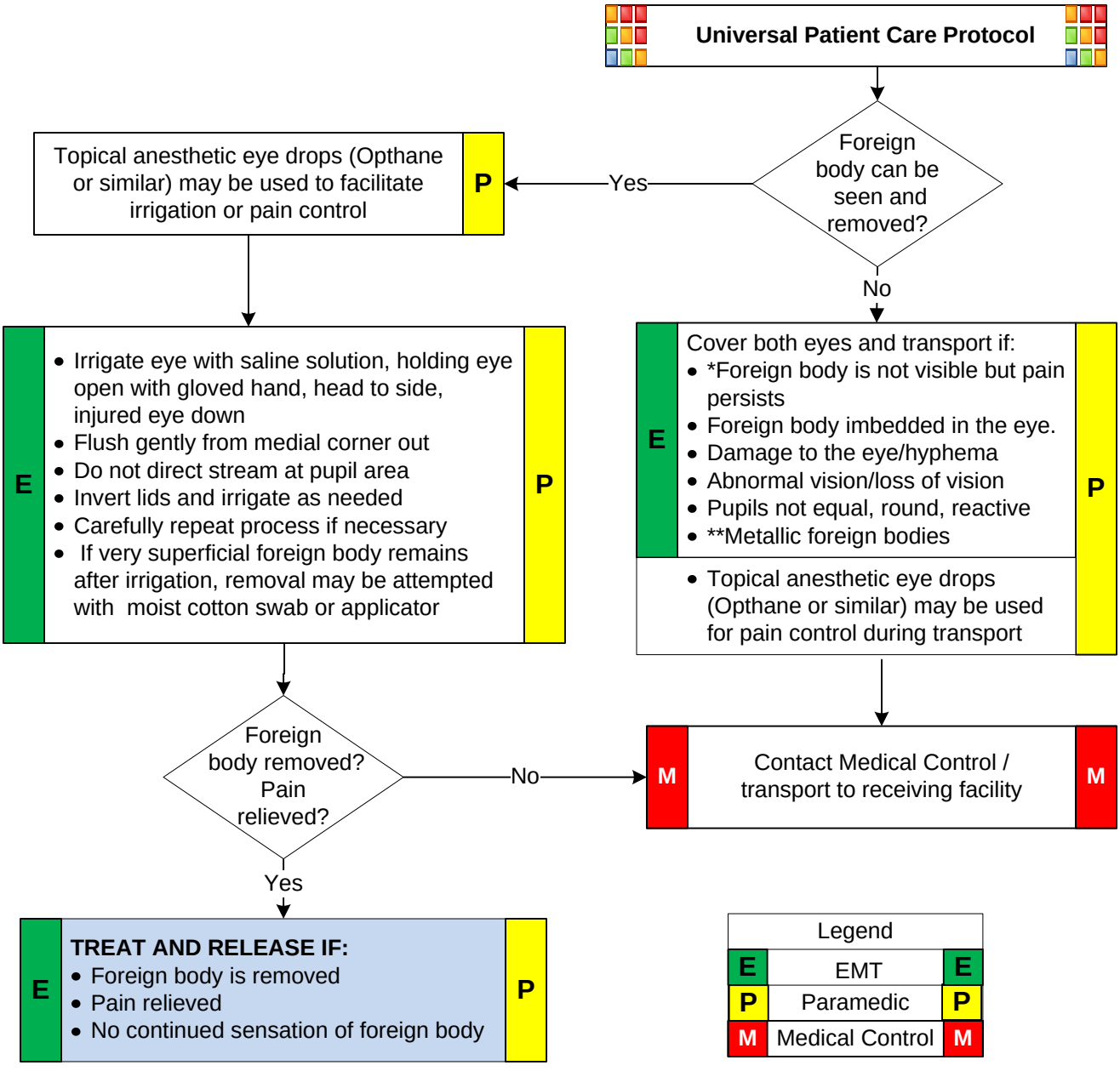
Pearls
- Most eye conditions require prompt attention. Do not hesitate to refer these patients to the physician.
- Patient care documentation should include visual acuity before any intervention

Eye - Foreign Body

History
- What was the patient doing
- Type of material that entered the eye
- Did the patient or other person attempt removal?
- Was attempt successful?

Signs and Symptoms
- Sensation of foreign body in eye
- Light sensitivity
- Eye pain

Inspection
- Foreign body has been removed or is a material that can be removed (i.e., non-metallic, not imbedded in eye)
- Sensation without foreign body



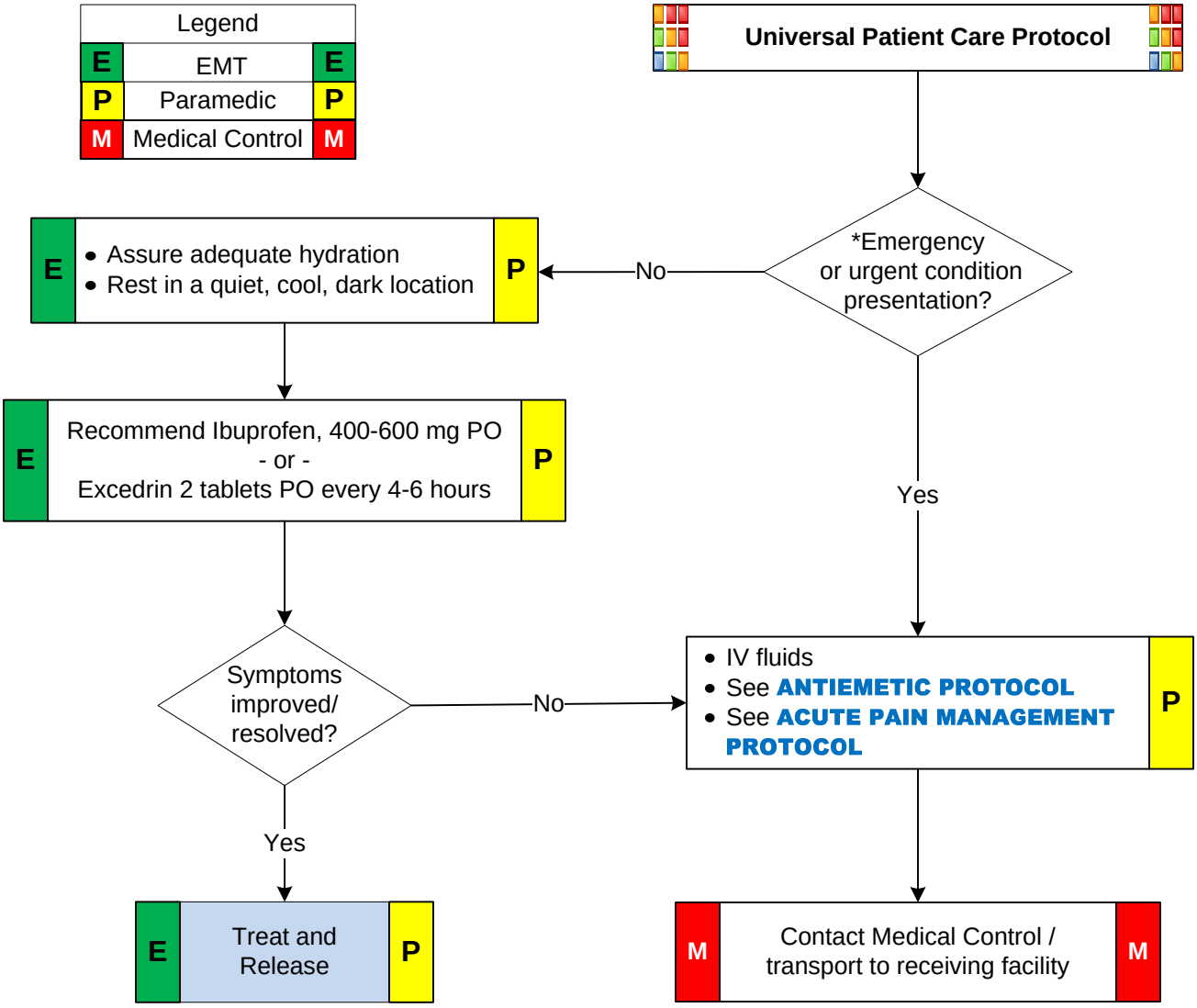
Pearls
- *Persistent Foreign Body sensation without visualized Foreign Body may be corneal abrasion and should be evaluated by a physician
- **Metallic Foreign Body may leave a “rust ring” and should be evaluated by a physician

Headache

***Emergency conditions**
- Severe headache described as "worst headache of my life".
- Headache with other neurological symptoms
- Headache with vision loss
- Altered level of consciousness
- Headache associated with diastolic BP 110 or systolic BP 200

***Urgent conditions**
- Headache unresolved after 1-2 hours with treatment in this protocol
- Patients with a history of migraine or cluster type headaches, unresolved with normal interventions
- Routine conditions
- Headache without other symptoms

Differential
- Sub Arachnoid/Intracranial Bleed
- Meningitis
- Migraine/Cluster Headache
- Tension Headache



Pearls
- Headaches are a common condition during both large incidents and planned events
- Care should be taken to rule out other causes of headache such as dehydration (very common), hypertension, hypertensive crisis, CVA, TIA, or other etiology
- If symptoms are not resolved within 24 hours, patient should seek further medical care

GASTROENTERITIS
(Nausea, Vomiting, Diarrhea)

***Emergency conditions**
- Severe abdominal pain in a female of childbearing age (possible ectopic pregnancy)
- Hemodynamic instability

***Urgent conditions**
- Abdominal pain, other than mild cramping
- Inability to keep down fluids after treatment
- Blood in stool or vomitus
- Fever above 101.5 F

Signs and Symptoms
- Vomiting, nausea, diarrhea
- Mild fever
- Mild cramping
- Stable vital signs (no signs of shock)

Differential
- Acute abdominal condition (Ectopic, Appendicitis, Gallbladder disease)
- Dysentery
- Colitis
- GI Bleed

Universal Patient Care Protocol

*Emergency or urgent condition presentation?

No

E
- See ANTIEMETIC PROTOCOL
- Oral rehydration, small sips of water, juice
- Do not attempt solid food

- If dehydrated, IV rehydration 1000 cc Normal Saline IV over 1 - 2 hours

P

E **Anti-Diarrheal**
Pepto-Bismol, 2-3 tbsp or 2-3 tablets q 3-4 hours
- or -
Imodium, 4 mg initially, then 2 mg after each unformed stool to a max of 16 mg mg/day

P

Symptoms improved within 24 hours?

No

Yes

Legend

E	EMT	E
P	Paramedic	P
M	Medical Control	M

Yes

See **ANTIEMETIC PROTOCOL**
See **ABDOMINAL PAIN PROTOCOL**
See **SHOCK PROTOCOL**

E Treat and Release
Monitor symptoms and vital signs **P**

M Contact Medical Control / transport to receiving facility **M**

Pearls
- Gastroenteritis applies to a wide range of symptoms
- Care should be taken to assure the patient is not contagious and likely to contaminate others
- Instruct all patients on hand washing, sanitation, food handling, and water procedures
- If large groups of personnel become ill, consult with Safety Officer and make check of food unit, hydration stations and water supply
- Think water supply contamination when large groups become ill
- If symptoms are not resolved within 48 hours, patient should seek further medical care

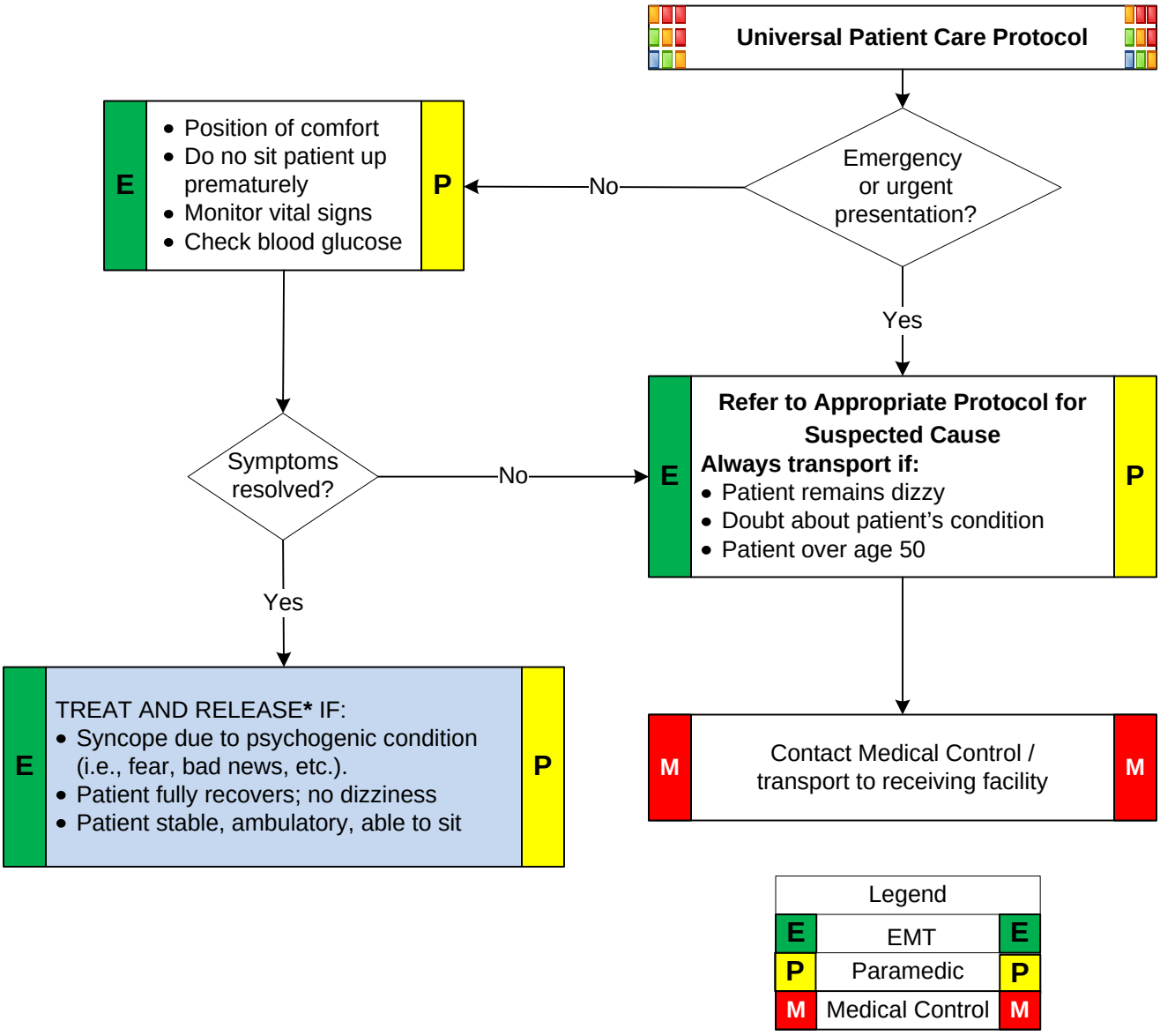
Syncope

***Emergent**
- Nausea, chest or abdominal pain, palpitations,
- Blood in vomit or stool
- Not conscious, alert, oriented
- Vital signs abnormal

***Urgent**
- Vertigo (spinning sensation)
- Not resolved in less than two minutes
- Age greater than 50
- Cardiac, TIA or Stroke history

History
- Onset duration
- Seizure activity
- Precipitating factors, patient sitting, standing or lying; patient pregnant
- Medication, disease, prior syncope
- Cardiac, TIA or Stroke history

Differential
- Cardiac Event
- Stroke/TIA
- Low Blood Pressure/Shock
- Hypoglycemia
- Substance Abuse
- Seizure



Pearls*
- Recommend bed rest in an environment where patient can be observed
- Inform patient to call back if condition worsens or see a physician

Embedded Foreign Body

History
- What was the patient doing before impaled object?
- Does the patient know what the object is and how large?

***Removable Object**
- Object is visible
- Length, diameter and type of object can be determined
- Not imbedded in any vital body part
- Bleeding is controlled
- No range of motion or neurological or vascular deficits

Legend	
E	EMT
P	Paramedic
M	Medical Control

Universal Patient Care Protocol

Is object removable*?

Yes

E
- Remove splinters which appear to be removable in one piece and have an exposed portion
- Remove object with forceps
- Palpate and ask patient if they feel object is all out
- Clean and dress wound

P

No

E
- Object too large to extract and/or pain too great (imbedded farther than one inch or larger than ¼ inch in diameter)
- Item that could cause tissue damage
- Loss of range of motion or neurological or vascular deficits

P

Tetanus prophylaxis in last five years?

No

E Transport patient for Tetanus prophylaxis or refer patient for Tetanus prophylaxis within 72 hours P

Yes

E **TREAT AND RELEASE**
- No adverse objective or subjective findings
- Object completely removed and pain is tolerable
- Patient has had tetanus vaccination in past five years
- Inform patient to return if condition worsens or see a physician

P

M Contact Medical Control / transport to receiving facility M

Pearls
- Items that could cause tissue damage include poisonous plants such as Oleander, chemically treated or contaminated materials, radiological contaminated materials, etc.

Minor Burns

***Minor Burn**
- No full thickness (third degree) burns
- No second degree burns greater than 10 percent
- No critical body areas affected
- No electrical burns except superficial
- No chemical burns

Signs and Symptoms
- Vital signs within normal limits
- Pain is tolerable
- Superficial or small partial thickness 1% or less BSA

History
- Time elapsed since burn
- Was patient in a closed space with steam or smoke?
- Accompanying explosion or toxic fumes?
- Prior cardiac or pulmonary disease?

Universal Patient Care Protocol

Considered a minor burn?

Yes

E / P
- Remove clothing and jewelry from/proximal to area
- Moist dressings
- Small burns may be soaked in cool water to relieve pain
- Cleanse wounds
- Debride non-viable loose skin, leave blisters intact
- Wear sterile gloves. Use a sterile forceps and scissors to cut away loose skin
- Apply antibiotic ointment
- Sterile, bulky, occlusive dressing such as Adaptec

No

See **TRAUMA SECTION BURN PROTOCOL**
See **HAZMAT PROTOCOL** if Chemical Burn
See **ACUTE PAIN MANAGEMENT PROTOCOL**

E Recommend Ibuprofen, 400-600 mg q 6 hours for pain (max. 2400 mg/day) **P**

Is pain controlled?

No

Yes

E / P
Treat and Release
- No adverse subjective or objective findings
- Pain is tolerable
- Treatment improves patient comfort
- Patient does not request follow-up treatment
- Depending upon the burn's severity (i.e., if second degree a recheck may be requested to reapply dressings within 24 hours)

M Contact Medical Control / transport to receiving facility **M**

Legend	
E	EMT
P	Paramedic
M	Medical Control

Pearls
- Keep dressing dry, change daily and observe for signs of infection or skin breakdown.
- For all but superficial burns, burn should be rechecked in 24-48 hours
- Inform patient to call back if condition worsens or see a physician
- Hydrofluoric acid: Hydrofluoric acid exposure can lead to deep, penetrating injury even when symptoms seem minor. Mix calcium gluconate with equal parts K-Y jelly and apply to affected areas. For hands, this can be done by putting the calcium in a rubber glove and then putting the affected hand in the glove. ALWAYS transport

Lacerations/Wounds (Minor)

***Suturable**
- Wound can be separated underlying fat layer is visible
- Any wound that crosses the vermillion border of the lip
- Wounds greater than 3 cm, crosses joint, &/or does not easily close

Non-Suturable wounds
- Less than 3 cm
- Non-gapping, easily closed
- Not located on face or across joints

Signs and Symptoms
- Only minor lacerations should be considered under this protocol
- Go to TRAUMA PROTOCOLS for larger lacerations
- Bleeding must be controlled using direct pressure
- If foreign body (FB) is present see EMBEDDED FB PROTOCOL
- If wound is more than 8 hours old or due to animal bite, refer to physician for decision on treatment

****Tetanus Prophylaxis**
- Any skin break within the last 72 hours
- Has not been immunized in the past 5 years or status is unknown
- Tetanus and Diphtheria Toxoid (DT), 0.5 mg IM into Deltoid muscle
- Record date of immunization, dose, lot number, package ID number on a slip of paper for patient and on medical record
- Contraindicated if hypersensitive to DT
- Side effects: local pain, tenderness, muscle stiffness at site
- May develop a viral-like syndrome

Universal Patient Care Protocol

Requires sutures*?

No

E
- Cleanse wound with soap and water or Normal Saline.
- Remove any superficial foreign bodies
- Apply antibiotic ointment or cream and a dressing

P

Yes

E
If Steri-strip needed to close:
- Do not use ointment
- Apply benzoin to adjacent skin and allow to dry until “tacky”
- Approximate edges of wound
- Apply steri-strip
- Apply non-stick dressing and bandage

P

E
Transport or arrange care by physician or other qualified medical provider for sutures or tissue glue repair
P

Tetanus prophylaxis in last five years**?

No

Yes

E
Treat and Release
- Wound successfully closed
- Pain is tolerable
- Depending upon the wound severity recheck may be requested to change dressings within 24 hours

P

Transport patient for Tetanus prophylaxis or refer patient for Tetanus prophylaxis within 72 hours
P

M
Contact Medical Control / transport to receiving facility
M

Legend		
E	EMT	E
P	Paramedic	P
M	Medical Control	M

Pearls
- Recheck all wounds in 24-48 hours
- It is not so much the time to closure that matters, as it is the time to wound cleaning
- Early and complete wound cleaning substantially reduces the chance of later infection
- In the environment where definitive care may be delayed, thorough irrigation and debridement of an open wound reduces the urgency of evacuation and leads to a better long term outcome

Musculoskeletal Injury

***Emergency Conditions**
- Multiple trauma
- Neurologic or vascular compromise
- Hemodynamic instability

***Urgent conditions**
- Obvious dislocation
- Angulation
- Severe pain
- Significant swelling
- Bony tenderness

History
- What caused the injury and when did it occur?
- Does patient have a previous history of injury in the same location?

Signs and Symptoms
- Extremity injury without significant swelling or pain
- Distal pulses, normal color and temperature and capillary refill
- Crepitus not present
- Range of motion normal
- Edema or ecchymosis minor or absent

For ankle injury:
- Able to ambulate without limp, swelling, no joint tenderness distal fibula

Universal Patient Care Protocol

Emergency or urgent condition*?

No

E / P
- Immobilize
- Elevate extremity
- Ice as necessary
- Apply ice 15-20 minutes of every hour
- Encourage or force stop to activity

E / P Recommend Ibuprofen, 400-600 mg PO q 6 hours (max. 2400 mg/ day)

Yes

See appropriate TRAUMA PROTOCOL for type of injury encountered

Condition improved?

No

M / M Contact Medical Control / transport to receiving facility

Yes

E / P **TREAT AND RELEASE:**
- No adverse objective or subjective findings
- Mechanism of injury not sufficient to cause fracture
- Minor sprain or strain
- Patient allowed restricted activity with a recheck at 24-48 hours

Legend	
E	EMT
P	Paramedic
M	Medical Control

Pearls
- For overuse of wrist, a wrist splint may be beneficial
- Back pain without new trauma and no radiation to leg(s), ice for first 24 hours; heat may be used if over 24 hours post injury
- Inform the patient to return or call back if the condition worsens

Water & Hydration Considerations

Background
- Need for good hydration and water procedures
- At 2% of body weight water loss symptoms begin to appear
- At 10% dehydration becomes severe
- Between 20-30% can be fatal
- Up to 10% losses easily reversible with IV and oral hydration

Hydration
- Cool weather (less than 50^0 F) at least 2 quarts of water a day
- Warm weather, minimum of 3-4 quarts a day
- Water is the most suitable
- DO NOT distribute carbonated beverages, hypertonic fluids, or other sugar drinks as the primary fluid replacement
- Electrolyte replacement drinks should be mixed 50% with water

Water
- Most water provided to incidents or events is from a secured source such as: city water systems, streams/rivers with water safety check completed, known springs, etc.
- This water is typically provided to the incident by “Buffalo” (500 gal tank on trailer), tanker truck, or fixed source

Water Purification

Cross contamination is the largest issue with water sources. Care should be taken to encourage hand washing, good hygiene, proper sanitation procedures (toilets 200’ from water sources), not allowing personnel to drink directly from the same containers, not allowing personnel to place their containers on master faucets or outlets, etc.

You should inspect water sources with Safety Officers on a regular basis. Know where both gray and sewer water goes and what is done with it

All water sources can be used, but must be purified first

Several Means for Water Purification

Boiling
- Water can be boiled for 5 minutes at sea level to yield purified water
- For every 1000 feet of elevation, you must add 1 minute to the boiling process

Chemical
- Water can be treated with Halazone tablets or Iodine tablets to purify
- Muddy water or water with many particulates should be strained through a filter first

Mechanical
- There are a number of mechanical water purifiers utilized at incidents and events
- Assure the operator understands the loading, cross contamination, and purifying procedures

Legend		
E	EMT	E
P	Paramedic	P
M	Medical Control	M

Pearls
- At 92° F, the body receives more heat from the environment than it can radiate away; the body relies fully upon the evaporation process to provide cooling with sweat
- A two hour period of work in these conditions can cause 5% dehydration; a 150 pound person must replace 7.5 pints of water
- Each person must carry the amount of water needed for the day, or have it available to them
- Without proper hydration, dehydration begins; even low levels of dehydration will affect human performance

State of Florida All Hazards Medical Disaster Procedures and Protocols

Section 6

UNIFORM PRE-HOSPITAL MASS CASUALTY INCIDENT PROCEDURE

UNIFORM PRE-HOSPITAL MASS CASUALTY INCIDENT PROCEDURE

MCI PROCEDURE

1. PURPOSE

To efficiently triage, treat and transport victims of multiple casualty incidents (MCI's). The following procedure is applicable to all multiple victim situations. This procedure is intended for incidents when the number of injured exceed the capabilities of the first arriving unit(s). The number of casualties may exceed the capabilities of the local jurisdiction and will require assistance from other EMS providers.

2. PROCEDURE

A. The officer of the first arriving unit will establish COMMAND and;

1) Perform a size up, estimating the number of victims.
2) Request a Level 1, 2, 3, 4 or 5 response (see II.D.), request additional units and/or specialized equipment as required.
3) Identify a staging area.
4) Direct the remaining crewmembers and any additional personnel arriving to initiate triage.
   a) Triage will be performed in accordance with START or JumpSTART.
   b) Prioritize victims utilizing color- coded ribbons as either:

Red-	Immediate
Yellow-	Delayed
Green-	Ambulatory (minor)
Black-	Deceased (non-salvageable)

5) Locate and direct the walking wounded to one location away from the incident, if possible. These victims need to be assessed as soon as possible. Assign someone to keep the walking wounded together.

B. As additional units arrive, COMMAND will designate the following officers:

1) TRIAGE (Initially the responsibility of the First Arriving Officer)
2) TREATMENT
3) TRANSPORT
4) STAGING

C. Additional Branches/Sections may be required depending on the complexity of the incident. These Officers may include but are not limited to:

1) MEDICAL BRANCH
2) LANDING ZONE/HELISPOT
3) EXTRICATION
4) HAZMAT
5) REHABILITATION
6) SAFETY
7) PUBLIC INFORMATION OFFICER (PIO)
8) MEDICAL INTELLIGENCE – to assist with suspected or known WMD events for decon, antidotes and treatment

D. **MCI – Pre - determined Response Plan**

1. Considerations:
   a) An MCI shall be classified by different levels depending on the number of victims. The number of victims will be based on the initial size-up, prior to triage.
   b) Levels of response will augment the units already on the scene, units on scene or enroute will be included in assignment. The exception would be when in conjunction with a Fire Alarm assignment. (i.e. Fire with multiple victims may be a Second Alarm with a MCI Level 3 response this will be two separate assignments)
   c) Command can downgrade or upgrade the assignment at any time.
   d) All units will respond to the staging area unless otherwise directed by COMMAND. When announcing an MCI specify the general category (trauma, haz mat, smoke inhalation, etc.)
   e) Any victim meeting Trauma Transport Criteria must be reported to a State-approved Trauma Center for determination as to transport destination. Trauma Transport Criteria will be determined during the secondary triage in the Treatment Phase.
   f) All units are to respond to the staging area emergency response unless otherwise directed.
   g) Consider air transport for special needs, mass transit resources for multiple "walking wounded", and private BLS transport units.
   h) Consider Mobile Command Vehicles, Medical Supply Trailers and Communication Trailers.
   i) Upon notification of a MCI - Medical Control (Medcom/MRCC) will gather each hospital's capability and relay this information to the Transport Officer or Medical Communication Officer.
   j) On a large-scale incident consider sending a Hospital Coordinator to each hospital to assist with communications.
   k) Request law enforcement to set up a safety parameter.

DEFINITIONS:

   a) Strike Team - Is a specified combination of the same kind and type of resources with common communications and a leader. (i.e. ALS Transport Unit Strike Team would be 5 ALS Transport Units with a leader)
   b) Task Force – Is a group of resources with common communications and a leader. (i.e. MCI Task Force would be 2 ALS Transport Units, 2 BLS Transport Units and 1 Suppression Unit with a leader)
   c) Litter Bearer – A team of personnel assigned to TRIAGE to move victims from the incident site to the Treatment Area or Transport Units

MCI LEVEL 1 (5-10 victims)

4 ALS Transport Units 1 Shift Supervisor
2 Suppression units 1 EMS Supervisor

Note: The 2 closest hospitals & Trauma Center to the incident will be notified by Medical Control. (MedCom or local communication center)

MCI LEVEL 2 (11-20 victims)

6 ALS Transport Units 2 Shift Supervisors
3 Suppression units 2 EMS Shift Supervisors

Note: The 3 closest hospitals & 2 Trauma Centers to the incident will be notified by Medical Control.

MCI LEVEL 3 (21 - 100 victims)

8 ALS Transport Units 3 Shift Supervisors Supply Trailer
4 Suppression Units 3 EMS Shift Supervisors
Command Vehicle Operations Chief

Note: The 4 closest hospitals & 3 Trauma Centers to the incident will be notified by Medical Control. The Warning Point will notify the Emergency Management Agency.

MCI LEVEL 4 (101 – 1000 victims)

5 MCI Task Forces (25 units)
1 Suppression Unit Strike Team (5 units)
2 BLS Transport Strike Teams (10 units)
2 Mass Transit Buses
Command Vehicle
2 Supply Trailers
2 ALS Transport Strike Teams (10 units)
5 Shift Supervisors
3 EMS Shift Supervisors
1 EMS Chief
Operations Chief
Communications Trailer

Note: The 10 closest hospitals & 5 Trauma Centers to the incident will be notified by Medical Control. The Warning Point will notify the Emergency Management Agency. In a on-going long term MCI the Metropolitan Medical Response System (MMRS), and the Disaster Medical Assistance Team (DMAT) may be notified.

MCI LEVEL 5 (over 1000 victims)

10 MCI Task Forces (50 units)
2 Suppression Unit Strike Team (10 units)
4 BLS Transport Strike Teams (20 units)
4 Mass Transit Buses
2 Command Vehicles
4 Supply Trailers
4 ALS Transport Strike Teams (20 units)
10 Shift Supervisors
6 EMS Shift Supervisors
2 EMS Chiefs
2 Operations Chiefs
Communications Trailer

Note: The 20 closest hospitals & 10 Trauma Centers to the incident will be notified by Medical Control. The Warning Point will notify the Emergency Management Agency.
In an on-going long term MCI the MMRS, SMART, DMAT, the International Medical & Surgical Response Team (IMSuRT) and the Medical Reserve Corp (MRC) may be notified.

Strike Team = 5 of the same type of units including; common communications and leader
Task Force = 5 different types of units including; common communications and leader
MCI Task Force = May be 2 ALS Transport units, 2 BLS Transport Units, 1 Suppression Unit including; common communications and leader.

3. OFFICER RESPONSIBILITIES

A. COMMAND

1) Established by the first arriving officer. Radio Designation COMMAND
2) Follow Field Operation Guide (FOG) #1.
3) Remain in a safe, fixed and visible location uphill and upwind.
4) Determine the MCI Level (1, 2, 3, 4, or 5).
5) Designate a Staging Area.
6) Assign personnel to perform the functions of TRIAGE, TREATMENT, TRANSPORT and STAGING.
7) Advise Comm. Center of the number of victims and their categories once triage is complete.
8) During large scale or complex MCIs (i.e. fire with multiple victims) designate a Medical Branch to reduce the span of control.
9) If the incident is due to a known or suspected Weapons of Mass Destruction (WMD Event) refer to WMD FOG #8, establish a Medical Intelligence Officer to assist with decontamination, antidotes and treatment of victims.
10) Ensure proper security of incident site, treatment area and loading area also traffic control and access for emergency vehicles with law enforcement

B. MEDICAL BRANCH

1) Radio Designation MEDICAL, Follow FOG #2.
2) Assure TRIAGE, TRATMENT and TRANSPORT has been established. If established by COMMAND, TRIAGE, TREATMENT and TRANSPORT will now report to MEDICAL.
3) Work with COMMAND and direct and/or Supervise on-scene personnel from agencies such as the Medical Examiners Office, Red Cross, private ambulance companies and hospital volunteers.
4) Ensure notification of Medical Control (Medcom/MRCC)
5) If the incident is due to a known or suspected Weapons of Mass Destruction (WMD Event) refer to WMD FOG #8, establish a Medical Intelligence Officer to assist with decontamination, antidotes and treatment of victims.
6) Ensure proper security of incident site, treatment area and loading area also traffic control and access for emergency vehicles with law enforcement

C. TRIAGE OFFICER

1) Radio designation, TRIAGE, Follow FOG #3.
2) Organize the Triage Team to begin initial triaging of victims, utilizing START/JumpSTART triage system. Assemble the walking wounded and uninjured in a safe area. Use bullhorns/PA if necessary
3) Advise COMMAND (or MEDICAL if established) as soon as possible if there is a need for additional resources.
4) Coordinate with TREATMENT to ensure that priority victims are treated first.
5) Ensure that all areas around the MCI scene have been checked for potential victims, walking wounded, ejected victims, etc.
6) Supervise the Triage Personnel, Litter Bearers and Medical Examiner Personnel.
7) Maintain security and control of the Triage Area. Request Law Enforcement.
8) Report to COMMAND or MEDICAL upon completion of duties for further assignments.

D. TREATMENT OFFICER

Reports to COMMAND or MEDICAL. Supervises the Treatment Managers of the RED, YELLOW, and GREEN Areas. Coordinates the re-triage and tagging of all victims and the on site medical care. Directs the movement of victims to the loading area(s).

1) Radio designation, TREATMENT, Follow FOG #4.
2) Consider assigning a "Documentation Aide" to assist with paperwork.
3) Direct personnel to either begin treatment on the victims where they lay OR Establish a centralized Treatment Area.
4) Considerations for a Treatment Area;
    a) Capable of accommodating the number of victims and equipment.
    b) Consider weather, safety and the possibility of hazardous materials.
    c) Designate entrance and exit areas, which are readily accessible (funnel points)
    d) On large-scale incidents, divide treatment area into three distinct areas based on priority. Designate a Treatment Manager for each area (Red, Yellow, Green) Use color tarps if available.
5) Complete a "Treatment Log", as victims enter the area.
6) Ensure that all victims are re-triaged through a secondary exam and the assessment is documented on a Triage tag (Disaster Management System (DMS) All Risk Triage Tag) the rescuer filling out the All Risk Triage Tag and keep the portion of the tag designated to the transport Officer for future documentation.
7) All red-tagged victims will be transported immediately as transport units become available. These victims should not be delayed in the Treatment Area.
8) Ensure that enough equipment is available to effectively treat all victims.
9) Establish communications with TRANSPORT to coordinate proper transport of the appropriate victims. Direct movement of victims to ambulance loading areas.
10) Provide periodic status reports to COMMAND/MEDICAL.

NOTE: RED, YELLOW, GREEN TREATMENT MANAGERS – Reports to the TREATMENT Officer and is responsible for the treatment and continual re-triaging of victims. Notify TREATMENT Officer of victim readiness and priority for transportation. Assure that appropriate victim information is recorded.

E. TRANSPORT OFFICER

Reports to COMMAND or MEDICAL. Supervises the Medical Communication Coordinator and Documentation Aide(s). The TRANSPORT Officer is responsible for the coordination of victims and maintance of records relating to victim identification, injuries, mode of transportation and destination.

1) Radio designation, TRANSPORT, Follow FOG #5.
2) Assign a Documentation Aide with a radio to assist with paperwork and communications.
3) Assign a Medical Communication Coordinator to establish continuous contact with Medical Control (MedCom or MRCC[1])
4) Establish a victim loading area. Advise STAGING of the location and direction of travel. Consider Law Enforcement for security of loading area.
5) Arrange for the transport of victims from the treatment area. Maintain "Hospital Transportation Log"#5B. Keep a piece of the triage tag for future documentation.
6) Communicate with the Landing Zone (LZ)/Helispot Officer and relay the number of victims to be transported by air. Air transported victims should be assigned to distant hospitals, unless the victims needs dictate otherwise (Trauma Center, burn unit, etc.).

F. MEDICAL COMMUNICATIONS COORDINATOR

Reports to the TRANSPORT Officer and is responsible for maintaining communication with Medical Control to assure proper victim transport information and destination.

1) Radio designation COMMUNICATION, Follow FOG #5A
2) Establish communication with Medical Control (MedCom or MRCC[1]). Advise Medical Control of the overall situation, (i.e. smoke inhalation, trauma, burns, HAZMAT exposure, etc.) amount and categories of victims. Medical Control will survey area hospitals to determine their capabilities and capacities then relay this information. Document this information on the Hospital Capability Worksheet #5C and maintain this for the duration of the incident.
3) When units are prepared to transport, advise Medical Control and supply them with the following information:
   a) The unit transporting.
   b) The number of victims to be transported.
   c) Their priority; Red, Yellow, or Green
   d) Any special need victims; cardiac, burn, trauma, etc.
4) The Medical Communication Coordinator in conjunction with Medical Control will determine the most appropriate facility. Ground transported victims should be assigned to hospitals on a rotating basis.
5) Once Medical Control receives the information from the Medical Communication Coordinator, Medical Control will notify the appropriate hospital.
6) Transporting units will not contact the individual hospital on their own, unless there is a need for medical direction/care outside of protocols.

[1] MRCC - Medical Resource Coordination Center - prime function is to maintain a status as to the number of victims and the hospital readiness status to accept victims, coordinate transportation and direct them to the appropriate hospital during a disaster or other situation requiring a high demand of medical resources

G. MEDICAL SUPPLY COORDINATOR
Reports to MEDICAL and is responsible for acquiring and maintaining control of all medical equipment and supplies.

1) Radio designation, SUPPLY, Follow FOG #6.
2) Assure necessary equipment is available on the transporting vehicle.
3) Provide an inventory of medical supplies at the Staging Area for use on scene The State has issued 23 MCI trailers at least one to each region that are available during a large scale MCI)

H. STAGING OFFICER
Reports to COMMAND and is responsible for managing all activities within the staging area.

1) Radio designation, STAGING, Follow FOG #7.
2) Establish the location of a Staging Area and notify the Communication Center to direct any incoming units.
3) Maintain a "Unit Staging Log"#7A.
4) Ensure that all personnel stay with their vehicles unless otherwise directed by
5) COMMAND. If personnel are directed to assist in another function ensure that the keys stay with each vehicle.
6) Coordinate with the TRANSPORT Officer the location for a victim loading area and best route to the area.
7) Maintain a reserve of at least 2 transport vehicles. When the reserve is depleted request additional units through COMMAND.

4. DOCUMENTATION

A. The Incident Commander will, at the completion of the incident, coordinate the gathering of all pertinent documentation.
B. A Post Incident Analysis (PIA) should be conducted on all MCIs.

5. MCI KITS

Each Unit will carry an MCI bag. Included in the bag will be:

A. Two (2) Triage packs with:
   A. Four (4) combine dressings
   B. Four (4) 4x4's
   C. Six (6) pairs of gloves
   D. One (1) pediatric face mask, assorted oropharyngeal (OPAs) and nasopharyngeal (NPAs) airways
   E. 2 clip rings containing triage ribbons paired in red and yellow, green and black. There are 15 ribbons of each color per ring.

B. One (1) additional set of triage ribbons.

C. Fifty (50) Triage tags - Disaster Management Tags (DMS) All Risk Triage tags.

D. Three (3) mechanical pencils and three (3) grease pencils

E. The following MCI FOG's, logs, and associated paperwork for each Officer:
   1) Command FOG #1 - White
   2) Medical FOG #2 - Blue
   3) Triage FOG #3 - Yellow
   4) Treatment FOG #4 - Red
   5) Treatment Area Log 4A - Red
   6) Transport FOG #5 - Green
   7) Medical Communication FOG#5A - Green
   8) Hospital Transport Log #5B - Green
   9) Hospital Capability Worksheet #5C - Green
   10) Medical Supply FOG #6 - Blue
   11) Staging FOG #7 - Orange
   12) Unit Staging Log #7A - Orange
   13) MCI-WMD/Terrorist Event FOG #8 - Beige

MCI SUPERVISOR KIT

A. Complete vest set with the following identification vests:
   1) White for COMMAND
   2) Blue for the MEDICAL Officer
   3) Yellow for the TRIAGE Officer
   4) Red for the TREATMENT Officer
   5) Green for the TRANSPORT Officer
   6) Green stripped for the MEDICAL COMMUNICATION COORDINATOR
   7) Blue stripped for the MEDICAL SUPPLY Officer
   8) Orange for the STAGING Officer

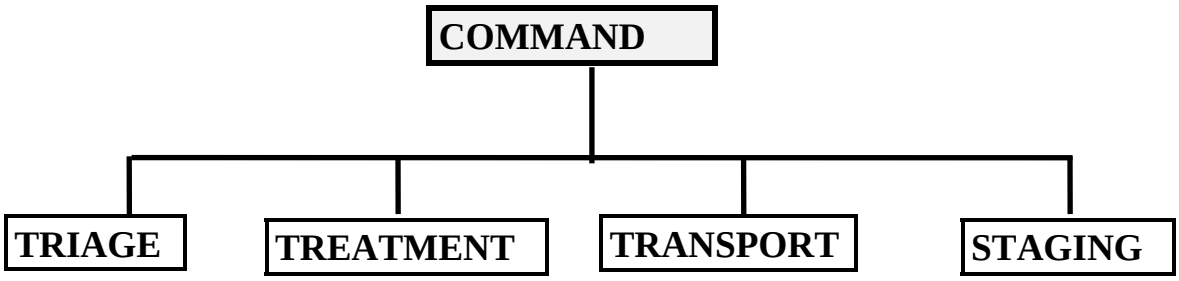
B. Portfolio for each officer which contains a clipboard, paperwork for each officer, pens, pencils, grease pencils, and a pad of paper.

C. EMS tactical EMS Command Board

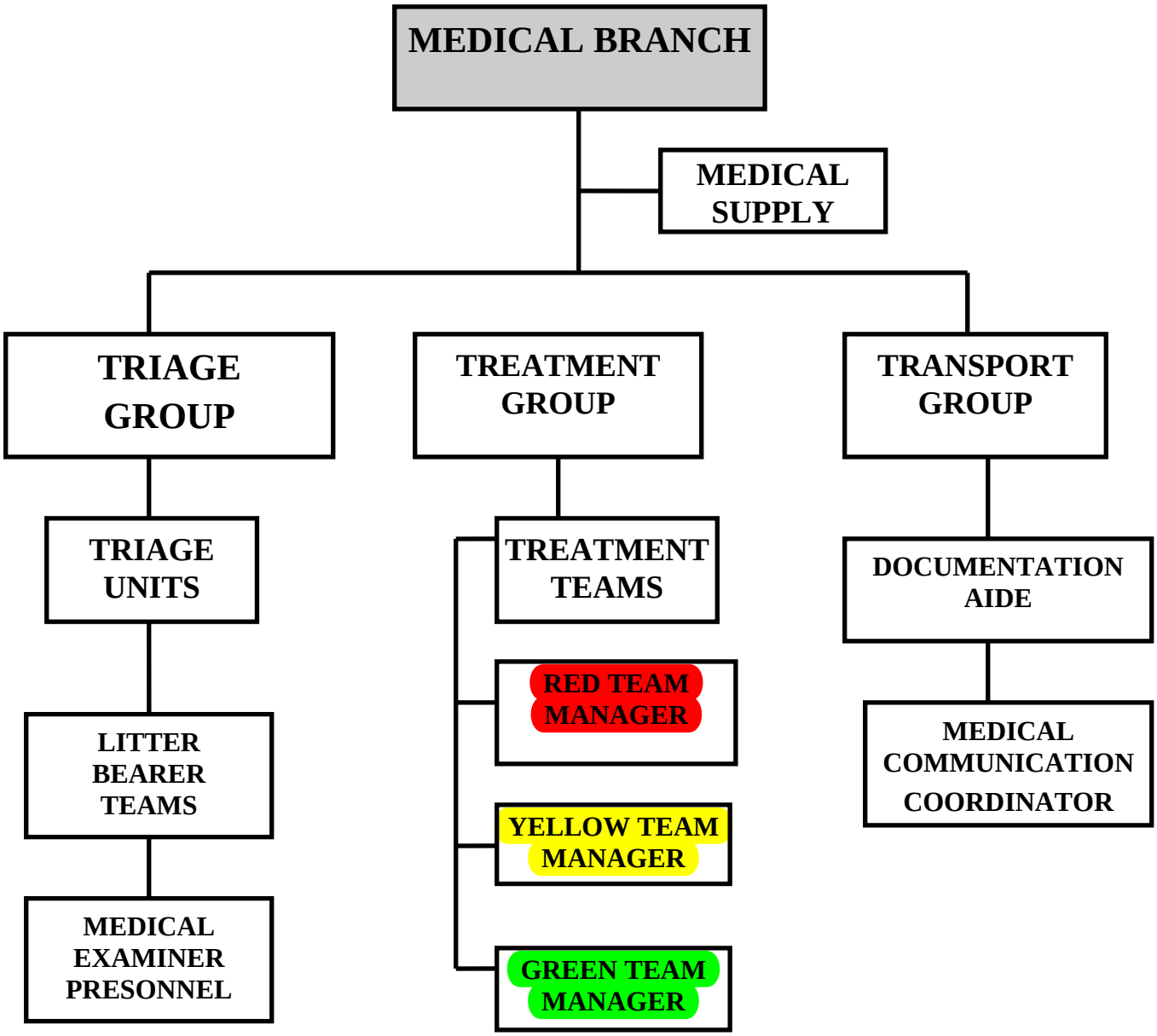
D. Tarp set red, yellow, green, black tarps

E. Bullhorn

BASIC MCI COMMAND STRUCTURE FOR MEDICAL RESPONSES



COMPLEX MCI COMMAND STRUCTURE FOR MEDICAL RESPONSES



1. INTRODUCTION

This procedure will be based on the Simple Triage and Rapid Treatment or START process for adult victims and the JumpSTART adaptation for the pediatric victim. These methods of triage are designed to assess a large number of victims objectively, efficiently, and rapidly and can be used by personnel with limited medical training.

2. PROCEDURE

A. Initial triage - Using the START or JumpSTART methods (Sections III or IV):

1) Locate and direct all of the walking wounded into one location away from the incident if possible. Assign someone to keep them together (Fire Dept. Personnel, Law Enforcement Officer or capable bystander)

2) Begin assessing all non-ambulatory victims where they lay.

3) Utilize the Triage Ribbons (color-coded plastic strips). One should be tied to an upper extremity in a VISIBLE location.
   a) RED - Immediate
   b) YELLOW - Delayed
   c) GREEN - Ambulatory (Minor)
   d) BLACK - Deceased (non-salvageable)

4) Independent decisions should be made for each victim. Do not base triage decisions on the perception of too many reds, not enough greens, etc.

5) If borderline decisions are encountered always triage to the most urgent priority (Green/Yellow patient, tag Yellow).

B. Secondary Triage

1) Performed on all victims during the Treatment Phase. If a victim is identified in the initial Triage Phase as a Red and transport is available do not delay transport to perform a secondary assessment.

2) Utilize a Triage Tag (Disaster Management System (DMS) All Risk Triage tag) and attempt to assess for and complete all information required on the tag (time permitting). Affix the tag to the victim and remove the ribbon.

3) The Triage priority determined in the Treatment Phase should be the priority used for transport. If trauma related, the Trauma Transport Criteria will be applied to trauma victims during the secondary triage in the Treatment Phase.

3. START TRIAGE

NOTE: Remember the pneumonic **R.P.M**. (**R**espiration, **P**erfusion, **M**ental Status). The first assessment that produces a RED stops further assessment. Only correction of life-threatening problems, such as airway obstruction or severe hemorrhage should be managed during triage.

A. Assess **RESPIRATIONS**:
1) If respiratory rate is 30/min or less go to the PERFUSION assessment.
2) If respiratory rate is over 30/min, Prioritize RED.
3) If victim is not breathing open the airway, remove obstructions if seen and assess for (1) or (2) above.
4) If victim is still not breathing. Prioritize BLACK.

B. Assess **PERFUSION**:
1) Performed by assessing a radial pulse.
2) If radial pulse is present, go to MENTAL STATUS assessment.
3) No radial pulse Prioritize RED.

NOTE: Any major external bleeding should also be controlled at this time.

C. Assess **MENTAL STATUS**:
1) Assess the victim's ability to follow simple commands and their orientation to time, place, and person. (CAO X 3)
2) If the victim does not follow commands, is unconscious, or is disoriented, Prioritize RED.
3) If the victim follows commands, oriented X 3, Prioritize GREEN.

NOTE: Depending on injuries (burns, fractures, bleeding) it may be necessary to Prioritize YELLOW.

4. JumpSTART TRIAGE

Physiological differences in children necessitate the need to adapt the standard START triage method to children $\leq$ 8 years of age or those victims with the anatomical or physiological features of a child in the age group. The same parameters (R.P.M.) will be utilized with the adaptations indicated.

A. Assess **RESPIRATIONS:**
1) If the respiratory rate is between 15 and 45/min go to PERFUSION assessment.
2) If the respiratory rate is over 45/min or under 15/min,. Prioritize RED.
3) If the victim is not breathing open the airway, remove obstructions if seen and assess for (1) or (2) above.
4) If the victim is not breathing and no obstructions are present, check a peripheral (radial, or pedal) pulse. If a peripheral pulse is present, provide five (5) ventilations (approximately 15 seconds) via any type of barrier device. If spontaneous respirations resume, Prioritize RED.
5) If the victim is still not breathing, Prioritize BLACK

5. JumpSTART Triage "continued"

B. Assess **PERFUSION**:
1) Performed by assessing a peripheral pulse.
2) If a peripheral pulse is present, go to the MENTAL STATUS assessment.
3) If no peripheral pulse is present, Prioritize RED

NOTE: Any major external bleeding should also be controlled at this time.

C. Assess **MENTAL STATUS**:
1) Assess the child through AVPU scale. Assess whether the victim is either ALERT, responds to VERBAL stimuli, responds to PAINFUL stimuli, or is UNCONCIOUS.
2) If the victim is unconscious or only responds to painful stimuli, Prioritize RED.
3) If the victim is alert or responds to verbal stimuli, assess for further injuries, Prioritize YELLOW or GREEN.

NOTE: Infants who are developmentally unable to walk should be triaged using JumpSTART algorithm either during initial triage or in the GREEN area if carried out by a non-rescuer. During triage if they do not fulfill the criteria of a RED victim and no other outward signs of significant injury, they may be triaged as a GREEN victim.

Note: START Triage system developed by Newport Beach Fire Rescue and Hoag Hospital
JumpSTART Triage system developed by Dr. Lou Romig

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COMMAND

MCI PROCEDURE **FOG #1**

- ☐ Don the appropriate vest and use the radio designation "COMMAND". Establish the Command Post in a safe, visible and fixed location uphill and upwind. Consider assigning an aide. If WMD involved also use FOG #8

- ☐ Perform the initial size-up including wind direction. Determine any special needs such as fire suppression, haz mat, extrication, etc. and request additional units as needed.

- ☐ Approximate the number of victims and category of injury (trauma, burns, smoke inhalation, etc.)

MCI	Level 1	Level 2	Level 3	Level 4	Level 5
Victims	5-10	11-20	21-100	101-1000	>1000

- ☐ Establish Staging Area as soon as possible, Request additional units early as needed consider HAZMAT, TRT, extrication, Air Rescue.

- ☐ Assign positions to perform the following functions:
  - ☐ MEDICAL BRANCH (as needed)
  - ☐ TRIAGE
    - ☐ Litter Bearers
  - ☐ TREATMENT
    - ☐ RED, YELLOW, GREEN Treatment Managers
  - ☐ TRANSPORT
    - ☐ Documentation Aide
    - ☐ Medical Communication Coordinator
  - ☐ STAGING
  - ☐ MEDICAL SUPPLY, REHAB, SAFETY, DECON, EXTRICATION, PIO etc.
- ☐ Advise Communication Center of the exact number of victims and their categories once reported from TRIAGE.
- ☐ Request law enforcement for security for all areas, traffic control and access for emergency vehicles.
- ☐ When applicable, have a liaison for each involved agencies at the Command Post. Some examples would include, Law Enforcement, Medical Examiner, Emergency Management Agency, Occupancy owner/representative, etc.
- ☐ If the incident is due to a known or suspected WMD/terrorist event refer to WMD. FOG #8; establish a Medical Intelligence Officer to assist with decontamination, antidotes and treatment of victims.

(Paper color – White)Two sided (Predetermined Response Plan on back)

Predetermined Response Plan (For the back of COMMAND and MEDICAL FOG)

MCI LEVEL 1 (5-10 victims)

4 ALS Transport Units
2 Suppression units
1 Shift Supervisor
1 EMS Supervisor

Note: The 2 closest hospitals & Trauma Center to the incident will be notified by Medical Control. (MedCom or local communication center)

MCI LEVEL 2 (11-20 victims)

6 ALS Transport Units
3 Suppression units
2 Shift Supervisors
2 EMS Shift Supervisors

Note: The 3 closest hospitals & 2 Trauma Centers to the incident will be notified by Medical Control.

MCI LEVEL 3 (21 - 100 victims)

8 ALS Transport Units
4 Suppression Units
Command Vehicle
3 Shift Supervisors
3 EMS Shift Supervisors
Operations Chief
Supply Trailer

Note: The 4 closest hospitals & 2 Trauma Centers to the incident will be notified by Medical Control. The Warning Point will notify the Emergency Management Agency.

MCI LEVEL 4 (101 – 1000 victims)

5 MCI Task Forces (25 units)
1 Suppression Unit Strike Team (5 units)
2 BLS Transport Strike Teams (10 units)
2 Mass Transit Buses
Command Vehicle
2 Supply Trailers
2 ALS Transport Strike Teams (10 units)
5 Shift Supervisors
3 EMS Shift Supervisors
1 EMS Chief
Operations Chief
Communications Trailer

Note: The 10 closest hospitals & 5 Trauma Centers to the incident will be notified by Medical Control. The Warning Point will notify the Emergency Management Agency. In an on-going long term MCI the Metropolitan Medical Response System (MMRS) and the Disaster Medical Assistance Team (DMAT) may be notified.

MCI LEVEL 5 (over 1000 victims)

10 MCI Task Forces (50 units)
2 Suppression Unit Strike Team (10 units)
4 BLS Transport Strike Teams (20 units)
4 Mass Transit Buses
2 Command Vehicles
4 Supply Trailers
4 ALS Transport Strike Teams (20 units)
10 Shift Supervisors
6 EMS Shift Supervisors
2 EMS Chiefs
2 Operations Chiefs
Communications Trailer

Note: The 20 closest hospitals & 10 Trauma Centers to the incident will be notified by Medical Control. The Warning Point will notify the Emergency Management Agency.
In an on-going long term MCI the MMRS, SMART, DMAT, International Medical & Surgical Response Team (IMSuRT) and the Medical Reserve Corp (MRC) may be notified.

Strike Team = 5 of the same type of units including; common communications and leader
Task Force = 5 different types of units including; common communications and leader
MCI Task Force = May be 2 ALS Transport units, 2 BLS Transport Units, 1 Suppression Unit including; common communications and leader

MEDICAL

MCI PROCEDURE **FOG #2**

- ☐ Don the appropriate vest and use the radio designation "MEDICAL".
- ☐ Establish in a safe, fixed and visible location or co-join command post.
- ☐ Utilize the EMS Tactical Command Worksheet.
- ☐ Verify that COMMAND has requested appropriate number of units.
- ☐ Assign the following functions, If not done by COMMAND.
    - ☐ TRIAGE
        - ☐ Litter Bearers
        - ☐ Medical Examiner Personnel
    - ☐ TREATMENT
        - ☐ RED, YELLOW, GREEN Treatment Managers
    - ☐ TRANSPORT
        - ☐ Documentation Aide
        - ☐ Medical Communication Coordinator
    - ☐ STAGING
    - ☐ Medical Supply Officer
- ☐ Advise the communication center of the exact number of victims and their categories once reported from TRIAGE.
- ☐ Determine amount and type of additional medical supplies needed, consider Medical Supply Officer.
- ☐ If the incident is due to a known or suspected WMD/terrorist event refer to WMD FOG #8; establish a Medical Intelligence Officer to assist with decontamination, antidotes and treatment of victims.

TRIAGE

MCI PROCEDURE **FOG #3**

- ☐ Don the appropriate vest and use radio designation “TRIAGE”.
- ☐ Assign personnel to triage the "walking wounded". Use bullhorn/PA system to direct victims to a specific location or to decon area if needed.
- ☐ Direct personnel to triage and tag victims where they lay if the scene is safe.
- ☐ Prioritize victims using colored triage ribbons.
- ☐ Request Litter Bearer Teams from COMMAND/MEDICAL to assist with movement of victims from the incident site to the Treatment Area. Coordinate movement with the TREATMENT Officer.
- ☐ Victims that are black tagged/deceased should be left where they are found and notify the medical examiner/law enforcement.
- ☐ Report to COMMAND/MEDICAL the number and category of victims.
- ☐ Ensure that all areas of the incident have been checked for victims and that all victims have been triaged.
- ☐ Once triage is completed contact COMMAND for further assignment.
- ☐ If victims are contaminated, Use the Disaster Management System (DMS) All Risk Triage tag to identify victims contaminated, and any antidotes administered. Have victims remove clothing and place in bags use ID strip from All Risk Triage tags to label; have law enforcements secure items.
- ☐ If the incident is due to a known or suspected WMD/terrorist event refer to WMD FOG #8.

(Paper color – Yellow)

TREATMENT

MCI PROCEDURE **FOG #4**

- ☐ Don the appropriate vest and use the radio designation “TREATMENT”.
- ☐ Direct personnel to either begin treatment on victims where they lie OR establish a centralized Treatment Area. Ensure security with Law Enforcement.
- ☐ Coordinate the movement of victims into the Treatment area with the Litter Bearers.
- ☐ Consider obtaining a Documentation Aide to assist with paperwork.
- ☐ Request additional medical supplies as necessary from the MEDICAL SUPPLY Coordinator. (Broward County has 4 MCI/WMD supply trailers)
- ☐ Ensure personnel perform a secondary triage and tag victims with a triage tag. Personnel will then remove the colored ribbon.
- ☐ If the incident size warrants it designate a "Treatment Team Manager" for each color category. (RED, YELLOW, GREEN).
- ☐ Advise TRANSPORT of victim(s) requiring immediate transportation.
- ☐ Account for all victims triaged and treated on the Treatment Log.
- ☐ Advise COMMAND/MEDICAL as to any changes in the victim count.
- ☐ If victims are contaminated, Use the Disaster Management System (DMS) All Risk Triage tag to identify victims contaminated, and any antidotes administered. Have victims remove clothing and place in bags. Use the ID strip from DMS All Risk Triage tags to label the bag and request law enforcement to secure items. After decon is completed remove the pink contamination strip from DMS All Risk Triage tag (gross decon as a minimum).
- ☐ If the incident is due to a known or suspected WMD/terrorist event refer to WMD FOG #8. Work with the Medical Intelligence Officer to assist with decontamination, antidotes and treatment of victims.

(Paper color – Red)

TREATMENT

MCI PROCEDURE **LOG #4A**

DATE_____ **PAGE_____OF_____**

INCIDENT / LOCATION: _____

Ribbon Color	Triage Tag Number	Triage Tag Color	Age/Sex	Victim Name

(Paper color – Red) Two sided

TRANSPORT

MCI PROCEDURE **FOG #5**

- ☐ Don the appropriate vest and use the radio designation "TRANSPORT".
- ☐ Obtain a Medical Communication Coordinator to maintain continuous communication with Medical Control and document the hospital information on the Hospital Capability Worksheet.
- ☐ Obtain a Documentation Aide(s) to record the triage tag numbers, victim name, age/sex, transporting unit and hospital destination for each victim on the Hospital Transport Log. Keep a portion of the tag.
- ☐ Establish a Victim Loading Area accessible to the Treatment Area and preferably having clear entry and exit points.
- ☐ Consult with TREATMENT on the amount and priority of victims.
- ☐ Coordinate the loading of patients by priority to transport units and helicopter if needed coordinate with the Landing Zone Officer/Helispot.
- ☐ Assign 2-3 victims to each unit, ensuring adequate transport crew. The severity of victims should be mixed if multiple victims are assigned to a unit.
- ☐ Assign a hospital destination to each transporting unit; provide verbal and/or written travel instructions.
- ☐ Request additional transport units from STAGING.
- ☐ If the incident is due to a known or suspected WMD/terrorist event refer to WMD FOG #8. Transport decontaminated victims only; Ensure the pink contamination strip from the DMS All Risk Triage tag is removed after the victim has been decontaminated (gross decon as a minimum).

(Paper color – Green)

MEDICAL COMMUNICATION

MCI PROCEDURE **FOG #5A**

- ☐ Don the appropriate vest and use the radio designation "COMMUNICATION".
- ☐ Establish early contact with Medical Control (MEDCOM/MRCC)
- ☐ Advise Medical Control of overall situation (i.e. smoke inhalation, trauma, burns, HAZMAT exposure, etc.) amount and priority of victims.
- ☐ Medical Control will gather hospital capabilities and capacities. Document this hospital information on the Hospital Capability Worksheet.
- ☐ When units are prepared to transport, advise Medical Control and supply them with the following information:
    a) The unit transporting.
    b) The number of victims to be transported.
    c) Their priority; Red = Immediate
    Yellow = Delayed
    Green = Ambulatory (minor)
    d) Any special need victims, cardiac, burn, trauma, etc.
- ☐ Ground transported victims should be assigned to hospitals on a rotating basis.
- ☐ Notify the hospital(s) of HAZMAT/WMD exposure and any antidotes given.

(Paper color – Green)

HOSPITAL TRANSPORT LOG

MCI PROCEDURE **LOG #5B**

DATE:_____ **PAGE_____OF_____**

INCIDENT/ LOCATION: _____

Triage Tag Number	Triage Tag Color	Transport Unit	Receiving Facility	Age/ Sex	Victim Name

(Paper color – Green) Two sided

HOSPITAL CAPABILITY WORKSHEET

Initial Victims: Trauma Alerts_____ REDS _____ YELLOWS _____ GREENS _____
MCI CATEGORY _____ MCI LEVEL _____ INCDENT # _____

Hospital	Accepting Trauma Alerts	Trauma Alerts Transported	Accepting REDS	REDS Transported	Accepting YELLOWS	YELLOWS Transported	Accepting Greens	GREENS Transported

USE HASH MARKS TO TRACK VICTIMS TRANSPORTED

Level 1 (5-10 victims) Level 2 (11-20 victims) Level 3 (21-100 victims) Level 4 (over 100 victims) Level 5 (over 1000 victims)

MEDICAL SUPPLY

MCI PROCEDURE **FOG #6**

- ☐ Don the appropriate vest and use the radio designation “SUPPLY”.
- ☐ Assure necessary equipment is available on the transporting vehicle.
- ☐ Consult with TREATMENT on the need for medical supplies in the Treatment Area.
- ☐ Provide an inventory of medical supplies at the Staging Area.
- ☐ (MCI trailer –regional or local assets)

(Paper color - blue)

STAGING

MCI PROCEDURE **FOG #7**

- ☐ Don the appropriate vest and use radio designation “STAGING”.
- ☐ Maintain Staging Area established by COMMAND or establish a location and notify the communication center to direct all incoming units.
- ☐ Establish a visible location in the Staging Area.
- ☐ Maintain a Unit Staging Log
- ☐ Ensure that personnel stay with their vehicle unless otherwise directed.
- ☐ Organize arriving units, keep like units together. If personnel leave their vehicle keep the keys with each vehicle.
- ☐ Have arriving units put ‘BLS’ or ‘ALS’ on their front windshield using a marker, sign or tape.
- ☐ Coordinate with TRANSPORT the need for units and direct units to the victim loading area.
- ☐ Maintain a reserve of at least 2 transport units. Should this go down, advise COMMAND.

(Paper color – Orange)

UNIT STAGING LOG

MCI PROCEDURE **LOG #7A**

DATE: _____
PAGE_____OF_____

INCIDENT/LOCATION:_____

Unit Number	Officer in Charge	Type Unit ALS/BLS/Other	Time Arrived	Time Assigned

(Paper color – Orange) Two-sided

MCI - WMD/Terrorist Event

MCI PROCEDURE **FOG #8**

Enroute

- ☐ Request additional resources examples are - HAZMAT, TRT, decon trailer, MCI/WMD trailers -4 trailers are located in Broward County they contain medical/trauma supplies as well as HAZMAT/WMD antidote kits.
- ☐ Use the DOT Emergency Response Guidebook (ERG) recommendations; Use the Florida Incident Field Operations Guide (FOG) book, and/or Emergency Response to Terrorism Job Aid.
- ☐ Respond in a combined approach of Fire-Rescue, Law Enforcement, and a HAZMAT Task Force.
- ☐ Approach cautiously; from uphill/upwind if possible. Establish a safe staging area early. Do not use radios/cell phones in close proximity to suspicious devices (within 500 ft).
- ☐ Park a safe distance from an identified hazard or area that could endanger personnel or equipment. Use binoculars, look for unusual sights, sounds and be prepared to relocate if odor/cloud/casualties are noted. Consider the victim's reported signs, symptoms and mechanism.
- ☐ Consider secondary devices, and request law enforcement to sweep the area for a secondary device.

On-Scene

- ☐ Establish Command, be prepared to establish a Unified Command with all agencies having jurisdiction and assess the security of the command post.
- ☐ Initiate an on-scene size up and hazard risk assessment, continually size up the incident, evaluate hazards and risks.
- ☐ Establish an incident perimeter - Secure the scene, deny entry, with the assistance of HAZMAT establish control zones (Hot, Warm, Cold). Request Law Enforcement to assist with the safety parameter.
- ☐ Direct victims using bullhorns/PA systems to gross decon area use large volumes of water at low pressure (elevated master streams, hose lines, showers, sprinkler system, etc.). Be aware of run off.
- ☐ Ensure personnel wear proper PPE (consult with HAZMAT/Poison Control Center as needed)
- ☐ If needed use a HAZMAT/WMD antidote kit from fire-rescue units or the MCI/WMD trailers. If a Duodote auto injector is administered tie an ORANGE plastic ribbon on the victim to verify type and amount of antidote given. If a CANA (valium) auto injector is administered use a WHITE plastic ribbon. Also write this information on the Disaster Management System (DMS) All Risk Triage tag.
- ☐ For contaminated victims -use the DMS All Risk Triage tag to identify victims contaminated, direct the victims to remove all clothing and place in bags, use ID strip from DMS All Risk Triage tags to label; and request law enforcements to secure. Preserve evidence, if found notify law enforcement.
- ☐ Notify hospitals/Medcom of HAZMAT hazard, antidotes given and degree of decontamination completed; Transport decontaminated victims only, Ensure the pink contamination strip from the DMS tag has been removed after the victim has been decontaminated (gross decon as a minimum).

Emergency Evacuation Procedure – The term "Emergency Traffic" shall be used to clear radio traffic. The communication center will sound a radio alert tone followed by clear text identifying the type of emergency. If an evacuation is warranted the Incident Commander (IC) shall designate a specific vehicle(s) to sound the evacuation signal. The signal will consist of repeated short blasts of the air horn for approximately 10 seconds, followed by 10 seconds of silence this will be done 3 times. Following this the IC should conduct a Personal Accountability Report (PAR) (Paper color- tan)

State of Florida All Hazards Medical Disaster Procedures and Protocols

Section 7

HAZMAT

Adapted with permission from Florida Regional Common EMS Protocols Third Edition Revised May 2012
Greater Broward EMS Medical Director's Association

Section 7 - HAZMAT

Section 7 HAZMAT

Hazardous Material Exposure Table of Contents

7.0 Introduction

Introduction

These protocols have been developed to address the specialized treatment of patients exposed to hazardous materials. Some of the agents covered in these protocols may be used as a weapon of mass destruction (WMD) in a terrorist attack. In these instances, scene safety and a need to stage at a safe distance from the scene should be a primary concern for all personnel.

The protocols cover exposure to chemical (7.1), biological (7.2), and radiological (7.3) agents. A color code is assigned to each protocol in the Chemical section (7.1), which coincides with the chemical treatment guide. The Chemical Treatment Guides have the adult and pediatric dosages combined.

The protocols are intended to include a comprehensive overview of hazardous materials for use by hazmat teams and/or hazmat tox medics. The availability of these specialized teams and medics precludes the need for the participating EMS Agencies to carry all of the medications listed in this protocol.

7.1 Adult Hazardous Material Exposure (Chemicals)

This protocol is to be used for those patients suspected of exposure to hazardous materials via any route of exposure (e.g., inhalation, absorption). The protocols give specific considerations for each type of exposure as well as general treatment guidelines. Scene safety should be of primary concern, with special attention being paid to the need for personal protective equipment. Additional assistance may be necessary in certain cases (e.g., hazardous materials team for toxic exposure, police for scene control, including a violent and/or impaired patient - see Protocol 1-2.

A history of the events leading to the illness or injury should be obtained from the patient and bystanders, to include the following information:

1. To which poison or other substances was the patient exposed?
2. When and how much?
3. Duration of symptoms?
4. Is there any pertinent medical history?
5. Accidental? Nature of accident?
6. Duration of exposure (if applicable)?

If risk of exposure from fumes is high, call the hazardous materials team. In this instance, refer to the appropriate hazardous materials PPE protocol, as the risk of secondary contamination is very high. All patients who have been exposed to hazardous materials must be properly decontaminated prior to initiation of extensive medical treatment and transportation to the hospital.

Contact the Poison Information Center (1-800-222-1222) for consultation regarding specific therapy, and then contact the receiving emergency department.

It is imperative that the emergency department be made aware early that a contaminated patient is being transported so that the proper preparations can be made to receive the patient.

7.1.1 Acids and Acid Mists

TREATMENT
Chemical Treatment Guide 1: YELLOW

DESCRIPTION
Acids are colorless to yellow liquids with strong irritating odors. Some acids may be flammable agents. Acids act as direct irritants and corrosive agents to moist membranes and to intact skin to a lesser extent.

SIGNS AND SYMPTOMS
Low concentrations of airborne acids can produce rapid onset of eye, nose, and throat irritation.

Higher concentrations can produce cough, stridor, wheezing, chemical pneumonia, and non-cardiogenic pulmonary edema. Ingestion of acids can result in severe injury to the upper airway, esophagus, and stomach. In addition, there may be circulatory collapse, as well as partial- or full-thickness burns.

End-stage symptoms may resemble organophosphate poisoning. However, patients will have normal or dilated pupils (patients will not have pinpoint pupils). These patients should not be given atropine or 2-PAM.

Note:
This protocol does not include hydrofluoric acid (see Protocol 7.1.13).

EXAMPLES
- Sulfuric acid (battery acid)
- Muriatic acid (pool cleaner)
- Hydrochloric acid (HCl)
- Some drain cleaners

7.1.2 Alkaline Compounds

TREATMENT
Chemical Treatment Guide 1: YELLOW

DESCRIPTION
Most alkaline compounds are solids. Alkalis will impart a soapy texture to aqueous solutions. Alkalis act as direct irritants and corrosive agents to moist membranes and to intact skin to a lesser extent. The extent of tissue penetration and severity of injury is usually greater with alkalis than with acids.

SIGNS AND SYMPTOMS
Low concentrations of airborne alkalis can produce rapid onset of eye, nose, and throat irritation.

Higher concentrations can produce cough, stridor, wheezing, chemical pneumonia, and non-cardiogenic pulmonary edema. Ingestion of alkalis can result in severe injury to the upper airway, esophagus, and stomach. In addition, there may be circulatory collapse, as well as partial- or full-thickness burns.

End-stage symptoms may resemble organophosphate poisoning. However, patients will have normal or dilated pupils (patients will not have pinpoint pupils). These patients should not be given atropine or 2-PAM.

EXAMPLES
- Lye (baseball field line chalk)
- Cement
- Some drain cleaners
- Sodium hydroxide

7.1.3 Ammonia (Liquid and Gas)

TREATMENT
Chemical Treatment Guide 1: YELLOW

DESCRIPTION
Ammonia is a colorless gas having an extremely pungent odor, which may be in an aqueous solution or gaseous state. Liquefied compressed gas may produce a cryogenic (freezing) hazard as it is released into the atmosphere. Common household ammonia contains 5-10% ammonia. It is a direct irritant and, in much higher concentrations, an alkaline corrosive agent to moist mucous membranes and, to a lesser extent, to intact skin. A chloramine gas can be liberated when household ammonia is mixed with a hypochlorite solution (bleach), which may injure the airway.

SIGNS AND SYMPTOMS
Low concentrations of airborne ammonia can produce cough, stridor, wheezing, and chemical pneumonia (non-cardiogenic pulmonary edema). Ingestion of concentrated ammonia (e.g., > 5%) may cause corrosive injury to the esophagus, stomach, and eye.

End-stage symptoms may resemble organophosphate poisoning. However, patients will have normal or dilated pupils (patients will not have pinpoint pupils). These patients should not be given atropine or 2-PAM.

EXAMPLES
- Component of household cleaners
- Refrigerant gases
- Used in manufacture of plastics, explosives, and pesticides
- Corrosion inhibitor
- Used in water purification process
- Component of fertilizers

7.1.4 Aromatic Hydrocarbons (Benzene, Toluene, Xylene) and Ketones

TREATMENT

Chemical Treatment Guide 2: BLUE

DESCRIPTION

Aromatic hydrocarbons may be found as colorless liquids or in a solid form with an ether-like or pleasant odor. These compounds may be highly flammable. Ketones are organic compounds derived from secondary alcohols by oxidation. They generally have low viscosity, low to moderate boiling points, moderate vapor pressures, and high evaporation rates. Most ketones are chemically stable liquids. Routes of exposure include absorption through the skin and eyes, inhalation, and ingestion.

SIGNS AND SYMPTOMS

Mild exposure: cough, hoarseness, headache, drowsiness, dizziness, weakness, tremors, transient euphoria, vision and hearing disturbances, nausea/ vomiting, salivation, and stomach pain.

Moderate to severe exposure: cardiovascular collapse, tachydysrhythmias (especially ventricular fibrillation), chest pain, pulmonary edema, dyspnea, tachypnea, respiratory failure, paralysis, altered mental status, seizures, excessive salivation, and delayed carcinogenic effects.
Halogenated hydrocarbons (chloride, bromide, iodide, fluoride) may present with ventricular tachycardia, ventricular fibrillation, and supraventricular tachycardias. Aromated hydrocarbons may present with altered mental status.

End-stage symptoms may resemble organophosphate poisoning. However, patients will have normal or dilated pupils (patients will not have pinpoint pupils). These patients should not be given atropine or 2-PAM.

EXAMPLES

- Components of gasoline
- Methyl benzene
- Methyl benzol
- Phenyl methane

7.1.5 Arsenic Compounds (Heavy Metal Poisoning)

TREATMENT
Chemical Treatment Guide 2: BLUE

DESCRIPTION
Arsenic compounds may be found as white, transparent, or colorless crystals; colorless liquids; or colorless gas (e.g., ant poison). They are either odorless or have a garlic-like odor. Some are flammable. Exposure can be fatal or cause severe injury at concentrations too low to detect.
Lewisite is a blistering agent made from arsenic that causes immediate pain, irritation, and blistering of skin and mucous membranes. It is very similar in action to mustard and may be treated as mustard (see Protocol 7.1.17).
Arsine gas is made from arsenic and causes renal failure and destruction of red blood cells. Most exposures commonly occur when arsine gas is used to extract precious metals from ore.

SIGNS AND SYMPTOMS
Severe gastrointestinal fluid loss, burning abdominal pain, watery or bloody diarrhea, muscle spasm, seizures, cardiovascular collapse, tachycardia, hypotension, ventricular dysrhythmias, shock, and coma. There may be respiratory or cardiac arrest and acute renal failure may occur with bronze urine within a few minutes.

EXAMPLES
- Component of wood preservatives, insecticides, and herbicides
- Arsine gas: used to extract precious metals from ore

7.1.6 Carbamate (Insecticide Poisoning)

TREATMENT
Chemical Treatment Guide 4: GREEN

DESCRIPTION
Carbamate may be found in a solid, powder, or liquid form; it has a white or gray color and a weak odor. This reversible acetyl cholinesterase inhibitor is found in insecticides, herbicides, and some medicinal products.
Many carbamates are well absorbed through intact skin, so they pose a serious exposure risk to rescuers. Simple water washing may be sufficient to remove oily compounds. Carbamates affect both the parasympathetic nervous system (muscarinic effects) and the sympathetic nervous system (nicotinic effects). Although the muscarinic effects may be reversed with atropine, the nicotinic effects may cause respiratory paralysis and require intubation and aggressive ventilatory support.
Carbamates may be incorporated in a flammable base.

SIGNS AND SYMPTOMS
Muscarinic effects are the same as seen with organophosphates, which are described as the classic SLUDGE syndrome (excessive Salivation, Lacrimation, Urination, Diarrhea, Gastrointestinal distress, and Emesis). Additional muscarinic effect include bronchorrhea, bronchospasm, and bradycardia. The patient will have constricted pupils (miosis) with inhalation or skin exposure. Ingestion may or may not cause miosis; however, stimulation of nicotinic receptors will produce tachycardia, muscle paralysis (apnea), muscle twitching/fasiculations, and seizures.

EXAMPLES
Insecticides used for house tenting: Temic, Metical, Isolan, Furadan, Lannae, Zectran, Mesurol Dimetialn, Bagon

Note:
PPE (usually Level A) with SCBA must be worn in the hazardous area when carbamates are present. PPE with a minimum of Level C protection must be worn for treatment outside the hazardous area.

7.1.7 Carbon Monoxide Poisoning

TREATMENT
Chemical Treatment Guide 2: BLUE

DESCRIPTION
Carbon monoxide (CO) poisoning should be suspected when the patient has been exposed to the products of combustion (e.g., smoke, automobile exhaust, exhaust fumes from fuel-powered machinery) and is experiencing symptoms. These symptoms may vary with the level of CO exposure.

SIGNS AND SYMPTOMS
Mild CO exposure: headache, nausea/vomiting, poor concentration, irritability, agitation, and anxiety. May resemble flu-type symptoms. Suspect CO exposure during a cold snap with use of charcoal heaters and other types of furnaces, and where there are multiple victims in the same house or building.

Moderate to severe CO exposure: altered mental status, chest pain, cardiac dysrhythmias, pale skin, cyanosis, seizures, and rarely cherry-red skin.

EXAMPLES
- Suspect CO poisoning when multiple victims in same building exhibit symptoms.
- Use of petroleum-fueled heaters, machinery, and other devices inside a building (especially with improper ventilation).
- Incomplete burning of natural gas, LP gas, gasoline, kerosene, oil, coal, wood, or any other material containing carbon.
- Fire fighters working at a fire scene, especially during overhaul operations.

7.1.8 Chlorinated Hydrocarbons

TREATMENT
Chemical Treatment Guide 2: BLUE

DESCRIPTION

Methylene chloride is a volatile liquid that yields heavy vapors. At room temperature, it is a clear, colorless liquid with a pleasant (ether-like) odor. Exposure can occur through skin absorption, eye contact, inhalation, and ingestion. Methylene chloride is converted inside the body to carbon monoxide.

SIGNS AND SYMPTOMS
Cardiovascular collapse, ventricular dysrhythmias, respiratory arrest, pulmonary edema, dyspnea and tachypnea, headache, drowsiness, dizziness, altered mental status, seizures, nausea/vomiting, diarrhea, abdominal cramps, and chemical burns.

EXAMPLES
- Component (solvent) in paint, varnish strippers, and degreasing agents
- Used in production of photographic films, synthetic fibers, pharmaceuticals, adhesives, inks, and printed circuit boards
- Employed as a blowing agent for polyurethane foams, as a propellant for insecticides, in air fresheners, and in paint

7.1.9 Chlorine Gas and Phosgene (CG)

TREATMENT

Chemical Treatment Guide 1: YELLOW

DESCRIPTION

Chlorine is either a colorless to amber-colored liquid (aqueous chlorine is usually in the form of hypochlorite [bleach] in variable concentrations) or a greenish-yellow gas (anhydrous) with a characteristic odor. The liquid hypochlorite solutions are very unstable and react with acids to release chlorine gas (e.g., bleach mixed with vinegar or a toilet bowl cleaner containing HCl). Liquefied compressed chlorine gas may produce a cryogenic (freezing) hazard as it is released into the atmosphere. Clothing that has been soaked in a hypochlorite solution can be a hazard to rescuers. A chloramine gas may be liberated when a hypochlorite solution (bleach) is mixed with household ammonia, which may cause injury to the airway.

Phosgene (CG) is a chemical warfare agent. Phosgene gas can be liberated when Freon or chlorinated compounds (e.g., bleach mixed with ammonia) are heated. Phosgene has similar effects on the body as chlorine; however, symptoms from phosgene may be delayed for several hours.

SIGNS AND SYMPTOMS

Both agents: dyspnea, tachypnea, cough, choking sensation, rhinorrhea, acute or delayed chemical pneumonia (non-cardiogenic pulmonary edema), ventricular dysrhythmias, cardiovascular collapse, severe irritation and burns of the mucous membranes and lungs, headache, dizziness, altered mental status, nausea/vomiting, and severe irritation and burns to the eyes and skin.

EXAMPLES

- Chlorine gas is used in water purification processes at water plants and sewage treatment plants, as well as in pesticides, refrigerants, and solvents.
- Hypochlorite solutions are used in cleaning solutions and as disinfectants for water (drinking, waste, and swimming pools).
- Phosgene is used in paint removers, dry cleaning fluid, dyes, and pesticides.

7.1.10 Cyanide: Hydrogen Cyanide, Hydrocyanic Acid (AC), Cyanogen Chloride (CK), Potassium Cyanide, Sodium Cyanide

TREATMENT

Chemical Treatment Guide 5: RED

DESCRIPTION

Cyanide can be found in a liquid (solutions of cyanide salts), solid (cyanide salts), or gaseous (hydrogen cyanide) form. In solid form, it is white and has a faint almond odor (20% of the population is genetically unable to detect the odor). Hydrogen cyanide gas may be formed when acid is added to cyanide salt or a nitrite or when plastics burn. If a large amount of liquid or solid cyanide material is present on the victim's clothing or skin, it poses a significant risk of exposure to rescuers. Exposure can occur through skin absorption, eye contact, inhalation, and ingestion. If the patient is unconscious and is being rescued from a fire, there is a high probability of concurrent carbon monoxide and cyanide poisoning; both conditions must be treated (also see Chemical Treatment Guide 2: Blue for these patients).

SIGNS AND SYMPTOMS

Cardiovascular: initially, pulse decreases and BP rises; in later stages, dysrhythmias and cardiovascular collapse can occur. There may also be palpitations and/or chest tightness.
Respiratory: can cause immediate respiratory arrest. Initially, there is usually an increase in the rate and depth of respirations, which later become slow and gasping.
CNS: can cause immediate coma. Initially there is usually weakness, headache, and confusion; seizures are common.
GI: nausea/vomiting, salivation.
Skin: pale, cyanotic, or reddish color. Death is caused by an inhibitory action on the cytochrome oxidase system, preventing tissue usage of oxygen.

EXAMPLES

- Hydrogen cyanide is used in the production of organic chemicals (it may be called nitrile).
- Potassium and sodium cyanide are used primarily in electroplating and metal treatment.
- Cyanides may be present in smoldering fires (e.g., wool, foams).

Note:

- PPE (usually Level A) with SCBA must be worn in the hazardous area when cyanide compounds are present. PPE with a minimum of Level C protection must be worn for treatment outside the hazardous areas.
- Good medical supportive care, including airway management, is paramount and should precede the use of the cyanide antidote kit. However, the rapid administration of the cyanide antidote kit will be the only therapy that will reverse the life-threatening symptoms of cyanide poisoning.

7.1.10 Cyanide: Hydrogen Cyanide, Hydrocyanic Acid (AC), Cyanogen Chloride (CK), Potassium Cyanide, Sodium Cyanide (continued)

TREATMENT:

Cyanokit (Hydroxycarbolomin for Injection)

This kit is for intravenous use. The hydroxycarbolomin is to be reconstituted with 100 mL per vial of 0.9% sodium chloride injection. The starting dose is 5 g. (may be packaged in one or two vials).

1. Start a dedicated IV line
2. Reconstitution: Add 100 mL of 0.9% sodium chloride injection to the vial using a transfer spike. Fill to the line (with the vial in an upright position).
2. Mix: Rock or rotate the vial for 30 seconds to mix the solution. Do not shake.
3. Infuse the first vial: Use vented IV tubing to hang the bag and infuse over 7.5 minutes.
4. Infuse the second vial: Repeat Steps 1 and 2 before the second infusion. Use vented IV tubing to hang the bag and infuse over 7.5 minutes.

OR

Lilly Kit or Pasadena Kit for cyanide or hydrogen sulfide

1. Amyl nitrite pearls— Broken and held on a gauze pad under the patient's nose. Allow the patient to inhale the material for 15 to 30 seconds of every minute. During the interval during which the patient is not inhaling the amyl nitrate, 100% oxygen should be administered. If the patient is not breathing, place the "pearls" into a BVM and ventilate the patient. (amyl nitrite pearls convert 3%-5% of the hemoglobin to methemoglobin)

Note: This is a temporizing measure only, with the most effective antidotes being given IV. The amyl nitrite step may be bypassed once IV access is obtained Do not allow this to delay IV access.

2. If intubated provide PPV utilizing a BVM
3. As soon as possible start an IV of normal saline and immediately give:
   a) Sodium nitrite 10ml of a 3% solution IV over 2 minutes (300mg). Monitor BP, as hypotension may occur. (sodium nitrite converts approximately 20% of the circulating hemoglobin to methemoglobin). Additional doses of sodium nitrite should only be done once methemoglobin blood analysis is completed.
   b) Children— Administer 0.33 ml / kg of a 3% solution over 10 minutes.
   c) Sodium thiosulfate 50 ml of a 25% solution over 10 minutes. Monitor BP
   d) Children— Administer 1.65 ml / kg up to 50 ml over 10 minutes.
4. Administer 100% (NRBM) oxygen after administering Sodium Nitrite.

Note: Do not administer sodium nitrite in cases involving smoke inhalation (structure fires) or carbon monoxide poisoning. Administer only sodium thiosulfate and 100% oxygen.

7.1.11 Dinitrobenzene (DNB)

TREATMENT

Chemical Treatment Guide 3: GRAY

DESCRIPTION

DNB is a colorless, oily liquid with a characteristic and peculiar sweet odor. It can also be found as a solid. DNB causes methemoglobinemia, resulting in a state of relative hypoxia due to the inability of RBCs to carry oxygen. DNB is explosive; it is detonated by heat or shock.

SIGNS AND SYMPTOMS

Signs and symptoms of the methemoglobinemia caused by this exposure include chocolate-brown-colored blood, headache, ataxia, vertigo, tinnitus, dyspnea, CNS depression, hypotension, heart blocks, ventricular dysrhythmias, seizures (rare), cyanosis, and cardiovascular collapse.

7.1.12 Ethylene Glycol

TREATMENT
Chemical Treatment Guide 6: PINK

DESCRIPTION
Ethylene glycol is an odorless, colorless, syrupy liquid found in antifreeze, brake fluid, and other industrial products. Because it is readily available and relatively inexpensive, it is often used in suicide attempts. Ingestion is the primary route of exposure. The potential lethal dose is reported to be 100 mL (1.0-1.5 mL/kg) in adults. It is the toxic metabolites - not the parent compound - that are responsible for the associated toxic effects. These effects include metabolic acidosis, tetany, QT interval prolongation on the ECG, and irreversible kidney failure. Ethylene glycol poisoning can be fatal, and quick diagnosis and intervention are imperative to prevent the damaging effects of the metabolites. If the patient has concurrently ingested ethanol, symptoms of ethylene glycol toxicity may be delayed.

SIGNS AND SYMPTOMS
The clinical manifestations of ethylene glycol poisoning occur in three phases:

- Phase I (30 minutes to 12 hours): ethanol-like inebriation, metabolic acidosis, seizures, and coma.
- Phase 2 (12 to 36 hours): tachycardia, tachypnea, hypertension, pulmonary edema.
- Phase 3 (36 to 48 hours): crystalluria, acute tubular necrosis with oliguria - renal failure.

EXAMPLES

- Component of antifreeze (including new-generation-type antifreeze)
- Brake fluids
- Inks in stamp pads and ballpoint pens
- Paints and plastics

7.1.13 Hydrofluoric Acid (HF)

TREATMENT

Chemical Treatment Guide 7: ORANGE

DESCRIPTION

Hydrofluoric acid is a colorless to yellow liquid with a strong, irritating odor. Because the boiling point of HF is 67ºF, when exposed to air, HF will readily change to a gaseous state. When HF comes in contact with metals, it forms hydrogen gas, which is extremely flammable. Once HF is absorbed into the tissues, it binds to calcium and magnesium. This form of fluoride poisoning can be fatal, even if exposure is due to a dilute solution (< 3%). Contact with as little as 7 mL of 100% solution can cause death.

SIGNS AND SYMPTOMS

Hypovolemic shock and collapse, tachycardia with weak pulse, acute pulmonary edema, asphyxia, chemical pneumonitits, upper airway obstruction with stridor, pain and cough, decreased LOC, nausea/vomiting, diarrhea, possible GI bleeding, and possible blindness. HF also causes severe skin burns. The damage may be severe with no outward signs, except that the patient will complain of severe pain.

EXAMPLES

- Rust removers
- Metal plating
- Glass etching
- Computer manufacturing

7.1.14 Hydrogen Sulfide, Sulfides, and Mercaptans

TREATMENT
Chemical Treatment Guide 5: RED

DESCRIPTION
Members of this class of gases are colorless but have a strong offensive odor, like rotten eggs or sewer gas. When they are present at high levels, however, the olfactory senses will be overwhelmed, making the gas odorless. These chemicals may be found in a liquid form at low temperatures or high pressures. Clothing that has become soaked in sulfide solutions or mercaptans may pose a risk to rescuers. These types of chemicals can cause severe respiratory irritation, including pulmonary edema and respiratory paralysis (especially likely with hydrogen sulfide).

SIGNS AND SYMPTOMS
Cardiovascular collapse, tachycardia, dysrhythmias, irritation of the respiratory tract, cough, dyspnea, tachypnea, respiratory arrest, pulmonary edema, headache, altered mental status, garlic taste in mouth, seizures, nausea/vomiting, diarrhea, profuse salivation, dermatitis, sweating, and possible cyanosis.

EXAMPLES
- Found in sewers, septic tanks, livestock waste pits, manholes, well pits, and similar settings
- Found in chemical wastes, petroleum, and natural gas (28%)
- Produced in industrial processes that work with sulfur compounds

7.1.15 Methanol

TREATMENT
Chemical Treatment Guide 6: PINK

DESCRIPTION

Methanol is found as a highly volatile clear liquid and in mixtures. It is used in solvents, additives, and emulsifiers. It is a frequent ingredient in windshield washer fluid. Routes of exposure include skin absorption, eye contact, inhalation, and ingestion. Methanol has CNS depressant properties that are highly toxic upon aspiration and can cause respiratory failure and cardiac dysrhythmias. The metabolites that are formed following the metabolism of methanol - formaldehyde and formic acid - can cause a severe delayed toxicity.

SIGNS AND SYMPTOMS
Cardiovascular: dysrhythmias and hypotension.
Respiratory: respiratory insufficiency or arrest, pulmonary edema, chemical pneumonitis, and bronchitis.
CNS: CNS depression and coma, seizures, headache, muscle weakness, and delirium.
GI: GI bleeding, nausea/vomiting, and diarrhea. Eye: chemical conjunctivitis.
Skin: problems ranging from irritation to full-thickness burns.

7.1.16 Methylene Biphenyl Isocyanate, Ethyl Isocyanate, and Methylene Dilsocyanate (MDI)

TREATMENT
Chemical Treatment Guide 1: YELLOW

DESCRIPTION
MDI is found as a solid, whose color ranges from white to yellow flakes. Various liquid solutions are also used for industrial purposes. There is no odor to the solid or liquid solutions. The vapor is approximately eight times heavier than air.

This chemical is a strong irritant to the eyes, mucous membranes, skin, and respiratory tract. MDI is also a very potent respiratory sensitizer. Various industrial processes utilize MDI in production and usage of (poly)urethane foams, lacquers, and sealants; MDI is also used in the production of insecticides and laminating materials. These chemicals are not cyanide compounds.

SIGNS AND SYMPTOMS
Irritation to the eyes, mucous membranes, skin, and respiratory tract (cough, dyspnea, and pulmonary edema).

EXAMPLES
- Component of smoke in plastic fires

7.1.17 Mustard (Sulfur Mustard): Lewisite, Blister Agents (H, HD, HS)

TREATMENT

Chemical Treatment Guide 1: YELLOW

DESCRIPTION

Mustard is a "blister agent" that causes cell damage and destruction. It is a colorless to light yellow to dark brown oily liquid with the odor of garlic, onion, or mustard. It does not evaporate readily, but may pose a vapor hazard in warm weather. Mustard is a vapor and liquid hazard to skin and eyes, and a vapor hazard to airways. Its vapor is five times heavier than air.

Sulfur mustard has been used as a research tool to study DNA damage and repair. A variety of military munitions are filled with mustard, including projectiles, mortars, and bombs. Mustard damages DNA in cells, which leads to cellular damage and death. It penetrates the skin and mucous membranes very quickly, and cellular damage begins within minutes.

Lewisite is a "blister agent" that has the same effect on the body as mustard; with the exception that onset of symptoms begins immediately.

SIGNS AND SYMPTOMS

Mustard: Clinical effects begin within 2 to 24 hours. The initial effects include the following issues:

Eyes: itching or burning, redness, corneal damage.

Skin: erythema with itching and burning, blisters.

Respiratory tract: epistaxis, hoarseness, sinus pain, dyspnea, and cough.

Lewisite: same effect on the body as mustard, with the exception that onset of symptoms begins immediately.

7.1.18 Nitrogen Products and Other Products Causing Methemoglobinemia

TREATMENT

Chemical Treatment Guide 3: GRAY

DESCRIPTIONS

These products can be found in a gas, liquid, or solid form. They are released from the combustion or decomposition of substances that contain nitrogen. Depending on the individual compound, these agents may pose a significant health hazard for rescuers. Many are well absorbed through intact skin. Simple water washing may be sufficient to remove oil compounds. Other routes of exposure include eye contact, inhalation, and ingestion. These products are respiratory tract irritants that can cause a severe, delayed pulmonary edema or immediate upper airway irritation and edema. They also change Fe^2 to Fe^3 (methemoglobinemia), which does not bind to oxygen.

SIGNS AND SYMPTOMS

Cardiovascular: cardiovascular collapse with weak and rapid pulse.
Respiratory: a mild, transient cough and tachypnea (only symptoms at the time of exposure to most agents). A delayed onset of dyspnea, tachypnea, violent coughing, cyanosis, and pulmonary edema follows. Some agents work immediately on the upper airway, resulting in pain and choking, spasm of the glottis, temporary reflex arrest of breathing, and possibly upper airway obstruction spasm or edema of the glottis.
CNS: headache, dizziness, vertigo, fatigue, restlessness, and decreased LOC (usually delayed signs).
GI: burning of the mucous membranes, nausea/vomiting, and abdominal pain.
Eye: chemical conjunctivitis.
Skin: irritation of moist skin areas, pallor, and cyanosis with normal SpO_2.

Note:
Symptoms may be immediate or may be delayed for 5 to 72 hours.

EXAMPLES

- Propellant fuels and agricultural fumigants
- Also used in laboratory research solvents, bleaching agents, and refrigerants
- Found in grain silos (silo filler's disease)
- Product of combustion in most fires (e.g., structure fires)

7.1.19 Organophosphates: Insecticide Poisoning and Nerve Agents (GA, GB, GD, GF, VX)

TREATMENT

Chemical Treatment Guide 4: GREEN

DESCRIPTION

Organophosphate compounds are used as insecticides in residential applications as well as commercial agriculture. They are found as liquids, dusts, wettable powders, concentrates, and aerosols. Chemical nerve agents include Tabun (GA), Sarin (GB), Soman (GD), GF, and VX. Many are well absorbed through intact skin, so they pose a serious hazard to rescuers. Simple water washing may be sufficient to remove oily compounds. Routes of exposure include skin absorption, eye contact, inhalation, and ingestion.

Organophosphates affect both the parasympathetic nervous system (muscarinic effects) and the sympathetic nervous system (nicotinic effects). Although the muscarinic effects may be reversed with atropine, the nicotinic effects may cause respiratory paralysis and require intubation and aggressive ventilatory support. Organophosphates may be incorporated in a flammable base.

SIGNS AND SYMPTOMS

Exposure may produce the classic SLUDGE syndrome (excessive Salivation, Lacrimation, Urination, Diarrhea, Gastrointestinal distress, and Emesis). Additional muscarinic effects include bronchorrhea, bronchospasm, and bradycardia. The patient will have constricted pupils (miosis, which may last as long as 2 months) with inhalation or skin exposure. Ingestion may or may not cause miosis. However, stimulation of nicotinic receptors will produce tachycardia, muscle paralysis (apnea), muscle twitching/fasiculations, and seizures.

EXAMPLES

- Pesticides (e.g., Chlorthion, Diazinon, Dipterex, Di-Syton, Malathion, Parathion, Phosdrin)
- Chemical warfare agents (e.g., VX, Sarin, Tabun, Soman)

Note:

PPE (usually Level A) with SCBA must be worn in the hazardous area when organophosphates are present. PPE with a minimum of Level C protection must be worn for treatment outside the hazardous areas.

7.1.20 Phenol

TREATMENT
Chemical Treatment Guide 9: WHITE

DESCRIPTION
Phenol (carbolic acid), at room temperature, is a translucent, colorless, crystalline mass; white powder; or thick, syrupy liquid. The crystals turn pink to red in air. Phenol has a sweet, tar-like odor that is readily detected at low concentrations. It is soluble in alcohol, glycerol, petrolatum, and, to a lesser extent, water.
Phenol is absorbed rapidly by all routes; however, the inhalation hazard is limited. In dilute concentrations (1% to 2%), phenol may cause severe burns. Systemic toxicity can rapidly lead to death.
Phenol is mainly used in the manufacture of phenolic resins and plastics. It is also used as a disinfectant and has some medicinal applications (e.g., Campho Phenique®).

SIGNS AND SYMPTOMS
Nausea/vomiting, diarrhea, excessive sweating, headache, dizziness, ringing in the ears, seizures, loss of consciousness, coma, respiratory depression, inflammation of the respiratory tract, shock, and death. Exposure to skin can result in severe burns, which will cause the skin to have a white, red, or brown appearance. Failure to decontaminate the skin may allow the phenol to be absorbed systemically, resulting in death.

EXAMPLES
- Used in the manufacture of phenolic resins and plastics
- Used as a disinfectant
- Campho Phenique®

7.1.21 Phosphine

TREATMENT

Chemical Treatment Guide 8: PURPLE

DESCRIPTION

Phosphine can be found in a gas, liquid, or solid form. Most gases are colorless to brown, and have a sharp odor. Phosphine is used as a chemical warfare and protection agent, as a propellant fuel, and as an agricultural fumigant. Some compounds are used in laboratory research, solvents, and pesticides. They are released from the combustion or decomposition of substances that contain nitrogen. A toxic exposure can result from working on or in grain silos.
Very small amounts of phosphine can be trapped in a victim's clothing after an overwhelming exposure, posing a risk to rescuers. Routes of exposure include skin absorption, eye contact, inhalation, and ingestion. Phosphine is a respiratory tract irritant that can cause a severe, delayed pulmonary edema or immediate upper airway irritation and edema.

SIGNS AND SYMPTOMS

Cardiovascular: cardiovascular collapse with weak and rapid pulse. Patients may present with a reflex bradycardia.
Respiratory: mild and transient cough (only symptom at the time of exposure to most agents). A delayed onset of dyspnea, tachypnea, violent coughing, and pulmonary edema follows. Some agents work immediately on the upper airway, resulting in pain and choking, spasm of the glottis, temporary reflex arrest of breathing, and possibly upper airway obstruction spasm or edema of the glottis.
CNS: fatigue, restlessness, and decreased LOC (usually delayed signs). GI: burning of the mucous membranes, nausea/vomiting, and abdominal pain.
Eye: chemical conjunctivitis.
Skin: irritation of moist skin areas, pallor, and cyanosis.

Symptoms may be immediate or may be delayed for 5 to 72 hours.

EXAMPLES

- Pesticides (especially rodenticides). Also see description.

Note

PPE (usually Level A) with SCBA must be worn in the hazardous area where phosphine is present. PPE with a minimum of Level C protection must be worn for treatment outside the hazardous areas.

7.1. G Chemical Treatment Guide Index

Chemical Name or Group Name	Treatment Guide
Acids and acid mists	Guide 1 - YELLOW
Alkaline compounds	Guide 1 - YELLOW
Ammonia (liquid and gas)	Guide 1 - YELLOW
Aromatic hydrocarbons (benzene, toluene, xylene)	Guide 2 - BLUE
Arsenic compounds (heavy metal poisoning)	Guide 2 - BLUE
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Chemical Treatment Guide 1A: YELLOW

- Acids and acid mists
- Alkaline compounds
- Ammonia (liquid and gas)
- Chlorine gas and phosgene (CG)
- Methylene biphenyl isocyanate, ethyl isocyanate, and methylene dilsocyanate (MDI)
- Mustard (sulfur mustard): Lewisite, blister agents (H, HD, HS)

SIGNS AND SYMPTOMS

Low concentrations of airborne acids and alkalis can produce rapid onset of eye, nose, and throat irritation. Higher concentrations (low concentrations of ammonia) can produce cough, stridor, wheezing, and chemical pneumonia (non-cardiogenic pulmonary edema). Ingestion of acids and alkalis can result in severe injury to the upper airway, esophagus, and stomach. In addition, there may be circulatory collapse, as well as partial- or full-thickness burns.

End-stage symptoms may resemble organophosphate poisoning. However, patients will have normal or dilated pupils (patients will not have pinpoint pupils). These patients should not be given atropine or 2-PAM.

Supportive Care

- Remove the patient from the hazardous area (a).
- If the patient was exposed externally, remove his/her clothing and jewelry and decontaminate with copious amounts of water. Provide ocular irrigation with normal saline (do not attempt to neutralize with another solution).
- If the patient has external burns, see Trauma Protocol on Burn Injuries.
- Medical Supportive Care Protocol or Pediatric Assessment. (Ipecac, charcoal, and NG tube are contraindicated; avoid oral airways.)
- Contact the Poison Information Center (1-800-222-1222).
- If the patient has pulmonary edema, maintain adequate ventilation and oxygenation, and provide pulmonary suction to remove fluid. Non-cardiogenic pulmonary edema should not be treated with Lasix, but with positive end expiratory pressure (PEEP) or a CPAP mask

- If the patient has bronchospasm: Albuterol (Ventolin®):
  Adult
  - 1 nebulizer treatment containing 2.5 mg of albuterol pre-mixed with 3 mL normal saline

  Pediatric
  - If < 1 year old or < 10 kg: mix 1.25 mg in 1.5 mL of normal saline (0.083%).
  - If > 1 year or > 10 kg: pre-mixed 2.5 mg in 3 mL of normal saline (0.083%). May repeat twice PRN (a).
- Adult and pediatric - may give terbutaline (Brethine®) 0.25 mg SQ, if available.
- If bronchodilators are administered, may add ipratropium bromide (Atrovent®) 0.5 mg (0.5 mL) to either albuterol or levalbuterol nebulizer treatment on first nebulizer treatment only (b) (c) (d).
- Adult and pediatric if the patient has inhaled chlorine or hydrochloric acid (HCl) and has significant respiratory distress, administer sodium bicarbonate via nebulizer (8.4% 3 mL mixed with normal saline 3 mL or 4.2% in 6 mL).

Chemical Treatment Guide 1A: YELLOW (continued)

- If seizures continue for 5 minutes, Administer one of the following benzodiazepines: (see Medication Delivery Procedure 4.18.3, 4.18.4, 4.18.8)
  - Diazepam (Valium®) Adult dose 5 mg IV, IM or IN; may repeat to a max of 20 mg. Pediatric dose 0.2 mg/kg, may repeat to a max of 10 mg (a).

  OR
  - Midazolam (Versed) Adult dose 2 mg increments IV, IO, IM, or IN, Pediatric dose 0.1mg/kg, maximum single dose 4 mg IV, IO, IM. For IN administration use 0.2 mg/kg/dose (use 10 mg/2mL concentration), maximum single dose 5 mg; may repeat once if necessary. Maximum total dose of 10 mg (e)

  OR
  - Lorazepam (Ativan®) Adult dose 2 mg IV, IM, or IN; may repeat once as needed, up to a max dose of 4 mg (a). Pediatric dose 0.1mg/kg, maximum dose is 2 mg.

- If hypotension persists, administer 20 mL/kg normal saline IV PRN (maximum total dose is 60 mL/kg) Neonate 10mg/kg maximum total dose is 30mL/kg.

Note:

(a) If risk of exposure from fumes is high, call for a hazardous materials team. Refer to the appropriate hazardous materials PPE protocol, as the risk of secondary contamination is very high.
(b) Adult do not give albuterol or ipratropium bromide if the patient's heart rate 140.
(c) Pediatric do not give albuterol or ipratropium bromide if the patient's heart rate is above 200.
(d) Caution should be used when the patient is older than 40 years of age or has a history of hypertension or heart disease.
(e) For IN administration, administer 1ml per nare, give half the volume in one nostril and the other half of the volume in the other nare.

Chemical Treatment Guide 2A: BLUE

- Aromatic hydrocarbons (benzene, toluene, xylene)
- Arsenic compounds (heavy metal poisoning)
- Carbon monoxide poisoning
- Chlorinated hydrocarbons (methylene chloride)

SIGNS AND SYMPTOMS

Mild exposure signs and symptoms: Cough, hoarseness, headache, poor concentration, irritability, agitation, anxiety, drowsiness, dizziness, weakness, tremors, transient euphoria, vision and hearing disturbances, nausea/vomiting, salivation, diarrhea, stomach pain, and chemical burns with chlorinated hydrocarbons. (For arsenic signs and symptoms, see below.)

Moderate to severe exposure signs and symptoms: Cardiovascular collapse, tachydysrhythmias (especially ventricular fibrillation), chest pain, pulmonary edema, dyspnea, tachypnea, respiratory failure, paralysis, altered mental status, seizures, excessive salivation, pale skin, cyanosis, rarely cherry-red skin with carbon monoxide, and delayed carcinogenic effects. (For arsenic signs and symptoms, see below.)

Signs and symptoms of arsenic exposure: Severe gastrointestinal fluid loss, burning abdominal pain, watery or bloody diarrhea, muscle spasm, seizures, cardiovascular collapse, tachycardia, hypotension, ventricular dysrhythmias, shock, and coma. There may be respiratory or cardiac arrest, and acute renal failure may occur with bronze urine within a few minutes.

End-stage symptoms may resemble organophosphate poisoning. However, patients will have normal or dilated pupils (patients will not have pinpoint pupils). These patients should not be given atropine or 2-PAM. Products may be flammable.

Supportive Care

- Remove the patient from the hazardous area (a).
- Medical Supportive Care Protocol or Pediatric Care . (Ipecac and an NG tube are contraindicated. Avoid oral airways.)
- If the patient was exposed externally, remove his/her clothing and jewelry and decontaminate as appropriate. Provide ocular irrigation with normal saline

- Administer high-flow oxygen (100%) (b).
- Contact the Poison Information Center (1-800-222-1222).
- If the patient has pulmonary edema, maintain adequate ventilation and oxygenation, and provide pulmonary suction to remove fluid. Non-cardiogenic pulmonary edema should not be treated with Lasix, but with positive end-expiratory pressure (PEEP) or a CPAP mask

Chemical Treatment Guide 2A: BLUE (continued)

ALS

- If the patient has dysrhythmias, treat PRN
- If seizures continue for 5 minutes, Administer one of the following benzodiazepines:

  - Diazepam (Valium®) Adult dose 5 mg IV, IM or IN; may repeat to a max of 20 mg. Pediatric dose 0.2 mg/kg, may repeat to a max of 10 mg (d).

  OR

  - Midazolam (Versed) Adult dose 2 mg increments IV, IO, IM, or IN, Pediatric dose 0.1mg/kg, maximum single dose 4 mg IV, IO, IM. For IN administration use 0.2 mg/kg/dose (use 10 mg/2mL concentration), maximum single dose 5 mg; may repeat once if necessary. Maximum total dose of 10 mg (d)

  OR

  - Lorazepam (Ativan®) Adult dose 2 mg IV, IM, or IN; may repeat once as needed, up to a max dose of 4 mg (d). Pediatric dose 0.1mg/kg, maximum dose is 2 mg.
- If hypotension persists, administer 20 mL/kg normal saline IV PRN (maximum total dose is 60 mL/kg) Neonate 10mg/kg maximum total dose is 30mL/kg.

Note:

(a) If risk of exposure from fumes is high, call for a hazardous materials team. Refer to the appropriate hazardous materials PPE protocol, as the risk of secondary contamination is very high.

(b) Document the duration of exposure to CO and when oxygen therapy was started (this information is needed to assist in making HBO decisions).

(c) Administration of epinephrine to patients in a pre-code status may not be desirable for this group of patients. A physician or the Poison Information Center should guide the administration of epinephrine in these cases.

(d) For IN administration, administer 1ml per nare, give half the volume in one nostril and the other half of the volume in the other nare.

Chemical Treatment Guide 3A: GRAY

- Dinitrobenzene (DNB)
- Nitrogen products and other products causing methemoglobinemia

SIGNS AND SYMPTOMS

Methemoglobinemia characterized by chocolate-brown-colored blood, CNS depression, headache, dizziness, ataxia, vertigo, tinnitus, dyspnea, tachypnea, violent coughing, choking, possibly upper airway obstruction spasm or edema of the glottis, abdominal pain, hypotension, heart blocks, ventricular dysrhythmias, seizures (rare), pallor, cyanosis, and cardiovascular collapse.
Symptoms may be immediate or may be delayed for 5 to 72 hours.

Supportive Care

- Remove the patient from the hazardous area (a).
- Medical Supportive Care Protocol or Pediatric Care
- If the patient was exposed externally, remove his/her clothing and decontaminate as appropriate.
- Administer high-flow oxygen (100%).
- Contact the Poison Information Center (1-800-222-1222).
- If nitrogen product ingestion occurred, adult and pediatric dose administer activated charcoal 1g/kg maximum dose is 50 g PO.

ALS

- Adult and pediatric if the patient is dyspneic, is cyanotic , has normal SpO2 and has chocolate brown colored blood, administer methylene blue (1%) 1 - 2 mg/kg slow IV over 5 minutes, followed by a normal saline 30 mL flush to decrease pain at the IV site.
- If the patient has dysrhythmias, treat PRN.
- If seizures continue for 5 minutes, Administer one of the following benzodiazepines:
  - Diazepam (Valium®) Adult dose 5 mg IV, IM or IN; may repeat to a max of 20 mg. Pediatric dose 0.2 mg/kg, may repeat to a max of 10 mg (b).

  OR
  - Midazolam (Versed) Adult dose 2 mg increments IV, IO, IM, or IN, Pediatric dose 0.1mg/kg, maximum single dose 4 mg IV, IO, IM. For IN administration use 0.2 mg/kg/dose (use 10 mg/2mL concentration), maximum single dose 5 mg; may repeat once if necessary. Maximum total dose of 10 mg (b)

  OR
  - Lorazepam (Ativan®) Adult dose 2 mg IV, IM, or IN; may repeat once as needed, up to a max dose of 4 mg Pediatric dose 0.1mg/kg, maximum dose is 2 mg (b).
- If hypotension persists, administer 20 mL/kg normal saline IV PRN (maximum total dose is 60 mL/kg) Neonate 10mg/kg maximum dose is 30mL/kg.
- Do not induce vomiting.

ALS with Medical Control Contact:

- If cyanosis persists, adult and pediatric dose administer methylene blue (1%) 1-2 mg/kg slow IV over 5 minutes, followed by a 30 mL flush of normal saline to decrease pain at the IV site.

Note:

(a) If risk of exposure from fumes is high, call for a hazardous materials team. Refer to the appropriate hazardous materials PPE protocol, as the risk of secondary contamination is very high.

(b) For IN administration, administer, 1ml per nare, give half the volume in one nostril and the other half of the volume in the other nare.

Chemical Treatment Guide 4A: GREEN

- Carbamates: insecticide poisoning
- Organophosphates: insecticide poisoning and nerve agents (GA, GB, GD, GF, VX)

SIGNS AND SYMPTOMS

The muscarinic effects are described as the classic SLUDGE syndrome (excessive Salivation, Lacrimation, Urination, Diarrhea, Gastrointestinal distress, and Emesis). Additional muscarinic effects include bronchorrhea, bronchospasm, and bradycardia. The patient will have constricted pupils (miosis, which may last as long as 2 months despite appropriate treatment) with inhalation or skin exposure. Ingestion may or may not cause miosis. Stimulation of nicotinic receptors will produce tachycardia, muscle paralysis (apnea), muscle twitching/fasiculations, and seizures.

Supportive Care

- Remove the patient from the hazardous area (a).
- Avoid exposure to the patient's sweat, vomit, stool, and vapors emitting from soaked clothes.
- Medical Supportive Care or Pediatric Care
- Administer high-flow O_2.
- If the patient was exposed externally, remove his/her clothing and decontaminate as appropriate (place the patient's clothes in sealed bag).
- Contact the Poison Information Center (1-800-222-1222).

ALS

If treating 1-4 patients:

- If the patient is bradycardic (patient is usually tachycardic) or has excessive pulmonary secretions, adult dose administer atropine 0.03 mg/kg IV (2 mg/70 kg), pediatric dose 0.05mg/kg maximum dose is 3mg. Repeat every 5 minutes until secretions are inhibited (b) (c).
- In case of organophosphate poisoning, adult and pediatric dose consider pralidoxime (Protopam ®, 2-PAM®) 1-2 g mixed in 100 mL NS IV drip over 30 minutes. In severe cases, 2-PAM® may be given via IV at a maximum rate of 200 mg/min or 1 g/5 min (used when nicotinic effects are present, as evidenced by fasciculation of large muscles). Observe patient for hypertension. (May be needed with high exposure to carbamates.)
- If seizures continue for 5 minutes, Administer one of the following benzodiazepines: (see Medication Delivery Procedure 4.18.3, 4.18.4, 4.18.8)
  - Diazepam (Valium®) Adult dose 5 mg IV, IM or IN; may repeat to a max of 20 mg. Pediatric dose 0.2 mg/kg, may repeat to a max of 10 mg (e).

  OR
  - Midazolam (Versed) Adult dose 2 mg increments IV, IO, IM, or IN, Pediatric dose 0.1mg/kg, maximum single dose 4 mg IV, IO, IM. For IN administration use 0.2 mg/kg/dose (use 10 mg/2mL concentration), maximum single dose 5 mg; may repeat once if necessary. Maximum total dose of 10 mg (e)

  OR
  - Lorazepam (Ativan®) Adult dose 2 mg IV, IM, or IN; may repeat once as needed, up to a max dose of 4 mg. Pediatric dose 0.1mg/kg, maximum dose is 2 mg (e).

Chemical Treatment Guide 4A: GREEN (continued)

If treating 5 or more patients older than 5 years of age or treating self-exposure (with pinpoint pupils): Adult and pediatric.

- Administer DuoDote(s) (combined Atropine and Pralidoxime) or Mark I Kit(s) (two auto-injectors containing Atropine 2 mg in one and pralidoxime 600 mg in the other; see Medical Procedure 4.18.2) as follows:
  - For early symptoms (severe rhinorrhea or mild to moderate dyspnea): administer one DuoDote or Mark I auto-injector kit. If no improvement in patient's status in 10 minutes, administer another DuoDote or Mark I auto-injector kit (c) (d).
  - For severe respiratory distress, coma, or seizures: administer three DuoDotes or Mark I auto-injectors and one CANA/Valium auto-injector (diazepam 10 mg IM) (c) (d).

For all patients meeting the preceding criteria:

- Alert the emergency department to prepare for a contaminated patient.
- Do not induce vomiting or give Furosemide (Lasix®) or Morphine.
- If the patient is experiencing eye pain and/or blepharospasm, administer Scopolamine 1 drop in each eye.

Note:

(a) If risk of exposure from fumes is high, call for a hazardous materials team. PPE (usually Level A) with SCBA must be worn in the hazardous area. PPE with a minimum of Level C protection must be worn for treatment outside the hazardous area.
(b) If advised by the Poison Information Center, every other dose of Atropine can be increased to 0.06 mg/kg IV.
(c) The endpoint for treatment is manifested by patient improvement with clear lung sounds.
(d) When possible, establish an IV and administer Atropine, Diazepam, Lorazepam, and Midazolam IV and Pralidoxime IV drip.
(e) For IN administration, administer 1ml per nare, give half the volume in one nostril and the other half of the volume in the other nare.

Chemical Treatment Guide 5A: RED

- Cyanide: hydrogen cyanide, hydrocyanic acid (AC), cyanogen chloride (CK)
- Hydrogen sulfide, sulfides, and mercaptans
- Azides

SIGNS AND SYMPTOMS
Cardiovascular: initially, pulse decreases and BP rises. In later stages, tachycardia, dysrhythmias, and cardiovascular collapse can occur. There may also be palpitations and/or chest tightness.
Respiratory: can cause immediate respiratory arrest. Initially there is usually an increase in the rate and depth of respirations, which later become slow and gasping. Irritation of the respiratory tract, cough, dyspnea, tachypnea, and pulmonary edema may also occur.
CNS: can cause immediate coma. Initially there is usually weakness, headache, and confusion; seizures are common.
GI: nausea/vomiting, profuse salivation, possibly garlic taste in mouth. Skin: pale, cyanotic, or reddish color, dermatitis, sweating.

Note:
Good medical supportive care, including airway management, is paramount and should precede the use of the cyanide antidote kit. However, the rapid administration of the cyanide antidote kit is the only therapy that will reverse the life-threatening symptoms.

Supportive Care
- Remove the patient from the hazardous area (a).
- Avoid exposure to vapors emitting from soaked clothes.
- Medical Supportive Care or Pediatric Care
- Administer high-flow O_2.
- If the patient was exposed externally, remove his/her clothing quickly and decontaminate.
- Contact the Poison Information Center (1-800-222-1222).
- If the patient is conscious, administer activated charcoal 1g/kg maximum dose is 50 g PO for oral ingestion.
- Only a physician or the Poison Information Center can authorize treatment beyond supportive care for exposure to azides.
- Alert the emergency department to prepare for a contaminated patient.
- Do not induce vomiting.

ALS
- Adult and pediatric if the patient is unconscious, administer sodium bicarbonate 1 mEq/kg IV.
- If advanced airway in place provide PPV utilizing a BVM
- If the patient has dysrhythmias, treat PRN
- If hypotension persists, administer 20 mL/kg normal saline IV PRN (maximum total dose is 60 mL/kg) Neonate 10mg/kg maximum total dose is 30mL/kg.

Chemical Treatment Guide 5A: RED (continued)

- If the patient is exhibiting life-threatening symptoms (severe respiratory compromise or arrest, shock, seizures, coma), administer the Cyanokit or if unavailable the cyanide antidote kit (3 parts) in the following order (to induce methemoglobinemia). If symptoms are not severe, or if diagnosis is not certain, omit Steps 1 and 2 and only give sodium thiosulfate (Step 3). Paramedics who are not part of a hazardous materials team and non-rescue supervisors can only give sodium thiosulfate.

TREATMENT:
Option 1 Cyanokit (Hydroxycarbolomin for Injection)
This kit is for intravenous use. The hydroxycarbolomin is to be reconstituted with 100 mL per vial of 0.9% sodium chloride injection. The starting dose is 5 g. (may be packaged in one or two vials). See Procedure 4.13 and Drug Summary 5.19, Hydroxycarbolomin.

1. Start a dedicated IV line
2. Reconstitution: Add 100 mL of 0.9% sodium chloride injection to the vial using a transfer spike. Fill to the line (with the vial in an upright position).
3. Mix: Rock or rotate the vial for 30 seconds to mix the solution. Do not shake.
4. Infuse the first vial: Use vented IV tubing to hang the bag and infuse over 7.5 minutes.
5. Infuse the second vial: Repeat Steps 1 and 2 before the second infusion. Use vented IV tubing to hang the bag and infuse over 7.5 minutes.

OR

Option 2: Lilly Kit or Pasadena Kit for cyanide or hydrogen sulfide the cyanide antidote kit comes in 3 parts, administer in the following order (to induce methemoglobinemia). If symptoms are not severe, or if diagnosis is not certain, omit Steps 1 and 2 and only give sodium thiosulfate (Step 3). Paramedics who are not part of a hazardous materials team and non-rescue supervisors can only give sodium thiosulfate

Rescue Supervisor and Hazardous Materials Team Paramedic

2. Amyl Nitrite pearls - Broken and held on a gauze pad under the patient's nose. Allow the patient to inhale the material for 15 to 30 seconds of every minute. During the interval during which the patient is not inhaling the Amyl Nitrate, 100% oxygen should be administered. If the patient is not breathing, place the "pearls" into a BVM and ventilate the patient. (amyl nitrite pearls convert 3%-5% of the hemoglobin to methemoglobin) (b).
3. Sodium Nitrite 10ml of a 3% solution IV over 2 minutes (300mg). Monitor BP, as hypotension may occur. (Sodium Nitrite converts approximately 20% of the circulating hemoglobin to methemoglobin). Additional doses of Sodium Nitrite should only be done once methemoglobin blood analysis is completed. Administer 100% (NRBM) oxygen after administering Sodium Nitrite.

All Paramedics

4. Sodium Thiosulfate 25% 12.5 g (50 mL) IV.

Note: Do not administer sodium nitrite in cases involving smoke inhalation (structure fires) or carbon monoxide poisoning. Administer only sodium thiosulfate and 100% oxygen.

Chemical Treatment Guide 5A: RED (continued)

- If seizures continue for 5 minutes, Administer one of the following benzodiazepines: (see Medication Delivery Procedure 4.18.3, 4.18.4, 4.18.8)
  - Diazepam (Valium®) Adult dose 5 mg IV, IM or IN; may repeat to a max of 20 mg. Pediatric dose 0.2 mg/kg, may repeat to a max of 10 mg (c).

  OR
  - Midazolam (Versed) Adult dose 2 mg increments IV, IO, IM, or IN, Pediatric dose 0.1mg/kg, maximum single dose 4 mg IV, IO, IM. For IN administration use 0.2 mg/kg/dose (use 10 mg/2mL concentration), maximum single dose 5 mg; may repeat once if necessary. Maximum total dose of 10 mg (c).

  OR
  - Lorazepam (Ativan®) Adult dose 2 mg IV, IM, or IN; may repeat once as needed, up to a max dose of 4 mg Pediatric dose 0.1mg/kg, maximum dose is 2 mg (c).

ALS with Medical Control Contact

- If symptoms persist after 20 minutes, repeat the cyanide antidote kit at 50% of the initial dose.
- If the patient becomes cyanotic after administration of the cyanide antidote kit, contact the Poison Information Center (1-800-222-1222) for further instructions.

Note:

(a) If risk of exposure from fumes is high, call for a hazardous materials team. Refer to the appropriate hazardous materials PPE protocol, as the risk of secondary contamination is very high.
(b) If the patient has IV access and received supportive care, Step 1 may be bypassed for Step 2.
(c) For IN administration, administer 1ml per nare, give half the volume in one nostril and the other half of the volume in the other nare.

7.1.G Chemical Treatment Guide 6A: PINK

Chemical Treatment Guide 6A: PINK

- Ethylene glycol
- Methanol

CLINICAL MANIFESTATIONS OF ETHYLENE GLYCOL POISONING
Phase I (30 minutes to 12 hours): ethanol-like inebriation, metabolic acidosis, seizures, and coma.
Phase 2 (12 to 36 hours): tachycardia, tachypnea, hypertension, pulmonary edema.
Phase 3 (36 to 48 hours): crystalluria, acute tubular necrosis with oliguria - renal failure.

SIGNS AND SYMPTOMS OF METHANOL EXPOSURE
Cardiovascular: dysrhythmias and hypotension.
Respiratory: respiratory insufficiency or arrest, pulmonary edema, chemical pneumonitis, and bronchitis.
CNS: CNS depression and coma, seizures, headache, muscle weakness, and delirium.
GI: GI bleeding, nausea/vomiting, and diarrhea. Eye: chemical conjunctivitis.
Skin: problems ranging from irritation to full-thickness burns.

Supportive Care
- Remove the patient from the hazardous area.
- Medical Supportive Care or Pediatric Care.
- Contact the Poison Information Center (1-800-222-1222).

ALS
- If seizures continue for 5 minutes, Administer one of the following benzodiazepines:

  - Diazepam (Valium®) Adult dose 5 mg IV, IM or IN; may repeat to a max of 20 mg. Pediatric dose 0.2 mg/kg IV, IM, IN or IO, may repeat to a max of 10 mg (a).

  OR

  - Midazolam (Versed) Adult dose 2 mg increments IV, IO, IM, or IN, Pediatric dose 0.1mg/kg, maximum single dose 4 mg IV, IO, IM. For IN administration use 0.2 mg/kg/dose (use 10 mg/2mL concentration), maximum single dose 5 mg; may repeat once if necessary. Maximum total dose of 10 mg (a)

  OR

  - Lorazepam (Ativan®) Adult dose 2 mg IV, IM, or IN; may repeat once as needed, up to a max dose of 4 mg (a). Pediatric dose 0.1mg/kg, maximum dose is 2 mg.
- If the patient's lungs are clear, administer normal saline at a rate of 100 mL/h IV.
- If the patient's respiratory rate is twice the normal rate, administer sodium bicarbonate 8.4% 1-2 mEq/kg IV.
- If the patient has dysrhythmias, treat PRN (see Adult Protocol 2.3 or Pediatric Protocol 3.3).
- Administer thiamine 100 mg IV if available

Note: (a) for IN administration, administer 1ml per nare, give half the volume in one nostril and the other half of the volume in the other nare.

Chemical Treatment Guide 7A: ORANGE

- Hydrofluoric acid (HF)
- Vicane

SIGNS AND SYMPTOMS

Hypovolemic shock and collapse, tachycardia with weak pulse, acute pulmonary edema, asphyxia, chemical pneumonitis, upper airway obstruction with stridor, pain and cough, decreased LOC, nausea/vomiting, diarrhea, possible GI bleeding, and possible blindness. HF also causes severe skin burns. The damage may be severe with no outward signs, except that the patient will complain of severe pain.

Supportive Care

- Remove the patient from the hazardous area (a).
- Medical Supportive Care Protocol or Pediatric Care. (Ipecac is contraindicated.)
- If the patient was exposed externally, remove his/her clothing and jewelry and decontaminate with copious amounts of water.
- Contact the Poison Information Center (1-800-222-1222).
- If the patient has pulmonary edema, maintain adequate ventilation and oxygenation, and provide pulmonary suction to remove fluid. Non-cardiogenic pulmonary edema should not be treated with Lasix, but with positive end-expiratory pressure (PEEP) or a CPAP mask

ALS

- If the patient has burns to the eye(s): Immediately flush with copious amounts of water or normal saline. Prepare an eye wash solution by mixing calcium gluconate (10%) 50 mL in normal saline 500 mL (b).
- Apply calcium gluconate eye wash using the Morgan lens and continue until arrival at the receiving facility (b).

<u>If the patient has burns to the skin for Adult and Pediatric</u>

- Immediately flush with copious amounts of water.
- Prepare a skin gel by mixing calcium gluconate (10%) 10 mL into a 2-oz tube of KY Jelly (making a 2.5% gel) (b).
- Apply a 2.5% calcium gluconate gel on the burned area. For burns to the hand(s), place the hand in a glove filled with this gel (b).

Chemical Treatment Guide 7A: ORANGE (continued)

For inhalation injury: For Adult and Pediatric

- Immediately support ventilations.
- Administer calcium gluconate Treat inhalation injuries with oxygen and 2.5% calcium gluconate nebulizer, aadminister 1mL mixed 3mL normal saline via a nebulizer.
- For severe respiratory depression/arrest and/or cardiac toxicity (dysrhythmia, prolonged QT interval, hypotension), administer calcium gluconate (10%) 1-2 g slow IV over 5 minutes (b).
- If the patient has dysrhythmias, treat PRN .
- If hypotension persists, treat PRN.
- If hypotension persists, administer 20 mL/kg normal saline IV PRN (maximum total dose is 60 mL/kg) Neonate 10mg/kg maximum total dose is 30mL/kg.

ALS with Medical Control Contact

If systemic symptoms persist, repeat calcium gluconate (10%) adult dose 1-2 g slow IV over 5 minutes pediatric dose 100mg/kg maximum dose is 1 g IV slow over 5 minutes (b).

Note:

(a) If risk of exposure from fumes is high, call for a hazardous materials team. Refer to the appropriate hazardous materials PPE protocol, as the risk of secondary contamination is very high.

(b) Do not use calcium carbonate, as the outcome can be disastrous.

Chemical Treatment Guide 8A: PURPLE

- Ketones
- Phosphine

SIGNS AND SYMPTOMS OF KETONE EXPOSURE
Cardiovascular: cardiac dysrhythmias and tachycardia.
Respiratory: upper respiratory tract irritation, dyspnea, tachypnea, a burning sensation in the chest and pulmonary edema.
CNS: CNS depression to coma, confusion, tinnitus, disorientation, headache, drowsiness, weakness, and seizures.
GI: pain and irritation of the mucous membranes, nausea/vomiting, and diarrhea.
Eye: chemical conjunctivitis.
Skin: irritation and dermatitis, cyanosis of extremities.

SIGNS AND SYMPTOMS OF PHOSPHINE EXPOSURE
Cardiovascular: cardiovascular collapse with weak and rapid pulse. Patients may present with a reflex bradycardia.
Respiratory: mild and transient cough (only symptom at the time of exposure to most agents). A delayed onset of dyspnea, tachypnea, violent coughing, and pulmonary edema follows. Some agents work immediately on the upper airway, resulting in pain and choking, spasm of the glottis, temporary reflex arrest of breathing, and possibly upper airway obstruction spasm or edema of the glottis.
CNS: fatigue, restlessness, and decreased LOC (usually delayed signs). GI: burning of the mucous membranes, nausea/vomiting, and abdominal pain.
Eye: chemical conjunctivitis.
Skin: irritation of moist skin areas, pallor, and cyanosis.

Note: Symptoms may be immediate or may be delayed for 5 to 72 hours.

Supportive Care Adult and Pediatric
- Remove the patient from the hazardous area (a).
- Avoid exposure to vapors emitting from soaked clothes.
- Medical Supportive Care or Pediatric Care.
- Administer 100% high-flow oxygen.
- Ipecac is contraindicated.
- If the patient was exposed externally, remove his/her clothing and decontaminate as appropriate (do not use water as an initial irrigating solution for phosphine exposure due to possible reactivity). Provide ocular irrigation with normal saline

- Contact the Poison Information Center (1-800-222-1222).
- For phosphine ingestions. Administer activated charcoal 1g/kg maximum dose of 50g PO.
- If the patient has pulmonary edema, maintain adequate ventilation and oxygenation, and provide pulmonary suction to remove fluid. Non-cardiogenic pulmonary edema should not be treated with Lasix, but with positive end-expiratory pressure (PEEP) or CPAP mask.

Chemical Treatment Guide 8A: PURPLE (continued)

ALS

- If seizures continue for 5 minutes, Administer one of the following benzodiazepines:

  - Diazepam (Valium®) Adult dose 5 mg IV, IM or IN; may repeat to a max of 20 mg. Pediatric dose 0.2 mg/kg, may repeat to a max of 10 mg (a).

  OR

  - Midazolam (Versed) Adult dose 2 mg increments IV, IO, IM, or IN, Pediatric dose 0.1mg/kg, maximum single dose 4 mg IV, IO, IM. For IN administration use 0.2 mg/kg/dose (use 10 mg/2mL concentration), maximum single dose 5 mg; may repeat once if necessary. Maximum total dose of 10 mg (b).

  OR

  - Lorazepam (Ativan®) Adult dose 2 mg IV, IM, or IN; may repeat once as needed, up to a max dose of 4 mg (a). Pediatric dose 0.1mg/kg, maximum dose is 2 mg.

- If the patient has dysrhythmias, treat PRN.
- If hypotension persists, administer 20 mL/kg normal saline IV PRN (maximum total dose is 60 mL/kg) Neonate 10mg/kg maximum total dose is 30mL/kg.

Note:

(a) If risk of exposure from fumes is high, call for a hazardous materials team. PPE (usually Level A) with SCBA must be worn in the hazardous area. PPE with a minimum of Level C protection must be worn for treatment outside the hazardous areas.

(b) For IN administration, administer 1ml per nare, give half the volume in one nostril and the other half of the volume in the other nare.

7.1.G Chemical Treatment Guide 9A: WHITE

Chemical Treatment Guide 9A: **WHITE**

Phenol (carbolic acid)

SIGNS AND SYMPTOMS

Nausea/vomiting, diarrhea, excessive sweating, headache, dizziness, ringing in the ears, seizures, loss of consciousness, coma, respiratory depression, inflammation of the respiratory tract, shock, and death. Exposure to skin can result in severe burns, which will cause the skin to have a white, red, or brown appearance. Failure to decontaminate the skin may allow the phenol to be absorbed systemically, resulting in death.

Supportive Care

- Remove the patient from the hazardous area (a).
- Avoid exposure to vapors emitting from soaked clothes.
- Medical Supportive Care or Pediatric Care
- Ipecac is contraindicated.
- If the patient was exposed externally, remove his/her clothing and decontaminate with copious amounts of water. After thoroughly rinsing skin, apply vegetable oil to exposed areas. (Isopropyl alcohol may be used for very small skin burns only.)
- Provide ocular irrigation with normal saline.
- Contact the Poison Information Center (1-800-222-1222).

ALS Level 1

- Assess the need for an advanced airway.
- If seizures continue for 5 minutes, Administer one of the following benzodiazepines:

    - Diazepam (Valium®) Adult dose 5 mg IV, IM or IN; may repeat to a max of 20 mg. Pediatric dose 0.2 mg/kg, may repeat to a max of 10 mg (a).

    OR

    - Midazolam (Versed) Adult dose 2 mg increments IV, IO, IM, or IN, Pediatric dose 0.1mg/kg, maximum single dose 4 mg IV, IO, IM. For IN administration use 0.2 mg/kg/dose (use 10 mg/2mL concentration), maximum single dose 5 mg; may repeat once if necessary. Maximum total dose of 10 mg (b)

    OR

    - Lorazepam (Ativan®) Adult dose 2 mg IV, IM, or IN; may repeat once as needed, up to a max dose of 4 mg (a). Pediatric dose 0.1mg/kg, maximum dose is 2 mg.
- If hypotension persists, administer 20 mL/kg normal saline IV PRN (maximum total dose is 60 mL/kg) Neonate 10mg/kg maximum total dose is 30mL/kg. (Adult Protocol 2.4.1).

Note:

(a) If risk of exposure from fumes is high, call for a hazardous materials team. Refer to the appropriate hazardous materials PPE protocol, as the risk of secondary contamination is very high.

(b) For IN administration, administer 1ml per nare, give half the volume in one nostril and the other half of the volume in the other nare.

7.2 Adult Hazardous Material Exposure (Biological Agents)

This protocol is to be used for those patients suspected of exposure to biological agents via any route of exposure (e.g., inhalation, absorption). It gives specific considerations for each type of exposure as well as general treatment guidelines. Scene safety should be of primary concern, with special attention being paid to the need for personal protective equipment. Additional assistance may be necessary (e.g., hazardous materials team, police).

Because many biological agents are spread through an airborne route, scene safety must include use of protective masks by all personnel, and must include containment of the unknown substance to prevent its airborne spread. Any victim who has a cough, respiratory symptoms, or a flu-like syndrome should be considered as potentially infectious to others by the respiratory route, until proven otherwise. Both patients and healthcare workers should wear protective masks. If a patient needs low-flow oxygen therapy, it may be given by nasal cannula under a protective mask. If a patient needs high-flow oxygen therapy, it may be given by non-rebreather mask, which should not be covered by a protective mask; instead, the healthcare workers must wear protective masks.

Symptoms that would develop after a biological weapon (BW) attack would be delayed and nonspecific, making the initial diagnosis difficult. A BW attack should be considered if any of the following factors are present:

- Large epidemic with unprecedented number of ill or dying
- HIV-positive individuals who demonstrate first susceptibility (“canary in a coal mine”)
- High volumes of patients complaining primarily of respiratory symptoms that are severe and are associated with an unprecedented mortality rate
- A cause of infection that is unusual or impossible for the particular region (such as the Ebola virus, which is rarely seen outside Africa)
- Multiple, yet simultaneous outbreaks
- An epidemic caused by a multidrug-resistant pathogen, previously unknown
- Sick or dead animals of multiple types
- Identification of the delivery vehicle for the agent
- Prior intelligence reports or claims by aggressors of a BW attack

SIGNS AND SYMPTOMS

After a characteristic incubation period following aerosol exposure, most BW agents present as an initial influenza syndrome characterized by the following signs and symptoms:

- Fever
- Chills
- Malaise
- Headache
- Myalgia

7.2 Adult Hazardous Material Exposure (Biological Agents) (continued)

Some BW agents rapidly develop into a pulmonary syndrome characterized by the following signs and symptoms:

- Dyspnea
- Cyanosis
- Chest pain
- Radiological abnormalities
- Liver involvement, indicated by rising liver enzymes, with or without jaundice
- Encephalitis (may occur with some viral agents), typified by photophobia, confusion, and nuchal rigidity
- Maculopapular, vesicular pustular, or ulcerative skin lesions, with or without bleeding abnormalities

Unexplained death or flaccid paralysis (may indicate a biological toxin) A history should be obtained from the patient and bystanders, to include the following information:

- Duration of symptoms
- Pertinent medical history
- Patient's recent history of travel
- Infectious contacts
- Employment
- Activities over the preceding 3-5 days

If a biological agent exposure is suspected, call for a hazardous materials team. In this instance, refer to the appropriate hazardous materials PPE protocol, to protect against secondary contamination. All patients who have been exposed to hazardous materials must be properly decontaminated prior to initiation of extensive medical treatment and transportation to the hospital.

Contact the Poison Information Center (1-800-222-1222) for consultation regarding specific therapy, and then contact the receiving emergency department.

It is imperative that the emergency department be made aware early that a contaminated patient is being transported so that proper preparations can be made to receive the patient.

7. 2.1 Anthrax

7.2.1 Anthrax

Bacillus anthraces is a gram-positive, rod-shaped organism that becomes infectious when it converts into a spore and enters the host. The spore germinates inside a macrophage, which is then transported to regional lymph nodes. There, local production of toxins causes edema and necrosis of the tissue, leading to bacteremia, toxemia, and death. Symptoms vary with the method of exposure:

- Cutaneous Anthrax: Skin lesions appear in 1-5 days, consisting of 1- to 2-cm vesicles with regional edema and lymphadenitis. Most patients with small lesions will be afebrile. Lesions develop into a painless necrotic ulcer with a black eschar base.
- Gastrointestinal Anthrax: Signs and symptoms include fever, nausea/ vomiting, abdominal pain, bloody diarrhea, sometimes rapidly developing ascites, and possibly acute abdomen. Oropharyngeal cases show primary involvement of the tonsils.
- Inhalation Anthrax: A 6-day incubation period is followed by fever, myalgias, cough, and fatigue. Initial improvement is followed by abrupt onset of respiratory distress, shock, and death in 24-36 hours. Physical findings are nonspecific, pneumonia is rare, and 50% of cases have associated hemorrhagic meningitis.

Supportive Care

- Remove the patient from the hazardous area (a).
- If the patient was exposed externally, remove his/her clothing and decontaminate as appropriate.
- Medical Supportive Care or Pediatric Care
- Contact the Poison Information Center (1-800-222-1222).

ALS
None

ALS with Medical Control Contact
If there is a high suspicion of significant exposure to anthrax, then Medical Control or the Poison Information Center may order preventive treatment with oral ciprofloxacin (Cipro®) 500 mg PO bid or doxycycline 100 mg PO bid.

Note:
(a) If risk of exposure is high, call for a hazardous materials team. Refer to the appropriate hazardous materials PPE protocol, as the risk of secondary contamination is very high.

7.2.2 Botulism

7.2.2 Botulism

The botulinum toxins are a group of seven related neurotoxins produced by the bacillus Clostridium botulinum. When inhaled, these toxins produce a clinical picture very similar to that associated with foodborne intoxication, although the time to onset of paralytic symptoms may actually be longer than for foodborne cases, and may vary by type and dose of toxin. The clinical syndrome produced by one or more of these toxins is known as "botulism." Botulism toxin is also a licensed medicine that is used for the treatment of dystonias and can be found in some hospital pharmacies.

SIGNS AND SYMPTOMS
The onset of symptoms of inhalation botulism may vary from 24-36 hours to several days following exposure. Symptoms include the following:
Bulbar palsies produce loss of function in nerves originating in the brain stem, causing the following symptoms:

- Blurred vision
- Mydriasis
- Diplopia
- Ptosis
- Photophobia
- Dysphagia
- Dysphonia

Following bulbar palsies, skeletal muscles become weak, leading to a symmetrical descending paralysis (head-to-toe).
These symptoms may progress acutely to respiratory failure and death within 24 hours.
Patients usually remain awake and alert.

Supportive Care

- Medical Supportive Care or Pediatric Care.
- Contact the Poison Information Center (1-800-222-1222).

ALS Level 1
None

7.2.3 Cholera

Vibrio cholerae is a short, curved, motile, gram-negative, non-sporulating rod. Cholera is the prototype toxigenic diarrhea, which is secretory in nature. Transmission of the pathogen occurs through direct and indirect fecal contamination of water or foods, and by heavily soiled hands or utensils. V. cholerae can survive for as long as 24 hours in sewage, and as long as 6 weeks in certain types of relatively impure water containing organic material. Because cholera does not easily spread from human to human, for this pathogen to be an effective biological weapon, major drinking water supplies would have to be heavily contaminated.

Cholera is an acute infectious disease, characterized by sudden onset with nausea, vomiting, profuse diarrhea with “rice water” appearance, rapid loss of body fluids, toxemia, and frequent collapse. If untreated, mortality may by 50%.

SIGNS AND SYMPTOMS
The following signs and symptoms occur within 12 to 72 hours of exposure:

- Intestinal cramping
- Painless diarrhea
- Vomiting
- Malaise
- Headache
- Low-grade fever

Supportive Care

- Remove the patient from the hazardous area.
- Medical Supportive Care or Pediatric Care
- Consider fluid replacement.
- Contact the Poison Information Center (1-800-222-1222).

ALS Level 1
None

ALS with Medical Control Contact
In-hospital treatment may include the use of tetracycline 500 mg qid for 3 days or doxycycline 300 mg once or 100 mg bid for 3 days. If the organism is tetracycline resistant, use ciprofloxacin 500 mg bid for 3 days or erythromycin 500 mg qid for 3 days.

7.2.4 Plague

7.2.4 Plague

The plague is spread to humans from either the bite of an infected flea or inhalation of the organism. Infection occurs in three forms:

- Bubonic: involves lymph nodes closest to the bite of infected flea.
- Pneumonic: an infection of the lungs.
- Septicemia: a generalized infection in the blood, caused by the bacteria escaping through the lymph nodes or lungs.

SIGNS AND SYMPTOMS

Two to three days after inhaling the plague organism, the patient will develop the following signs and symptoms:

- High fever
- Myalgia
- Chills
- Headache
- Cough with bloody sputum
- Signs of overwhelming infection (including pneumonia)

Chest X-ray may show patchy infiltrates or consolidation, with a rapidly progressing pneumonia causing dyspnea, stridor, and cyanosis. The patient will experience eventual respiratory failure and circulatory collapse; laboratory evidence will show disseminated intravascular coagulation (DIC).

Supportive Care

- Remove the patient from the hazardous area (a).
- Respiratory isolation is mandatory for the first 48 hours of treatment.
- Medical Supportive Care or Pediatric Care.
- Contact the Poison Information Center (1-800-222-1222).

ALS Level 1

None

ALS with Medical Control Contact

- Antibiotic treatment must be started within 24 hours of the onset of symptoms. In-hospital treatment may include the use of streptomycin 15 mg/kg IM bid for 10 days or doxycycline 200 mg IV initially, followed by 100 mg bid for 10 days. For plague meningitis, administer chloramphenicol 12.5-18.75 mg/kg qid.
- If there is a high suspicion of significant exposure to plague, then Medical Control or the Poison Information Center may order preventive treatment with oral ciprofloxacin (Cipro®) 500 mg PO bid or doxycycline 100 mg PO bid.

Note:

(a) If risk of exposure is high, call for a hazardous materials team. Refer to the appropriate hazardous materials PPE protocol, as the risk of secondary contamination is very high.

7.2.5 Q Fever

Q fever is caused by a rickettsia organism, Coxiella burnetii, that is highly infectious and resistant to heat and drying. Its natural reservoir is sheep, cattle, and goats. Humans acquire the disease by inhalation of aerosols contaminated with the organism. Following a 10- to 20-day incubation, Q fever generally occurs as a self-limiting febrile illness lasting 2 days to 2 weeks, and is characterized by headaches, fatigue, and myalgias. Pneumonia occurs in 50% of all patients, with half of these patients (25% total) presenting with a cough (usually non-productive) or rales.

SIGNS AND SYMPTOMS
- High-grade fever
- Rigors
- Severe headache
- Photophobia
- Myalgias
- Nausea/vomiting
- Diarrhea

Supportive Care
- Remove the patient from the hazardous area.
- Medical Supportive Care or Pediatric Care.
- Decontaminate as appropriate.
- Contact the Poison Information Center (1-800-222-1222).

ALS Level 1
None.

ALS with Medical Control Contact
Most cases will resolve even without antibiotic therapy. To shorten the duration of the illness, in-hospital treatment may include the use of tetracycline 500 mg qid or doxycycline 100 mg bid for 5 to 7 days.

7.2.6 Ricin

Ricin is a potent cytotoxin that is derived from the beans of the castor plant and is a by-product in castor oil production. When inhaled as a small-particle aerosol, this toxin may produce pathologic changes within 8 hours and severe respiratory symptoms followed by acute hypoxic respiratory failure in 36-72 hours. When ingested, ricin causes severe gastrointestinal symptoms, followed by vascular collapse and death. This toxin may also cause disseminated intravascular coagulation, microcirculatory failure, and multiple-organ failure if given intravenously.

SIGNS AND SYMPTOMS
After inhalation:
- Fever
- Chest tightness
- Cough
- Shortness of breath
- Nausea
- Joint pain within 4 to 8 hours of exposure
- Necrosis of the lower airway epithelium and severe pulmonary edema
- Death within 36-72 hours

After ingestion:
- Nausea
- Vomiting
- Severe diarrhea
- Gastrointestinal hemorrhage with necrosis of the liver, spleen, and kidneys
- Shock leading to death within 3 days

After injection:
- Marked death of muscles and lymph nodes near the site of injection
- Multiple-organ failure, leading to death

Supportive Care
- Remove the patient from the hazardous area (a).
- Medical Supportive Care or Pediatric Care
- Decontaminate as appropriate.
- Contact the Poison Information Center (1-800-222-1222).

ALS Level 1 None

ALS with Medical Control Contact
If ingested, aggressive gastric lavage and activated charcoal should be administered in the hospital.

Note:
(a) Risk of exposure via the airborne route is high. Refer to the appropriate hazardous materials PPE protocol, as the risk of secondary contamination is very high.

7. 2.7 Smallpox

7.2.7 Smallpox

Smallpox is caused by the Variola virus. Although the fully developed cutaneous eruption of smallpox is unique, earlier stages of the rash could be mistaken for varicella. Secondary spread of infection constitutes a nosocomial hazard from the time of onset of a smallpox patient's exanthem until scabs have separated. Quarantine with respiratory isolation should be applied to secondary contacts for 17 days post-exposure.

SIGNS AND SYMPTOMS

- Fever
- Rigors
- Headache
- Malaise
- Nausea/vomiting
- Back ache
- Approximately 15% of patients develop delirium.
- Approximately 10% of light-skinned patients exhibit an erythematous rash.
- Two to three days later, an enanthem appears concomitantly with a discrete rash about the face, hands, and forearms.
- Following eruptions on the lower extremities, the rash spreads to the trunk over the next week.
- Lesions quickly progress from macules to papules, and eventually to pustular vesicles.
- With smallpox, lesions are more abundant on the extremities and face, as opposed to varicella (chickenpox), in which lesions on various segments of the body remain generally synchronous in their stage of development and primarily start on the trunk and spread to the extremities.

Supportive Care

- Remove the patient from the hazardous area (a).
- Medical Supportive Care or Pediatric Care.
- Decontaminate as appropriate.
- Contact the Poison Information Center (1-800-222-1222).

ALS Level 1
None

ALS with Medical Control Contact
Immune globulin for variola and the vaccines (vaccinia and VIG) may be obtained through the CDC.

Note:
(a) Risk of exposure via the airborne route is high. Refer to the appropriate hazardous materials PPE protocol, as the risk of secondary contamination is very high.

7.2.8 Staphylococcal Enterotoxin B

7.2.8 Staphylococcal Enterotoxin B

Staphylococcal enterotoxin B (SEB) is a fever-producing exotoxin produced by the bacteria Staphylococcus aureus. This toxin commonly causes food poisoning in improperly handled foods that have an overgrowth of the staph organism and then are ingested. SEB symptoms will vary with the route of exposure (inhaled versus ingested).

SIGNS AND SYMPTOMS

- From 3-12 hours after aerosol exposure, there will be a sudden onset of the following signs and symptoms:
- Fever (103-106°F), lasting 2 to 5 days
- Chills
- Headache
- Myalgia
- Nonproductive cough, which may persist for up to 4 weeks
- In some patients, shortness of breath and retrosternal chest pain

If ingested, symptoms include the following:

- Nausea
- Vomiting
- Diarrhea

High exposure can lead to septic shock and death.

Supportive Care

- Remove the patient from the hazardous area.
- Medical Supportive Care or Pediatric Care
- Decontaminate as appropriate.
- Contact the Poison Information Center (1-800-222-1222).

ALS
None

7.2.9 Trichothecene Mycotoxins (T2)

The trichothecene mycotoxins are nonvolatile compounds produced by filamentous fungi (molds). They are relatively insoluble in water, but are highly soluble in ethanol, methanol, and propylene glycol. Exposure usually occurs through inhalation, ingestion, and/or absorption. Aerosol attack in the form of "yellow rain" will present as droplets of yellow fluid contaminating clothes and the environment.

SIGNS AND SYMPTOMS

Exposure to skin	**Severe poisoning by any route:**	**Exposure to airway**
Skin pain	Prostration	Nose and throat pain
Pruritus	Weakness	Nasal discharge
Redness	Ataxia	Itching and sneezing
Vesicles	Collapse	Cough
Necrosis	Shock	Dyspnea
Sloughing of epidermis	Death	Wheezing
		Chest pain
		Hemoptysis

Supportive Care

- Remove the patient from the hazardous area.
- Medical Supportive Care or Pediatric Care
- Decontaminate as appropriate.
- Contact the Poison Information Center (1-800-222-1222).

ALS Level 1
None

ALS with Medical Control Contact
If ingested, aggressive gastric lavage and activated charcoal should be administered in the hospital.

7.2.10 Tularemia

Francisella tularensis is a nonmotile, gram-negative coccobacillus that typically causes disease in animals. Humans can become infected by either handling diseased animal fluids or by being bitten by infected deerflies, mosquitoes, or ticks. The organism can also remain viable for weeks in a number of media and is easily spread by aerosol. After infection, bacteremia results, with a secondary spread to the lungs and other organs.

SIGNS AND SYMPTOMS
The following signs and symptoms will appear within 2-10 days of inhalational exposure:

- Fever
- Chills
- Headache
- Generalized muscle pain
- Nonproductive cough
- Pneumonia

If the organism was ingested or inoculated, symptoms will also include regional lymphadenopathy, with or without cutaneous ulcers. Clinical diagnosis is both difficult and problematic. Physical findings are usually nonspecific, although chest X-ray may reveal pneumonic process, mediastinal lymphadenopathy, or pleural effusion. Routine culture is possible but hazardous to lab personnel. Diagnosis can be established retrospectively by serology.

Supportive Care

- Remove the patient from the hazardous area (a).
- Medical Supportive Care or Pediatric Care.
- Decontaminate as appropriate.
- Contact the Poison Information Center (1-800-222-1222).

ALS Level 1
None

ALS with Medical Control Contact

- Antibiotic therapy for 10 days includes streptomycin 1 g q 12 hours IM or 15 mg/kg IM bid. If not available, administer gentamicin 3 mg/kg/day.
- Prophylaxis with tetracycline or doxycycline is effective if warning of BW attack is provided or if there is a high suspicion of significant exposure, as ordered by Medical Control or the Poison Information Center.

Note:
(a) If risk of exposure is high, call for a hazardous materials team. Refer to the appropriate hazardous materials PPE protocol, as the risk of secondary contamination is very high.

7.2.11 Venezuelan Equine Encephalitis (VEE)

VEE virus is a mosquito-borne alphavirus that is endemic in certain parts of the world (Central and South America, Mexico, and Florida), where it infects horses, mules, and donkeys. If this agent was intentionally released as an aerosol, disease might occur simultaneously in both horses and humans, but this pattern would not be commonly recognized.

SIGNS AND SYMPTOMS
After exposure, a sudden onset of symptoms begins in 1-5 days:

- Generalized malaise
- Spiking fever (up to 104°F)
- Rigors
- Severe headache
- Photophobia
- Myalgias in the legs and lumbosacral area
- Nausea and vomiting
- Cough
- Sore throat
- Diarrhea

These symptoms last up to 3 days, and then are followed by a period of weakness and lethargy. Most patients recover in 1-2 weeks. Some patients, especially children, may develop signs of CNS infection, with meningismus, convulsions, coma, and paralysis. There is a 20% mortality rate in children who develop encephalitis.

Supportive Care

- Remove the patient from the hazardous area (a).
- Medical Supportive Care or Pediatric Care.
- Contact the Poison Information Center (1-800-222-1222).

ALS Level 1
None

Note:
(a) Risk of exposure via the airborne route is low. However, patients should be isolated from mosquitoes for 72 hours to prevent spread by vectors.

7.2.12 Viral Hemorrhagic Fevers

7.2.12 Viral Hemorrhagic Fevers

The VHF are a diverse group of illnesses caused by a variety of RNA viruses; they demonstrate a wide range of morbidity and mortality. These viruses include: Ebola, Marburg, Dengue, Yellow fever, Crimean-Congo fever, Hantaan viruses, Lassa fever

Each of these viruses has a unique history and is capable of being spread in most cases by an aerosol or formite (except dengue virus). VHF agents, especially Marburg and Ebola, have allegedly been considered for weaponization. The clinical syndrome that these viruses cause in humans is called VHF.

SIGNS AND SYMPTOMS

- Fever
- Easy bleeding
- Petechiae
- Hypotension and shock
- Flushing of the face and chest
- Edema
- Malaise
- Myalgias
- Headache
- Vomiting
- Diarrhea

Supportive Care

- Remove the patient from the hazardous area (a)(b).
- Medical Supportive Care or Pediatric Care
- Contact the Poison Information Center (1-800-222-1222).

ALS - None

Note:

(a) Risk of exposure via the airborne route is high. Refer to the appropriate hazardous materials PPE protocol, as the risk of secondary contamination is very high.

(b) Risk of exposure from a symptomatic patient via blood or body secretions is high. Full PPE with masks, goggles, sleeves, and gowns is appropriate. If the patient is not severely ill, IV access should be delayed until hospital arrival. If IV access is needed for immediate patient resuscitation, extra care is appropriate to protect the healthcare worker, and IV attempts should not be made on combative patients or in a moving vehicle.

7.3 Adult Hazardous Material Exposure (Radiological Agents)

7.3 Adult Hazardous Material Exposure (Radiological Agents)

This protocol is to be used for those patients suspected of exposure to radiological agents via any route of exposure (e.g., ingestion, absorption). It gives specific considerations for each type of exposure as well as general treatment guidelines. Scene safety should be of primary concern, with special attention being paid to the need for personal protective equipment. If a radiological agent exposure is suspected, call for a hazardous materials team. In this instance, refer to the appropriate hazardous materials PPE protocol to protect against secondary contamination. All patients who have been exposed to hazardous materials must be properly decontaminated prior to initiation of extensive medical treatment and transportation to the hospital.
Contact the Poison Information Center (1-800-222-1222) for consultation regarding specific therapy, and then contact the receiving emergency department for confirmation of ALS Level 2 orders.
It is imperative that the emergency department be made aware early that a contaminated patient is being transported so that the proper preparations can be made to receive the patient.

TYPES OF RADIATION INJURY

- External irradiation occurs when all or part of the body is exposed to penetrating radiation from an external source. Following external exposure, an individual is not radioactive and can be treated like any other patient.
- Contamination means that radioactive materials in the form of gases, liquids, or solids are released into the environment and contaminate people externally, internally, or both. An external surface of the body, such as the skin, can become contaminated quite easily. If radioactive materials get inside the body through the lungs, gut, or wounds, the contaminant can become deposited internally.
- Incorporation refers to the uptake of radioactive materials by body cells, tissues, and target organs such as bone, liver, thyroid, or kidney. Incorporation cannot occur unless contamination has occurred.

These three types of accidents can happen in combination and can be complicated by physical injury or illness.

Irradiation of the whole body or some specific body part does not constitute a medical emergency, even if the amount of radiation received is high. The effects of irradiation usually are not evident for days or weeks; thus, while medical treatment is needed, it is not needed on an emergency basis. In contrast, contamination accidents must be considered medical emergencies, because they might lead to internal contamination and subsequent incorporation. Incorporation can result in adverse health effects several years later if the amount of incorporated radioactive material is high.
Treatment priorities are established as follows:

- Treat life-threatening problems first.
- Limit the radiation dose to both victims and healthcare personnel (time, distance, shielding).
- Control the spread of radioactive contaminants.

Serious medical problems should have priority over concerns about radiation, such as radiation monitoring, contamination control, and decontamination. However, attention should be given to PPE for medical personnel.

7.3.1 Radiation Exposure / Contamination

7.3.1 Radiation Exposure / Contamination

Radiation exposure/contamination may be a health risk to both the patient and the rescuer, depending on the type of radiation, time of exposure, distance from the radioactive source, and level of shielding from the radioactive source. Not all exposures will require medical treatment, however. In exposures where traumatic injuries are not present, the following steps should be taken.

Supportive Care
- Remove the patient from the hazardous area (a)(b).
- Decontaminate as appropriate (b).
- Medical Supportive Care or Pediatric Care.
- Contact the Poison Information Center (1-800-222-1222).

ALS Level 1
None

Additional treatment should be administered in the hospital.

Note:
(a) Use of radiological monitoring devices is essential, as risk of exposure may be high. Call for a hazardous materials team.
(b) In mild to moderate exposures without traumatic injuries, self-decontamination may be recommended for the patient at his/her home. Self-decontamination should include removing one's clothing, placing the clothes into a plastic bag, and showering with soap and water.

7.3.2 Acute Radiation Syndrome

7.3.2 Acute Radiation Syndrome

Acute radiation syndrome (ARS) is an acute illness that follows a roughly predictable course over a period of time ranging from a few hours to several weeks after exposure to ionizing radiation. It occurs if enough radiation reaches enough sensitive tissue. The following factors are important in determining whether ARS will develop:

- High dose
- High dose rate
- Whole-body exposure
- Penetrating irradiation

Other factors to be considered include age (young and old), sex, genetics, and medical history. Regardless of the source of radiation, if the dose is high enough, it will produce the same effect.

SIGNS AND SYMPTOMS

Signs and symptoms that develop in the ARS occur in four distinct phases:

Prodromal phase. Depending on the total amount of radiation absorbed, patients may experience a variety of symptoms, including:

- Loss of appetite
- Nausea
- Vomiting
- Fatigue
- Diarrhea

After high radiation doses, the following additional symptoms may develop:

- Prostration
- Fever
- Respiratory difficulties
- Increases in excitability

This is the stage at which most victims seek medical care.

Latent phase. During this transitional period, many of the initial symptoms resolve. This phase may last for as long as 3 weeks, depending on the original dose. This time interval decreases as the initial dose increases.

Illness phase. In this phase, overt illness develops, often characterized by the following signs and symptoms:

- Infection
- Bleeding
- Electrolyte imbalance
- Diarrhea
- Changes in mental status
- Shock

Recovery or death phase. This phase follows the period of overt illness, which may take weeks or months to resolve.

- Remove the patient from the hazardous area.
- Medical Supportive Care or Pediatric Care.
- Decontaminate as appropriate.
- Contact the Poison Information Center (1-800-222-1222).

ALS Level 1: None.

Additional treatment should be administered in the hospital.

State of Florida All Hazards Medical Disaster Procedures and Protocols

Section 8

FLORIDA INCIDENT FIELD OPERATIONS GUIDE

Chapter 5—Operations

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ORGANIZATION CHART

Figure 5 – Organization Chart: Operations

Position Checklists

Operations Section Chief: a member of the general staff responsible for the management of all operations directly applicable to the primary mission. The Operations Chief activates and supervises organization

elements in accordance with the incident action plan and directs its execution. The Operations Chief also directs the preparation of unit operational plans, requests, releases resources, makes expedient changes to the incident action plan as necessary; and reports such to the incident commander. The Operations Section Chief shall:

a. Review Common Responsibilities (page 2-18).
b. Develop operations portion of incident action plan.
c. Brief and assign operations section personnel in accordance with incident action plan.
d. Supervise operations section.
e. Determine need and request additional resources.

Deputy Operations Section Chief: the Deputy Operations Section Chief should have the same qualifications as the Operations Section Chief and shall:

a. Be prepared to assume the role operations section chief.
b. Assist in maintaining mission flow and documentation.
c. Keep EM Constellation (and other mission tracking systems) updated and accurate.

Branch Director: the Branch Directors when activated, are under the direction of the operations section chief, and are responsible for the implementation of the portion of the incident action plan appropriate to the branches. The Branch Director shall also:

a. Review Common Responsibilities (page 2-18).
b. Develop with subordinates alternatives for branch control operations.
c. Attend planning meetings at the request of the operations section chief.

d. Review division/group assignment lists (ICS form 204) for divisions/groups within branch. Modify lists based on effectiveness of current operations.
e. Assign specific work tasks to division/group supervisors.
f. Supervise branch operations.
g. Resolve logistical problems reported by subordinates.
h. Report to Operations Section Chief when incident action plan is to be modified; additional resources are needed; surplus resources are available; hazardous situations or significant events occur.
i. During wildfire deployments, respond to incidents that occur within the branch to ensure firefighter safety.
j. Approve accident and medical reports (home agency forms) originating within the branch.
k. Maintain unit/activity log (ICS form 214).
l. Review and approve Crew Time Reports (CTS) and equipment shift tickets for subordinates assigned

Division/Group Supervisor: reports to the Operations Section Chief (or Branch Director when activated). The Supervisor is responsible for the implementation of the assigned portion of the incident action plan, assignment of resources within the division/group, and reporting on the progress of control operations and status of resources within the division/group. The Supervisor shall:

a. Review Common Responsibilities (page 2-18).
b. Implement incident action plan for division/group.
c. Provide incident action plan to strike team/task force leaders, when available.

Strike Team/Task Force Leader: reports to a Division/Group Supervisor and is responsible for performing tactical assignments tasked to the strike team or task force. The Leader reports work progress, resources status, and other important information to a

Division/Group Supervisor, maintains work records on assigned personnel, and shall:

a. Review Common Responsibilities (page 2-18).
b. Review assignments with subordinates and assign tasks.
c. Monitor work progress and make changes when necessary.
d. Coordinate activities with adjacent strike teams, task forces, and single resources.
e. Travel to and from active assignment area with assigned resources.

Single Resource: the person in charge of a single tactical resource will carry the unit designation of the resource, and:

a. Review Common Responsibilities (page 2-18).
b. Review assignments.
c. Obtain necessary equipment/supplies.
d. Review weather/environmental conditions for assignment area.
e. Brief subordinates on safety measures.

Staging Area Manager: the staging area manager is responsible for managing all activities within a staging area, including:

a. Review Common Responsibilities (page 2-18).
b. Proceed to staging area.
c. Establish staging area layout.
d. Determine any support needs for equipment, feeding, sanitation, and security.
e. Establish check-in function as appropriate.
f. Post areas for identification and traffic control.

Air Operations Branch Director: the air operations branch director, who is ground based, is primarily responsible for preparing the air

operations portion of the incident action plan. The plan will reflect agency restrictions that have an impact on the operational capability or utilization of resources (e.g., night flying, hours per pilot). After the plan is approved, air operations is responsible for implementing its strategic aspects–those that relate to the overall incident strategy as opposed to those that pertain to tactical operations (specific target selection).

Additionally, the air operations branch director is responsible for providing logistical support to helicopters operating on the incident. The air tactical group supervisor working with ground and air resources normally performs specific tactical activities (target selection, suggested modifications to specific tactical actions in the incident action plan), as well as:

a. Review Common Responsibilities (page 2-18).
b. Organize preliminary air operations.
c. Request declaration (or cancellation) of restricted air space area, (FAA regulation 91.137).
d. Participate in preparation of the Incident Action Plan through the operation section chief. Insure that the air operations portion of the incident action plan takes into consideration the air traffic control requirements of assigned aircraft.
e. Perform operational planning for air operations.
f. Prepare and provide air operations summary worksheet (ICS form 220) to the air support group and fixed-wing bases.
g. Determine coordination procedures for use by air organization with ground branches, divisions, or groups.
h. Ensure compliance with SERT Air Operations Branch procedures

Air Operations

Federal, state, and local government agencies have diverse roles, statutory authorities, and unique capabilities for domestic incident aviation operations. On a day-to-day basis, local responders are utilizing air operations as a response asset to local incidents. Therefore, development of a centralized command and control structure to direct all independent local air missions is impractical. However, as the size, scope, and severity of incidents requiring aviation resources dramatically escalates, there is a need for a unified coordination system that takes into account varied federal, state, and local government aviation operations. This coordinated response enhances response efforts by providing a safer operating environment through flight coordination, reduced redundancy, and money saved by combining missions.

Based on the level or magnitude of the event, within the scope of the State Comprehensive Emergency Management Plan, the State Emergency Response Team may create an air operations branch within the operations section of the State emergency operations center for the State of Florida. This action may come at the request of a local jurisdiction, or created directly at the state level consistent with the guidelines as promulgated in the Florida Division of Emergency Management Air Operations Branch Guide (see below).

This measure will consolidate the various efforts of multiple agencies with aviation responsibilities and/or assets into a single point-of-contact at the statewide level for better coordination and more efficient use of valuable aviation-related resources.

Enhanced efficiency and effectiveness of air operations will add to the state's disaster response capability. More importantly, improved

flight safety will result from the coordination of all flight operations in highly congested airspace within a disaster area, through the benefit of better aircraft separation and increased pilot awareness of other agency flight operations in the vicinity.

SERT Air Operations Branch Guide

The purpose of the SERT air operations branch guide is to outline the organizational structure and operating procedures of the air operations branch within the State EOC and to identify agencies, assets, and infrastructure within Florida that are expected to be employed in a disaster or emergency situation. This guide will enable personnel assigned to the air operations branch to better coordinate air operations with federal, state, and local entities and serve as a working reference document for all those needing to interact with Florida's single point-of-contact for disaster-related aviation issues.

Air Operations Branch (AOB)

The air operations branch will be activated at the direction of the SERT chief and will coordinate all disaster-related State and local agencies and volunteer organizations air operations efforts with appropriate federal authorities and the aviation branch at the federal level, if activated at the joint field office.

The AOB will operate under the authority of the operations section in the same timeframe and manner as the state emergency operations center, as a whole, using the same level 1, 2, and 3 activation levels. The air operations branch will coordinate its efforts with appropriate emergency support functions within the State EOC, as well as appropriate federal, state, and local government

agencies, plus private sector, volunteer and non-government organizations supporting disaster aviation operations.

Responsibilities

The air operation branch's primary responsibility is to plan for and implement the efficient and effective use of aviation-related resources, aircraft assets, and support infrastructure, including airports, communications, and airspace management to enhance overall disaster and emergency management response efforts in Florida. As a coordination authority, the air operations branch serves only to ensure the efficient and effective use of aviation resources

The air operations branch is intended to provide a unified planning and operations coordination mechanism that integrates all aviation-related resources for missions carried out by federal, state, and local agencies participating in the response efforts. Command and control of aviation-related resources remains the exclusive authority of the respective, individual agencies.

Key Operational Functions

- Ensure the timely and appropriate support of air mission requests
- Review of air mission requests to determine prioritization of critical needs
- Review of available resources and capabilities to determine best utilizations
- Review mission planning and coordination to ensure safe aircraft deconfliction
- Promote federal, state, and local aviation-related interagency communications

- Monitor and update the State EOC's comprehensive air picture of flight operations
- Coordinate essential airport and aviation ground support infrastructure needs
- Coordinate air operations communication requirements, including frequency management, data and image transfer capabilities, and transponder codes
- Coordinate airspace management procedures, including temporary flight restriction requests and management with the federal aviation administration.
- Promote attention to flight safety by incorporating best practices and lessons learned and monitoring operations to identify and mitigate potential hazards to flight operations through timely implementation of warnings and corrective action.

Aviation Mission Priorities

Aviation mission priorities vary depending on the type and severity of a disaster. Personnel involved with aviation operations should be briefed on the requirements for and knowledgeable of their agency roles with respect to the following priorities:

a. Lifesaving (airborne search and rescue)
b. Life sustaining (medical evacuation and distribution of food and water)
c. Property protection (firefighting, law enforcement and national security)
d. Reconnaissance for rapid needs assessment (critical infrastructure, healthcare, transportation systems and hazardous materials)
e. Logistical support (personnel, response, relief and recovery resources)
f. Environmental protection (prevent or minimize damage)

Aviation Mission Sets

Aviation missions are assigned based on the Air Operations Branch assessment of availability of suitable and properly equipped aircraft and availability of qualified aircrews. Aviation mission sets may include, but are not limited to, the following types of activities:

a. Airborne search and rescue (SAR)
b. Aero medical evacuation (medical evacuation, patient movement)
c. Evacuation and relocation
d. Incident Awareness and Assessment (IAA)
e. Firefighting and suppression
f. Airborne Command and Control (c2)
g. Airfield recovery and sustainment
h. Response team personnel movement
i. Relief and recovery logistical support
j. Aerial imagery and air quality sampling
k. National defense and homeland security
l. VIP and media flight operations support

Key Operational Elements

- The Air Operations Branch will ensure coordination among applicable state and local agencies and volunteer organizations for planning, managing, and implementing all air operations in Florida.
- Operation of the national airspace system is the responsibility of the federal aviation administration before, during, and after a major incident regardless of the initiation of federal assistance. Disaster response air missions must be carried out with the local air traffic control facilities responsible for the airspace over or adjacent to an area impacted by a disaster or emergency situation.
- Liaison officers or identified points of contact will be provided to the air operations branch by appropriate

agencies with aviation assets planned for disaster relief operations to assist, advise, plan, and communicate applicable aviation operating procedures, and to share feedback and other information to and from their agencies.

- Aviation units with resources planned for use in disaster relief may relocate away from impact areas to preserve their viability to perform their mission or preposition at closer, designated, staging areas to decrease their response time, if feasible. Non-participating aircraft (civilian and military) may evacuate the impact area, if feasible.
- Public-use and private-use airports and military airfields may be suitable as disaster relief airports due to their location and capabilities. Prior permission will be obtained from private-use airport owners and prior coordination for their use will be effected with all anticipated airport and/or airfield operators.

Appendix A
Pain Management Scales

History
- Age
- Location
- Duration
- Severity (0 – 10)
  - 0 = No pain, 10 = Worst pain
- If child use Wong-Baker Faces Scale (3 yrs and older)
- Past medical history
- Medications
- Drug allergies

Signs and Symptoms
- Severity – Quality - Radiation
- Relation to movement, respiration
- Increased with palpation of area

Differential
- Musculoskeletal
- Visceral (abdominal)
- Cardiac - Neurogenic
- Pleural / Respiratory
- Neurogenic – Renal (colic)

Six Rights of Medication Administration

1. Right Person
2. Right Medication
3. Right Dose
4. Right Route
5. Right Time
6. Write - Right

Wong-Baker FACES Pain Rating Scale

Legend	
E	EMT
P	Paramedic
M	Medical Control

E

- Complete initial assessment to assure life threatening injury and illness is treated
- Assess consciousness
- Apply Oxygen. Maintain 02 saturation greater than 94%
- Assess vital signs
- Splint or elevate injured extremities as possible
- Assess perfusion
- Administer nothing by mouth (NPO)
- Provide reassurance and explanation of care procedures

P

- Advanced airway intervention as needed
- Cardiac Monitor
- Monitor ETCO2
- IV NS at KVO or Saline Lock
- Perform focused history and physical
- Perform secondary assessment
- Prior to Medication Administration, assure pulse oximeter in place and reading. Confirm that all airway supplies are available. Confirm Narcan (naloxone) is available.
- Administer pain medication as indicated

E

- Trend vital signs
- Frequent reassessment
- Document care and response

P

Caution
Drop in Blood Pressures

Pediatric: Refer to Length Based Tape/Scale for expected age specific normal vital signs

Pediatrics: Do not give if systolic BP is 10 points below normal for age group

Pediatric Bolus: If systolic BP drops greater than 10 points from baseline, give 20 ml/kg NS. Reassess and document response. May repeat bolus X1 if systolic BP does not increase to 10 points below baseline, and notify onsite/online Medical Control

Adults – If a drop in systolic BP to less then 90 mm Hg after pain medication administration, immediately give 250 ml Normal Saline Intravenous Bolus. Repeat for a 2nd bolus as needed for systolic BP less then 90 mm Hg. Reassess and document response. If change is not adequate, notify onsite / online Medical Control

Adults – Do Not Administer if systolic BP is less than 90 mm Hg

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

Pearls
- Wong-Baker Scale: Ask child to choose a face that best describes their own pain and record the appropriate number
- Unconscious or impaired: Closely monitor hemodynamic trends and physiological response to assess for the need of pain intervention
- Quiet or stoic adult or child must be closely monitored for signs and symptoms of need for analgesia intervention. Fear of further injury or language barrier may cause some patients to deny need for pain medication. Optimal oxygenation and hemodynamic stability are dependent upon adequate pain management
- Documentation: Appropriate pain scale measurement and vital signs will be documented pre and post each pain medication administration
- Documentation of reason for withholding pain medication shall also be documented

Appendix B

FLORIDA BUREAU OF EMS

STROKE ALERT CHECKLIST

DATE & TIMES				
Date:	Dispatch Time:	EMS Arrival Time:	EMS Departure Time:	ED Arrival Time:

BASIC DATA					
Patient Name		Age		Gender	
Witness Name		Witness Phone			
Last Time Without Symptoms					
Blood Glucose (if possible)					

HISTORY	YES	NO
Severe Headache		
Head Trauma at Onset		

EXAMINATION		✓ IF ABNORMAL
Subarachnoid Hemorrhage?	Level of Consciousness (AVPU)	
	Neck Stiffness (cannot touch chin to chest)	
Prehospital Stroke Scale	Speech (repeat "You can't teach an old dog new tricks")	
	Facial Droop (show teeth or smile)	
	Arm Drift (close eyes and hold out both arms)	

STROKE ALERT CRITERIA	YES	NO
Time of onset < 5 hours?		
Any abnormal finding on examination?		
Deficit not likely due to head trauma?		
Blood glucose > 50? (if fingerstick possible)		

IF ANSWER IS **YES** TO **ALL** STROKE ALERT CRITERIA,
CALL **STROKE ALERT** & TRANSPORT PATIENT **URGENTLY**
TO NEAREST APPROPRIATE HOSPITAL

EN ROUTE, PERFORM MORE COMPLETE NEURO ASSESSMENT IF TIME ALLOWS

DESTINATION HOSPITAL		HOSPITAL CONTACT	

Appendix C
Adult Trauma Triage Criteria & Methodology

The EMT or paramedic shall assess the condition of those injured persons with anatomical and physiological characteristics of a person sixteen (16) years of age or older for the presence of at least one of the following four (4) criteria to determine whether to transport as a trauma alert. These four criteria are to be applied in the order listed, and once any one criterion is met that identifies the patient as a trauma alert, no further assessment is required to determine the transport destination.

Criteria:

- ☐ 1. Meets color-coded triage system (see below) : R = Red; B = Blue
- ☐ 2. GCS ≤ 12 (Patient must be evaluated via GCS if not identified as a trauma alert after application of criterion 1.)
- ☐ 3. Meets local criteria (specify): _____
- ☐ 4. Patient does not meet any of the trauma criteria listed above but, in the judgement of the EMT or paramedic, should be transported as a trauma alert (document)_____

_____

_____

_____

COMPONENT		
AIRWAY	RESPIRATORY RATE OF 30 or GREATER ☐ B	ACTIVE AIRWAY ASSISTANCE[1] ☐ R
CIRCULATION	SUSTAINED HR OF 120 BEATS PER MINUTE or GREATER ☐ B	LACK OF RADIAL PULSE WITH SUSTAINED HEART RATE (>120) or BP <90 mmHg ☐ R
BEST MOTOR RESPONSE	BMR =5 ☐ B	BMR = 4 or LESS or PRESENCE OF PARALYSIS, or SUSPICION OF SPINAL CORD INJURY or LOSS OF SENSATION ☐ R
CUTANEOUS	SOFT TISSUE LOSS[2] or GSW TO THE EXTREMETIES ☐ B	2ND OR 3RD ° BURNS TO 15% or MORE TBSA or AMPUTATION PROXIMAL TO THE WRIST or ANKLE or ANY PENETRATING INJURY TO HEAD, NECK, or TORSO[3] ☐ R
LONGBONE FRACTURE[4]	SINGLE FX SITE DUE TO MVA or FALL 10 ' or MORE ☐ B	FRACTURE OF TWO or MORE LONGBONES ☐ R
AGE	55 YEARS or OLDER ☐ B	
MECHANISM OF INJURY	EJECTION FROM VEHICLE[5] or DEFORMED STEERING WHEEL[6] ☐ B	

■ R = any **one (1)** - transport as a trauma alert ■ B = any **two (2)** - transport as a trauma alert

1. Airway assistance beyond administration of oxygen
2. Major degloving injures, or major flap avulsion (>5 in.)
3. Excluding superficial wounds in which the depth of the wound can be determined
4. Longbone, including humerus, radius / ulna, femur, tibia / fibula.
5. Excluding motorcycle, moped, all terrain vehicle, bicycle, or open body of a pickup truck
6. Only applies to driver of vehicle

Appendix D
Pediatric Trauma Scorecard Methodology

The EMT or Paramedic shall assess the condition of those injured individuals with anatomical and physical characteristics of a person fifteen (15) years of age or younger for the presence of one or more of the following three (3) criteria to determine the transport destination per 64J-2.005, Florida Administrative Code, (F.A.C.):

1) Pediatric Trauma Triage Checklist: The individual is assessed based on each of the six (6) physiologic components listed below (left column). The single, most appropriate criterion for each component is selected (along the row to the right). Refer to the color-coding of each criteria and legend below to determine the transport destination:

COMPONENT			
SIZE	> 20 Kg (44+ lbs.) ☐ G	>11-20 Kg (24-44 lbs.) ☐ G	WEIGHT ≤ 11 Kg or LENGTH ≤ 33 INCHES ON A PEDIATRIC LENGTH AND WEIGHT EMERGENCY TAPE ☐ B
AIRWAY	NORMAL ☐ G	SUPPLEMENTED O_2 ☐ G	ASSISTED OR INTUBATED (1) ☐ R
CONSCIOUSNESS	AWAKE ☐ G	AMNESIA OR LOSS OF CONSCIOUSNESS ☐ B	ALTERED MENTAL STATUS (2) OR COMA or PRESENCE OF PARALYSIS OR SUSPICION OF SPINAL CORD INJURY or LOSS OF SENSATION ☐ R
CIRCULATION	GOOD PERIPHERAL PULSES; SBP > 90 mmHg ☐ G	CAROTID OR FEMORAL PULSES PALPABLE, BUT THE RADIAL OR PEDAL PULSE NOT PALPABLE or SBP < 90-mmHg ☐ B	FAINT OR NON-PALPABLE CAROTID OR FEMORAL PULSE or SBP < 50 mmHg ☐ R
FRACTURE	NONE SEEN OR SUSPECTED ☐ G	SINGLE CLOSED LONG BONE (3) FRACTURE (4) ☐ B	OPEN LONG BONE (3) FRACTURE (5) OR MULTIPLE FRACTURE SITES OR MULTIPLE DISLOCATIONS (5) ☐ R
CUTANEOUS	NO VISIBLE INJURY ☐ G	CONTUSION OR ABRASION ☐ G	MAJOR SOFT TISSUE DISRUPTION (6) OR MAJOR FLAP AVULSION OR 2^{O} OR 3^{O} BURNS TO ≥10% TBSA OR AMPUTATION (7) or ANY PENETRATING INJURY TO HEAD, NECK, OR TORSO (8) ☐ R

■ R = RED, any **one (1)** - transport as a trauma alert ■ B = BLUE, any **two (2)** - transport as a trauma alert ■ G = GREEN, follow local protocols

☐ **2)** Meets local criteria (specify):

☐ **3)** Patient does not meet any of the trauma criteria listed above, but the EMT or Paramedic can call a "Trauma Alert" if, in his or her judgement, the trauma patient's condition warrants such action. Must be documented on run report pursuant to 64E-2.013, (F.A.C.)

1. Airway assistance includes manual jaw thrust, continuous suctioning, or use of other adjuncts to assist ventilatory efforts
2. Altered mental states include drowsiness, lethargy, inability to follow commands, unresponsiveness to voice, totally unresponsive
3. Long bones include the humerus, radius / ulna, femur, tibia / fibula
4. Long bone fractures do not include isolated wrist or ankle fractures
5. Long bone fractures do not include isolated wrist or ankle fractures or dislocations
6. Includes major degloving injury
7. Amputation proximal to wrist or ankle
8. Excluding superficial wounds where the depth of the wound can be determined

Appendix E
Severe Respiratory Pathogens
(Acute viral illness such as SARS, Avian Flu, H1N1)

Symptoms of SARS can be similar to those of other viral infections. The first symptoms begin 2-7 days after exposure and may include the following:

Symptoms:
- Fever
- Headache
- Diarrhea
- Dry cough
- Shortness of breath
- Decreased appetite
- Fatigue
- Muscle aches and pain
- Malaise (a feeling of general discomfort)
- Respiratory symptoms develop 3 or more days after exposure
- Runny nose and sore throat (uncommon)
- By day 7-10 of the illness, almost all patients with laboratory evidence of SARS infection had pneumonia that could be detected on x-ray films

Normal:
- Normal conditions, no reported SARS or classified "epidemic" type cases in the United States.
- Practice accepted Universal Precautions (BSI)

Guarded:
- Confirmed case of SARS or classified "epidemic" type cases in the United States
- Practice accepted universal precautions; look for symptoms of SARS, interview patient for recent travel from affected area
- Practice accepted Universal Precautions (BSI)

Elevated:
- Confirmed or suspected SARS or classified "epidemic" type of cases in Florida.
- One crewmember shall make initial patient contact using HEPA filter mask (N95), gown, gloves, and approved eye protection
- The crewmember shall make the determination if any patient meets the criteria
- Practice accepted Universal Precautions (BSI)l

Legend		
E	EMT	E
P	Paramedic	P
M	Medical Control	M

Acute;
- Confirmed or suspected native case of SARS or any classified "epidemic" type of cases in Florida.
- All crewmembers shall wear a HEPA filter mask (N95), gown, gloves, and approved eye protection.
- Indoor use of gown(s) is mandatory, outdoor use of gown(s) is discretionary.

E

Initial Medical Care:
- Obtain history of patient's current respiratory medications and time of last dosage.
- Pulse oximetry
- Monitor respiratory pattern and quality
- Monitor VS
- Provide supplemental 02 as required by oximetry trends
- Notify hospital of suspected SARS or flu cases
- Maintain PPE

P

Pearls
- These procedures are intended to establish a safe environment for personnel and reduce the risk of exposure to unknown and/or potentially lethal diseases and prevent the epidemic-like spread of more common pathogens, including SARS (Severe Acute Respiratory Syndrome) or Avian Flu
- These levels of concern (or alert) will apply on any call where there is a primary medical situation that would meet the symptoms or criteria related to SARS or any other classified epidemic-like case
- In all situations of this type, a minimal crew will be used to handle the alarm in order to limit the chance of exposure
- Personnel shall monitor related reports from the Center for Disease Control and will respond accordingly
- In any case that is in doubt, the Incident Commander and/or Medical Section Leader will determine the level of response

APPENDIX F

Refusal Form / Release of Responsibility

Date: _____ PCR # _____ Contact# _____

Section I - Released at scene (RAS)

I understand that any evaluation and/or emergency treatment I have received by these EMS personnel has been on an emergency basis only and is not intended to be a substitute for complete medical assessment and/or care. The decision not to accept further medical care and/or transportation to a hospital emergency room has been made by me alone with the understanding that I may have medical complications unknown or unforeseen at this time. I understand that if I change my mind or conditions become worse and I decide to accept treatment/transportation by the Emergency Medical Services System, I can call back at and they will respond. In addition, I acknowledge that I was provided with, or a reasonable attempt was made to provide me with a copy of a Notice of Privacy Practices and my rights in accordance with the Health Insurance Portability and Accountability Act of 1996, also known as HIPAA.

_____

Section II - Refusal of care/Treatment/Transportation Against Medical Advice (AMA):

I Refuse medical treatment and/or transportation against the medical advice of Paramedic/EMT _____.

I acknowledge that I have been informed of and understand the risks and consequences involved in refusal, to include but Not limited to the _____ _____

Knowing this information, I hereby release the EMS personnel present and their agency as well as any base hospital involved in this incident from any and all responsibilities or any ill effects which may result from my decision. 1 also understand that if I change my mind or my condition becomes worse and I decide to accept treatment or transportation by the Emergency Medical Services System, I can call back and they will respond. In addition I acknowledge that I was provided with, or a reasonable attempt was made to provide me with, a copy of a Notice of Privacy Practices and my rights in accordance with the Health Insurance Portability and Accountability Act of 1996, also known as HIPAA.

Patient Name (Print): _____ Patient Signature: _____

Parent Guardian Signature: _____ Relationship: _____

Comments: _____

Paramedic/EMT Signature: _____ Witness Signature: _____

Termination of Paramedic / Patient Relationship Check

Prior to the termination of the Paramedic / Patient relationship, all of the following will be evaluated. All areas identified on this checklist must be specifically documented on the Patient Care Report (PCR).

Provider initials

1. _____ Physical Examination performed including full set of vital signs.
2. _____ History of event and prior medical history, including medications, obtained.
3. _____ Patient or decision-maker determined to be legally capable of refusing medical treatment or transportation. If minor or incompetent adult, assure that a legal guardian or person with durable power of attorney for healthcare is identified.
4. _____ Risks of refusal of medical treatment and transportation explained.
5. _____ Benefits of medical treatment and transportation explained.
6. _____ Patient clearly offered medical treatment and transportation.
7. _____ Refusal of Care Form prepared, explained, signed and witnessed.
8. _____ Patient confirmed to have a meaningful understanding of the risks and benefits involved in this healthcare decision.
9. _____ Patient advised to seek medical attention for complaint(s).
10. _____ Patient advised to call 911 for medical assistance if condition continues or worsens.
11. _____ Medical Direction consultation was obtained if the patient had an ALS suspected medical complaint.
12. _____ Supervisor was notified if any of the above was not accomplished in the termination of the paramedic / patient relationship.

Medications Authorized by Protocols

The following emergency medications are authorized for use as indicated in these Protocols

Adrenergics / Sympathomimetic
- Dopamine (Intropin)
- Epinephrine (Adrenalin)1:1000
- (Including Auto-Injector devices EpiPen® ,EpiPen Jr.® and similar)
- Epinephrine 1:10,000

Analgesics
- Fentanyl
- Morphine Sulfate

Anesthetics
- Lidocaine Hydrochloride (Xylocaine®) 2% Jelly
- Lidocaine Hydrochloride (Xylocaine®) 10% Spray
- Pontocaine Ophthalmic (local anesthetic)
- Tetracaine Hydrochloride 0.5% Eye Drops

Antagonists, Opiate
- Naloxone Hydrochloride (Narcan®)

Antianginals
- Nitroglycerin Drip (Nitrol, Tridil, Nitrostat)
- Nitroglycerin Tab/Spray (Nitrostat® , Nitrolingual® Spray)
- Nitroglycerin Ointment (Nitro-Bid®)

Antiarrhythmics
- Adenosine Triphosphate (Adenocard®)
- Amiodarone Hydrochloride (Cordarone®)
- Procainamide

Antimuscarinics/Antidotes
- Atropine Sulfate
- Calcium Channel Blocker
- Diltiazem (Cardizem)

Antidiabetics
- Dextrose 50% Dextrose 25% Dextrose 10%
- Oral Glucose solution
- Glucagon

Antidotes
- Auto-Injector Mark I
- Hydroxocobalamin (Cyanokit®)
- Activated Charcoal (Actidose®)
- Pralidoxime (2-PAM® , Protopam Chloride®)
- Methylene Blue

Antihypertensives
- Labetalol Hydrochloride (Normodyne® , Trandate®)
- Metoprolol (Lopressor®)

Antipyretics
- Acetaminophen

Antimetics
- Promethazine (Phenergan) (Oral or rectal only)
- Zofran (Ondansetron)

Antihistamines
- Diphenhydramine Hydrochloride (Benadryl®)
- Cimetidine (Tagamet) /H2 Histamine Blocker

Bronchodilators
- Albuterol (Proventil, Ventolin)
- Ipratropium Bromide (Atrovent)
- Racemic Epinephrine (Vaponephrine)

Corticosteroids
- Methylprednisolone Sodium Succinate (Solu-Medrol®)
- Dexamethasone (Decadron®)

Diuretic
- Furosemide (Lasix®)

Electrolytes
- Calcium Chloride
- Magnesium Sulfate
- Sodium Bicarbonate 8.4% and 4.2% (NaHCO3)

Sedative / Hypnotics
- Etomidate (Amidate®)
- Diazepam Hydrochloride (Valium®)
- Lorazepam (Ativan®)
- Midazolam (Versed®)

Medical Gas
- Oxygen

Paralytics/muscle relaxants
- Succinylcholine Chloride (Anectine®)
- Terbutaline (OB use)
- Vecuronium Bromide (Norcuron®)

Hormones / Vitamins
- Thiamine Hydrochloride (Vitamin B1)
- Vasopressin (Pituitary hormone)
- Oxytocin

Salicylates
- Aspirin (ASA)