

General Approach – Adult, Trauma

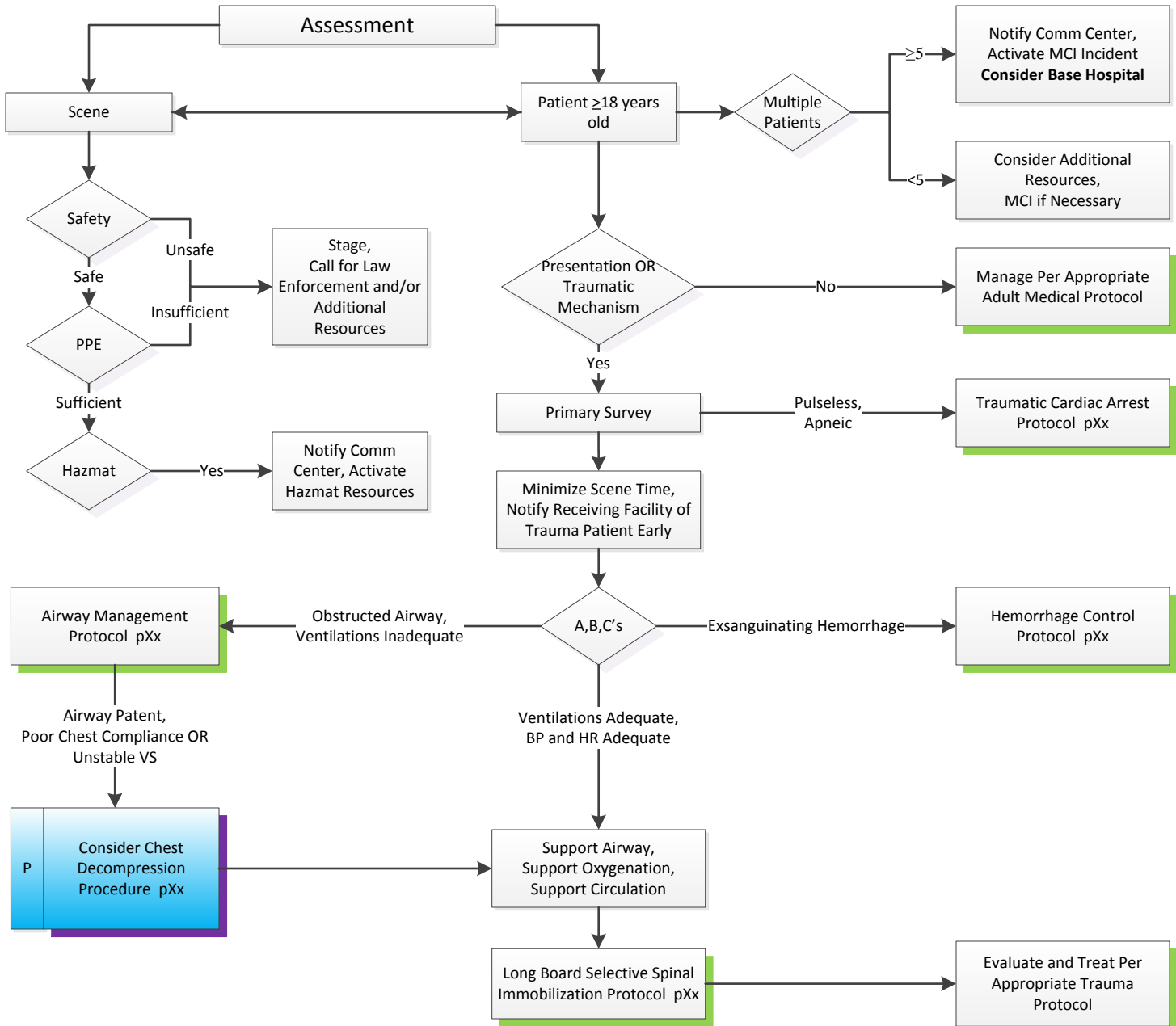
Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Pertinent Positives and Negatives

- Age, VS, GCS
- Time of Injury, Mechanism of Injury
- DCAP-BTLS
- SAMPLE History
- OPQRST History
- Pain / Swelling
- Mental Status
- Hypotension / Shock

Differential

- Stroke
- STEMI
- Overdose
- Elder Abuse
- Domestic Violence
- Non-Accidental Trauma



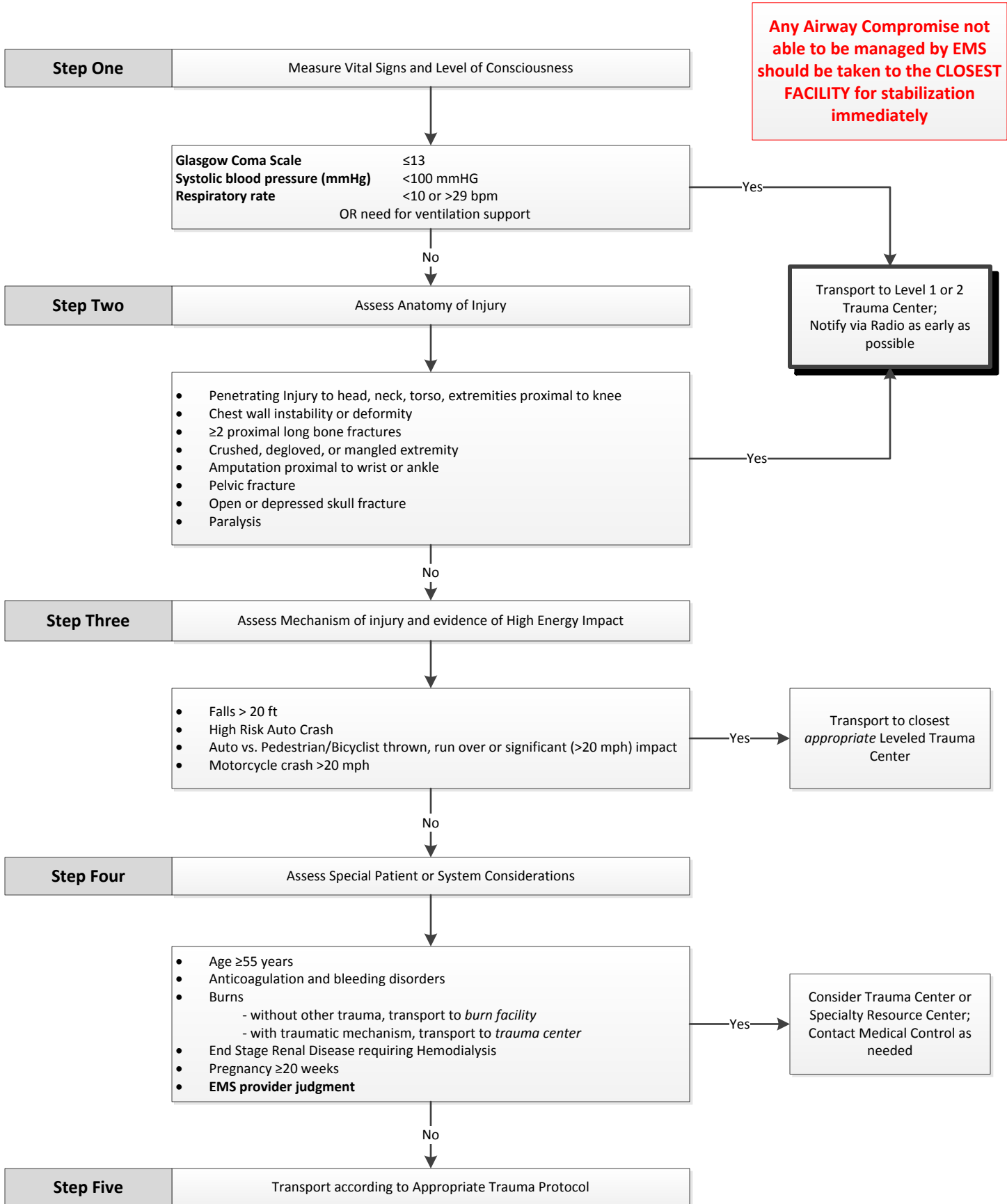
Pearls

REQUIRED EXAM: Vital Signs, GCS, Loss of Consciousness, Location of Pain (then targeted per Appropriate Trauma Protocol)

- Assess for major trauma criteria immediately upon patient contact
 - RR <10 or >29; SBP <90; Pulse <50 or >140; GCS <13; SpO2<93%
 - Transport to Trauma Center, minimize scene time to goal of <10 minutes
- Disability – assess for neuro deficits including paralysis, weakness, abnormal sensation
- Suspect Tension Pneumothorax when:
 - Mechanism consistent with Chest Trauma; Resp Distress; Decreased Breath Sounds; JVD; Low BP; Tachycardia; Tracheal Deviation
 - Signs and Symptoms of Tension Pneumothorax may be present *with or without* positive pressure ventilations
 - Needle Decompression should be performed with a 3" 14ga needle at the 2nd intercostal space, midclavicular line
 - If repeat decompression necessary, continue to move laterally along the superior aspect of the 3rd rib

Legend	
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Destination Determination – Adult, Trauma



Bites and Envenomations – Adult, Trauma

Legend	
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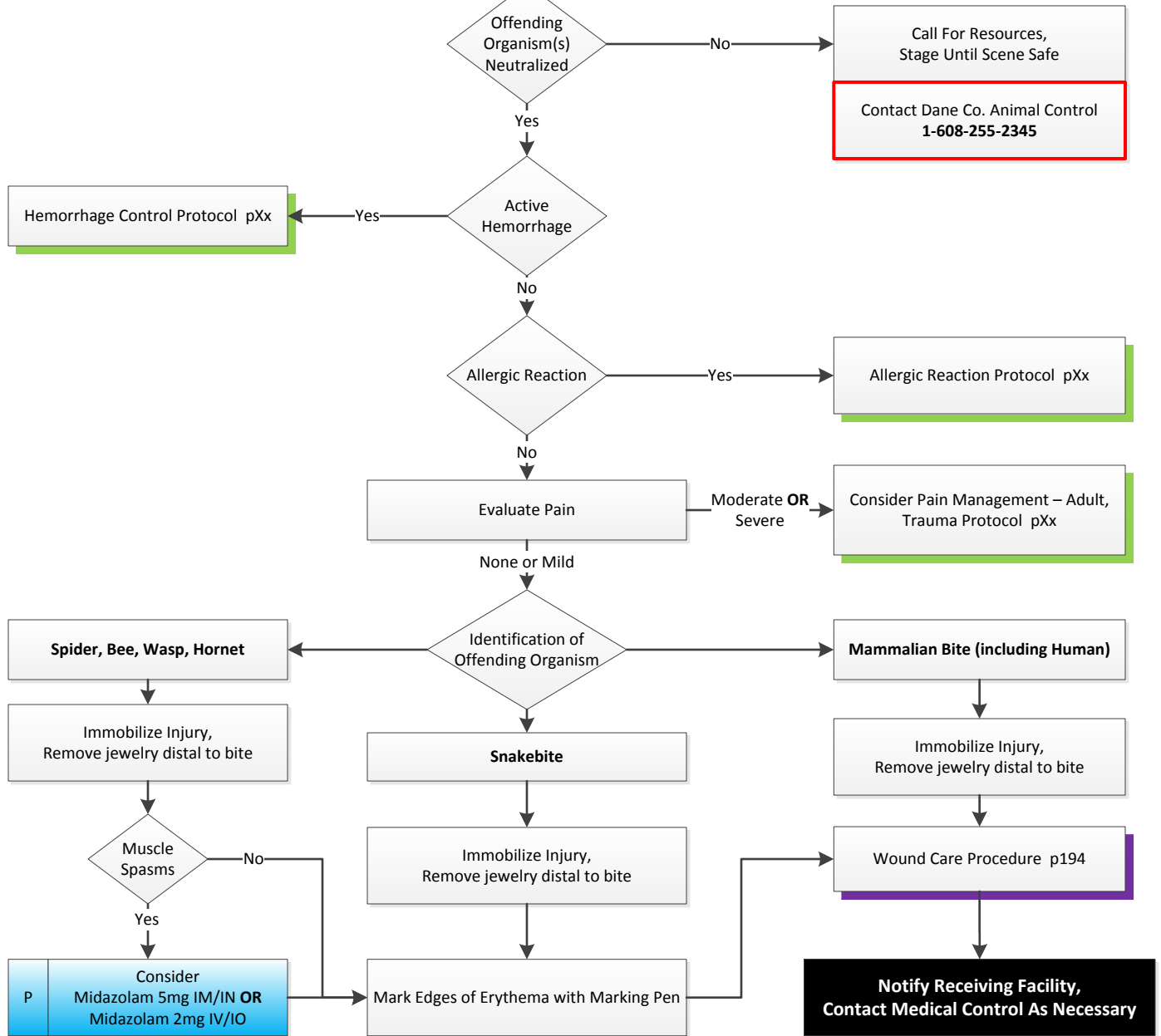
Pertinent Positives and Negatives

- Age, VS, Pulses distal to wound
- SAMPLE History
- OPQRST History
- Description or photo of offending creature
- Tetanus status
- Immunization History of Creature (if known)
- Domestic vs. Wild Animal
- Allergic Reaction
- Hypotension, Shock, Fever

Differential

- Penetrating Trauma
- Dry Bite (Snake)
- Abscess/Cellulitis
- Non-Accidental Trauma
- Projectile Injury

General Approach – Adult, Trauma



Pearls

REQUIRED EXAM: VS, GCS, Evidence of Intoxication, Affected Extremity Neurovascular Exam

- Cat bites may not initially appear serious, but can progress rapidly to severe infection
- Human bites have higher rates of infection than animal bites and necessitate evaluation in the Emergency Department for antibiotics
- Bites on the hands and lacerations over knuckles should be assumed to be “Fight Bites” until proven otherwise, and need evaluation
- Brown recluse spider bites are usually painless at the time of bite. Pain and tissue necrosis develops over hours to days
- Immunocompromised patients have higher risk of infection – Think: Diabetes, Chemotherapy, Organ Transplant

Trauma Protocols - Adult

	Legend
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Burns – Adult, Trauma

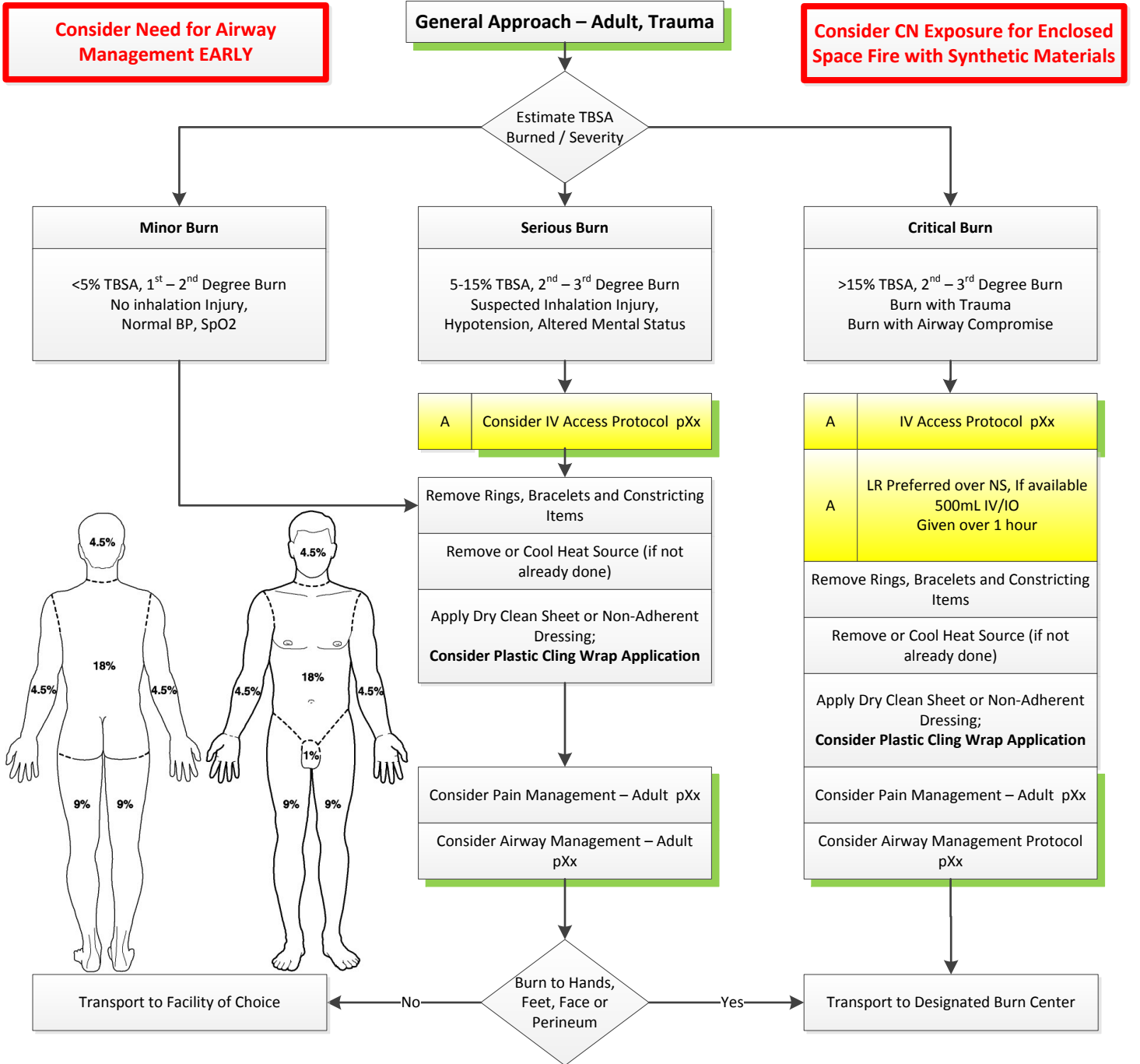
Pertinent Positives and Negatives

- Age, VS
- SAMPLE History
- OPQRST History
- Mechanism of Burn (heat, gas, chemical)
- Time of Injury

- Singed Facial Hair
- Wheezing, Hoarseness
- Subjective Throat Swelling
- Loss of Consciousness

Differential

- Blast Injury
- Radiation Injury
- Electrical Injury
- Cyanokit Need?
- Cellulitis
- Dermatitis
- Drug Reaction (Stevens-Johnson Syndrome)



Pearls

REQUIRED EXAM: VS, GCS, Lung Sounds, HEENT, Posterior Pharynx

- Burns to face and eyes, remove contact lenses prior to irrigation
- Chemical burns require removal of contaminated clothing, brush away dry powder before irrigation. Flush with copious warm water on scene and continue irrigation en route. Be sure to brush excess away and remove contaminated clothing BEFORE beginning irrigation. Early intubation is strongly recommended if suspicion of inhalation injury. Suspicion is high in patients involved in an enclosed space fire, who have facial burns or show signs of airway involvement; carbonaceous sputum, facial burns or edema, hoarseness, singed nasal hairs, agitation, hypoxia or cyanosis
- **Indications of possible Cyanide Poisoning** - Exposure to fumes from burning Nitrile (polyurethane, vinyl) Seizures, coma, cardiac arrest, headache, vertigo and/or cherry red skin color from increased venous O2 concentration

Traumatic Cardiac Arrest – Adult, Trauma

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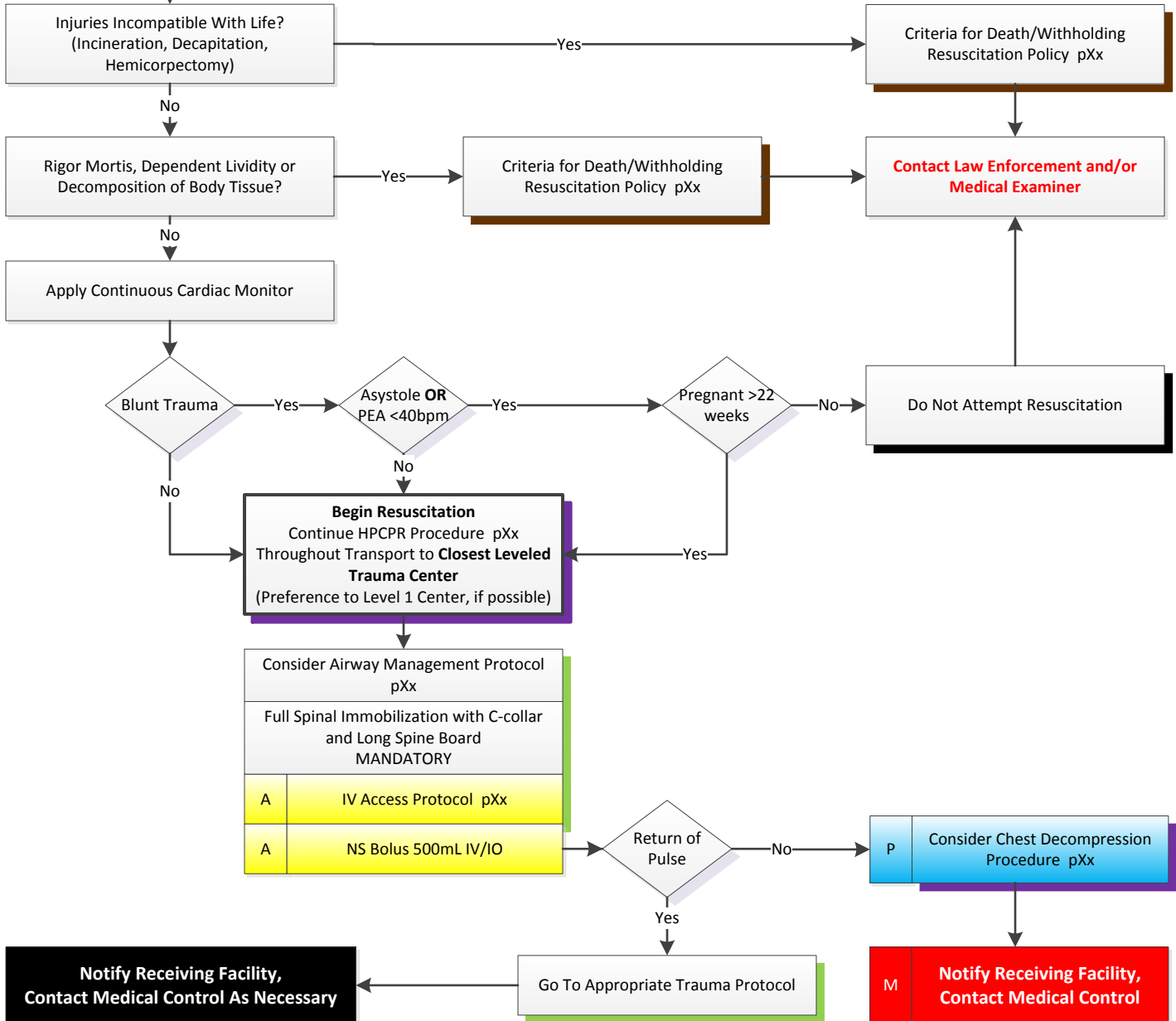
Pertinent Positives and Negatives

- Age, if known
- Mechanism of Injury
- Events leading up to arrest

Differential

- Hypovolemic Shock
 - External Hemorrhage
 - Internal Hemorrhage
 - Unstable Pelvic Fracture
- Tension Pneumothorax
- Medical Condition Causing Trauma (i.e. Cardiac Arrest)

General Approach – Adult, Trauma



Pearls

REQUIRED EXAM: Pupillary Light Reflex, Palpation of Pulses, Heart and Lung Auscultation

- Injuries incompatible with life include; decapitation, incineration, massively deforming head or chest injury, dependent lividity, rigor mortis
- As with all trauma patients, DO NOT delay transport
- Consider using medical cardiac arrest protocols if uncertainty exists regarding etiology of arrest
- Use of a long spine board will make chest compressions more effective; however, if spinal immobilization interferes with CPR use reasonable effort to limit patient and spine movement
- Be aware that these may be crime scenes: do your best to avoid disturbing forensic evidence
- If provider safety becomes a concern, transport of deceased patients to the hospital is acceptable
- Pregnancy EDC can be estimated by palpating the gravid uterus; above the level of the umbilicus is generally ≥ 22 weeks

Trauma Protocols - Adult

Chemical / Electrical Burn – Adult, Trauma

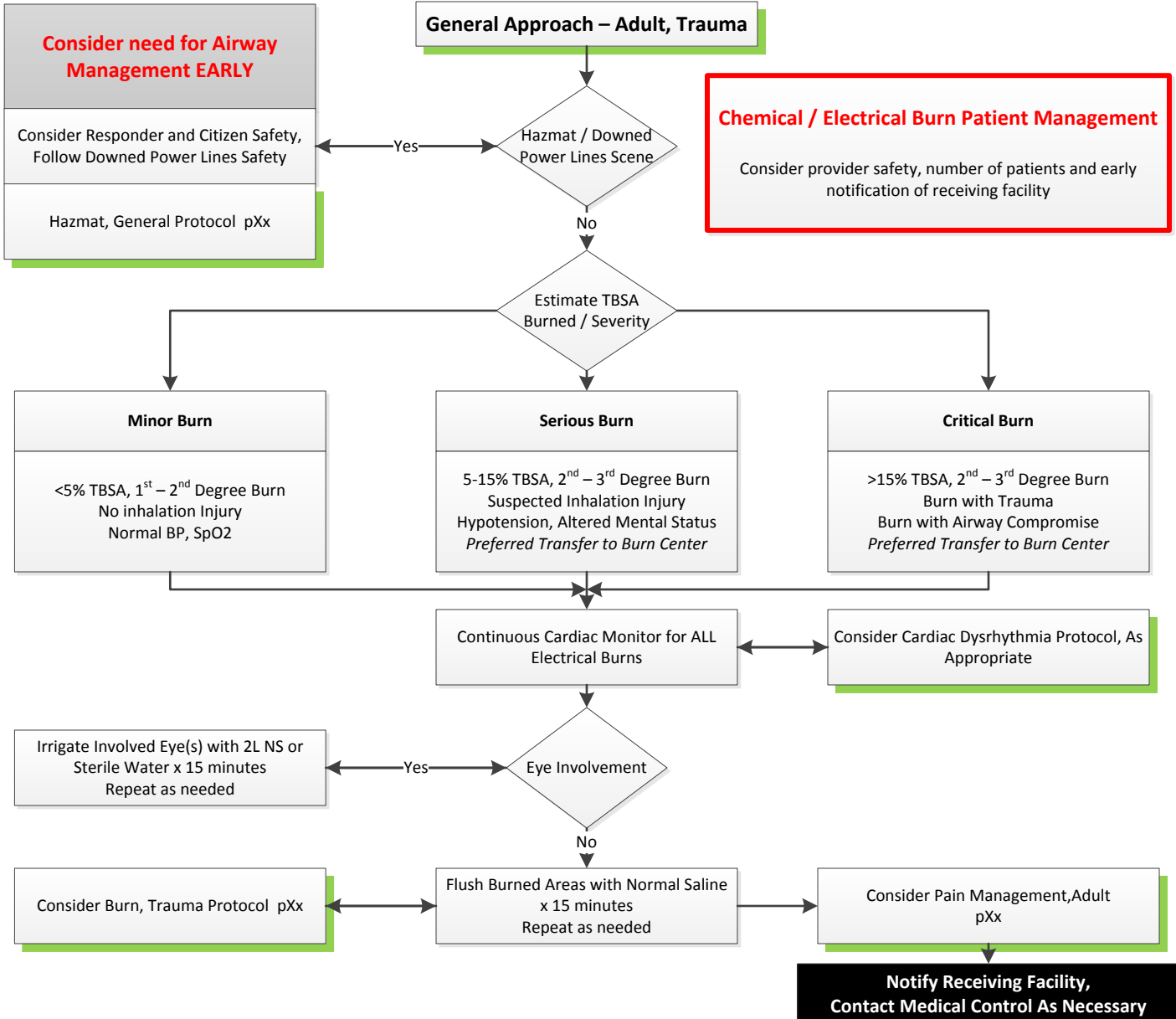
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- Pertinent Positives and Negatives**
- Type of exposure (heat, gas, chemical)
 - Central and Peripheral Pulses
 - Nausea, Vomiting, Diarrhea
 - Chemical Name (if known)

- Time of Exposure (duration)
- Mechanism of secondary injury (blunt vs. penetrating)
- Voltage of Electrical Current (if known)

- Differential**
- Thermal Injury
 - Chemical Burn
 - Electrical Injury
 - Blast Injury

- Abrasion
- Contusion
- Laceration
- Compartment Syndrome



Pearls

REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- Provider Safety is paramount! Ensure Chemical Source is not a hazard to responders and Electrical Sources are not contacting patient prior to assessment. Don't allow yourself or your crew to become victims.
- Safety First! Assure a Chemical source of burn is NOT a hazard to responders. Assure an Electrical source of burn is OFF or no longer contacting pt.
- High Voltage Electrical Burns (>600 volts) require spinal immobilization, continuous cardiac monitor and IV access regardless of external appearance of injury
- Chemical burns require removal of contaminated clothing, brush away dry powder before irrigation. Flush with copious warm water on scene and continue irrigation en route. Be sure to brush excess away and remove contaminated clothing BEFORE beginning irrigation
- Superficial appearance of Electrical Burns does NOT indicate severity of underlying tissue damage
- Attempt to locate contact points in Electrical Burns, generally contact point with source and where patient is grounded. Do not refer to them as entry or exit wounds. Surface appearance may belie the damage below
- Electrical Burns cause ventricular and atrial irritability and dysrhythmias; anticipate cardiac problems and treat accordingly

Trauma Protocols - Adult

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Chest Injury – Adult, Trauma

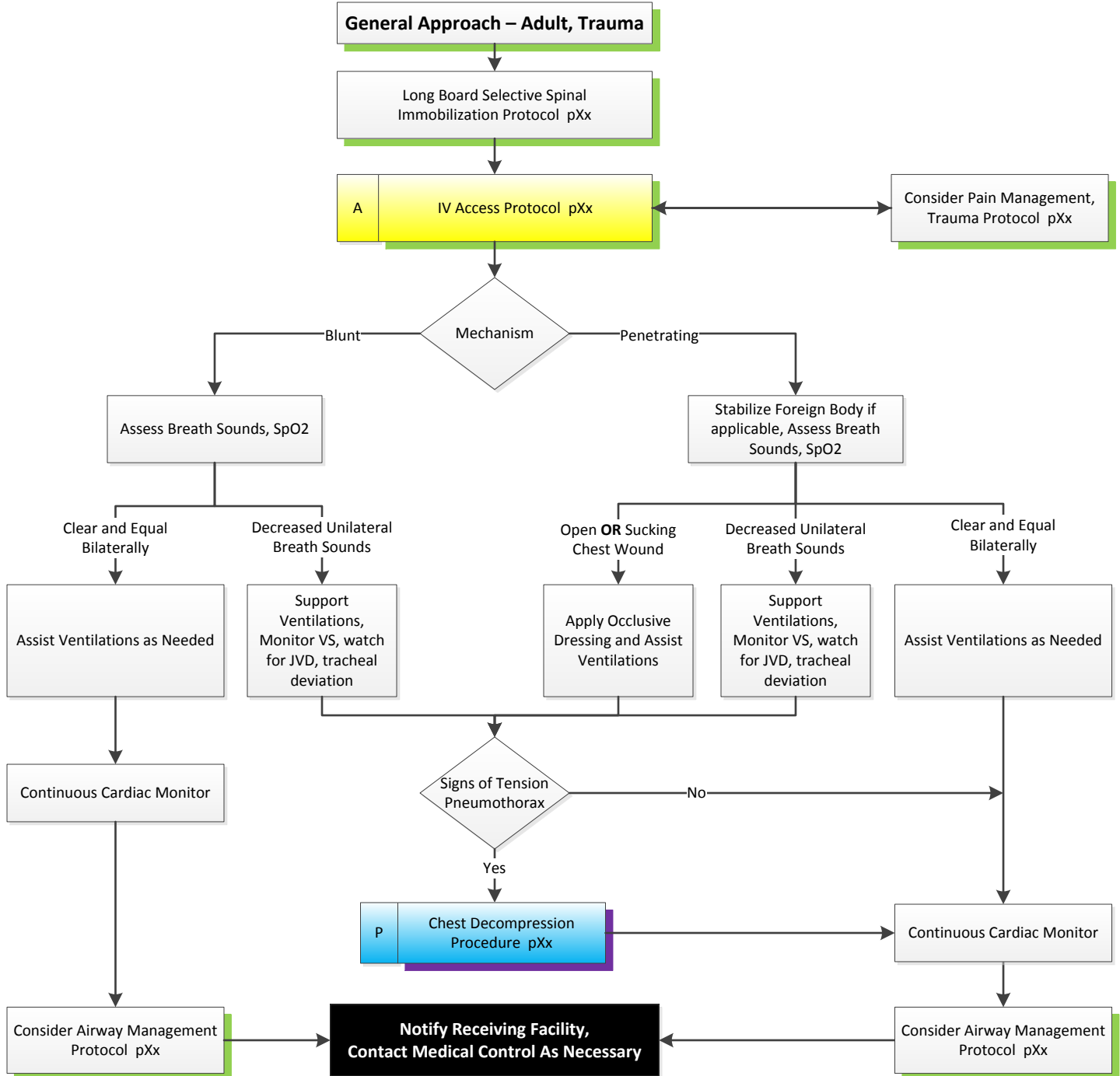
Pertinent Positives and Negatives

- Type of injury
- Mechanism (blunt vs. penetrating)
- Respiratory Effort, Adequacy
- Abnormal Breath Sounds (unilateral vs. bilateral)

- SAMPLE History
- OPQRST History
- Evidence of Intoxication
- Evidence of Multi-System Trauma

Differential

- Simple Pneumothorax
- Tension Pneumothorax
- Pericardial Tamponade
- Aortic Root Disruption
- Bronchial Tree Injury
- Tracheal Disruption
- Great Vessel Laceration
- Cardiac Contusion
- Cardiac Laceration



Pearls

REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- Consider tension pneumothorax in any patient with penetrating chest trauma, OR blunt chest trauma with decreased unilateral breath sounds, hypotension, tachycardia, hypoxia, tracheal deviation (late) or JVD (late)
- Aortic root injuries, bronchial disruption and tracheal disruptions are common with major deceleration injuries (i.e. MVC)
- Cardiac contusions are common with blunt chest trauma, and may present with ectopy, PVCs or even STEMI appearance on cardiac monitor
- Pericardial Tamponade is a surgical emergency and needs rapid transport. Look for muffled heart tones, hypotension, tachycardia

Trauma Protocols - Adult

Prolonged Crush Injury – Adult, Trauma

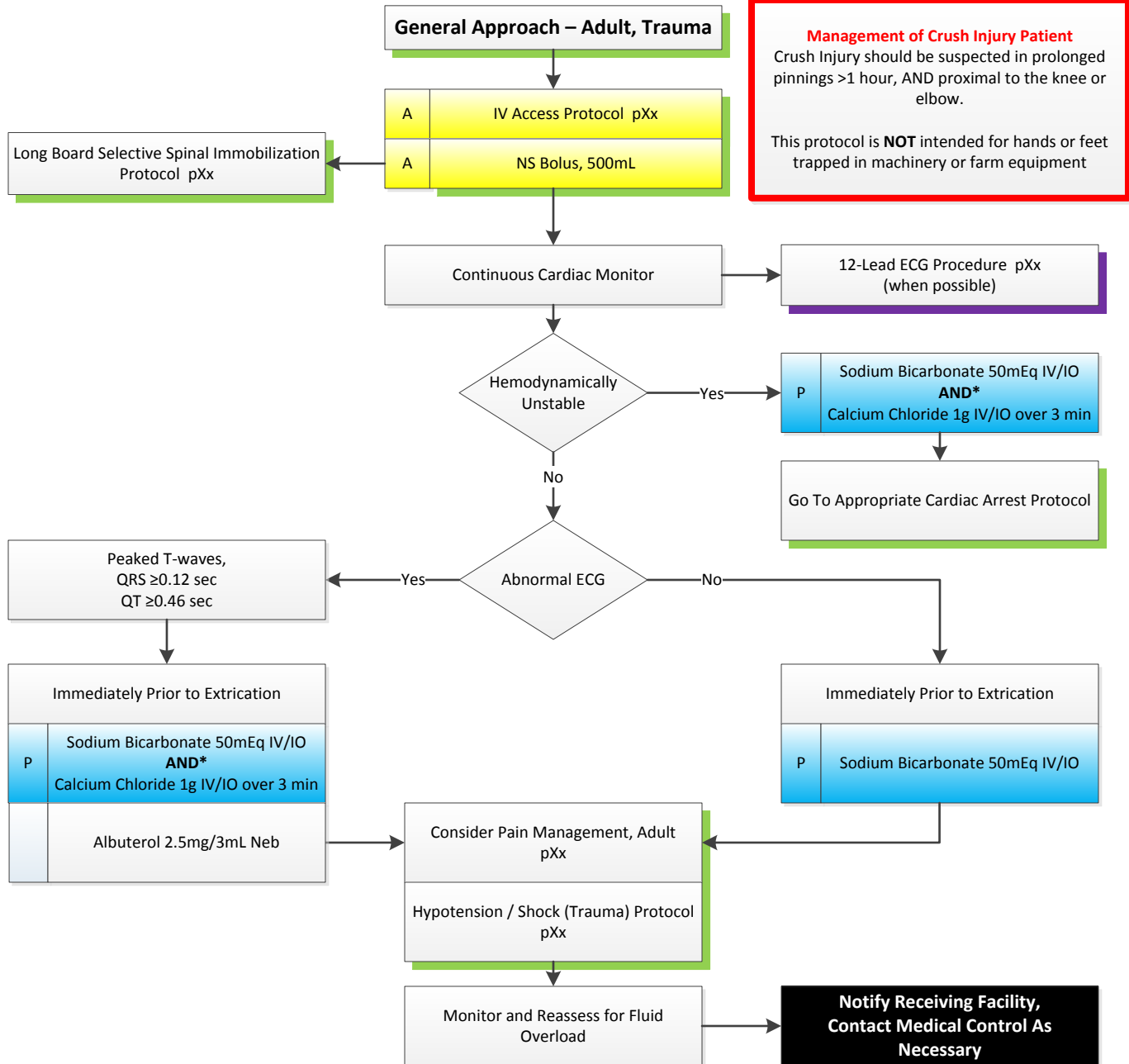
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Pertinent Positives and Negatives

- Age, VS, GCS
- SAMPLE History
- OPQRST History
- Crushed under heavy load ≥30 min
- Building collapse, trench collapse, industrial accident, heavy equipment pinning

Differential

- Compartment Syndrome
- Entrapment without Crush
- Fracture, Sprain, Strain



Pearls

REQUIRED EXAM: Vital Signs, GCS, Lung Sounds, Neuro Exam, Musculoskeletal Exam

- Structural Collapse, Crush Scenes are often full of hazards, provider safety is the most important consideration
- Patients may become hypothermic, even in warm environments
 - Hypothermia can lead to coagulopathy, which will increase bleeding times and have worse outcomes for the patient
- Crush injuries can result in hyperkalemia from shift of Potassium out of injured cells. Cardiac monitoring is required and 12-lead ECG preferred whenever possible (as dictated by the situation)
- Monitor extremities for signs of compartment syndrome after crush injury; **Pain, Pallor, Paresthesias, Paralysis, Pulselessness** and **Poikilothermia** (inability to regulate core body temperature)
- *Utilize different IV lines or flush between bicarb and calcium to prevent precipitation in the line

Near Drowning / Submersion Injury – Adult, Trauma

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Pertinent Positives and Negatives

- Submersion in water regardless of depth
- SAMPLE History
- OPQRST History
- Temperature of water
- Mental Status Changes

- Degree of Water Contamination
- Vomiting
- Coughing, Wheezing, Rales, Rhonchi, Stridor

Differential

- Spinal Trauma
- Pre-Existing Medical Condition
- Hypothermia
- Aspiration
- The Bends
- Pressure Injury
 - Barotrauma
 - Decompression Sickness
- Post-Immersion Syndrome



Pearls

REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- Have a HIGH index of suspicion for possible spinal injuries. Any diving injury or submersion with unclear details should be fully immobilized
- Hypothermia is often associated with near-drowning and submersion injuries. **Consider the Hypothermia Protocol** as appropriate
- All patients with Near-Drowning / Submersion Injury should be transported for evaluation due to delayed presentation of respiratory failure
- With diving injuries (decompression / barotrauma) consider availability of a hyperbaric chamber; contact Medical Control early.
- Near-drowning patients who are awake and cooperative but with respiratory distress may benefit from CPAP / Positive Pressure Ventilation

Legend	
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Environmental, Hyperthermia – Adult, Trauma

Pertinent Positives and Negatives

- Age, VS, Mental Status
- SAMPLE History
- OPQRST History
- Time and length of exposure to hot environment

- Hot, dry or sweaty skin
- Seizures
- Nausea
- Hypotension, Shock, Fever

Differential

- Alcohol Withdrawal (DTs)
- Hyperthyroidism (Thyroid Storm)
- Dehydration
- Cocaine or Sympathomimetic OD
- Sepsis
- CNS Lesion or Head Injury
- Abuse or Neglect (Elderly or disabled)
- Medication (Serotonin Syndrome, Malignant Hyperthermia)

General Approach – Adult, Trauma

Remove Patient from Hot Environment (if applicable)

Estimate Severity of Symptoms

Heat Cramps

Painful Spasms of Extremities and/or Abdominal Muscles
Normal Mental Status
Normal Vital Signs

Oral Fluids
Sponge with Cool Water and Fan

Heat Exhaustion

Dizziness, Lightheadedness, Headache, Irritability, Nausea
Normal or Mildly Depressed Mental Status
Mild Tachycardia (<150)
Normal or Mildly Elevated Temp

Keep Patient Supine
Apply 100% Oxygen
Sponge with Cool Water and Fan

Heat Stroke

Marked Alteration in Level of Consciousness
May Be Sweating OR Hot, Dry, Red Skin
Extremely High Temp, >104°F

Semi-Reclining Position with Head Elevated
Apply 100% Oxygen
Rapid Cooling with Cold Packs, Sponge with Cool Water and Fan

Tolerating Oral Fluids

Yes

No

Reassess and Document Mental Status, VS and ability to take PO

Normal

Any Abnormal

A IV Access Protocol pXx

Consider Hypotension Shock / Trauma pXx

P Consider Ondansetron 4mg IV/IO/ODT

Requires Transport

No

Yes

Execute and Document Patient Refusal Protocol pXx

Notify Receiving Facility, Contact Medical Control As Necessary

A IV Access Protocol pXx

Consider Hypotension / Shock (Trauma) pXx

P Ondansetron 4mg IV/IO

P If Shivering, Consider Midazolam 2mg IV/IO

Pearls

REQUIRED EXAM: VS, GCS, Skin, HEENT, Neuro, Evidence of Intoxication, Mental Status

- Extremes of Age are more prone to heat emergencies due to inability to easily self-extricate from hot environments
- Patients on Tricyclic Antidepressants, Anticholinergics, Diuretics (i.e. Lasix) are more susceptible to heat emergencies due to medication effects
- Cocaine, amphetamines and salicylates all may elevate body temperature or interfere with the ability to auto-regulate
- Sweating generally disappears as body temperature rises above 104°F
- If Heat Cramps resolved without IV Access or Medications, patients may refuse transport, IF tolerating oral fluids and VS normal

Legend	
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Environmental, Hypothermia – Adult, Trauma

Pertinent Positives and Negatives

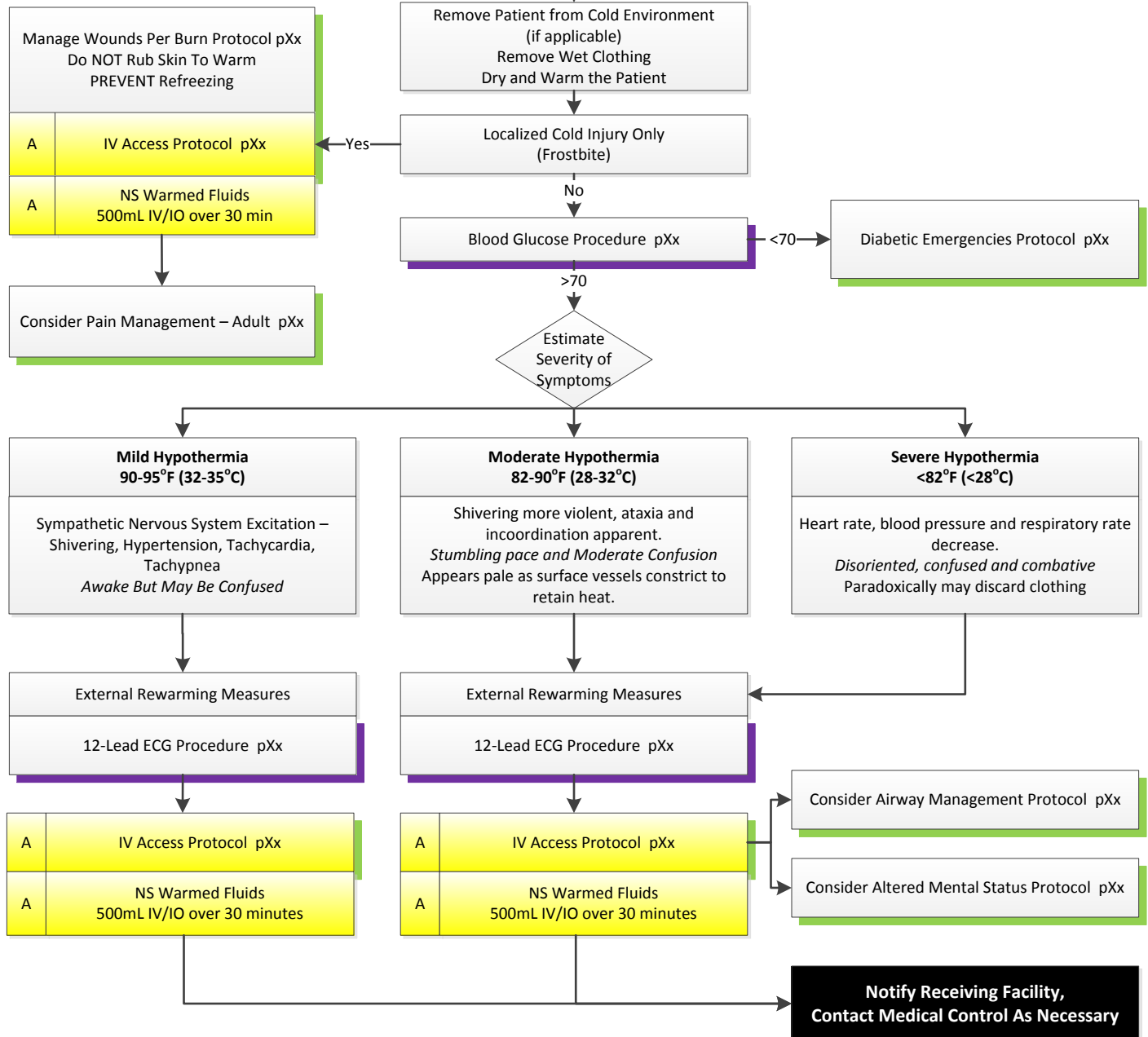
- Age, VS, Mental Status
- SAMPLE History
- OPQRST History
- Time and length of exposure to cold environment

- Cold or clammy skin
- Confusion
- Arrhythmias, J-waves on ECG
- Hypotension, Shock

Differential

- Alcohol Intoxication
- Hypothyroidism (Myxedema Coma)
- Dehydration
- Sepsis
- CNS Lesion or Head Injury
- Abuse or Neglect (Elderly or disabled)
- Medication (beta blocker overdose, opiate overdose)

General Approach – Adult, Trauma



Pearls

REQUIRED EXAM: VS, GCS, Skin, HEENT, Neuro, Evidence of Intoxication, Mental Status

- Hypoglycemia is found in many hypothermic patients, because hypothermia may be a result of hypoglycemia
- Severe hypothermia may cause myocardial irritability and rough handling can theoretically cause V-fib. Please handle carefully.
-Do not withhold intubation or CPR for this concern, but only the most experienced provider available should *gently* attempt intubation
- Below 86°F (30°C), antiarrhythmics may not be effective. If given, they should be given at reduced intervals. Do NOT attempt to pace below 86°F. If antiarrhythmics necessary for severely hypothermic patient, Contact Medical Control
- Extremes of age, malnutrition, EtOH and drug abuse and outdoor hobbies / employment all predispose to hypothermia

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Extremity Injury – Adult, Trauma

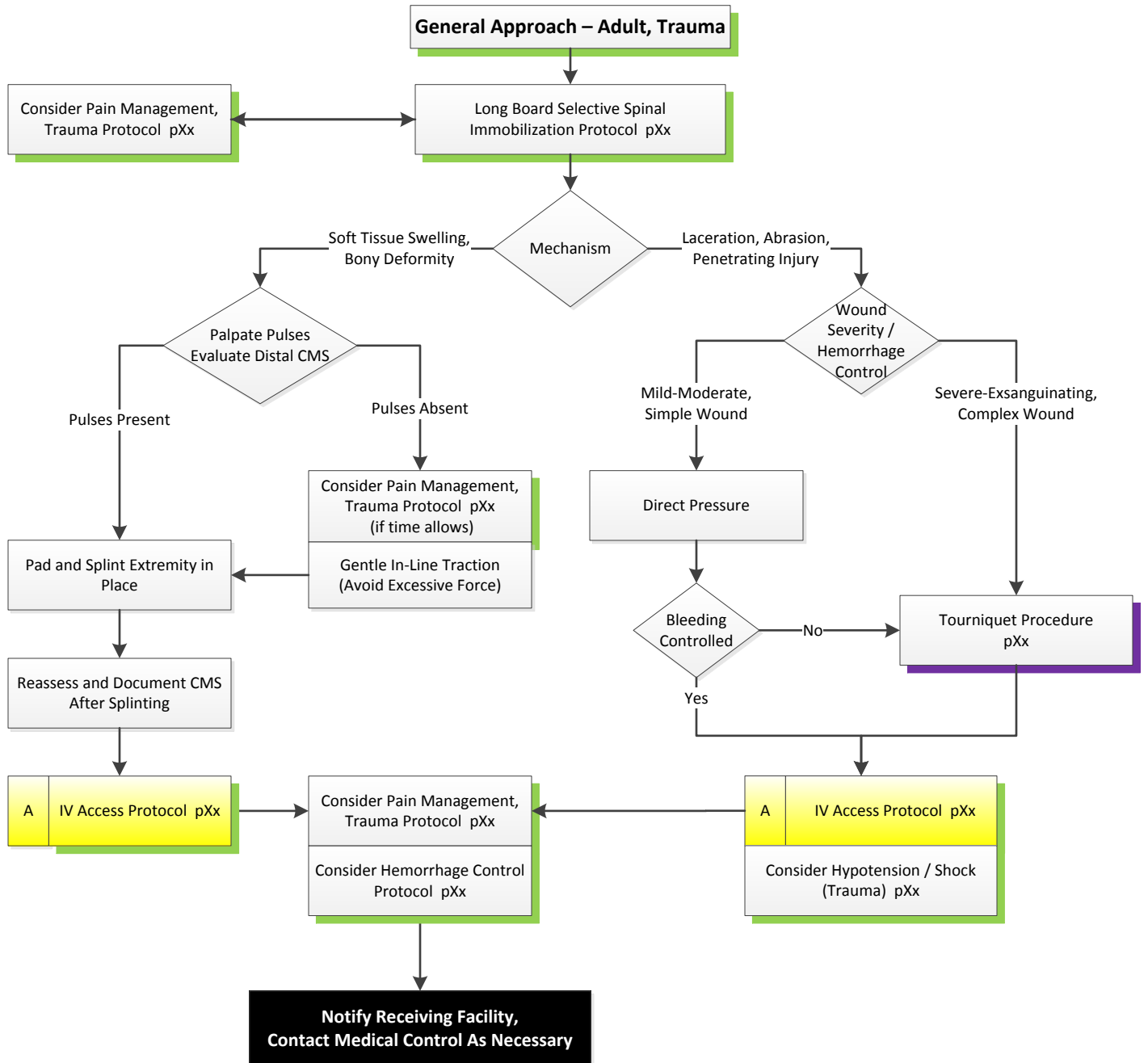
Pertinent Positives and Negatives

- Type of injury
- Mechanism (blunt vs. penetrating)
- Central and Peripheral Pulses
- Neuro Function Distal to Injury

- SAMPLE History
- OPQRST History
- Evidence of Intoxication
- Evidence of Multi-System Trauma

Differential

- Vascular Disruption
- Amputation
- Fracture, Dislocation
- Sprain, Strain
- Abrasion
- Contusion
- Laceration
- Compartment Syndrome



Pearls

REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- Immobilization of bony injuries should include the joint above and below. Joint injuries require immobilization of bone above and below
- Palpate and document Circulation, Movement and Sensation both before and after splint application
- Tourniquets should remain in place once hemorrhage control is adequate. The tourniquet is tight enough when the bleeding stops!
- If active hemorrhage and bony/soft tissue deformity, priority should be put on hemorrhage control *first*, then splinting – remember A,B,C's
- If amputated extremities available, seal in a plastic bag and place in cool water and bring to the hospital with the patient

Legend	
	EMT
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Eye Pain – Adult, Trauma

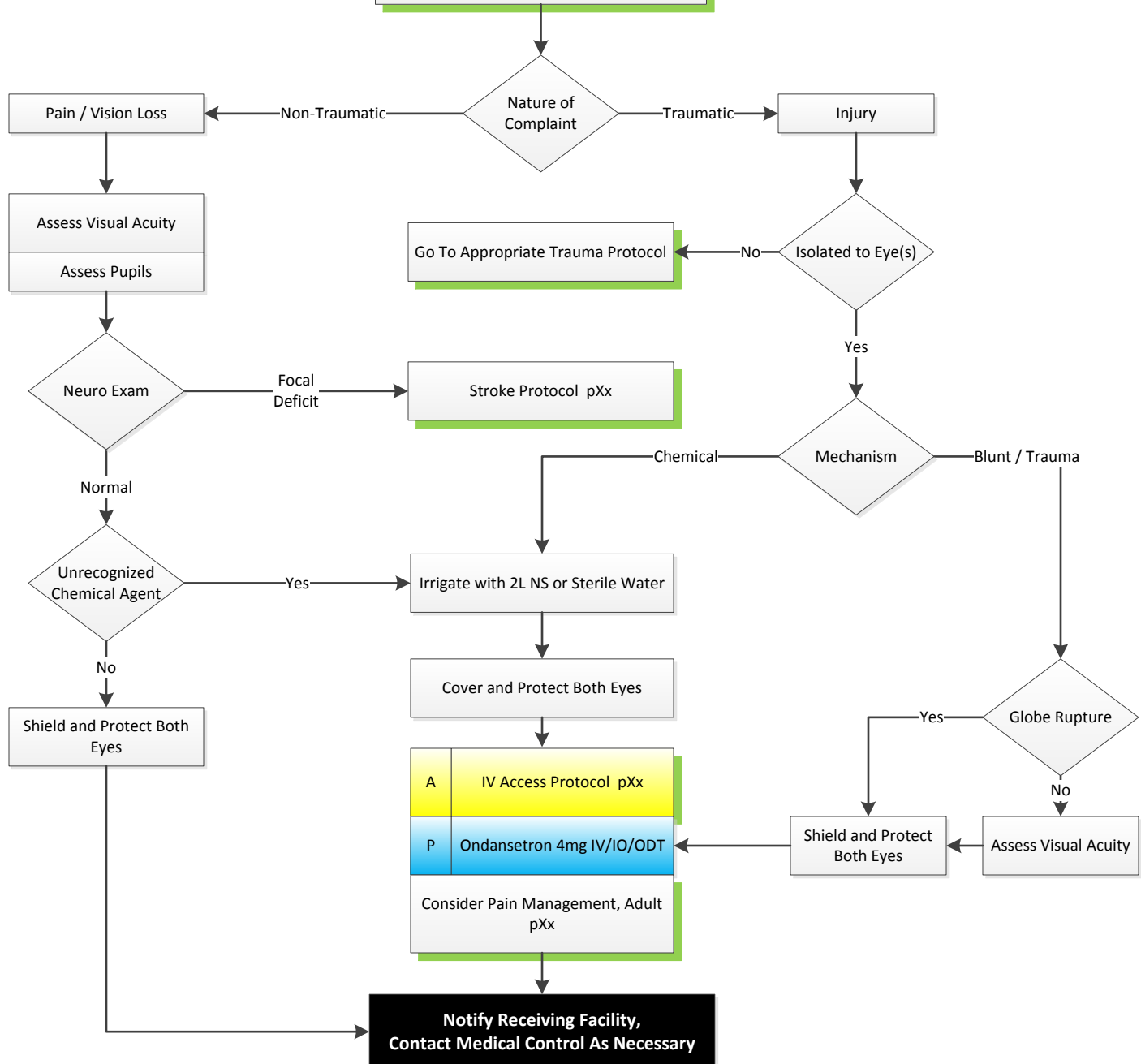
Pertinent Positives and Negatives

- Age, VS, Visual Acuity
- SAMPLE History
- OPQRST History
- Time of Injury
- Involved Chemical MSDS
- Contact/Corrective Lens Use
- “Shooting” or “Streaking” Lights
- Rust Ring
- “Lowering Shade” in Vision

Differential

- Globe Rupture
- Acute Closed Angle Glaucoma
- Stroke
- Retinal Artery Occlusion
- Chemical Burn
- Retinal Venous Thrombus

General Approach – Adult, Trauma



Pearls

REQUIRED EXAM: VS, GCS, Visual Acuity, Neuro Exam, Extraocular Movements

- Stabilize any penetrating objects. DO NOT remove any embedded / impaled objects
- If Long Spine Board not indicated, transport with head of stretcher elevated to 60 degrees to help reduce intraocular pressure
- Remove contact lenses when possible
- Always cover both eyes to prevent further injury
- Orbital fractures increase concern for globe or optic nerve injury; follow visual acuity and extraocular movements for changes
- Normal visual acuity can be present, even with severe injury

Hazmat, General – Adult, Trauma

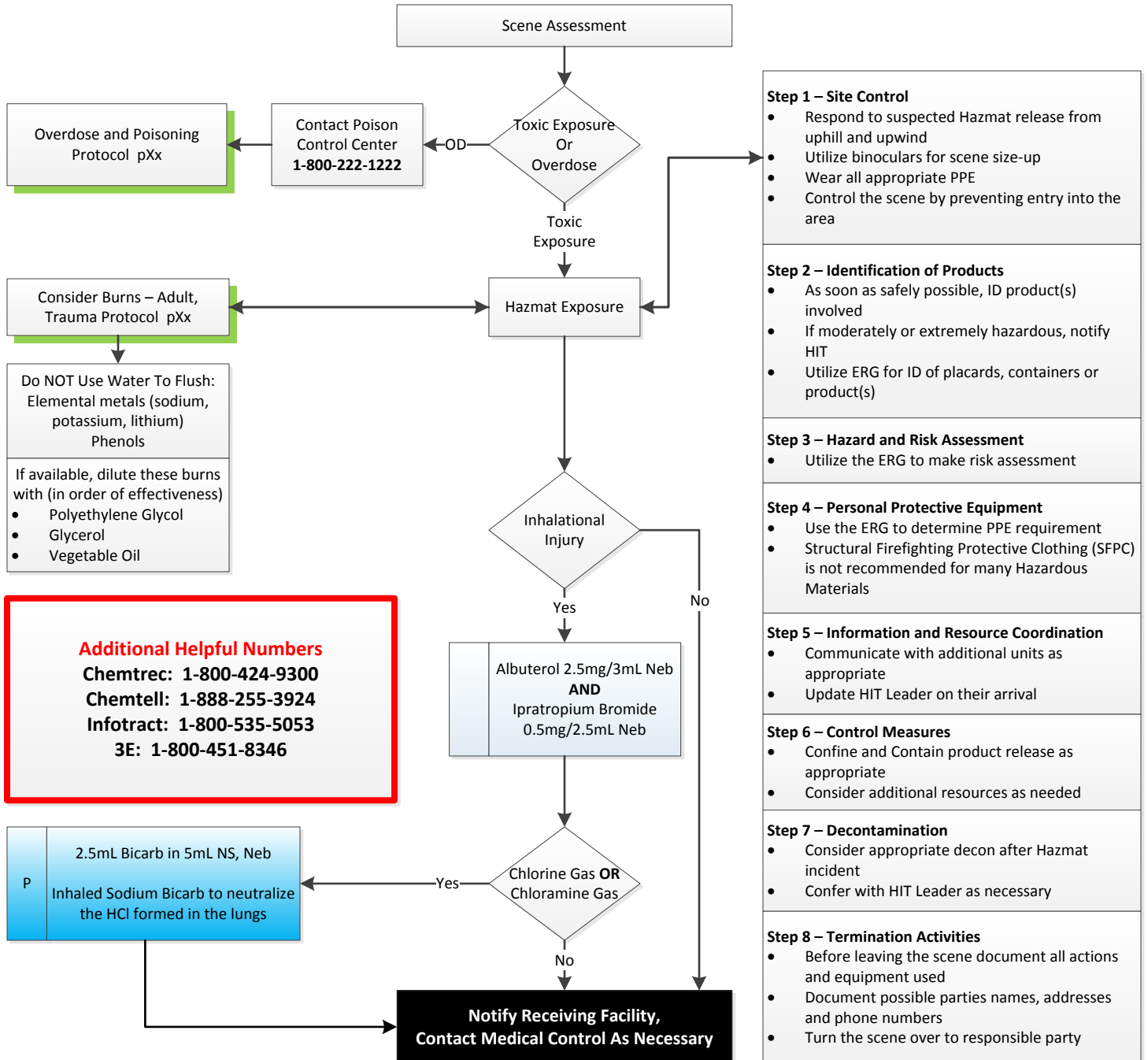
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M	Medical Control

Pertinent Positives and Negatives

- Age, VS, Mental Status
- SAMPLE History
- OPQRST History
- Time and length of exposure to toxic environment
- MSDS Sheet Info
- Mode of Release
- Number of Victims

Differential

- Alcohol Intoxication
- Hyperthyroidism
- Drug Abuse, Intoxication
- Sepsis
- CNS Lesion or Head Injury
- Abuse or Neglect (Elderly or disabled)
- Medication (beta blocker overdose, opiate overdose)



Pearls

REQUIRED EXAM: VS, GCS, Skin, HEENT, Neuro, Evidence of Intoxication, Mental Status

- The most important factor in Hazmat response is provider safety – you can't help anyone else if you're a victim as well
- In any Hazmat situation, consider that the exposure may not be accidental; consider intentional releases, secondary devices and terrorism
- Always park upwind and uphill of any potential exposures, and be conscious of any symptoms you may begin to develop
- Communication is key; contact the appropriate Hazmat authority early and notify the Hazmat leader as well as the Comm Center of findings
- In a large-scale event, have the Comm Center activate Dane County Mass Casualty Plan and notify the Base Hospital to get prepared
- Inhaled bicarb is controversial but seems to help. Aslan S, Kandis H, Akgun M, Cakir Z, Inandi T, Görgüner M. The effect of nebulized NaHCO3 treatment on "RADS" due to chlorine gas inhalation. *Inhal Toxicol.* 2006 Oct. 18(11):895-900.

Trauma Protocols - Adult

Legend	
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Head Injury – Adult, Trauma

Pertinent Positives and Negatives

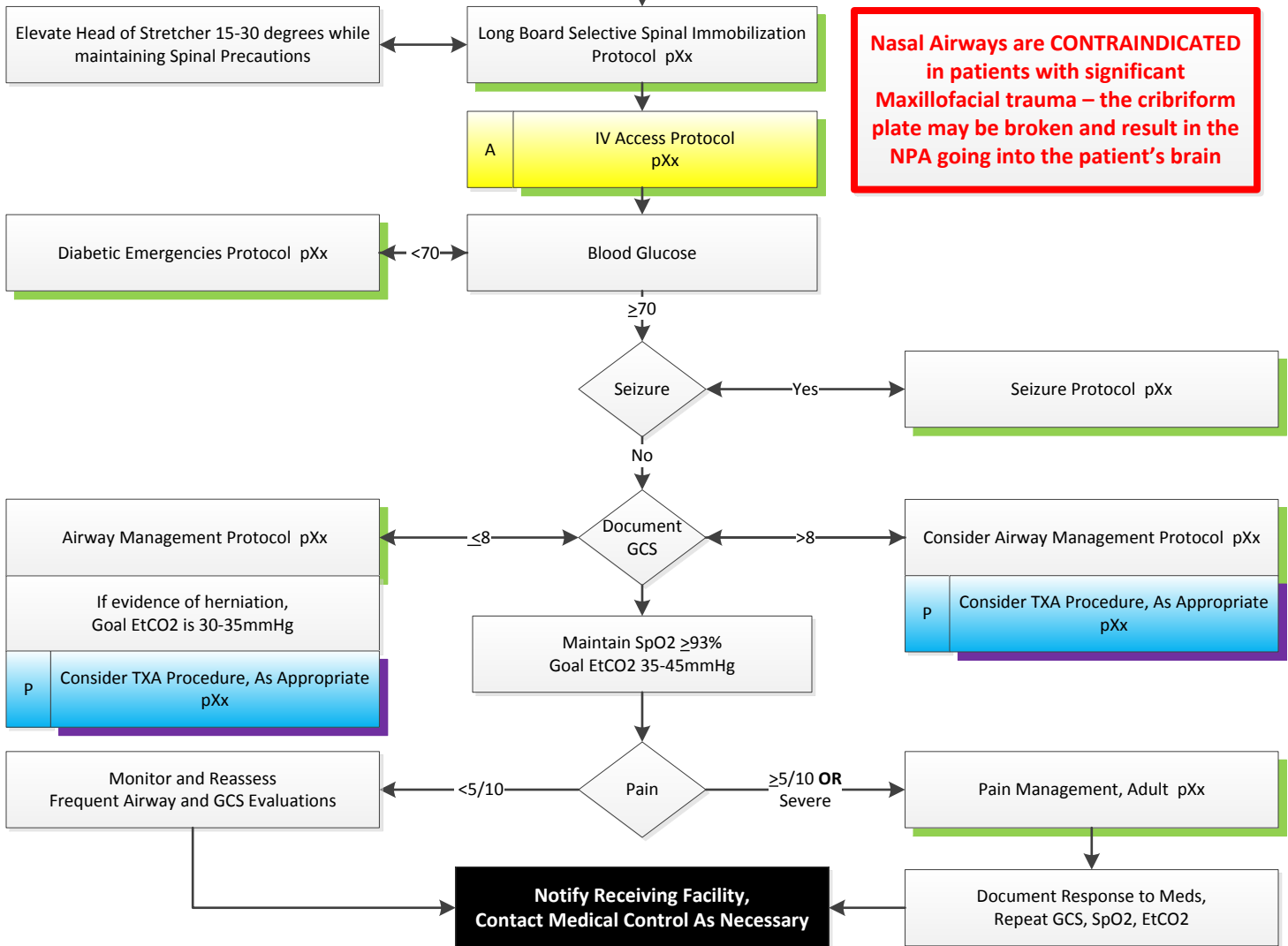
- Type of injury
- Mechanism (blunt vs. penetrating)
- Loss Of Consciousness
- Vomiting, Altered Mental Status

- SAMPLE History
- OPQRST History
- Evidence of Intoxication
- Evidence of Multi-System Trauma

Differential

- Skull fracture
- Epidural hematoma
- Concussion, Contusion, Laceration, Hematoma
- Non-Accidental Trauma
- Spinal Cord Injury
- Subdural Hematoma
- Subarachnoid Hemorrhage

General Approach – Adult, Trauma



Pearls

REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- If GCS ≤ 13 consider Air transport or Rapid Transport
- Airway interventions can be detrimental to patients with head injury by raising intracranial pressure, worsening hypoxia (and secondary brain injury) and increasing risk of aspiration. Whenever possible these patients should be managed in the least invasive manner to safely maintain O₂ saturation >90% (ie. NRB, BVM with 100% O₂)**
- Acute herniation should be suspected when the following signs are present: acute unilateral dilated and non-reactive pupil, abrupt deterioration in mental status, abrupt onset of motor posturing, abrupt increase in blood pressure, abrupt decrease in heart rate.
- Only in suspected acute herniation – increase ventilatory rate (rate 20/minute) and target EtCO₂ 30-35mmHg
- Increased intracranial pressure (ICP) may cause hypertension and bradycardia (Cushings response)
- Hypotension usually indicates injury or shock unrelated to the head injury and should be treated aggressively
- Most important vital sign to monitor and document is level of consciousness (GCS)
- Concussions are periods of confusion or loss of consciousness (LOC) associated with trauma which may have resolved by the time EMS arrives. Any confusion or mental status abnormality which does not return to normal within 15 minutes or any documented loss of consciousness should be transported to an Emergency Department. Any questions or clarifications, contact Medical Control.

Trauma Protocols - Adult

Legend	
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Hemorrhage Control – Adult, Trauma

Pertinent Positives and Negatives

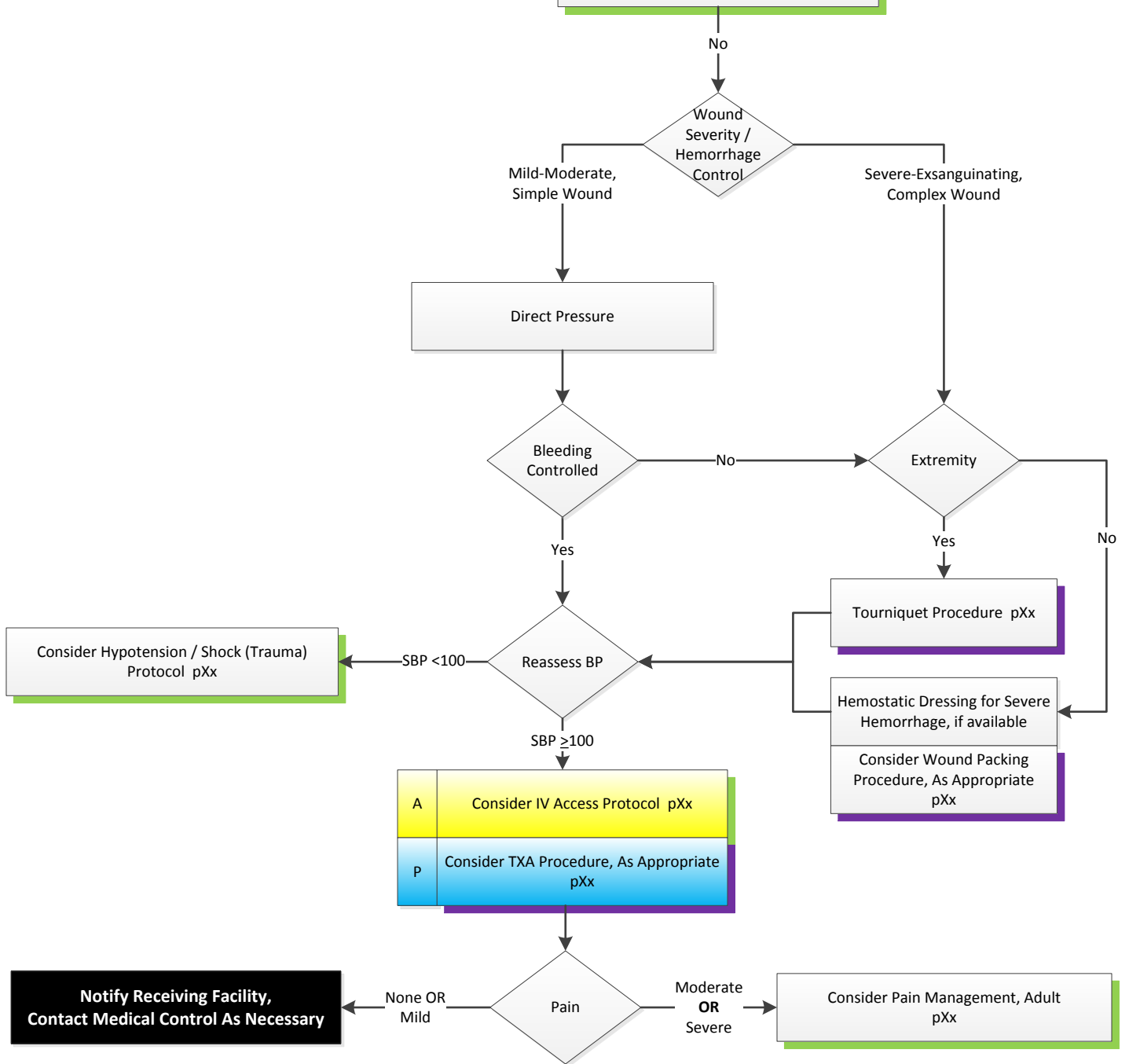
- Type of injury
- Mechanism (blunt vs. penetrating)
- Central and Peripheral Pulses
- Neuro Function Distal to Injury

- Time of Injury
- Deformity
- Diminished pulse / capillary refill

Differential

- Vascular Disruption
- Amputation
- Fracture, Dislocation
- Sprain, Strain
- Abrasion
- Contusion
- Laceration
- Compartment Syndrome

General Approach – Adult, Trauma



Pearls

REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- Hypotension in trauma needs blood products early, so minimize scene time. Goal for scene time in major trauma cases should be <10 min
- Multiple casualty incident or obvious life threatening hemorrhage, consider Tourniquet Procedure and/or Hemostatic Dressing FIRST
- Hemostatic Dressings are appropriate for hemorrhage that can't be controlled with a tourniquet, such as junctional wounds in the groin or axilla.
- Remember - hemostatic agents are contraindicated in wounds that violate the thoracic or abdominal cavity; if unsure, use sterile roll gauze.
- Signs/Symptoms of Shock include: altered mental status, pallor, hypotension (SBP <100), cap refill >3 sec, faint/absent peripheral pulses

Trauma Protocols - Adult

Legend	
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Lightning Strike – Adult, Trauma

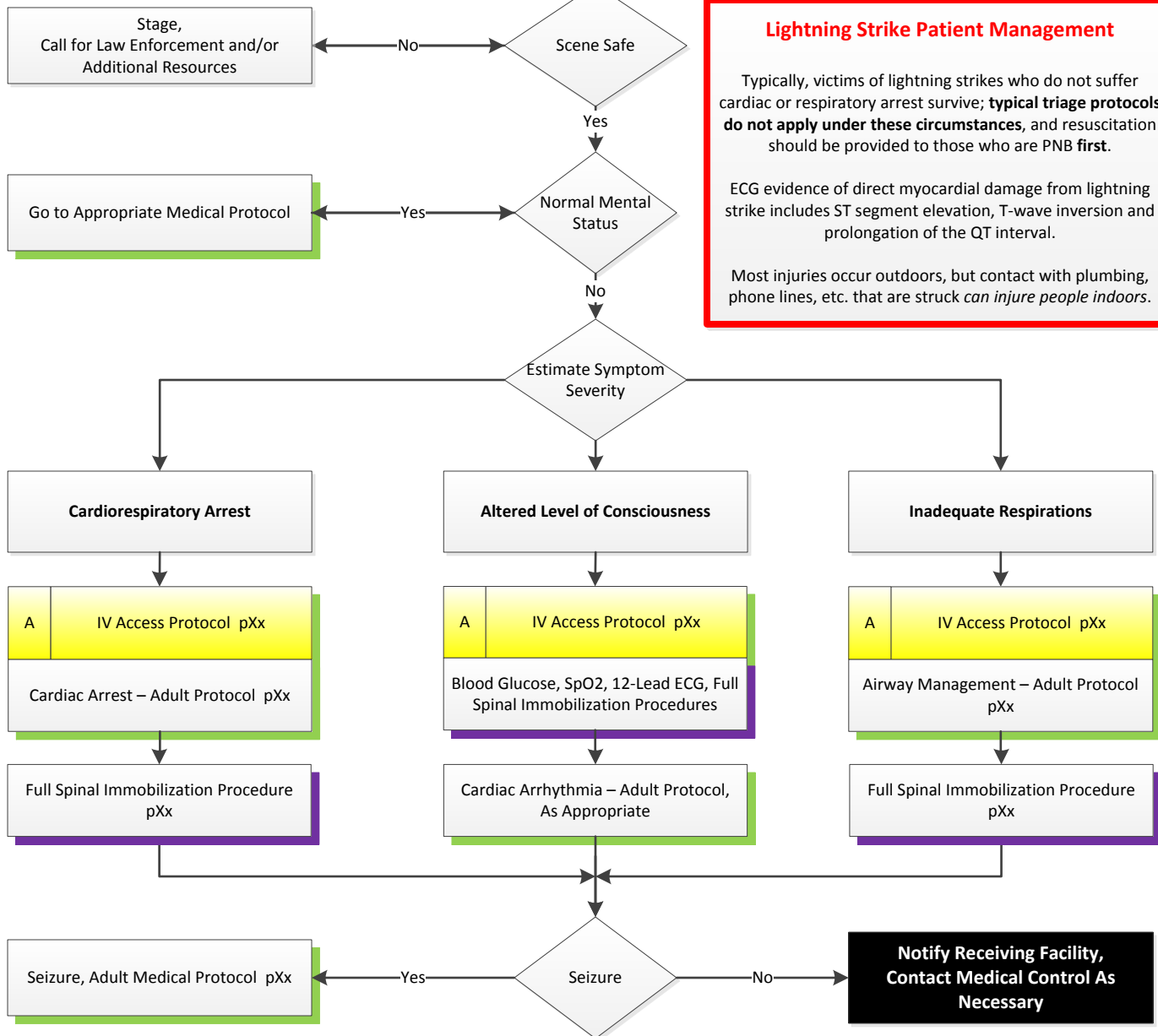
Pertinent Positives and Negatives

- Type of Strike (Direct, Splash, Contact)
- Central and Peripheral Pulses
- Nausea, Vomiting, Diarrhea
- Amnesia, Confusion, Neuro Deficits
- Duration of Unresponsiveness (if applicable)
- Time of Strike
- Wounds to Hands, Feet or Areas of Contact

Differential

- Thermal Injury
- Electrical Injury
- Blast Injury
- Acute Myocardial Infarction

General Approach – Adult, Trauma



Lightning Strike Patient Management

Typically, victims of lightning strikes who do not suffer cardiac or respiratory arrest survive; **typical triage protocols do not apply under these circumstances**, and resuscitation should be provided to those who are PNB first.

ECG evidence of direct myocardial damage from lightning strike includes ST segment elevation, T-wave inversion and prolongation of the QT interval.

Most injuries occur outdoors, but contact with plumbing, phone lines, etc. that are struck *can injure people indoors*.

Pearls

- REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro**
- National lightning safety guidelines state that risk continues for 30 minutes after the last lightning is seen or thunder heard
 - Lightning not striking twice is a **myth**; if there is continued risk to EMS providers, remove the patient to a safe place before treatment
 - Full spinal immobilization should be performed* in any patient with altered level of consciousness, as spinal injuries are common from the concussive force of the strike and/or involuntary muscle spasms
 - There are reports of patients surviving prolonged periods of arrest after lightning strike. Treatment for cardiopulmonary arrest is per ACLS protocols, but *decision to terminate resuscitation should be made in coordination with Medical Control*.

Electronic Control Device (a.k.a. TASER) – Adult, Trauma

Legend	
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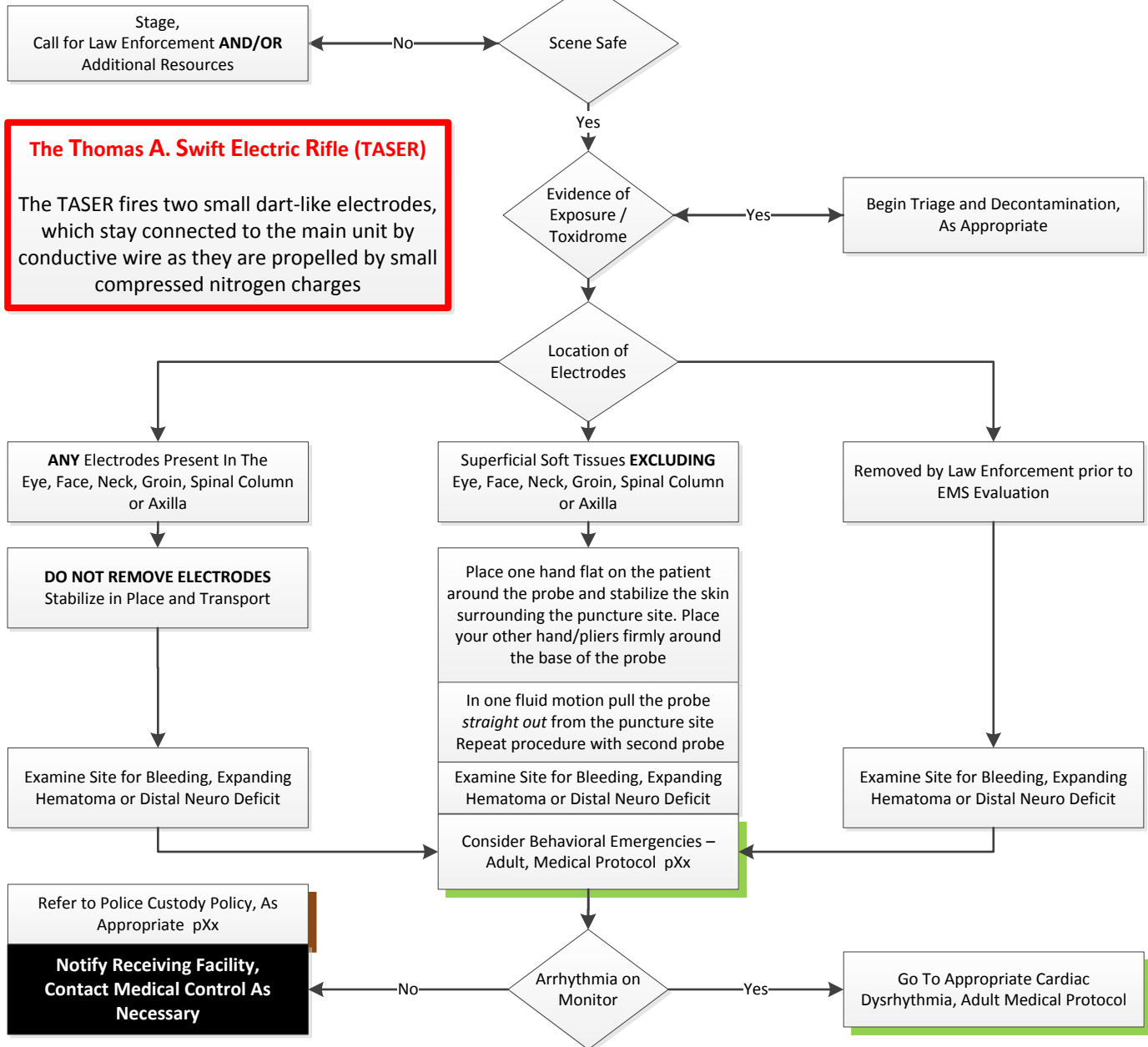
- Pertinent Positives and Negatives**
- Age, VS, SpO2, EtCO2, RR
 - SAMPLE History
 - OPQRST History
 - Situational Crisis

- Psychiatric Illness / Medication History
- Medic Alert Bracelet, DM History
- Anxiety, Agitation or Confusion
- Suicidal / Homicidal Thoughts or History
- Evidence of Substance Use / Overdose

- Differential**
- Illicit Drug Intoxication
 - Drug/EtOH Withdrawal
 - Primary Psychosis
 - Hypoglycemia

- Hypoxia
- Head Injury
- Occult Trauma
- Cerebral Hypoperfusion
- Toxic Ingestion

General Approach – Adult, Trauma



Pearls

REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- Safety first – for Providers, Police and Patients. Never restrain any patients in the prone (face down) position.
- Document the site of electrode penetration as well as whether the barb was completely intact or broken on removal
- Patients who require repeated deployments of the Electronic Control Device are at a significantly higher risk of cardiac dysrhythmias as well as in-custody death. Have a high index of suspicion and a low threshold to treat per the Behavioral Emergencies Protocol
- Patients who are actively restrained by Law Enforcement require an officer be present in the ambulance patient compartment during transport. It is a patient safety issue as well as a medicolegal liability for the EMS Provider.

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Long Board Selective Spinal Immobilization – Adult, Trauma

General Approach – Adult, Trauma

Selective Spinal Immobilization

The *large majority of patients* with traumatic injury *SHOULD* still be immobilized with a rigid C-collar until radiographically evaluated.

Selective Spinal Immobilization

This initiative aims to match the patients with a high likelihood of injury to the correct use of the rigid Long Spine Board.

Maintain Manual C-Spine Stabilization Until Evaluation and/or Immobilization Complete

Assess Mechanism of Injury (MOI)

Blunt Trauma
(With OR Without Penetrating Trauma)

Isolated Penetrating

- Altered level of consciousness OR (GCS < 15) OR
- Clinical Intoxication* OR
- Midline Neck Pain OR
- Midline Tenderness to Palpation of C-Spine OR
- Paraspinal Muscle Tenderness to Palpation OR
- Neurologic Deficits OR
- Abnormal Sensation OR
- ANY Anatomic Deformity OR
- Distracting Injury** OR
- Inability to Communicate OR
- Significant Mechanism of Injury OR

ANY 'Yes'

ANY 'Yes'

Apply Rigid Cervical Collar as per Standard

- Midline Thoracic or Lumbar Pain OR
- Tenderness to Palpation of Spine OR
- Neurologic Deficits OR
- Abnormal Sensation OR
- Anatomic Deformity of Spine OR
- Inability to Communicate OR
- Distracting Injury**

ALL 'No'

ALL 'No'

Spinal Immobilization not indicated

- Neurologic Deficits OR
- Abnormal Sensation OR
- Altered Level of Consciousness OR (GCS < 15) OR
- Clinical Intoxication*

ALL 'No'

Spinal Immobilization not indicated

ANY 'Yes'

Immobilization with Rigid Cervical Collar AND Long Spine Board Indicated

Evaluate and Treat per Appropriate Adult Trauma Protocol

Notify Receiving Facility,
Contact Medical Control As Necessary

Pearls

REQUIRED EXAM: Motor Function both upper and lower extremities, Sensation of upper and lower extremities, subjective abnormal sensation, Tenderness to palpation of bony prominences OR paraspinal muscles

- ***Clinical Intoxication** – A transient condition resulting in disturbances in level of consciousness, cognition, perception, affect or behavior, or other psychophysiological functions and responses. Common examples include; ataxia, emotional instability, flight of ideas, tangential thought or motor incoordination.
- ****Distracting Injury** – Examples include, but are not limited to; long bone fracture, dislocations, large lacerations, deforming injuries, burns OR any condition preventing patient cooperation with history.
- **ALL** shallow water near drownings, diving injuries and high-voltage electrical injuries (lightning, $\geq 1000V$ AC or $\geq 1500V$ DC) **MUST** be fully immobilized
- If immobilization *indicated but refused*; advise the patient of risk of death, permanent disability or long term impairment. Clearly document the refusal and the conversation (re: risk); Apply a cervical collar, if allowed and transport in neutral alignment.
- Long spine boards have risks and benefits for patients. Spinal immobilization should always be applied when any doubt exists about the possibility of spinal trauma.
- It is always safer and better patient care to assume that a Cervical Spine injury has occurred and provide protection, and should be the standard of care in trauma patient management
- Long spine boards can be very useful for extricating patients, transferring locations, and providing a firm surface for chest compressions.
- Very thoughtful consideration should go into any decision to NOT use the rigid cervical collar OR long spine board.

Trauma Protocols - Adult

Sexual Assault / Intimate Partner Violence – Adult, Trauma

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

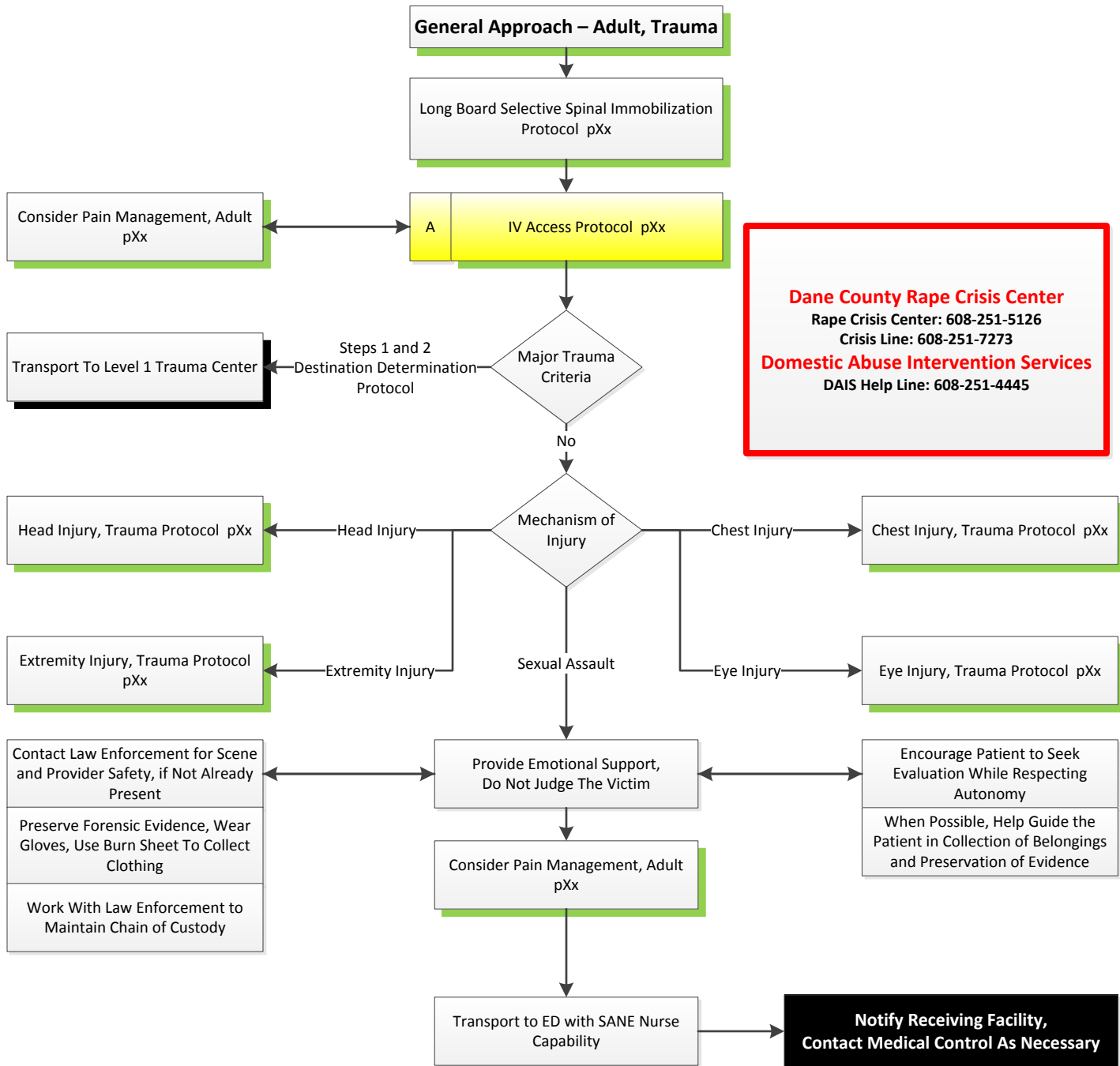
Pertinent Positives and Negatives

- Age, VS, GCS
- Mechanism of Injury
- Events leading up to 9-1-1 Activation
- Relationship to and Location of Offender
- Strangling or Neck Injury

- SAMPLE History
- OPQRST History
- Evidence of Intoxication
- Evidence of Multi-System Trauma

Differential

- Hypovolemic Shock
- -External Hemorrhage
- -Internal Hemorrhage
- -Unstable Pelvic Fracture
- Abrasion
- Contusion
- Laceration
- Compartment Syndrome



Dane County Rape Crisis Center
 Rape Crisis Center: 608-251-5126
 Crisis Line: 608-251-7273
Domestic Abuse Intervention Services
 DAIS Help Line: 608-251-4445

Pearls

REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- Major Trauma Criteria – Step 1 and Step 2 in Destination Determination Protocol. GCS ≤ 13 , SBP < 90 mmHg, Respiratory Rate < 10 or > 29 or need for ventilatory support
- Intimate Partner Violence is very difficult to disclose, and many victims call 9-1-1 with vague complaints; Have a HIGH index of suspicion
- Never judge a victim of intimate partner violence or sexual assault on the way they dress, act or present themselves
- Do not be afraid to involve Law Enforcement for assistance as needed, and have a low threshold to transport to a SANE Capable Emergency Department where Social Work, SANE Nurses, and Advocates can provide support and resources for these patients

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Hypotension / Shock (Trauma) – Adult, Trauma

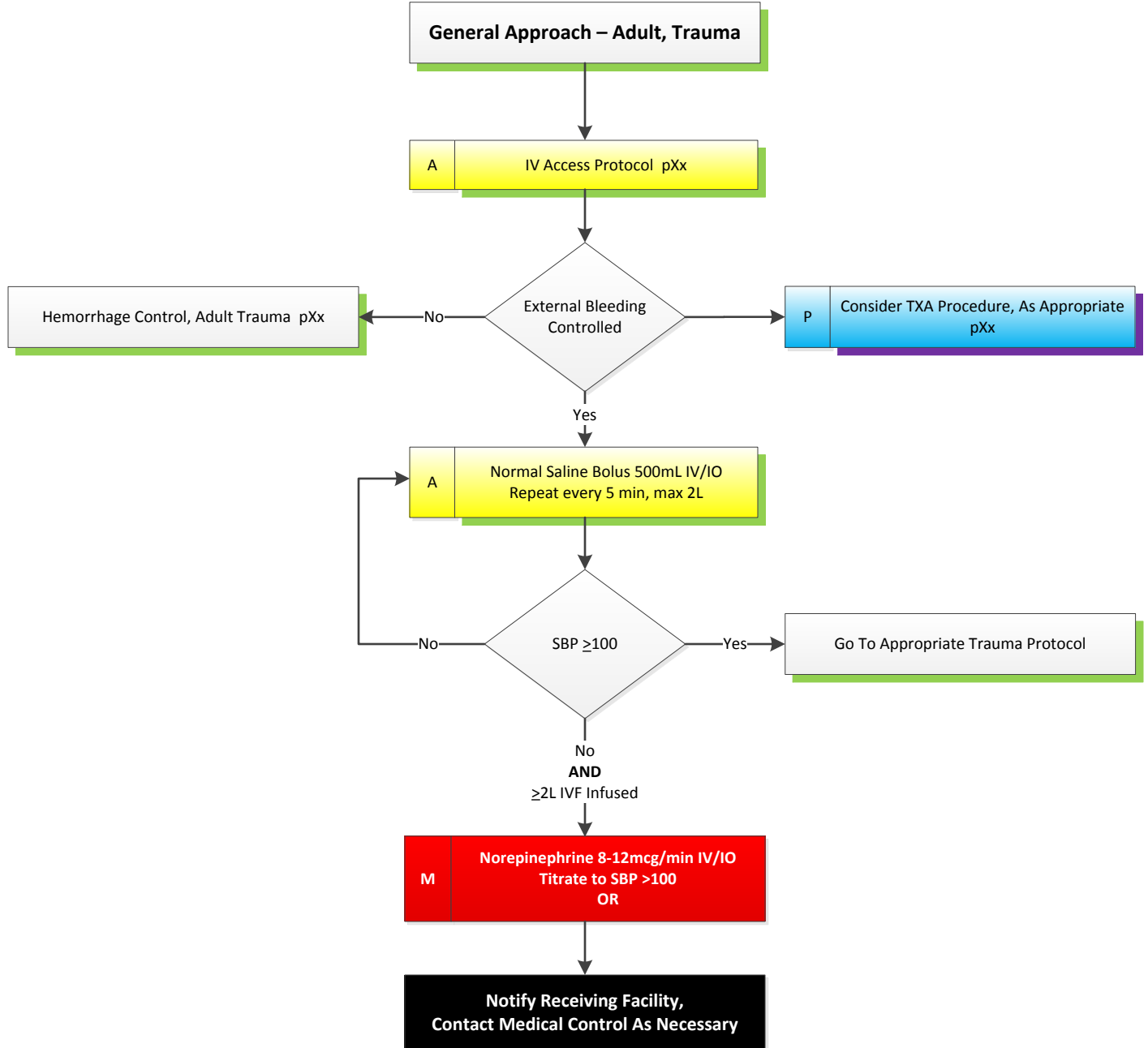
Pertinent Positives and Negatives

- Type of injury
- Mechanism (blunt vs. penetrating)
- Central and Peripheral Pulses
- Neuro Function Distal to Injury

- Time of Injury
- Deformity
- Diminished pulse / capillary refill

Differential

- Vascular Disruption
- Amputation
- Fracture, Dislocation
- Sprain, Strain
- Abrasion
- Contusion
- Laceration
- Compartment Syndrome



Pearls

REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- **Hypotension in trauma needs blood products early**, so minimize scene time. Goal for scene time in major trauma cases should be <10 min
- Multiple casualty incident or obvious life threatening hemorrhage, consider Tourniquet Procedure and/or Hemostatic Dressing FIRST
- Hemostatic Dressings are appropriate for hemorrhage that can't be controlled with a tourniquet, such as abdominal and pelvic wounds
- Signs/Symptoms of Shock include: altered mental status, pallor, hypotension (SBP <100), cap refill >3 sec, faint/absent peripheral pulses

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

WMD / Nerve Agent Exposure – Adult, Trauma

Pertinent Positives and Negatives <ul style="list-style-type: none"> Type of exposure (heat, gas, chemical) Central and Peripheral Pulses Nausea, Vomiting, Diarrhea Chemical Name (if known) 	<ul style="list-style-type: none"> Exposure to Chemical, Biologic, Nuclear or Radiologic Hazard Time of Exposure (duration) Pesticide Exposure 	Differential <ul style="list-style-type: none"> Thermal Injury Chemical Burn Blast Injury Nerve Agent Exposure 	<ul style="list-style-type: none"> Respiratory Irritant (Chlorine Gas, Ammonia, etc.) Vesicant (blistering agent) exposure Organophosphate Exposure
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Pearls

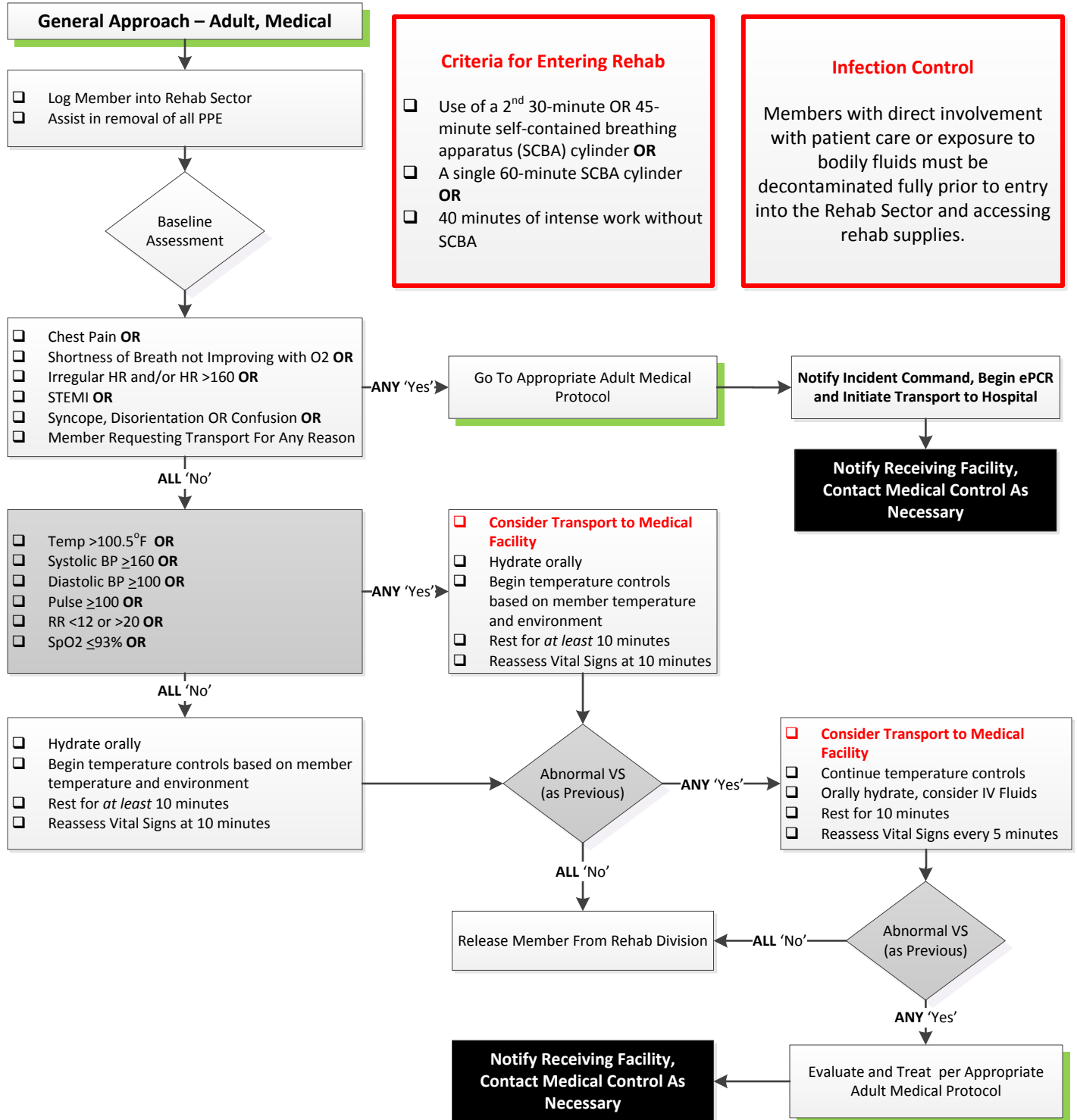
REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- *Each DuoDote Kit contains 600mg 2-PAM and 2.1mg of Atropine. The kits in the ambulance are intended for responder use only. If/When the emergency cache has been released by the State of Wisconsin, those kits may be used for the general public.
- SLUDGEM** – Salivation, Lacrimation, Urination (Incontinence), Defecation (Incontinence), GI Upset, Emesis, Miosis
- For patients with major symptoms, there is no max dosing for Atropine; continue administering until salivation/secretions improved
- Follow all Hazmat procedures, strictly adhere to personal protective equipment for exposure prevention and begin decontamination early
- Patients who have been exposed to organophosphates are highly likely to off-gas; be sure to use all responder PPE and to avoid exposure to clothing or exhalations of victims. Helicopter EMS is generally NOT appropriate for these patients.

Trauma Protocols - Adult

Public Safety Personnel Rehab – Special Operations

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control



Pearls

REQUIRED EXAM: Mental Status, Skin Condition, Temperature, Heart Rate, Respiratory Rate, Blood Pressure, SpO2, SpCO

- This Protocol was named "Public Safety Rehab", and should be applied to any situation during which Firefighters, Law Enforcement Officers, Emergency Medical Services or ANY Emergency Response Personnel are exerting themselves for > 40 minutes.
 - This INCLUDES training operations, special events and non-emergency operations lasting longer than 40 minutes.
- Per NFPA 1584 Requirements, the Rehab Site should be set up in a location that provides shelter for the members, is far enough away from the active scene that the turnout gear, SCBA and protective equipment may be safely doffed, and provide protection from the environmental conditions.
 - Ideally, members should be shielded from view of the active scene, to reduce anxiety and to prevent members from trying to exit rehab inappropriately.
- The purpose of this Protocol is to protect the physical and mental condition of members operating at the scene of an emergency or a training exercise and to prevent decompensation of the individual. By keeping the individuals safe, it improves the safety and integrity of the team as well as the operation.
- At a minimum, turnout coat and nomex hood should be removed and turnout pants pushed down to the knees while seated in Rehab.

Trauma Protocols - Adult