	Legend
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

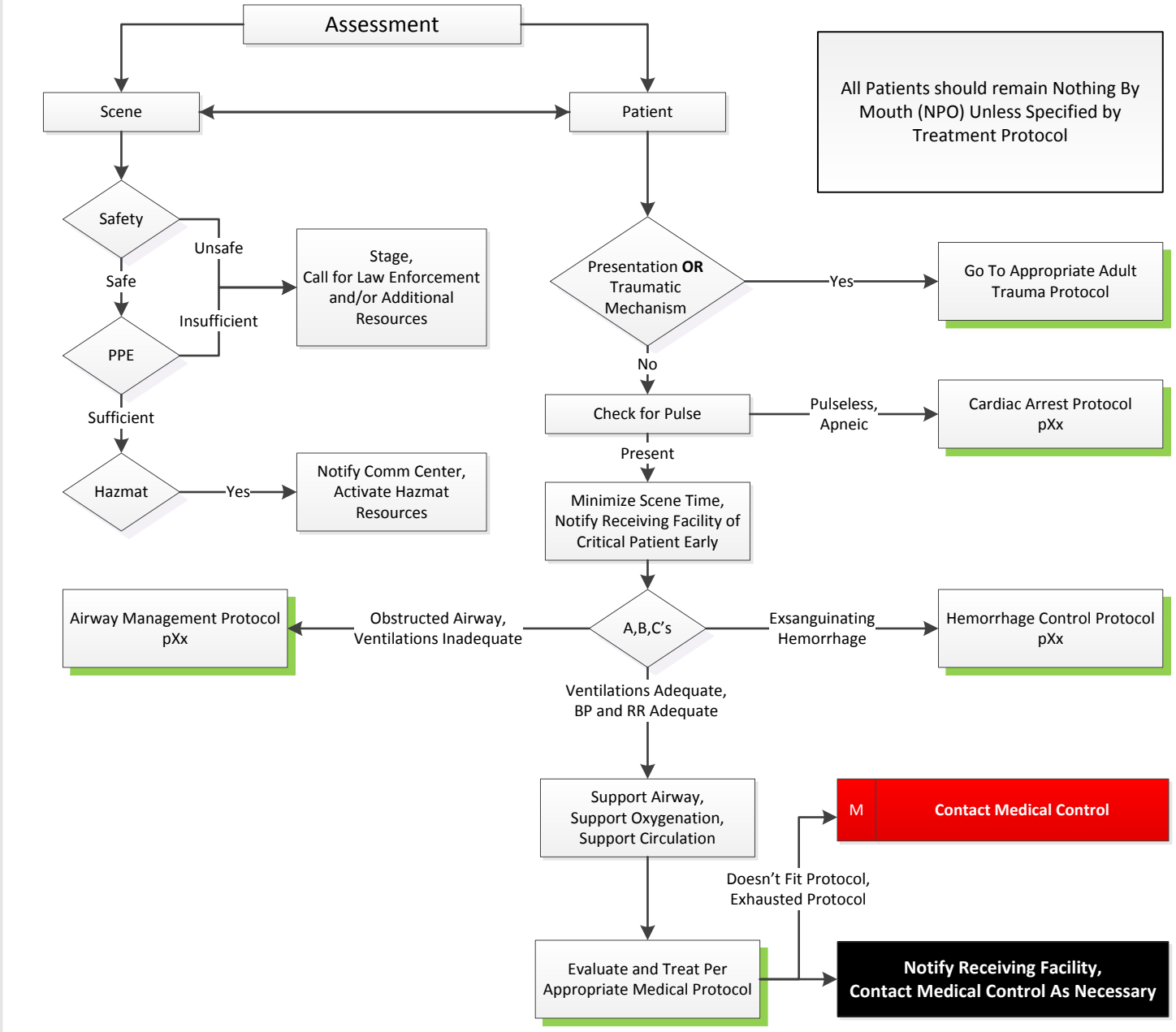
General Approach – Adult, Medical

Pertinent Positives and Negatives

- Age, VS, BP, RR, SpO2
- SAMPLE history
- OPQRST history
- Source of blood loss, if any (GI, vaginal, AAA, ectopic)
- Source of fluid loss, if any (vomiting, diarrhea, fever)
- Pregnancy history
- Mental Status
- Pale, Cool Skin
- Delayed Cap Refill
- Coffee Ground Emesis
- Tarry Stools
- Allergen Exposure

Differential

- Cardiac Dysrhythmia
- Hypoglycemia
- Ectopic Pregnancy
- AAA
- Sepsis
- Occult Trauma
- Adrenal Insufficiency



Pearls

REQUIRED EXAM: VS, GCS, Nature of Complaint

- 12-Lead ECG should be done early for *any* non-traumatic pain complaint between the ear lobes and the umbilicus (belly button).
- Include Blood Glucose reading for *any* patient with complaints of **weakness, altered mental status, seizure, loss of consciousness, known history of diabetes OR Cardiac Arrest**
- Measure *and document* SpO2, EtCO2 for ANY patient with complaint of weakness, altered mental status, respiratory distress, respiratory failure or EMS managed airway
- If hypotensive (Systolic BP<100mmHg) and/or clinical evidence of dehydration, consider IV Access Protocol and Shock (Non-Trauma) Adult Medical Protocol
- Any patient contact which does not result in an EMS transport must have a completed refusal form.
- Never hesitate to consult medical control for assistance with patient refusals that can't meet all required fields, clarification of protocols or for patients that make you uncomfortable.

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Airway Management - Adult

Pertinent Positives and Negatives

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- History of CHF, COPD, Asthma
- Lung Sounds before *AND after* intervention
- Allergen Exposure
- Toxic / Environmental Exposure

Differential

- Head Injury
- Electrolyte Abnormality
- COPD Exacerbation
- CHF Exacerbation
- DM, CVA, Seizure, Tox
- Sepsis
- Asthma Exacerbation
- Drug Ingestion / Overdose

General Approach – Adult, Medical

Anticipate and Prepare for the Difficult Airway

LEMON Rule

- **L**ook Externally
- **E**valuate with 3:3:2 Rule
- **M**allampati Classification
- **O**bstruction
- **N**eck Mobility (or lack thereof)

Assess A,B,C's (RR, Effort, Adequacy)

- Adequate → Supplemental Oxygen As Appropriate (Nasal Cannula, Facemask) → Evaluate and Treat Per Appropriate Adult, Medical Protocol
- Inadequate → Basic Airway Maneuvers (Open Airway, Suction, NPA vs. OPA)

Basic Airway Maneuvers (Open Airway, Suction, NPA vs. OPA) ↔ Consider Need for ALS Level Service EARLY

If obstruction suspected, Go to Airway Obstruction Procedure pXx

Assess Mental Status

- Altered **AND/OR** Apneic → Bag-Valve Mask
- Awake **OR** Protecting Airway → Consider CPAP Procedure IF Awake, Following Commands **and** SBP ≥100 pXx

Bag-Valve Mask → Consider Advanced Airway; Max 2 Attempts

Decomp-ensating: Consider CPAP Procedure IF Awake, Following Commands **and** SBP ≥100 pXx

P **x2**: Consider Rapid Sequence Airway Protocol pXx

M: **Consider Midazolam 1mg IV/IN If needed for CPAP compliance**

Each Attempt should include change in approach, operator and/or equipment **NO MORE THAN TWO (2) ATTEMPTS TOTAL**

Successful (Bag-Valve Mask) / Successful (CPAP) → Assess Air Movement and Chest Rise

- Poor Chest Rise **OR** Poor Air Exchange → Failed Airway Protocol pXx → Call for ALS Level Service IMMEDIATELY
- Good Chest Rise **AND** Good Air Exchange → Document Response to Procedure Continuous EtCO2, SpO2 Monitoring → **Notify Receiving Facility, Contact Medical Control As Necessary**

Pearls

REQUIRED EXAM: VS, GCS, Head, Neck, Blood Glucose

- Digital capnography is the standard of care and is to be used with all methods of advanced airway management and endotracheal intubation. If a service does not have digital capnography capabilities and an Invasive Airway Device is placed, an intercept with a capable service **MUST** be completed
- Goal $EtCO_2$ = 35-45mmHg
- If Airway Management is adequately maintained with a Bag-Valve Mask and waveform SpO2 >93%, it is acceptable to defer advanced airway placement in favor of basic maneuvers and rapid transport to the hospital
- *Always* assume that patient reports of dyspnea and shortness of breath are physiologic, **NOT** psychogenic! Treatment for dyspnea is O2, not a paper bag!
- Gastric decompression with Oral Gastric Tube should be considered on all patients with advanced airways, if time and situation allow
- Once secured, every effort should be made to keep the endotracheal tube in the airway; commercially available tube holders and C-collars are good adjuncts
- For all protocols, an **Intubation Attempt** is defined as: passing the tip of the laryngoscope blade or Blindly Inserted Airway Device (BIAD) tube past the teeth

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Rapid Sequence Airway - Adult

Pertinent Positives and Negatives
- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- History of CHF, COPD, Asthma
- Lung Sounds before *AND after* intervention
- Allergen Exposure
- Toxic / Environmental Exposure

Differential
- Head Injury
- Electrolyte Abnormality
- COPD Exacerbation
- CHF Exacerbation
- DM, CVA, Seizure, Tox
- Sepsis
- Asthma Exacerbation
- Drug Ingestion / Overdose

Airway Management – Adult, Medical

Px2 Consider Rapid Sequence Airway Procedure pXx

Preparation (8 Minutes Before Attempt)
IV, O2, Continuous Cardiac Monitor, SpO2, EtCO2, BP
Check Laryngoscope Bulb, ETT Balloon, Stylet, Syringes
Prepare Rescue Airway Device
Medications Drawn Up and Labeled

Preoxygenate (5 Minutes Before Attempt)
100% O2 x 5 Minutes
8 Vital Capacity Breaths via BVM or NRB
Continue Until Airway Secured
Continue apneic oxygenation via high-flow Nasal Cannula throughout procedure (if available)

Pretreatment (3 Minutes Before Attempt)
Cricoid Pressure (Sellick's Maneuver)
Lidocaine 1.5mg/kg IV/IO If Head Injury (max 150mg)

Paralysis and Induction (0 Minutes Before Attempt)
Etomidate 0.3mg/kg IV/IO (max 30mg) **OR**
Ketamine 2-4mg/kg IV/IO (max 400mg)
THEN
Succinylcholine 2mg/kg IV/IO (max 200mg) **OR**
Rocuronium 1.0mg/kg (max 100mg)

Unsuccessful → Failed Airway, Adult Protocol pXx

Placement with Proof (30 Seconds After Attempt)
Continuous EtCO2, Auscultation, Chest Rise, Fogging in Tube
Secure Device
Print capnography strip and document depth

Unsuccessful **OR** Poor Proof → Failed Airway, Adult Protocol pXx

Post Placement Management (60 Seconds After Success)
Post-Advanced Airway Sedation Adult pXx
Consider Rocuronium 1.0mg/kg IF prolonged paralysis AND transport time ≥10min

→ **Notify Receiving Facility, Contact Medical Control As Necessary**

Indications for Invasive Airway Management
- Age >18 years old for Paralytic Use
- Apnea
- Decreased Level of Consciousness with Respiratory Failure
- Poor Ventilatory Effort with Hypoxia
- Unable to Maintain Airway with Noninvasive Methods
- Burns with Suspected Airway Involvement
  - Singed Facial Hair
  - Hoarseness
  - Wheezing
  - Subjective Shortness of Breath

Each Attempt should include change in approach, operator and/or equipment
NO MORE THAN TWO (2) ATTEMPTS TOTAL

Contraindications for Invasive Airway Management
- Medication Hypersensitivities
- Inability to Ventilate with BVM
- Suspected Hyperkalemia (*no Succinylcholine*)
  - History of ESRD, Burns, Crush Injury
- History Malignant Hyperthermia
- Myopathy or Neuromuscular Disease
- Recent Burn (≥48 Hours after Burn and <1 week)
- Recent Spinal Cord Injury (≥72 Hours but ≤6 Months)

Pearls

REQUIRED EXAM: VS, GCS, Head, Neck, Blood Glucose, Lung Exam, Posterior Pharynx

- Digital capnography is the standard of care and is to be used with all methods of advanced airway management and endotracheal intubation. If a service does not have digital capnography capabilities and an Advanced Airway Device is placed, an intercept with a capable service **MUST** be completed
- If Airway Management is adequately maintained with a Bag-Valve Mask and waveform SpO2 ≥93%, it is acceptable to defer advanced airway placement in favor of basic maneuvers and rapid transport to the hospital
- Gastric decompression with Oral Gastric Tube should be considered on all patients with advanced airways, if time and situation allows
- Once secured, every effort should be made to keep the endotracheal tube in the airway; commercially available tube holders and C-collars are good adjuncts
- For all protocols, an Intubation Attempt is defined as passing the tip of the laryngoscope blade or Blindly Inserted Airway Device (BIAD) tube past the teeth
- Recent history of Upper Respiratory Infection, Missing / Loose Teeth or Dentures all will increase complexity of airway management

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

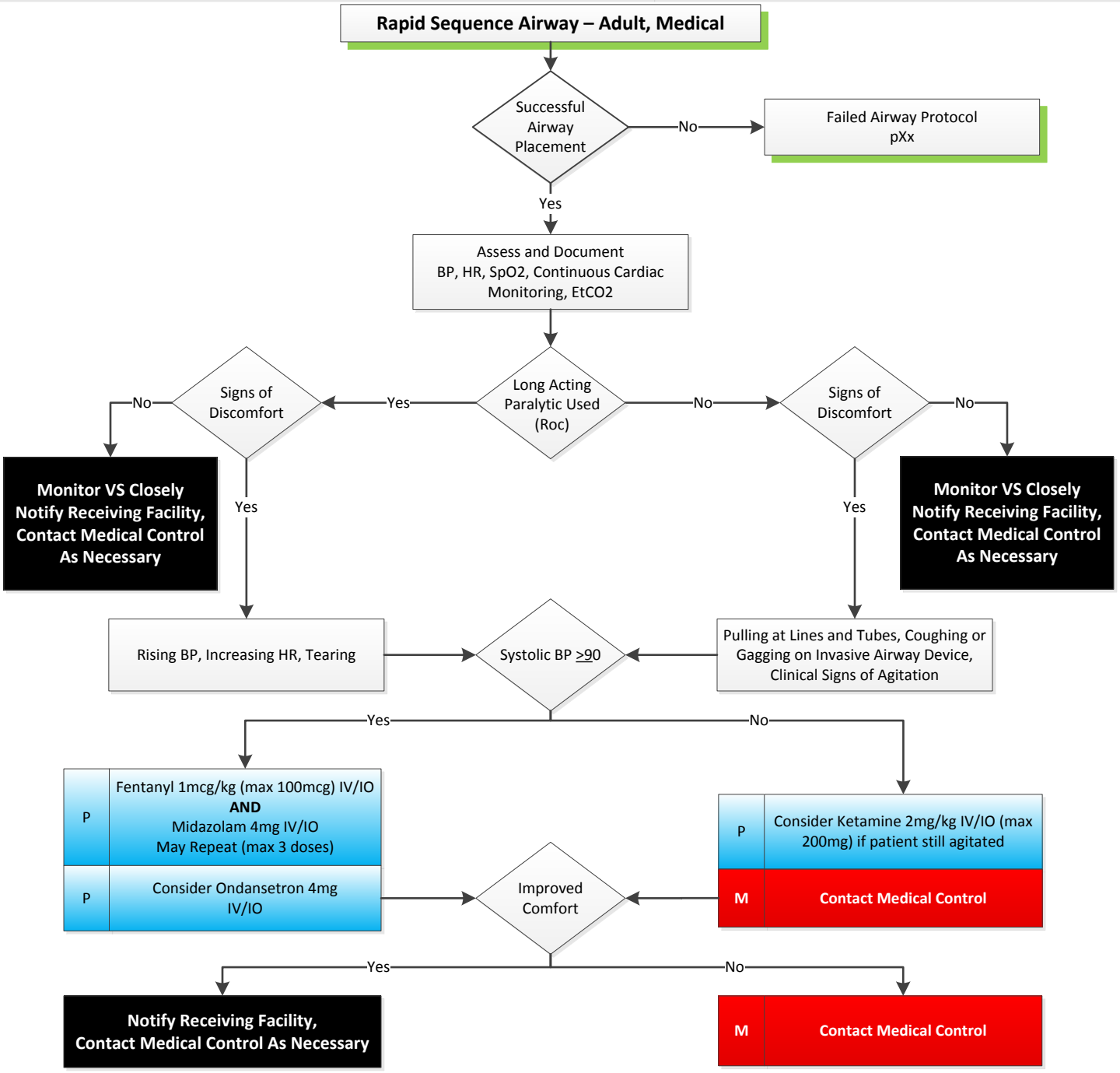
Post Advanced Airway Sedation - Adult

Pertinent Positives and Negatives

- Age, VS, BP, RR, SpO2
- SAMPLE history
- OPQRST history
- Mental Status
- Pale, Cool Skin
- Delayed Cap Refill

Differential

- Cardiac Dysrhythmia
- Hypoglycemia
- Overdose
- Toxidrome
- Sepsis
- Occult Trauma
- Adrenal Insufficiency



Pearls

REQUIRED EXAM: VS, GCS, Nature of Complaint

- Paralytics block movement of skeletal muscle but do **NOT** change awareness. Remember that without sedation, patients may be **awake** but **paralyzed**
- Monitor Vital Signs closely when managing airways and sedation. Changes that indicate pain, anxiety ***as well as tube dislodgment*** may be subtle (at first)!!
- Document Vital Signs before and after administration of every medication to prove effectiveness
- ANY change in patient condition, reassess from the beginning. Use the mnemonic DOPE (Dislodgment, Obstruction, Pneumothorax, Equipment) to troubleshoot problems with the ET Tube
- Ketamine may be considered for sedation AFTER standard regimen; use of Ketamine as induction agent for intubation does not obligate Ketamine for sedation as well
- Continuous End Tidal CO2 is mandatory for all intubated patients – color change is NOT sufficient proof of ET Tube in the trachea

Legend	
	EMT
A	A-EMT
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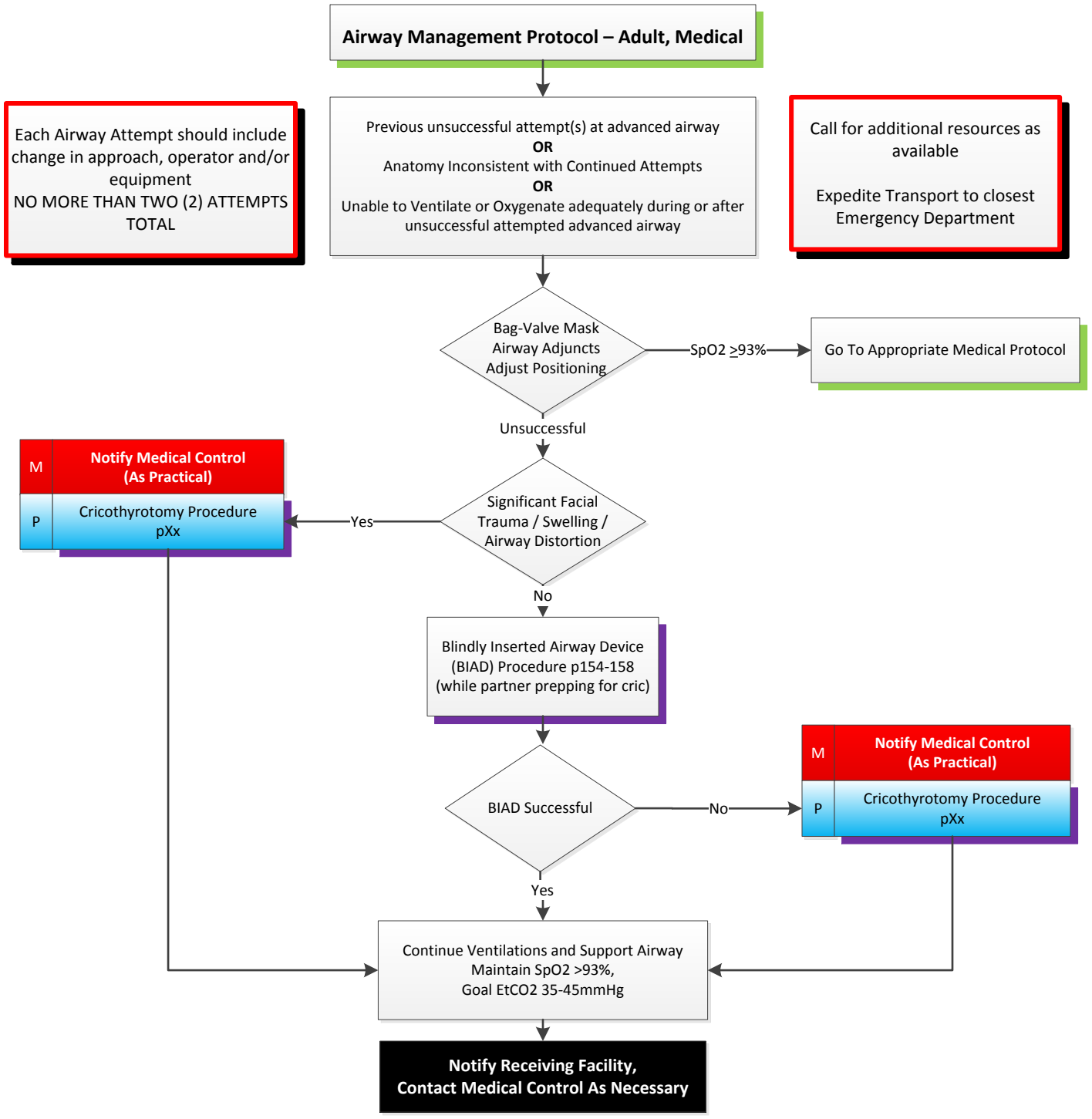
Failed Airway - Adult



Pearls

REQUIRED EXAM: VS, GCS, Lung Sounds, RR, Skin, Neuro

- A patient with a "failed airway" is near death or dying, not stable or improving. Inability to pass an ET Tube or low SpO2 alone are not indications for surgical airway.
- Continuous digital capnography is the standard of care and is to be used with **ALL** methods of advanced airway management and endotracheal intubation. If a service does not have digital capnography capabilities and an Invasive Airway Device is placed, an intercept with a capable service **MUST** be completed
- If Airway Management is adequately maintained with a Bag-Valve Mask and waveform SpO2 ≥93%, it is acceptable to defer advanced airway placement in favor of basic maneuvers and rapid transport to the hospital
- Gastric decompression with Oral Gastric Tube should be considered on all patients with advanced airways, if time and situation allow
- Once secured, every effort should be made to keep the endotracheal tube in the airway; commercially available tube holders and C-collars are good adjuncts
- For this protocol, *an Intubation Attempt is defined as* passing the tip of the laryngoscope blade or Invasive Airway Device past the teeth

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

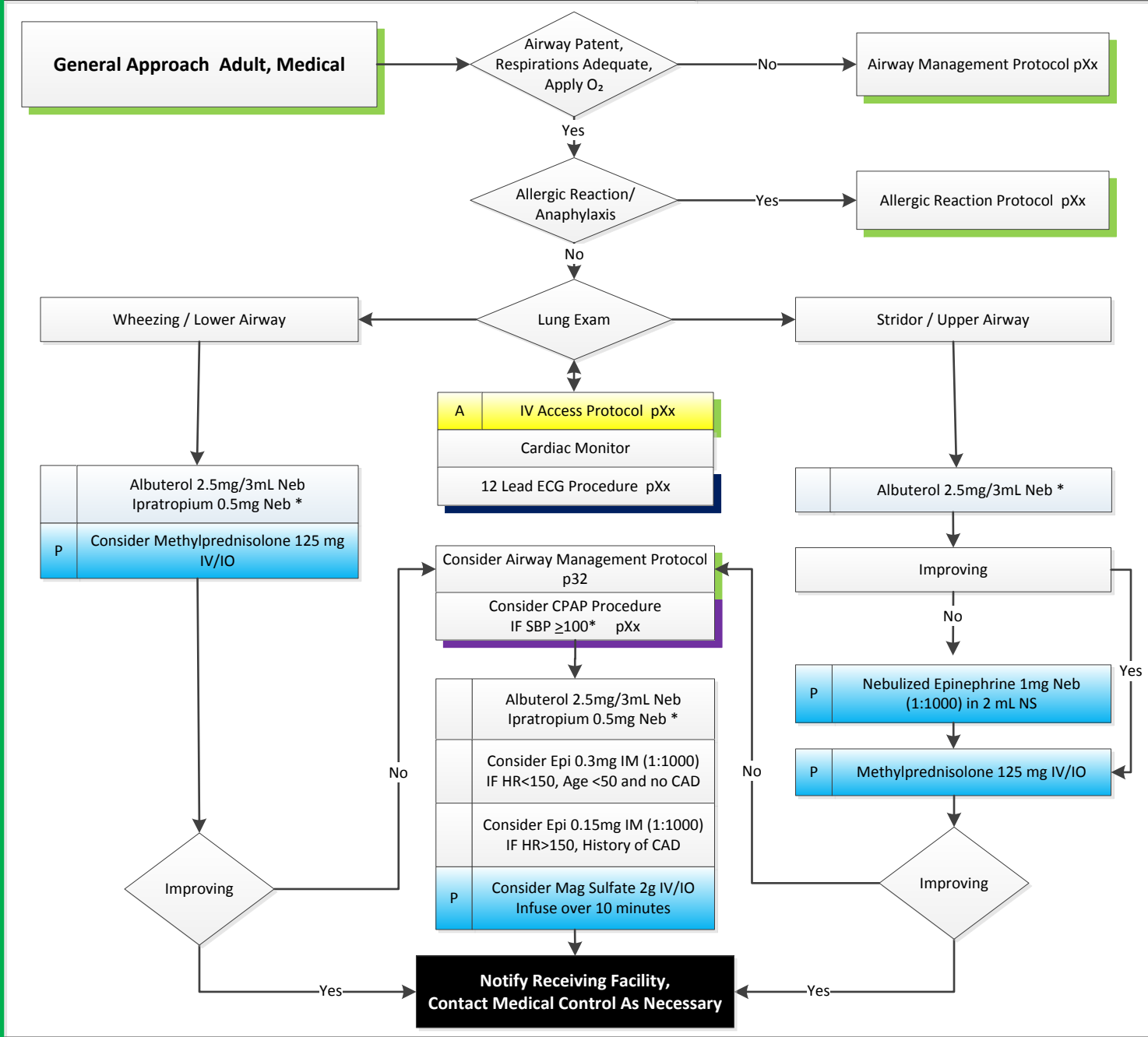
COPD / Asthma - Adult

Pertinent Positives/Negatives:

- Age, VS, SpO2, EtCO2
- SAMPLE history
- OPQRST history
- Asthma, COPD, CHF history
- Home meds used prior to call (Nebs, Steroids, Theophylline)
- Wheezing, Rhonchi
- Accessory Muscle Use
- Decreased Ability to Speak
- History of CPAP/Intubation/ICU Admission from previous flares
- Smoke Exposure, Inhaled Toxins

Differential

- Simple Pneumothorax
- Tension Pneumothorax
- Pericardial Tamponade
- STEMI, CHF
- Inhaled Toxins (CO, CN, etc.)
- Anaphylaxis
- Asthma/COPD



Pearls

REQUIRED EXAM: VS, 12 Lead, GCS, RR, Lung Sounds, Accessory muscle use, nasal flaring

- Do not delay inhaled meds to get extended history
- Supplemental O2 for all cases of hypoxia, tachypnea, subjective air hunger
- Keep patient in position of comfort if partial obstruction
- If COPD, monitor mental status
- Severe Asthma may restrict airway to have no wheezing
- Contact Medical Control PRIOR to IM Epi if age >50, HR >150, or history of coronary artery disease

****Contact Medical Control and request authorization for ½ of IM Epi dose (0.15mg of 1:1000) OR Epi Pen Junior.**

* Albuterol max 3 doses total, Ipratropium max 2 doses total

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

CHF / Pulmonary Edema - Adult

Pertinent Positives and Negatives

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- CHF, CAD, Chest Pain History
- Peripheral Edema
- Home meds used prior to call (Digoxin, Lasix, Viagra, Cialis)
- Respiratory Distress, Rales
- Orthopnea, JVD
- Pink, Frothy Sputum

Differential

- Myocardial Infarction
- Pericardial Tamponade
- Pulmonary Embolism
- Congestive Heart Failure
- Toxic Exposure
- COPD Exacerbation
- Acute Renal Failure

General Approach – Adult, Medical

Airway Patent, Respirations Adequate

- No → Airway Management Protocol pXx
- Consider Sepsis Screening Protocol When Appropriate pXx

Yes

12-Lead ECG Procedure pXx

- Dysrhythmia → Go To Appropriate Arrhythmia Protocol
- STEMI OR **Acute MI** → STEMI Protocol pXx

Aspirin 324mg PO Chewed or Powdered
IF Awake and Protecting Airway

A — IV Access Protocol pXx

- No Access → M — **Nitroglycerin 0.4mg SL Repeat every 5 min., max 3 doses**; Repeat and Document BP (SBP >100); Continuous Cardiac Monitor

Continuous Cardiac Monitor

Successful Access

P — Nitroglycerin Paste (If Available)
- SBP >100, 1 inch of paste
- SBP >150, 1.5 inches of paste
- SBP >200, 2 inches of paste

Note: For SBP >200, NTG Paste will likely not have a significant impact on BP; consider SL NTG

Severity of Symptoms

Mild

Normal HR
Normal or Elevated SBP (>100 but <180)

A — Nitroglycerin Tab/Spray 0.4mg SL Repeat every 5 min., max 3 doses

P — Nitroglycerin Paste (if available)

Improving

- No → Consider CPAP Procedure IF SBP ≥100* pXx
- Yes → **Notify Receiving Facility, Contact Medical Control As Necessary**

Moderate / Severe

Increased HR
Markedly Elevated SBP (>180)

A — Nitroglycerin Tab/Spray 0.4mg SL Repeat every 5 min., max 3 doses

P — Nitroglycerin Paste (if available)

Consider CPAP Procedure IF SBP ≥100* pXx

P — **Consider Midazolam 1mg IV If needed for CPAP compliance**

Notify Receiving Facility, Contact Medical Control As Necessary

Cardiogenic Shock

Initial Tachycardia, then later Bradycardia
Initial HTN, then progressing to Hypotension

SBP <100

P — Norepinephrine infusion IF Available
Start 8-12mcg/min IV/IO
Titrate to SBP ≥100

Consider Airway Management Protocol pXx

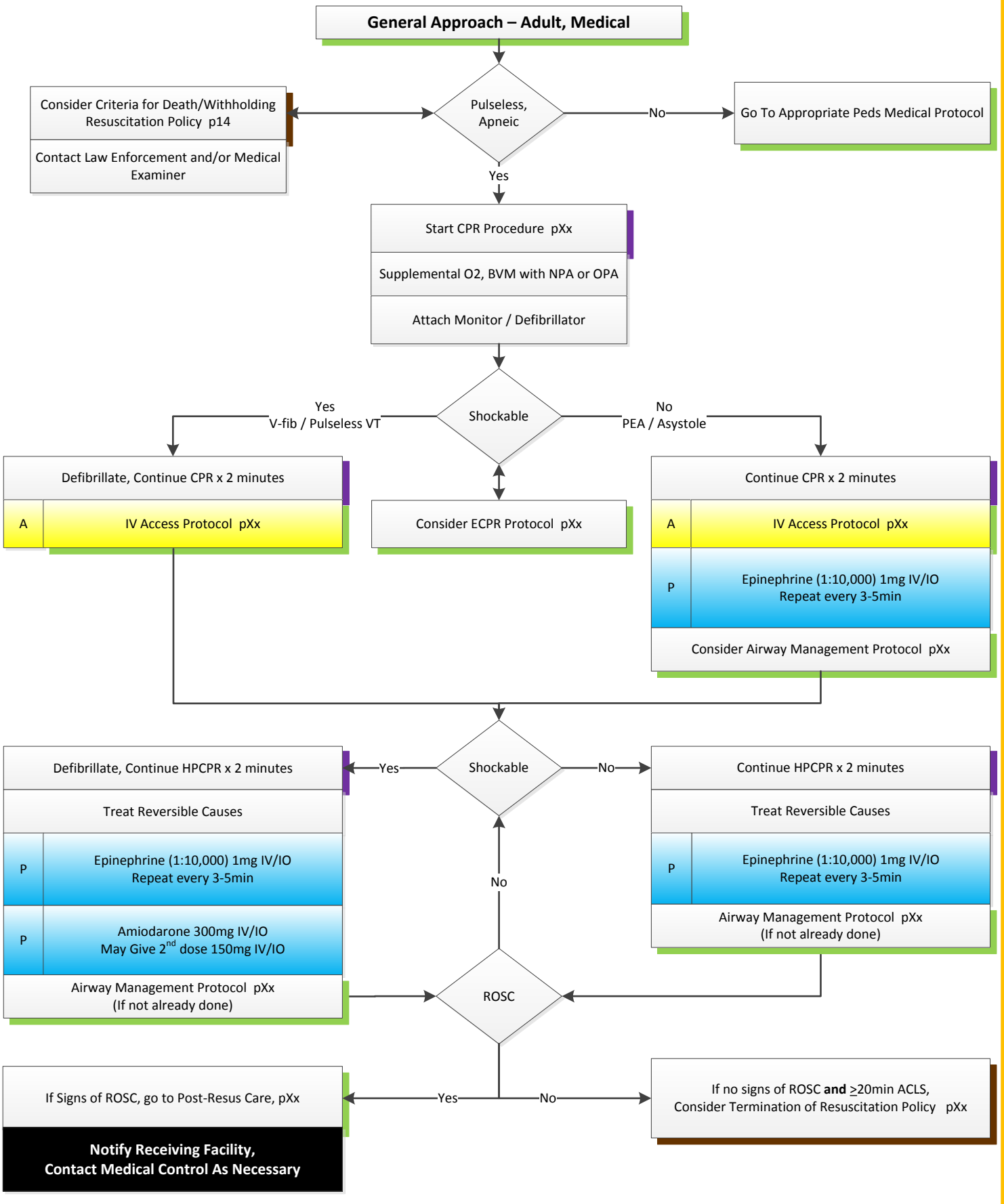
Pearls

REQUIRED EXAM: VS, GCS, Head, Neck, Blood Glucose

- If CHF / Cardiogenic Shock is from inferior MI (II, III, aVF), consider RIGHT sided ECG
- If ST Elevation in V3, V4 OR Inferior Leads (II, III, aVF), Nitroglycerin may cause severe hypotension requiring IV Fluid boluses
- If patient reports no relief with home Nitroglycerin, consider potency of medication (is the medicine expired? Would EMS supply be useful?)
- Consider Midazolam 1mg IV to assist with CPAP compliance. **BE CAUTIOUS** – Benzodiazepines may worsen respiratory depression, altered mental status, agitation especially if recent EtOH or illicit drug use. This med should be considered with EXTREME caution. All efforts should be made to verbally coach compliance PRIOR to BZD use in respiratory distress

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Cardiac Arrest - Adult



Legend	
	EMT
A	A-EMT
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Cardiac Arrest - Adult

CPR Quality

- Push Hard (at least 2 inches) and fast (100-120/min) and allow complete chest recoil
- Minimize interruptions in compressions
- Avoid excessive ventilation
- Rotate compressors every 2 minutes, sooner if fatigued
- If no advanced airway, 30:2 compression: ventilation ratio
- Quantitative waveform capnography
- If EtCO2 <10mmHg, attempt to improve CPR quality
- Consider Mechanical CPR device by 6 minutes of resuscitation; may consider sooner if resources allow
- Consider advanced airway placement by 6 mnutes of resuscitation; may consider sooner if resources allow

Drug Therapy

Epinephrine IV/IO dose: 1mg every 3-5 minutes
Consider Max 5 doses epi IF not responding to resuscitation efforts
Amiodarone IV/IO dose: First dose 300mg bolus. Second dose 150mg

P

CONSIDER CORRECTABLE CAUSES OF ARREST:

Hypoxia – secure airway and ventilate
Hypoglycemia – Dextrose 12.5-25g or D10W 100ml IV/IO
Hyperkalemia – Sodium Bicarbonate 50mEq IV/IO **AND**
- Calcium Chloride 1g IV/IO

Hypothermia – Active Rewarming
Hypomagnesemia / Torsades – Magnesium 2g IV/IO over 2 min
Hypovolemia – 500mL NS Bolus IV/IO
Hydrogen Ion (acidosis) – secure airway and ventilate
Tension Pneumothorax – Chest Decompression Procedure
Tamponade, Cardiac
Toxins:
Calcium Channel and B-Blocker OD – Glucagon 5mg IV/IO
Calcium Channel Blocker OD – Calcium Chloride 1g IV/IO
(contraindicated if pt. also on Digoxin/Lanoxin)
Tricyclic Antidepressant OD – Sodium Bicarb 1mEq/kg IV/IO
Narcotic OD – Naloxone 2mg IV/IO/IN/IM
Thrombosis, Pulmonary
Thrombosis, Coronary

High Performance CPR (HPCPR)

HPCPR is an emphasis on communication, efficient movement of resuscitationists, and an increased emphasis on the BASICS that improves outcomes

CONSIDER ALS *EARLY*
IF AT ANY TIME

Patient has Return of Spontaneous Circulation (ROSC)
Go to Post Resuscitation Protocol

Shock Energy for Defibrillation

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

Double Sequential Defibrillation

- Consider for cases of shock refractory V-fib or Pulseless V-tach that have not converted after 3 defibrillation attempts AND ≥1 dose of ACLS medication
- There is the potential to cause damage to equipment when performing this procedure. Therefore, it is recommended to be attempted using an AED and a monitor to minimize risk.
- Because of the potential for adverse equipment results, **it is important that your Service Director and Medical Director approve this procedure BEFORE attempting**

Advanced Airway

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

Return of Spontaneous Circulation (ROSC)

- Pulse and blood pressure
- Abrupt sustained increase in ETCO2 (typically >40mmHg
- Spontaneous arterial pressure waves with intra-arterial monitoring

Pearls

RECOMMENDED EXAM: Mental Status, Pulse, Initial and Final Rhythm

- Immediately after defibrillation, resume chest compressions with a different operator compressing. Do not pause for post-shock rhythm analysis. Stop compressions only for signs of life (patient movement) or rhythm visible through compressions on monitor or pre-defibrillation rhythm analysis every 2 minutes and proceed to appropriate protocol
- **Based on current literature, Ventricular Fibrillation and Pulseless Ventricular Tachycardia patients who are successfully resuscitated should be transported to a 24/7 STEMI capable facility.**
- **In the event a patient suffers cardiac arrest in the presence of EMS, the absolute highest priority is to apply the AED/Defibrillator and deliver a shock immediately if indicated.**
- Reassess airway frequently and with every patient move. Cycle compressors frequently – compression quality deteriorates before fatigue is perceived.
- Designate a "code leader" to coordinate transitions, defibrillation and pharmacological interventions. "Code Leader" ideally should have no procedural tasks.
- External Compression Devices may be considered if available and will not impede patient care.
- **Consider sodium bicarb early in cases of sudden cardiac arrest in Excited Delirium**

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

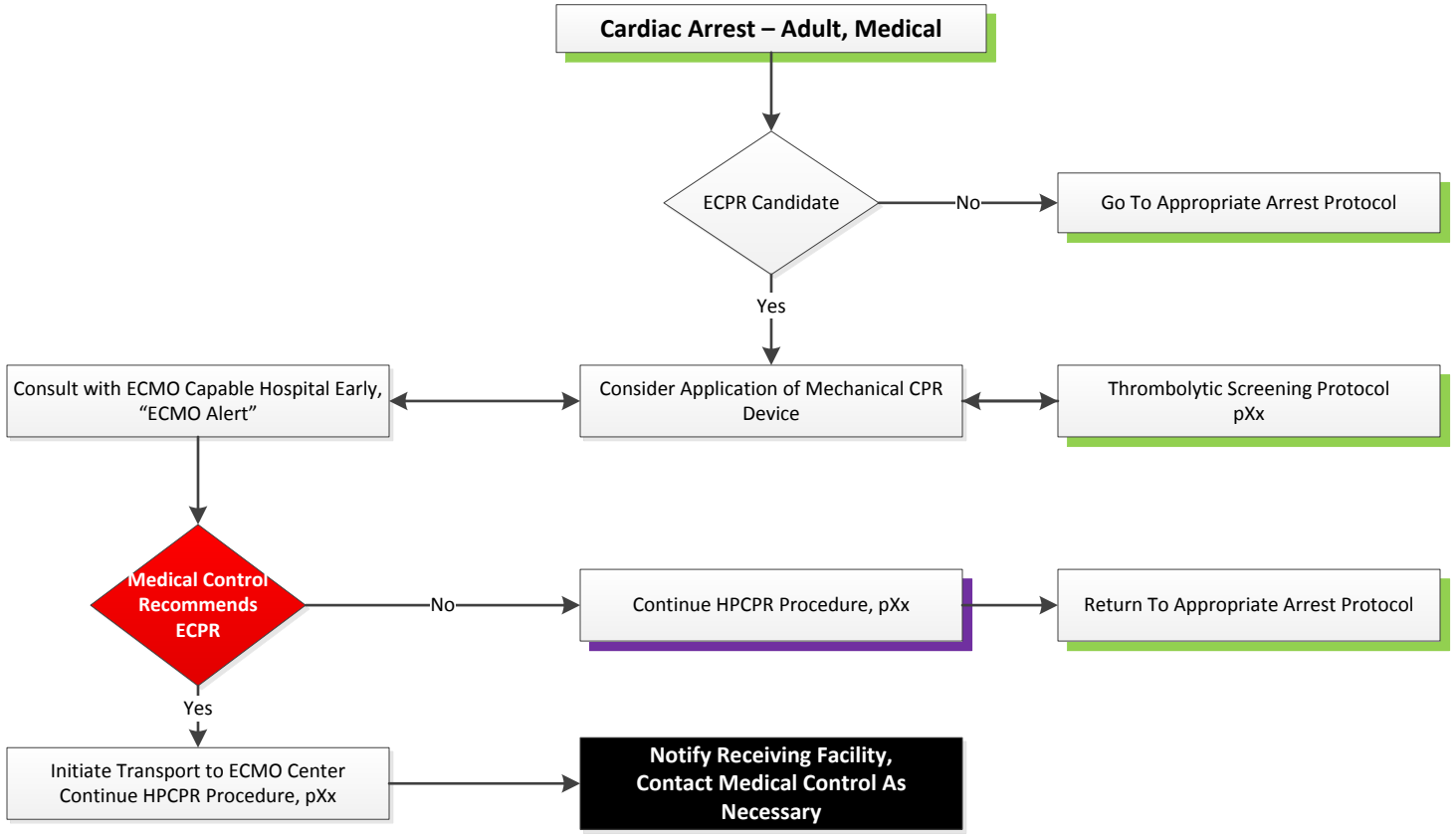
Extracorporeal Cardiopulmonary Resuscitation (ECPR) - Adult

Inclusion Criteria for ECPR:

- ❑ Age >18 and <70
- ❑ Arrest is EITHER:
  - Witnessed **OR**
  - Initial Shockable Rhythm **OR**
  - Intermittent ROSC
- ❑ ECPR can be initiated within ~60 minutes of estimated initial arrest
- ❑ ECPR and full ICU care are consistent with patient wishes (if known by family at bedside)

Exclusions to ECPR:

- ❑ Estimated BMI >40 due to morbid obesity
  - (i.e. >300lbs at 6' tall; >250lbs at 5'6" tall; cannot fit into LUCAS device)
- ❑ Cannot safely anticoagulate
  - (i.e. Trauma, Aortic Dissection, ICH, Uncontrolled Hemorrhage)
- ❑ Cannot perform ADLs at baseline, including (if known or reported by family)
  - Resident of Nursing Home, SNF, LTAC
  - Not oriented to self and place and/or not conversational
- ❑ Advanced comorbidities (if known or reported by family)
  - Oxygen-dependent lung disease
  - Previously evaluated and deemed not a candidate for LVAD
  - ESRD requiring dialysis
  - ESLD, including jaundice, ascites, varices and/or transplant list
  - Metastatic cancer and/or receiving chemo or radiation
- ❑ DNR/DNI (if known or reported by family)
- ❑ Attending physician perception of futility, including
  - EtCO2 <10mmHg for >20minutes



Pearls

REQUIRED EXAM: VS, GCS, RR, Lung Sounds, Cardiac Exam, JVD

- Goal is estimated time of arrest to on ECMO Circuit **<60 minutes**
- It is important to *balance* High Performance CPR on scene with ECPR potential; Strongly consider candidate patient if not responding to quality CPR.
- Ideally, decision to move patient should be made and transport from scene should happen in **<16 minutes**
- Contact ECPR-capable receiving hospital with "ECMO Alert" early; consider contact after 2nd shock for refractory V-fib, rearrest after ROSC, EMS Discretion, etc.
- ECPR is a *highly* time-critical intervention; it is important to consider the patient circumstances and whether pt. could be a candidate. Consultation with ECMO center early is a priority
- There are many variables that go into the decision to start a patient in ECPR circuit; even if a patient *is* transported to the ECMO center and the procedure is *not* started, this should not be considered a failure of the system.

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

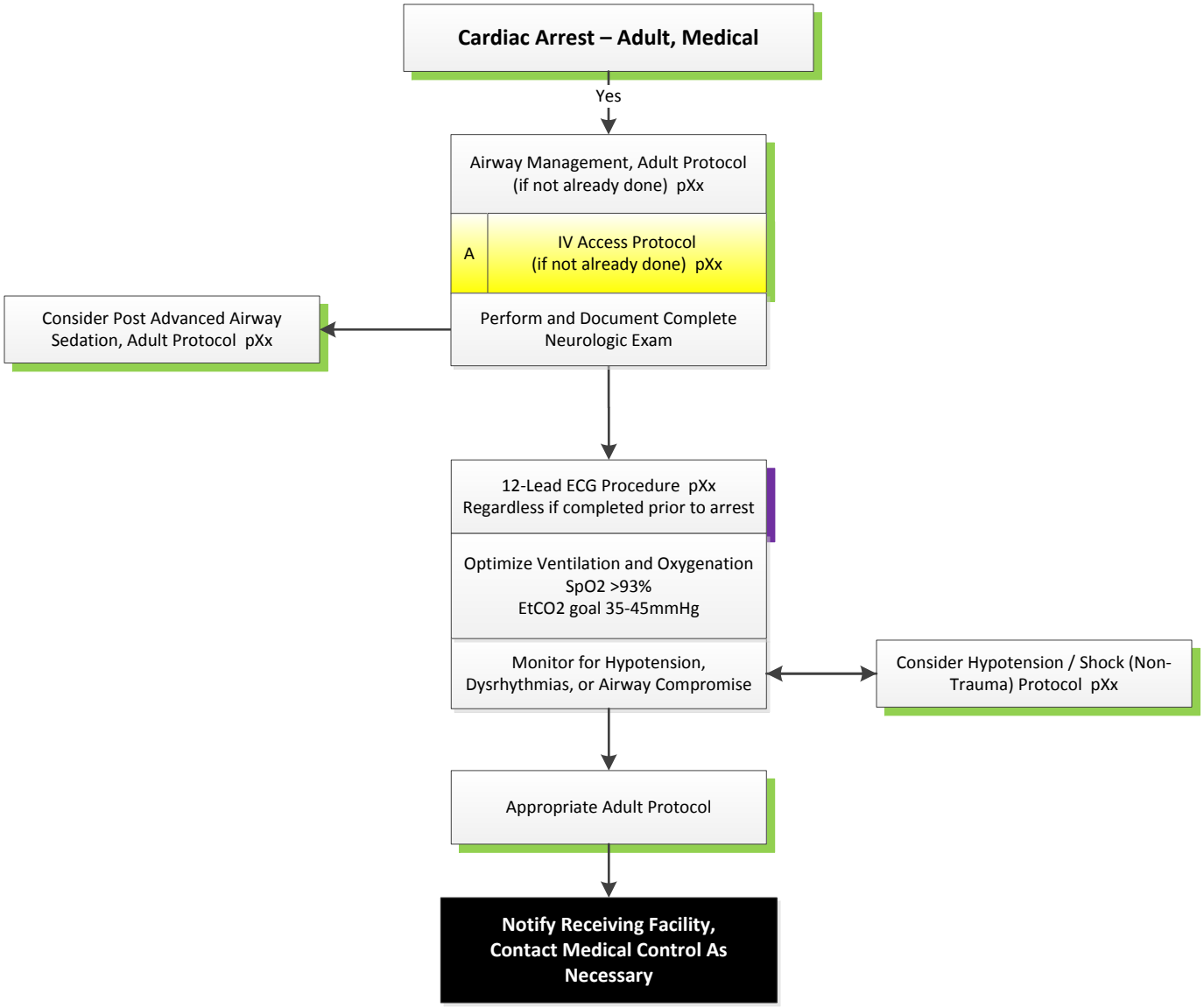
Post Resuscitation - Adult

Pertinent Positives and Negatives

- Events leading to arrest
- Estimated downtime
- Past Medical History
- Medications
- Existence of terminal illness
- Signs of lividity, rigor mortis
- Code Status (DNR)

Differential

- Medical or Trauma
- Vfib vs Pulseless Vtach
- Asystole
- Pulseless electrical activity (PEA)



Pearls

RECOMMENDED EXAM: Mental Status, Pulse, Initial and Final Rhythm

- The American Heart Association no longer supports routine prehospital hypothermia induction for all out of hospital cardiac arrests based on the most current literature.
- Acute myocardial infarction, cardiomyopathy, and primary arrhythmia are the most common causes for cardiac arrest.
- **Based on current literature, Ventricular Fibrillation and Pulseless Ventricular Tachycardia patients who are successfully resuscitated should be transported to a 24/7 STEMI capable facility.**
- In observational studies, $PaCO_2$ in a normal range (35 to 45 mmHg) when measured at 37°C is associated with better outcomes than higher or lower $PaCO_2$
- Antiarrhythmic drugs should be reserved for patients with recurrent or ongoing unstable arrhythmias.
- No data support the routine or prophylactic use of antiarrhythmic drugs after the return of spontaneous circulation following cardiac arrest, even if such medications were employed during the resuscitation.
- Determining and correcting the underlying cause of the arrhythmia (eg, electrolyte disturbance, acute myocardial ischemia, toxin ingestion) is the best intervention.

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

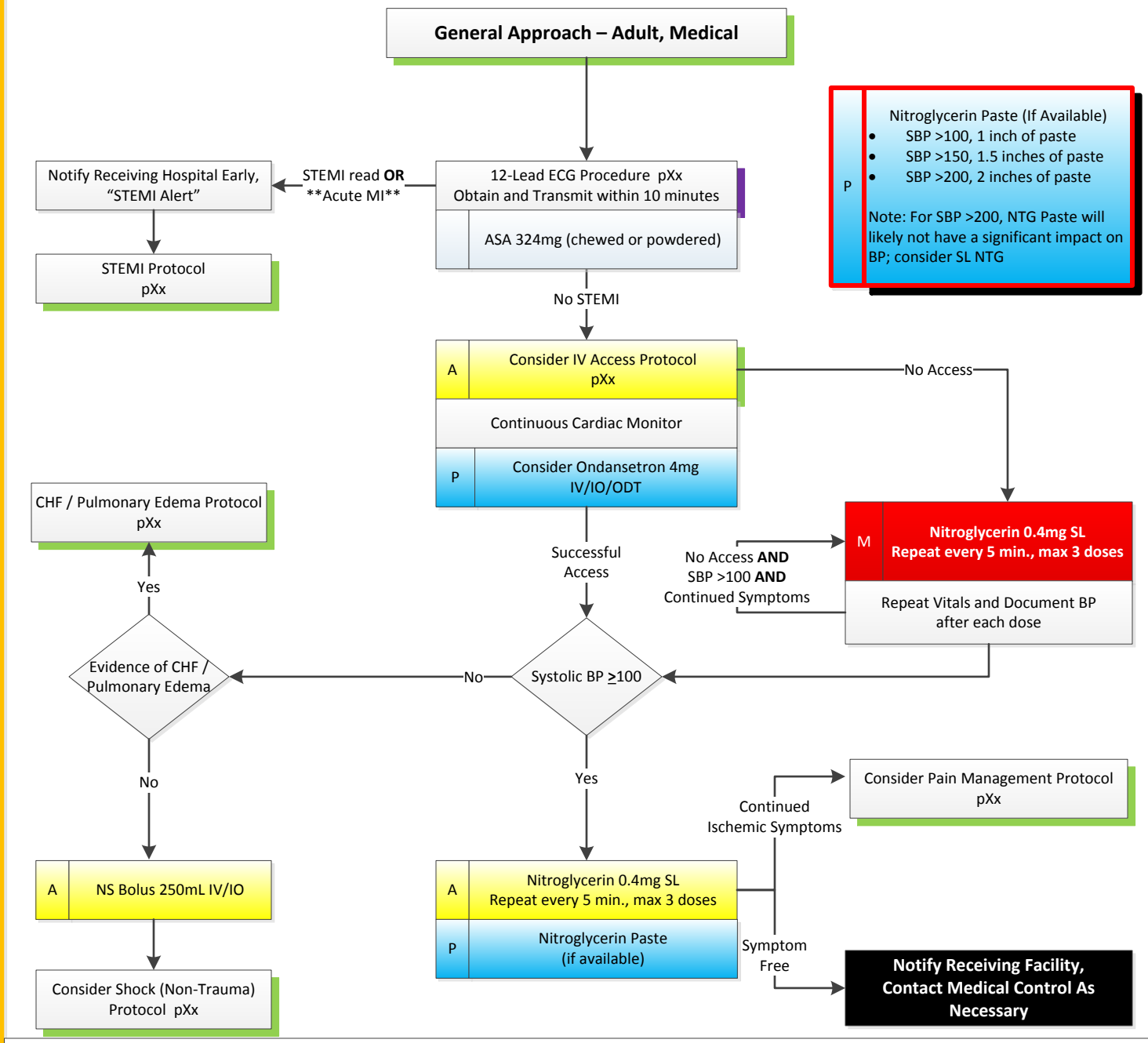
Chest Pain / Suspected Acute Coronary Syndrome - Adult

Pertinent Positives and Negatives

- Age, VS, SpO2, EtCO2, RR
- SAMPLE History
- OPQRST History
- CHF, CAD, Chest Pain History
- Home meds prior to EMS Arrival (Digoxin, Lasix, ASA, Viagra, Cialis)
- Respiratory Distress
- Orthopnea, JVD

Differential

- Pericardial Tamponade
- Pericarditis
- Asthma / COPD
- Aortic Dissection
- Sympathomimetic Overdose
- Pulmonary Embolism
- Esophageal Spasm
- Gastroesophageal Reflux (GERD)



Pearls

REQUIRED EXAM: VS, GCS, RR, Lung Sounds, Cardiac Exam, JVD

- Avoid Nitroglycerin in any patient who has used Viagra (Sildenafil) or Levitra (Vardenafil) in the last 24 hours or Cialis (Tadalifil) in the last 36 hours
- If no IV Access, ECG MUST be obtained and reviewed by Medical Control prior to administration of Nitroglycerin (even patient supplied)
- If patient takes Aspirin immediately prior to EMS arrival, confirm the medication and expiration date. If uncertain, administer full dose aspirin
- Use Nitroglycerin and opiates / opiates with caution if Inferior, Right Ventricle or Posterior MI is suspected
- Elderly patients, diabetics and women are more likely to have atypical chest pain – SOB, fatigue, weakness, back pain, jaw pain
- Have a low threshold to get a 12-Lead ECG. They are minimally invasive, painless and can evolve with time
- If ST Elevation in V3, V4 **or** Inferior Leads (II, III, aVF), Nitroglycerin may cause hypotension requiring IV Fluid Boluses

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

ST Elevation Myocardial Infarction - Adult

Pertinent Positives and Negatives

- Age, VS, SpO2, EtCO2, RR
- SAMPLE History
- OPQRST History
- CHF, CAD, Chest Pain History
- Home meds prior to EMS Arrival (Warfarin, Anticoagulation, ASA, Viagra, Cialis)
- Respiratory Distress
- Orthopnea, JVD

Differential

- Pericardial Tamponade
- Pericarditis
- Asthma / COPD
- Aortic Dissection
- Sympathomimetic Overdose
- Pulmonary Embolism

General Approach – Adult, Medical

STEMI Interpretation of 12-Lead **OR** **Acute MI** → No → Go To Appropriate Medical Protocol

Yes

Apply Defib Pads

Notify Receiving Hospital Early, "STEMI Alert"

Consider Air Transport if Long Transport

ASA 324mg (chewed or powdered) *if not already done* → Thrombolytic Screening Protocol pXx

Determine if known IV Dye Allergy

P: Consider Ondansetron 4mg IV/IO/ODT

P: Nitroglycerin Paste (If Available)
- SBP >100, 1 inch of paste
- SBP >150, 1.5 inches of paste
- SBP >200, 2 inches of paste

Note: For SBP >200, NTG Paste will likely not have a significant impact on BP; consider SL NTG

Inferior Wall MI (Elevation in II, III, aVF) → Yes → Consider Right Sided ECG Procedure (If Time Allows) pXx

A: IV Access Protocol pXx

No

A: Consider IV Access Protocol pXx

Systolic BP ≥100 → Yes → CHF / Pulmonary Edema → Yes → CHF / Pulmonary Edema Protocol pXx

No

No

Systolic BP ≥100 → Yes

Shock (Non-Trauma) Protocol pXx

A: Consider NS Bolus 250mL IV/IO

M: **If No IV, Nitroglycerin 0.4mg SL Repeat every 5 min., max 3 doses**

A: Nitroglycerin 0.4mg SL Repeat every 5 min., max 3 doses

P: Nitroglycerin Paste (if available)

Continued Ischemic Symptoms → Consider Pain Management Protocol, Adult pXx

Symptom Free → **Notify Receiving Facility, Contact Medical Control As Necessary**

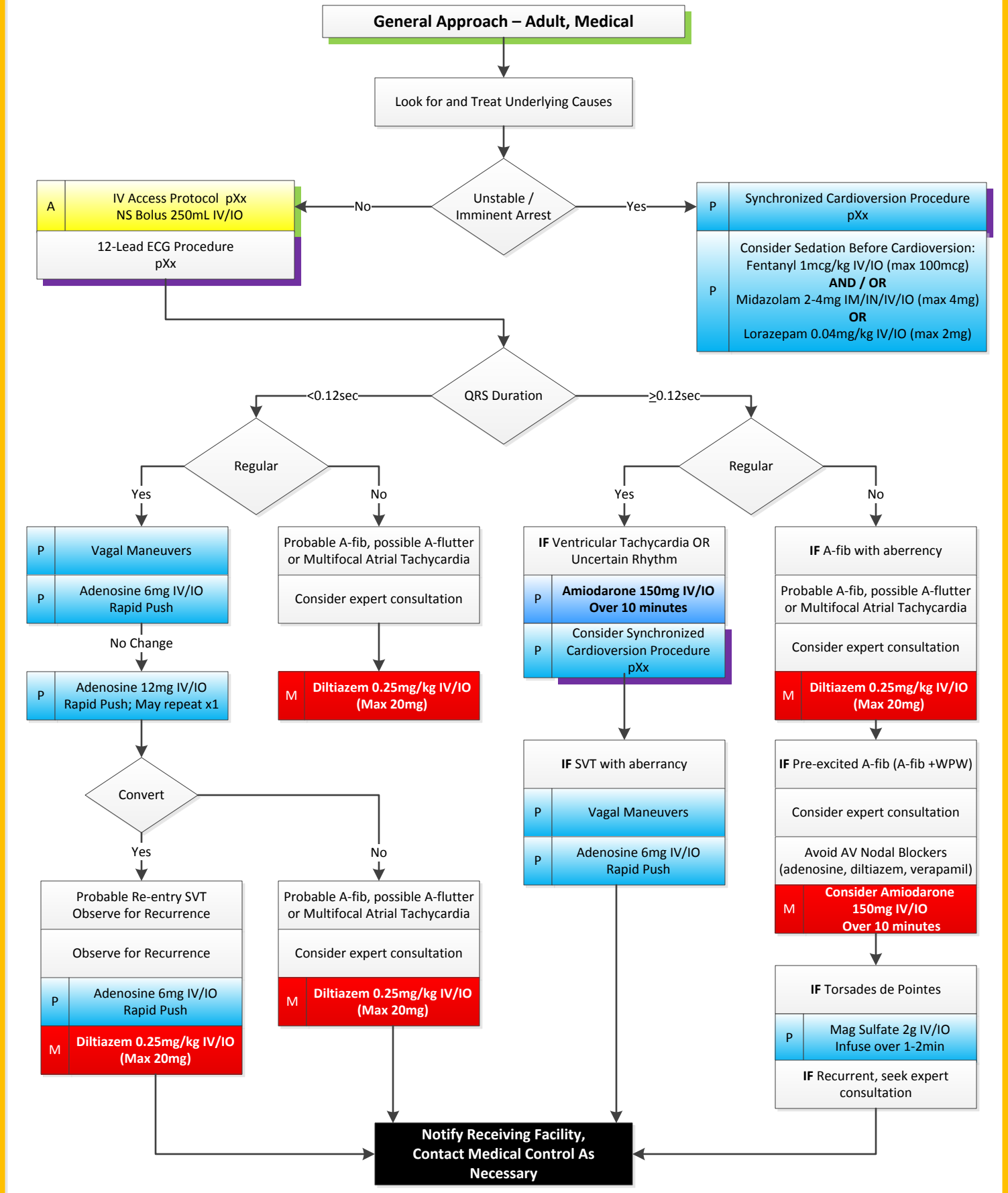
Pearls

REQUIRED EXAM: VS, GCS, RR, Lung Sounds, Cardiac Exam, JVD

- Goal is First Medical Contact (YOU!!) to arrival at the 24/7 PCI capable STEMI facility should be <60 minutes.
- Goal is to limit on-scene time with a STEMI patient to <10 minutes
- If long transport time expected due to geography, traffic, etc. consider activation of Air EMS for delivery directly to cath lab
- Transmit STEMI or **Acute MI** 12-Leads early and call STEMI receiving hospital with "STEMI Alert" early; inform them of full report to follow.

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Tachycardia With A Pulse - Adult



Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Tachycardia With A Pulse - Adult

Pertinent Positives and Negatives

- Age, VS, SpO2, EtCO2, RR
- SAMPLE History
- OPQRST History
- CHF, CAD, Chest Pain History
- QRS ≥0.12 sec (>3 small squares)
- Home meds prior to EMS Arrival (Digoxin, Lasix, ASA, Viagra, Cialis)
- Respiratory Distress
- Orthopnea, JVD

Differential

- Pericardial Tamponade
- Pericarditis
- Asthma / COPD
- Aortic Dissection
- Sympathomimetic Overdose
- Pulmonary Embolism

Uncontrolled A-Fib

Patients with a history of Atrial Fibrillation may have Rapid Ventricular Response ("A-fib with RVR" or "Uncontrolled A-fib") as their response to hemorrhage, hypovolemia, sepsis or medication noncompliance.

Keep in Mind; **this may be their version of Sinus Tachycardia!**

During Evaluation

Secure, verify airway and vascular access
Consider expert consultation
Prepare for cardioversion

CONSIDER ALS *EARLY*
IF AT ANY TIME
Patient has Return of Spontaneous Circulation (ROSC)
Go to Post Resuscitation Protocol

Torsades de Pointes

Prolonged QT may result in R-on-T phenomenon and Torsades. Congenital and Acquired etiologies include:
Amiodarone, Methadone, Lithium, Amphetamines, Procainamide, Sotalol
Hypokalemia, Hypomagnesemia, Heart Failure, Hypothermia, Subarachnoid Hemorrhage

Advanced Airway

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

P

CONSIDER CORRECTABLE CAUSES OF ARREST:

Hypoxia – secure airway and ventilate
Hypoglycemia – Dextrose 12.5-25g or D10W 100ml IV/IO
Hyperkalemia – Sodium Bicarbonate 50mEq IV/IO **AND**
- Calcium Chloride 1g IV/IO

Hypothermia – Active Rewarming
Hypomagnesemia / Torsades – Magnesium 2g IV/IO over 2 min
Hypovolemia – 500mL NS Bolus IV/IO
Hydrogen Ion (acidosis) – secure airway and ventilate
Tension Pneumothorax – Chest Decompression Procedure
Tamponade, Cardiac
Toxins:
- **Calcium Channel and B-Blocker OD** – Glucagon 5mg IV/IO
- **Calcium Channel Blocker OD** – Calcium Chloride 1g IV/IO (contraindicated if pt. also on Digoxin/Lanoxin)
- **Tricyclic Antidepressant OD** – Sodium Bicarb 1mEq/kg IV/IO
- **Narcotic OD** – Naloxone 2mg IV/IO/IN/IM

Thrombosis, Pulmonary
Thrombosis, Coronary

Pearls

REQUIRED EXAM: VS, GCS, RR, Lung Sounds, Cardiac Exam, JVD

- Not all cases of tachycardia need to be rate controlled; sepsis, hypovolemia, and acute hemorrhage will do *worse* if their ability to compensate is taken away
- Temporary transvenous overdrive pacing (atrial or ventricular) at 100 beats per minute generally is reserved for patients with long QT-related TdP who do not respond to intravenous magnesium
- Continually monitor for signs of decompensation and be prepared to defibrillate if the patient condition changes. Place the pads while reaching for the meds
- Adenosine has a very short half life (5sec or less) so it must be infused rapidly in a patent IV site that is preferably in the AC fossa or more proximal
- Elderly patients, diabetics and women are more likely to have atypical chest pain – SOB, fatigue, weakness, back pain, jaw pain
- Have a low threshold to get a 12-Lead ECG. They are minimally invasive, painless and can evolve with time. **Transmit them and seek MD Consult at any time**

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

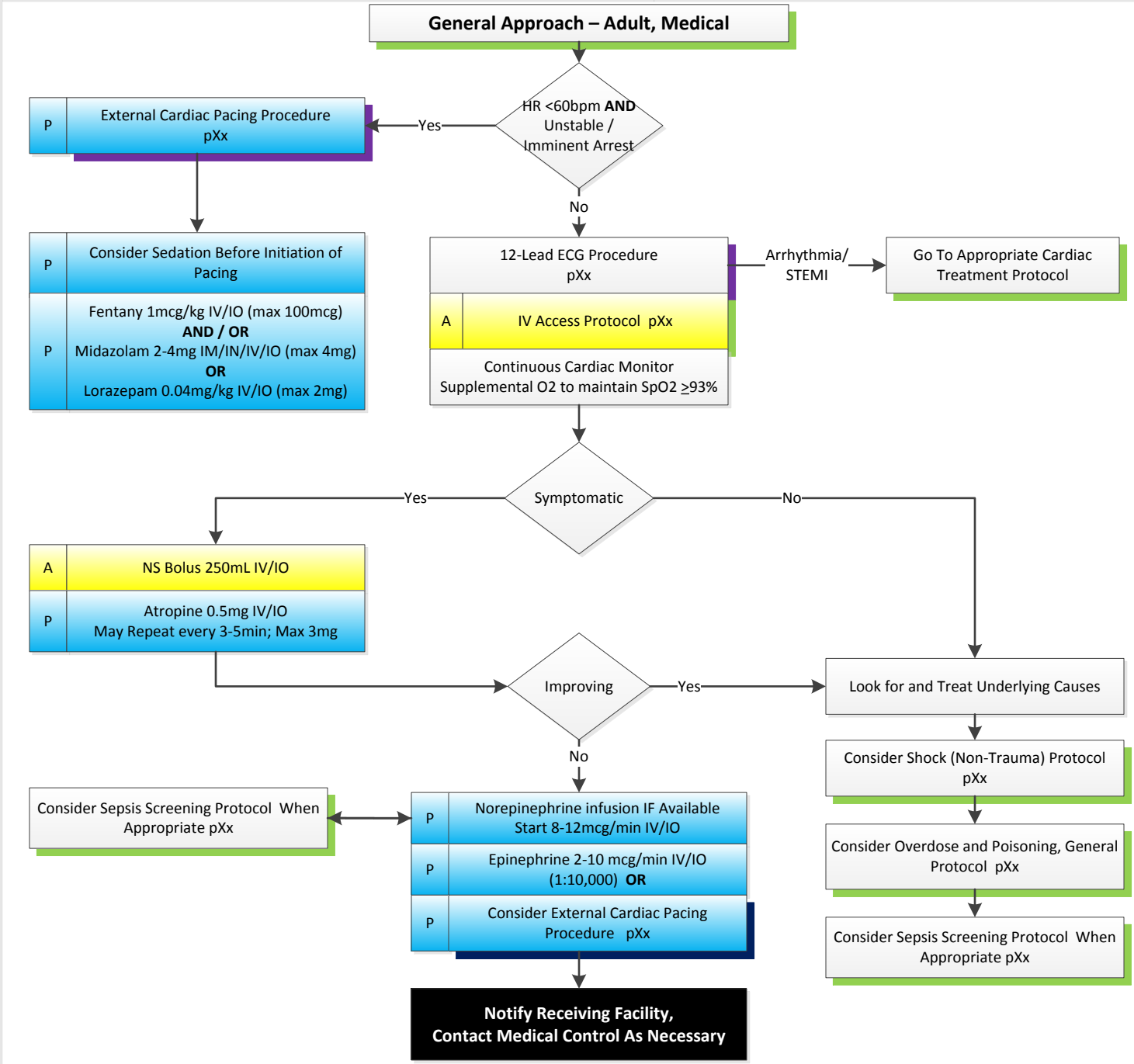
Bradycardia With A Pulse - Adult

Pertinent Positives and Negatives

- Age, VS, SpO2, EtCO2, RR
- SAMPLE History
- OPQRST History
- CHF, CAD, Chest Pain History
- QRS <0.12 sec (≤3 small squares)
- Home meds prior to EMS Arrival (Digoxin, Lasix, ASA, Viagra, Cialis)
- Respiratory Distress
- Orthopnea, JVD

Differential

- Pericardial Tamponade
- Pericarditis
- Pacemaker Failure
- Hypothermia
- Sinus Bradycardia
- Head Injury
- Spinal Cord Injury
- Sick Sinus Syndrome
- Acute MI
- AV Block (1°, 2°, 3°)



Pearls

REQUIRED EXAM: VS, GCS, RR, Lung Sounds, Cardiac Exam, JVD

- Not all cases of bradycardia need to be treated with medicine or pacing; use good clinical judgement and follow symptoms
- Continually monitor for signs of decompensation and be prepared to move to external cardiac pacing if the patient condition changes. Place the pads while reaching for the meds
- Titrate Epinephrine OR Dopamine infusions to HR >60 AND SBP <180
- Atropine is unlikely to work in cases of complete heart block. Atropine is contraindicated in patients with narrow angle glaucoma
- Elderly patients, diabetics and women are more likely to have atypical chest pain – SOB, fatigue, weakness, back pain, jaw pain
- Have a low threshold to get a 12-Lead ECG. They are minimally invasive, painless and can evolve with time

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

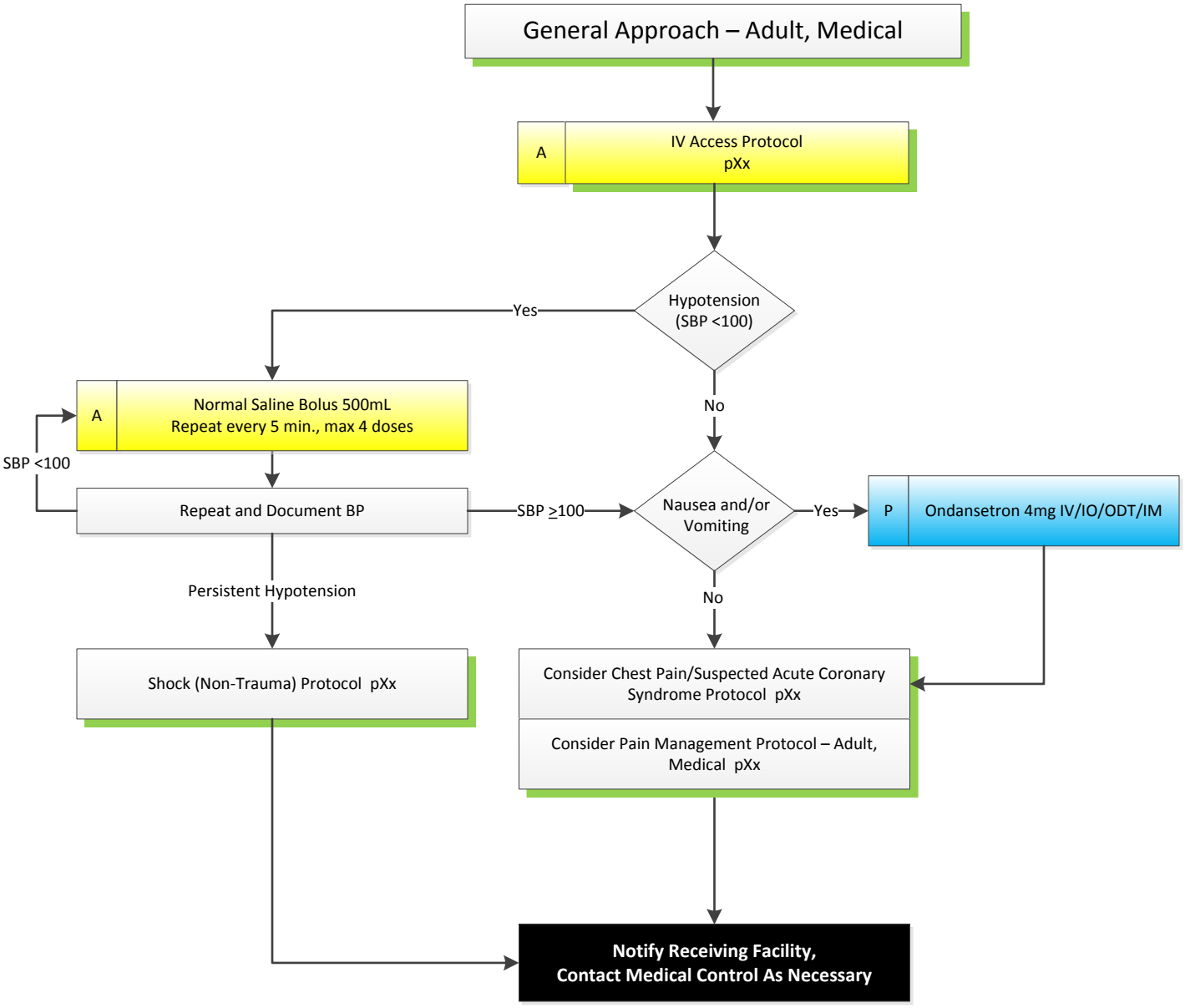
Abdominal Pain / GI Bleeding - Adult

Pertinent Positives and Negatives

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- Last Meal / Oral Fluids
- Menstrual / Pregnancy History
- Anticoagulant Use
- Nausea, Vomiting, Diarrhea
- Constipation
- Hematochezia (Bloody Stool)
- Recent Travel
- Recent Antibiotics

Differential

- AAA +/- Rupture
- Perforated Ulcer
- Appendicitis
- Ectopic Pregnancy +/- Rupture
- Diverticulitis
- Small Bowel Obstruction
- Splenic Enlargement / Rupture



Pearls

REQUIRED EXAM: VS, GCS, Focal Tenderness, Rebound Tenderness, Distal Pulses, Abdominal Masses

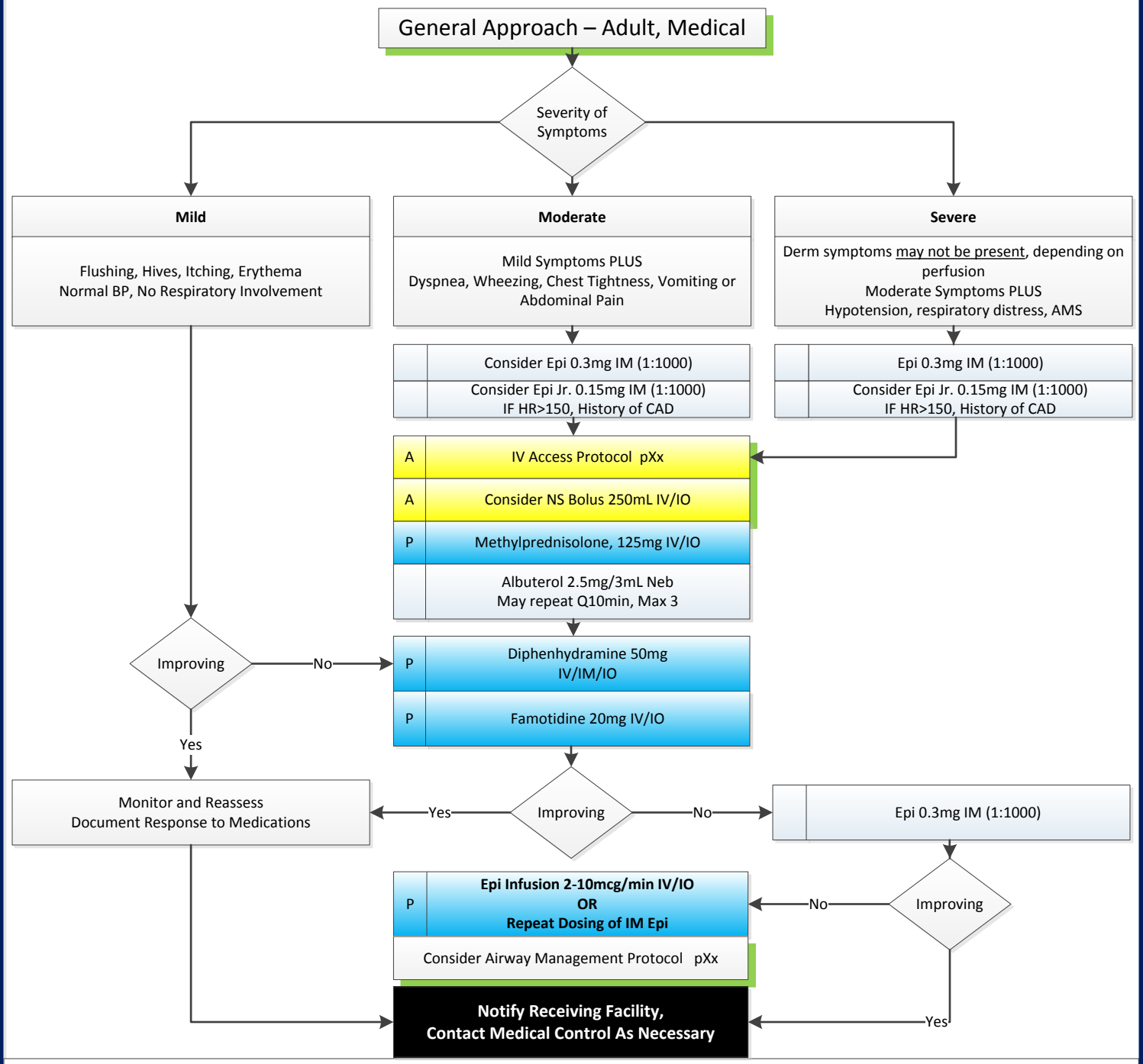
- Nothing by mouth (NPO) Status for all patients with abdominal pain
- If pain is above the umbilicus, perform a 12-Lead ECG. Go to Chest Pain Protocol as indicated
- Abdominal pain in women of child bearing age should be treated as an ectopic pregnancy until proven otherwise
- The diagnosis of AAA should be considered in patients >50 years old. Assess the abdomen for a midline pulsatile mass and feel for pulses in feet / legs
- Rebound tenderness is pain that is *increased* when releasing pressure from palpation
- Appendicitis may present with vague, peri-umbilical pain that slowly migrates to the Right Lower Quadrant (RLQ) over time
- Blood loss from the GI Tract has a very distinct smell; use all of your senses when evaluating your patients. GI Bleed patients have a high risk of serious hemorrhage
- **Abdominal Pain and known pregnancy, go to OB Protocol**

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Allergic Reaction - Adult

Pertinent Positives and Negatives
- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- Onset and Location of Symptoms
- Lung Sounds before *AND after* intervention
- Allergen Exposure
- Toxic / Environmental Exposure
- Subjective throat "tightness" OR "closing"

Differential
- Urticaria (Rash Only)
- Anaphylaxis (Systemic Effect)
- Shock (Vascular Effect)
- Angioedema
- Aspiration / Airway Obstruction
- Vasovagal Event
- Asthma / COPD
- CHF



Pearls

REQUIRED EXAM: VS, GCS, Skin, Cardivascular, Pulmonary

- Prior to administering epinephrine in patients who have a history of CAD or if HR is >150, epi may cause acute MI. These patients should receive a 12-Lead ECG prior to med administration, if practical given the clinical situation
- Epinephrine at ½ dose (0.15mg OR EpiPen Jr.) for patients with known CAD or if HR >150
- Epinephrine Infusion: Mix 1mg (1:1,000) in 250mL NS. If worsening/refractory anaphylaxis, contact Med Control as soon as practical. Start at 2mcg/min, titrate up.
- Famotidine **dilution no longer required**. Infuse over 2 minutes
- In general, the shorter the time from allergen contact to start of symptoms, the more severe the reaction
- Consider the Airway Management Protocol early in patients with Severe Allergic Reaction or subjective throat closing

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

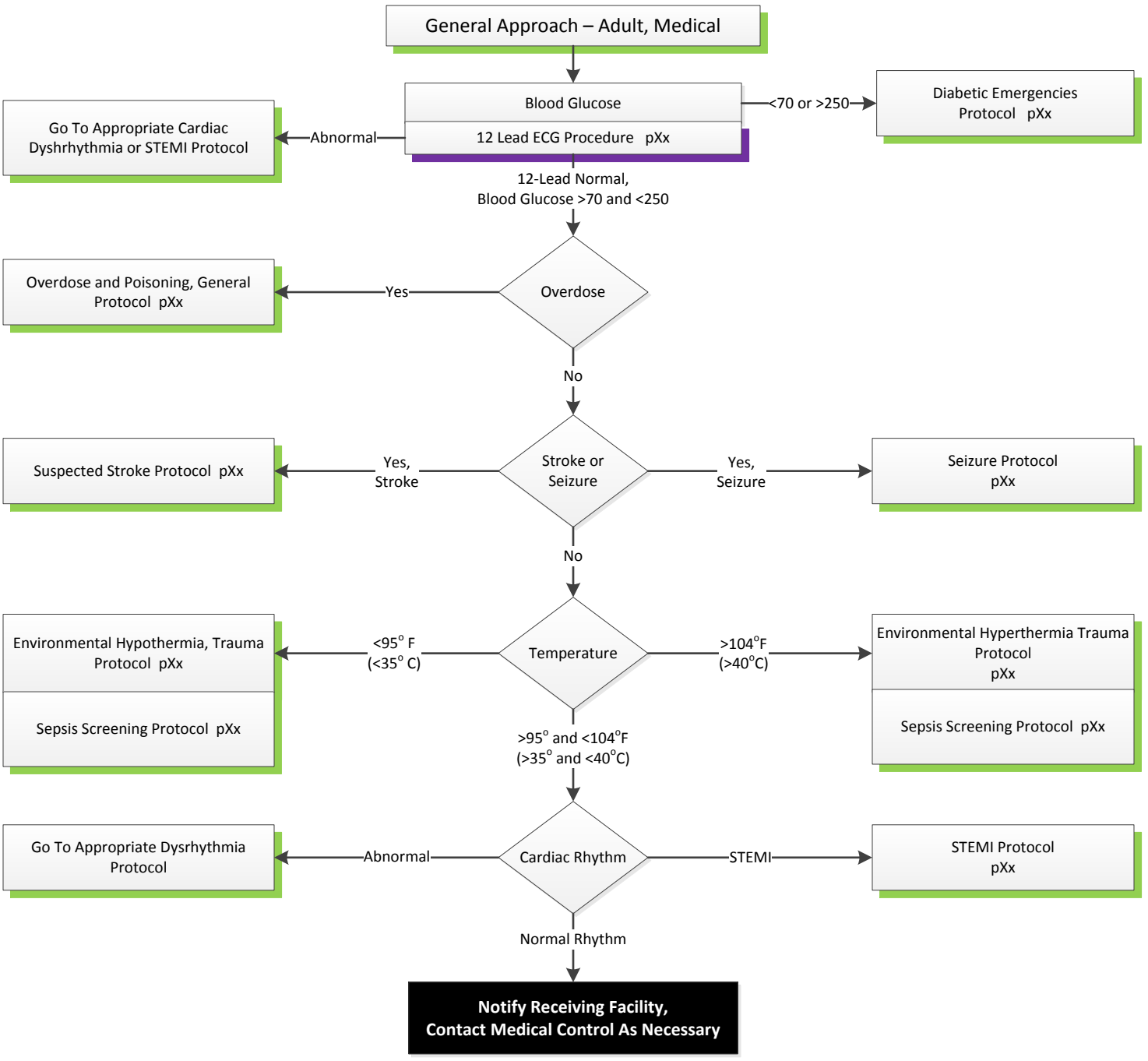
Altered Mental Status - Adult

Pertinent Positives and Negatives

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- History of DM, medic alert bracelet

Differential

- Head Injury
- Electrolyte Abnormality
- Psychiatric Disorder
- Cardiac Dysrhythmia
- DM, CVA, Seizure, Tox
- Sepsis
- Hypothermia
- Hypothyroidism
- Pulmonary



Pearls

REQUIRED EXAM: VS, GCS, Head, Neck, Blood Glucose

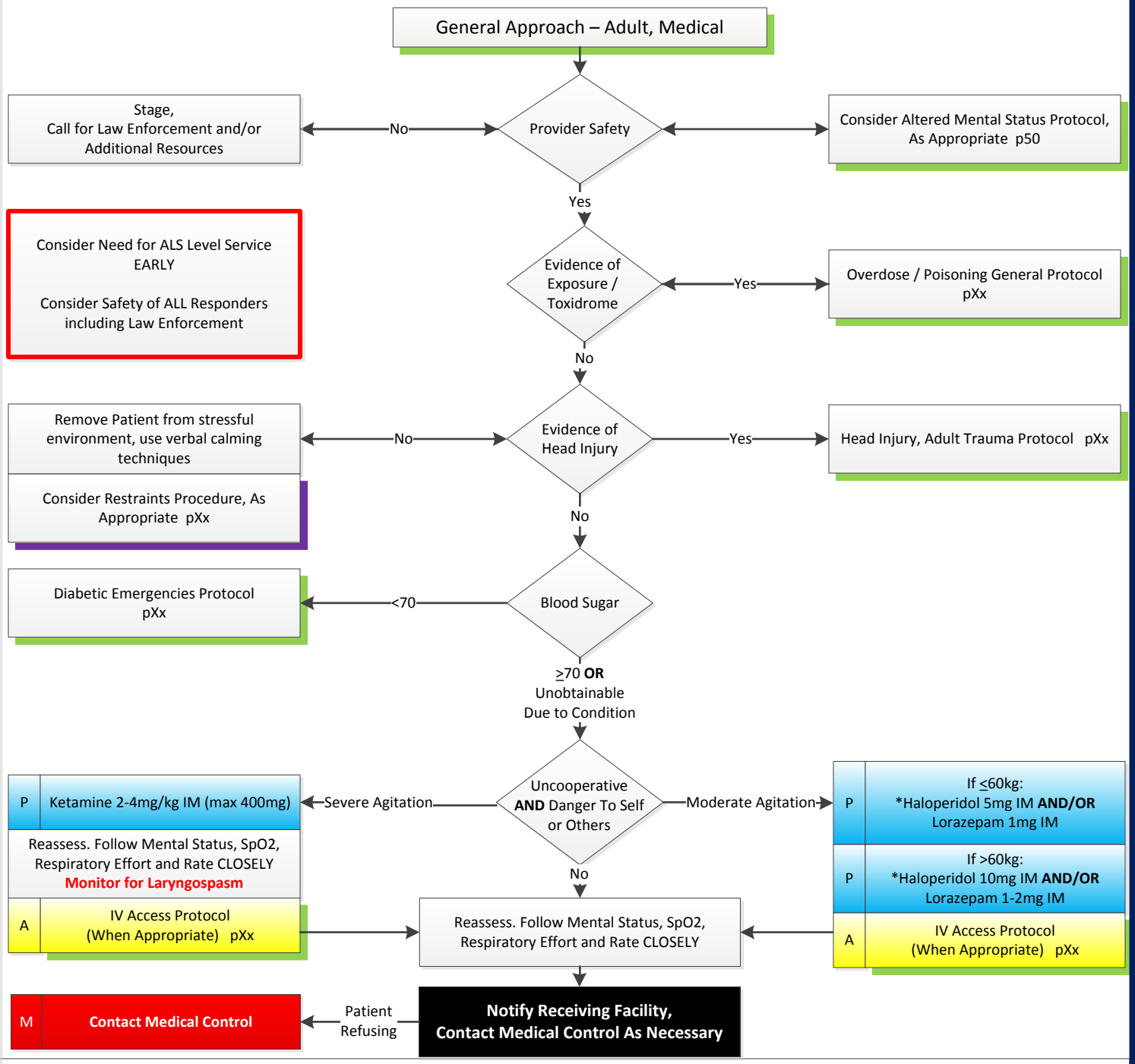
- Pay special attention to head and neck exam for bruising or signs of injury
- Altered Mental Status may be the presenting sign of environmental hazards / toxins. Protect yourself and other providers / community if concern. Involve Hazmat early
- Safer to assume hypoglycemia if doubt exists. Recheck blood sugar after dextrose/glutose administration and reassess
- **Do not let EtOH fool you!!** Alcoholics frequently develop hypoglycemia, Alcoholic Ketoacidosis (AKA) and often hide traumatic injuries!

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Behavioral / Excited Delirium - Adult

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
- EtOH Intoxication / Withdrawal
- Toxic Ingestion
- Substance Use / Abuse
- Schizophrenia
- Hypoglycemia
- Hypoxia
- Head Injury
- Occult Trauma
- Cerebral Hypoperfusion



Pearls

REQUIRED EXAM: VS, GCS, Skin, Cardivascular, Pulmonary

- Safety First – For Providers, Police and Patients! Never restrain any patients in the prone (face down) position
- All patients who require chemical restraint MUST be continuously monitored by ALS Personnel
- Patients who are actively fighting physical restraints are at high risk for Excited Delirium and In-Custody Death; Have a low threshold to activate ALS for chemical restraint
- Transport of patients requiring handcuffs or Law Enforcement (LE) restraint **require** LE to ride in the ambulance to the hospital – they have the keys!
- Avoid Haloperidol in patients with known history of MAOI Antidepressant use (Phenelzine, Tranylcypromine) **OR** history of Parkinson's Disease
- If a patient with Excited Delirium suddenly becomes cooperative/quiet, *reassess them quickly*! Sudden Cardiac Death is common in this population

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

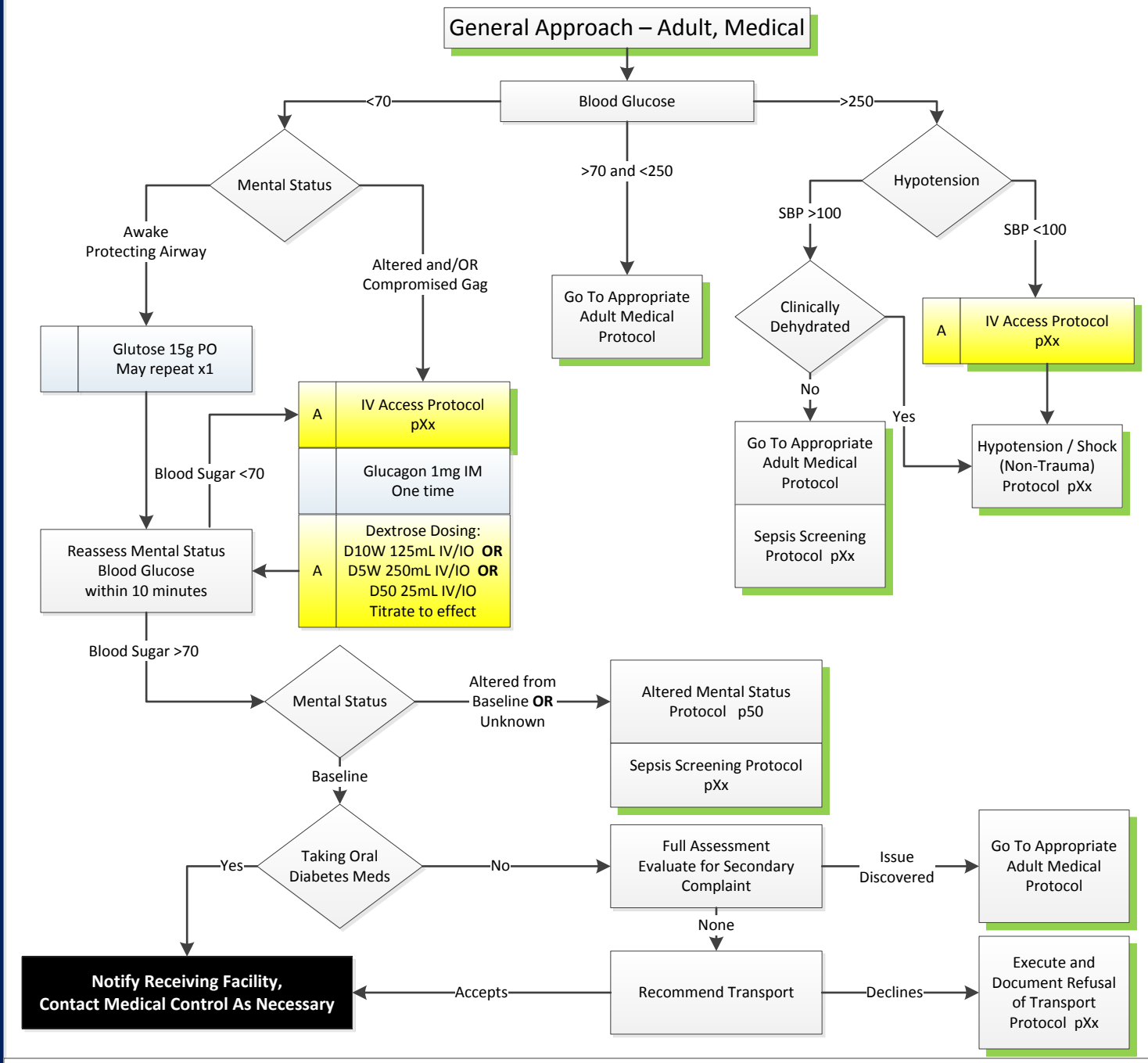
Diabetic Emergencies - Adult

Pertinent Positives/Negatives:

- Age, VS, Blood Glucose Reading
- SAMPLE History
- OPQRST History
- Last Meal, History of Skipped Meal
- Diaphoresis
- Siezures
- Abnormal Respiratory Rate
- History of DKA

Differential

- Toxic Ingestion
- Head Injury
- Sepsis
- Stroke/TIA
- Seizure
- EtOH Abuse/Withdrawal
- Drug Abuse/Withdrawal



Pearls

REQUIRED EXAM: VS, SpO2, Blood Glucose, Skin, Respiratory Rate and Effort, Neuro Exam

- Do NOT administer oral glucose to patients that can't swallow or adequately protect their airway
- It is important to have good IV access, particularly when administering D50. Dextrose is known to cause sclerosis and can be very hard on the veins.
- Simple Hypoglycemia for these protocols is defined as: hypoglycemia caused by insulin ONLY and not suspected to be due to occult infection or trauma
- Prolonged hypoglycemia may not respond to Glucagon; be prepared to start an IV and administer IV Dextrose
- Alcoholics and patients with advanced liver disease may not respond to Glucagon due to poor liver glycogen stores
- Patients on oral diabetes medications are at a very high risk of recurrent hypoglycemia and should be transported. Contact Medical Control for advice/patient counseling if patient is refusing. See Refusal after Hypoglycemia Treatment Protocol for additional information as necessary.
- Always consider intentional insulin overdose, and ask patients / family / friends / witnesses about suicidal ideation or gestures

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

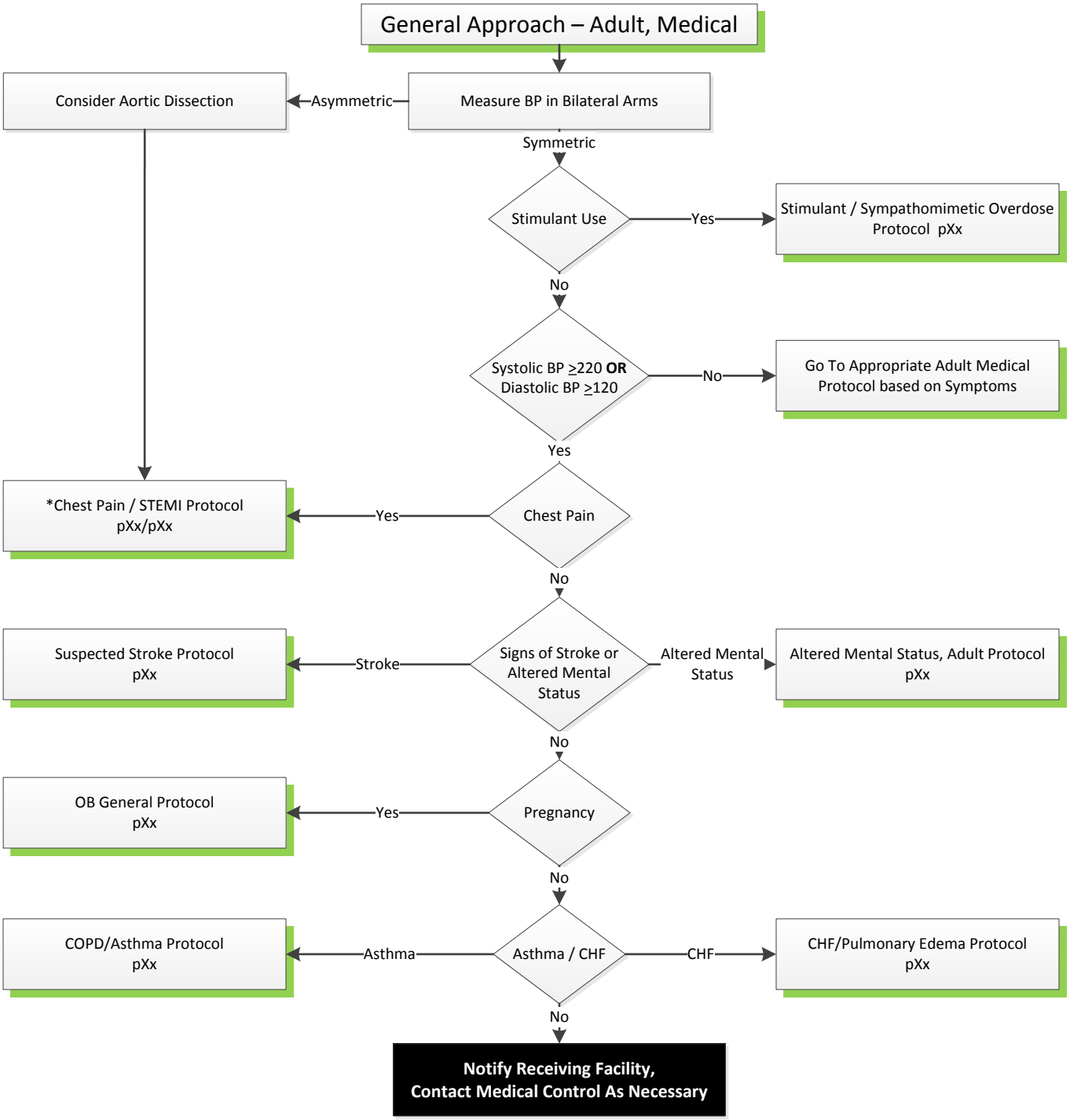
Hypertension - Adult

Pertinent Positives and Negatives

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- Acute Pain
- Headache
- Nosebleed
- Blurred Vision
- Dizziness
- Chest Pain

Differential

- Aortic Dissection
- Pre-Eclampsia / Eclampsia
- Hypertensive Encephalopathy
- Stimulant Use / Abuse



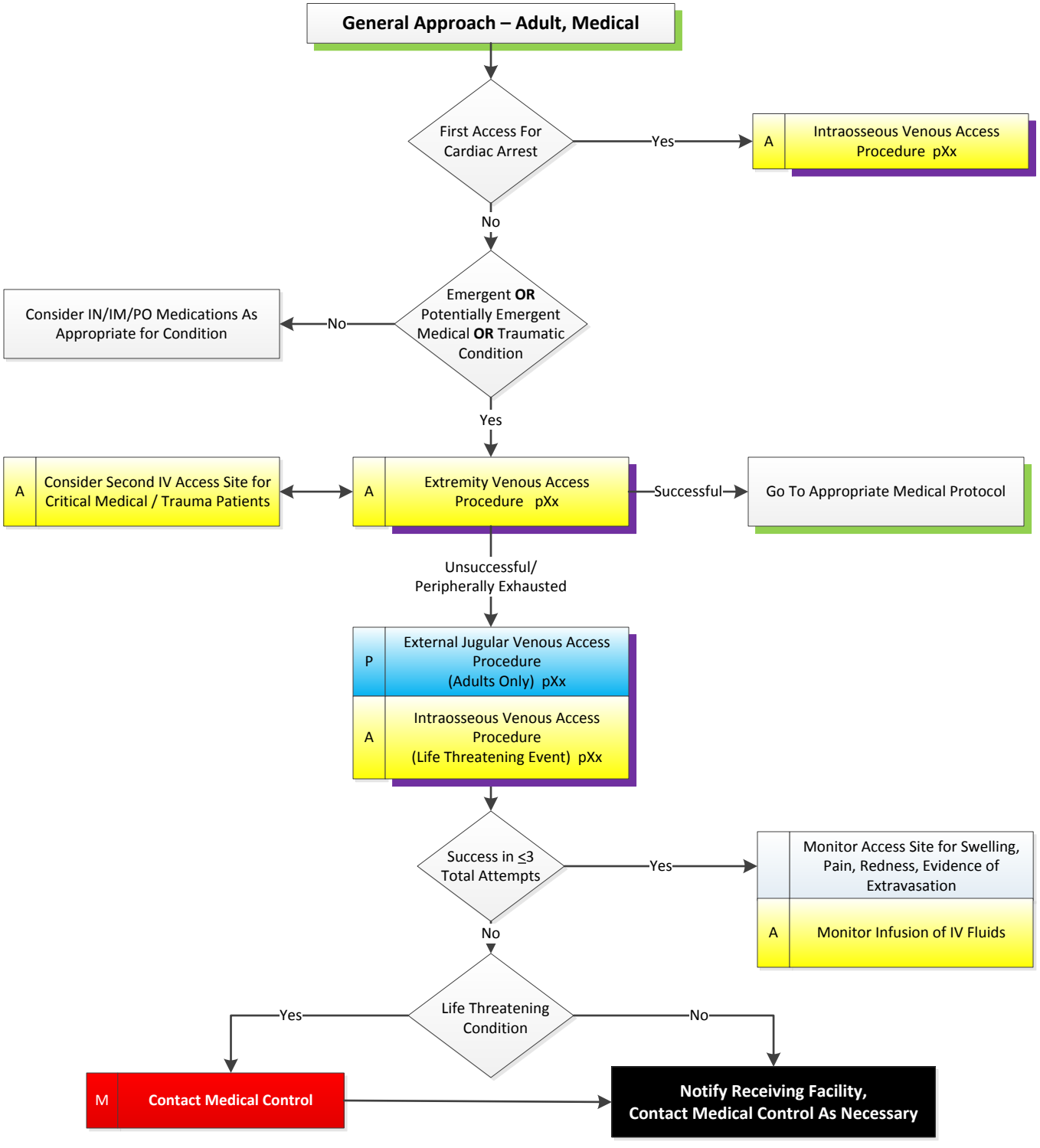
Pearls

REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- Hypertension based on two elevated readings taken >5 minutes apart. Never treat BP based on one set of vital signs
- Hypertensive Emergency is based on evidence of end-organ failure: STEMI/ACS, Hypertensive Encephalopathy, Renal Failure, Vision Change, Acute Stroke
- Patients with symptomatic hypertension should be transported with the head of the stretcher elevated 30 degrees
- Ensure Blood Pressure is checked with appropriate sized blood pressure cuff for patient size
- *Patients with long standing high blood pressure may have changed their "normal" set point; **do not decrease** their Systolic Blood Pressure >40 points

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

IV Access - Adult



Pearls

- In the setting of **CARDIAC ARREST ONLY**, any preexisting dialysis shunt or central line may be used by Paramedics
- For patients who are hemodynamically unstable or in extremis, Medical Control MUST be contacted prior to accessing any preexisting catheters
- Upper Extremity sites are preferred over Lower Extremity sites. Lower Extremity IVs are discouraged in patients with peripheral vascular disease or diabetes
- In post-mastectomy patients and patients with forearm dialysis fistulas, avoid IV attempts, blood draws, injections or blood pressures in the upper extremity on the affected side
- Saline Locks are acceptable in cases where access may be necessary but the patient is not volume depleted; having an IV does not mandate IV Fluid infusion
- The *preferred order* of IV Access is: Peripheral IV, External Jugular IV, Intraosseous IV, IN/IM **UNLESS** medical acuity or situation dictate otherwise.

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

OB General - Adult

Pertinent Positives and Negatives

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- Pregnancy History (G's and P's)
- Headache
- Abdominal Pain +/- Contractions
- Blurred Vision
- Vaginal Bleeding
- Chest Pain, Dyspnea, Hypoxia

Differential

- Pre-Eclampsia / Eclampsia
- Ectopic Pregnancy
- Hypertensive Encephalopathy
- Uterine Rupture
- Pulmonary Embolism
- Threatened / Impending / Missed Spontaneous Abortion
- Head Injury / Cushing's Reflex (Bradycardia + HTN)
- Domestic Abuse

General Approach – Adult, Medical

Known/Suspected Pregnancy **OR** Missed Period

- No → Go To Appropriate Medical Protocol
- Yes

Remember you have TWO patients during pregnancy; evaluate, treat and protect **BOTH**

Left Lateral Recumbent Position takes pressure off of the Inferior Vena Cava and prevents supine hypotension

Preeclampsia and **Eclampsia** are typically encountered in 3rd trimester, but may be in late 2nd trimester and up to 6 weeks after delivery

Left Lateral Recumbent Position

A — IV Access Protocol pXx

Blood Sugar

- <70 → Consider Diabetic Emergencies Protocol pXx
- ≥70

Seizure Activity

- Yes → P — If no IV, Midazolam 5mg IM/IN
- No

Labor / Imminent Delivery Protocol pXx

P — **Magnesium Sulfate 4g IV/IO Over 10 minutes AND**

P — Lorazepam 1-2mg IV/IO May Repeat x 1, Max 4mg **OR**

P — Midazolam 5mg IV/IO May Repeat x 1, Max 10mg

Vaginal Bleeding/ Abdominal Pain

- Pain → Labor
  - Yes → Labor / Imminent Delivery Protocol pXx
  - No
- Bleeding

Continued Seizure Activity

- No → Hypotension/ Shock
- Yes → M — **Contact Medical Control**

Hypotension/ Shock

- Yes → A — Normal Saline Bolus 500mL Repeat every 5 min., max 2L
  - Consider Shock (Non-Trauma) Protocol pXx
  - M — **Consider TXA Procedure, As Appropriate pXx**
- No

Notify Receiving Facility, Contact Medical Control As Necessary

Pearls

REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- Magnesium is the priority for pregnant seizures (eclampsia), but if seizing on EMS arrival give IM/IN Midazolam until IV Access achieved
- If after Magnesium 4gm IV/IO administered, continued seizure x 5 minutes OR recurrent seizure, contact Medical Control for authorization of additional Magnesium 2gm. Continuous monitoring is required, as magnesium may cause hypotension and decreased respiratory drive
- Hypertension, Severe headache, vision changes, RUQ pain, diffuse edema may indicate preeclampsia. This may progress to seizures (eclampsia).
- Any pregnant patient involved in an MVC or other trauma should be evaluated by MD for evaluation and fetal monitoring

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

OB / Vaginal Bleeding - Adult

Pertinent Positives and Negatives

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- Pregnancy History (G's and P's)
- Abdominal Pain +/- Contractions
- Blurred Vision
- Estimated Blood Loss (Pads / Tampons Per Hour)
- Chest Pain, Dyspnea, Hypoxia

Differential

- Ectopic Pregnancy
- Domestic Violence
- Sexual Assault
- Dysfunctional Uterine Bleeding
- Threatened / Impending / Missed Spontaneous Abortion
- Normal Menstrual Period

Pearls

REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- Always suspect pregnancy as a cause of vaginal bleeding in reproductive age women; patient report regarding menstrual history and sexual activity may not be accurate
- Ectopic pregnancy is a surgical emergency! Patients with vaginal bleeding, unstable vital signs and suspected ectopic pregnancy should be transferred to an OB receiving facility for emergent evaluation and management when possible
- Always have a high suspicion for domestic violence and /or sexual assault when evaluating a female with a reproductive or GU related complaint

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Labor / Imminent Delivery - Adult

Pertinent Positives and Negatives

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- Pregnancy History (G's and P's)
- Estimated Due Date
- Prenatal Care / High Risk Pregnancy
- Time of Contraction Onset, Frequency
- Rupture of Membranes and Time
- Sensation of Fetal Movement

Differential

- Endometritis
- Normal Active Labor
- Abnormal Presentation
- Prolapsed Cord
- Preterm Labor
- Threatened / Impending / Missed Spontaneous Abortion
- Premature Rupture of Membranes
- Placenta Previa / Placenta Abruption

General Approach – Adult, Medical

Abnormal Vaginal Bleeding/Hypertension

Yes → OB General Protocol pXx

No → **Left Lateral Recumbent Position**

Unable To Deliver

Create air passage by supporting presenting part of infant

Place 2 fingers alongside the nose and push away from the infant's face

Transport in Knee-Chest or Left Lateral Recumbent Position

M **Contact Medical Control**

Cord

Once the cord stops pulsating, then double-clamp approximately 10-12cm from the infant's abdomen. Cord should be cut between the two clamps.

Inspect Perineum
NO Digital Vaginal Exam

- No Crowning
  - Monitor and Document VS
    Reassess Frequently
  - Crowning, ≥36 Weeks Gestation → Yes → A IV Access Protocol pXx
  - No → Prolapsed Cord / Shoulder Dystocia
    - Hips Elevated, Knees to Chest
    - Insert Gloved Fingers Into Vagina Relieve Pressure on Umbilical Cord
    - Moist Saline Dressing Over Cord Eval Fetal Heart Rate / Cord Pulsation
- Crowning, ≥36 Weeks Gestation → A IV Access Protocol pXx
  - Breech / Footling / Abnormal Presentation
    - Transport knees to chest Unless Delivery Imminent
    - Encourage Mother to Refrain from Pushing
    - Support Presenting Parts, Do **NOT** Pull
- Crowning, <36 Weeks Gestation
  Abnormal Presentation
  Severe Vaginal Bleeding
  Multiple Gestation
  - Activate ALS
  - Expedite Transport to Nearest OB Receiving Facility → A IV Access Protocol pXx
  - Crowning, Delivery Imminent
    - Control delivery with gentle support of head to prevent injury to Mother/Baby
    - Check for nuchal cord; if present slip over head gently
    - Gently apply downward pressure to deliver anterior shoulder, then upward to deliver posterior shoulder

Notify Receiving Facility, Contact Medical Control As Necessary

Pearls

REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- **If Delivery is Completed, go to *Newly Born Protocol* for evaluation and management of the infant**
- Remember that you have TWO patients during Pregnancy, Labor and Delivery; be sure to monitor and protect both throughout your management
- After Delivery, massage the uterus through the anterior abdomen and wait for the placenta; **NEVER** pull on the umbilical cord to expedite the afterbirth
- Record the APGAR Scores for the infant at 1minute and 5minutes after delivery; if either in the Moderately Depressed range, continue to record and document every 5 minutes while supporting the infant per the Newly Born Protocol

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Newly Born - Peds

Pertinent Positives and Negatives

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- Pregnancy History (G's and P's)
- Estimated Due Date
- Prenatal Care / High Risk Pregnancy
- Time of Contraction Onset, Frequency
- Rupture of Membranes and Time
- Sensation of Fetal Movement

Differential

- Maternal Medication Effect
- Hypovolemia
- Pneumothorax
- Hypoglycemia
- Congenital Heart Defect
- Maternal / Newborn Infection / Sepsis
- Airway Obstruction – Secretions
- Choanal Atresia (imperforate nares)

Airway Suctioning

Routine Suctioning of the Newborn is NO LONGER Recommended

Clear Amniotic Fluid

Suction ONLY when obstruction is present and/or BVM is required

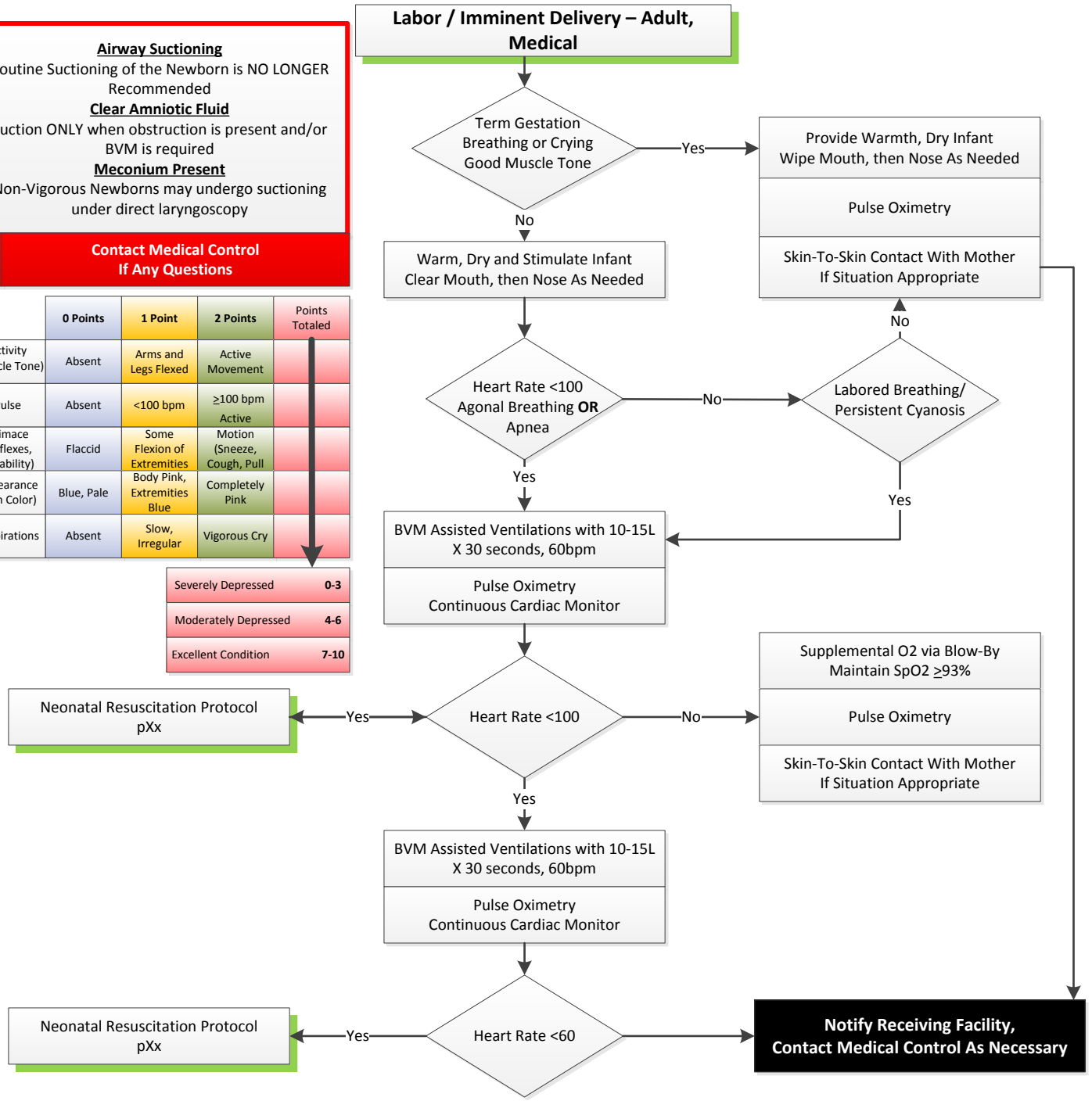
Meconium Present

Non-Vigorous Newborns may undergo suctioning under direct laryngoscopy

M **Contact Medical Control If Any Questions**

	0 Points	1 Point	2 Points	Points Totaled
Activity (Muscle Tone)	Absent	Arms and Legs Flexed	Active Movement	
Pulse	Absent	<100 bpm	≥100 bpm Active	
Grimace (Reflexes, Irritability)	Flaccid	Some Flexion of Extremities	Motion (Sneeze, Cough, Pull	
Appearance (Skin Color)	Blue, Pale	Body Pink, Extremities Blue	Completely Pink	
Respirations	Absent	Slow, Irregular	Vigorous Cry	

Severely Depressed	0-3
Moderately Depressed	4-6
Excellent Condition	7-10



Pearls

REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- Most Newborns requiring resuscitation will respond to supplemental O2, BVMs, airway clearing maneuvers. If not, go to Neonatal Resuscitation Protocol
- Consider birth trauma during evaluation of non-vigorous Newborn; pneumothorax, hypovolemia, hypoglycemia
- Term gestation, strong cry / adequate respirations with good tone will generally need no resuscitation
- Expected Pulse Ox Readings: Birth – 1min = 60-65%, 1-2min = 65-70%, 3-4min = 70-75%, 4-5min = 75-80%, 5-10min = 80-85%, >10min = >90%
- APGAR scores at 1min and 5 min. Appearance, Pulse, Grimace, Activity, Respirations. Each score gets 0, 1 or 2 points (Total 10). If either in the moderately depressed range, continue to record and document every 5 minutes.

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Cholinergic / Organophosphate Overdose - Adult

Pertinent Positives/Negatives:

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- History of Ingestion or Suspected Ingestion
- Dysrhythmias
- SLUDGEM
- DUMBELLS
- Time of Ingestion
- Type, Number and Dose of Pills Taken (if known)
- Seizures
- Mental Status Change
- Vomiting

Differential

- Head Injury
- Hazmat Exposure
- Electrolyte Imbalance
- DM, CVA, Seizure
- Sepsis

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** – **S**alivation, **L**acrimation, **U**rination (Incontinence), **D**efecation (Incontinence), **GI** Upset, **E**mesis, **M**iosis
- 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.
- A **cholinergic crisis** is an over-stimulation at a neuromuscular junction due to an excess of acetylcholine (ACh), as of a result of the inactivity or inhibition of the AChE enzyme, which normally breaks down acetylcholine

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Beta Blocker Overdose - Adult

Pertinent Positives/Negatives:

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- History of Ingestion or Suspected Ingestion
- Dysrhythmias
- SLUDGEM
- DUMBELLS
- Time of Ingestion
- Type, Number and Dose of Pills Taken (if known)
- Seizures
- Mental Status Change
- Vomiting
- QT <450

Differential

- Status Epilepticus
- Anticholinergic Syndrome
- Meningitis, Tetanus
- Hyperventilation
- Hypocalcemia, hypomagnesemia
- Oropharyngeal Infections
- Serotonin Syndrome
- Sepsis

Clinical Features of Beta Blocker Overdose

Cardiovascular – hypotension, bradycardia, AV block
Pulmonary – bronchospasm, wheezing
Metabolic – Hypoglycemia, Hyperkalemia
Neuro - Stupor

Common Beta Blockers:

Metoprolol (Lopressor, Toprol-XL)
Atenolol (Tenormin)
Labetalol
Propanolol (Inderal LA, InnoPran XL)
Carvedilol (Coreg)

General Approach, Adult Medical

Airway Evaluation
- Compromised → Airway Management Protocol pXx
- Adequate →

A — IV Access Protocol pXx
A — Normal Saline Bolus 250mL IV/IO
Administer Supplemental O2
12-Lead ECG Procedure (If Not Already Done) pXx

If at any time patient loses pulses

GO IMMEDIATELY to CARDIAC ARREST PROTOCOL pXx

Consider ECPR Protocol pXx

Beta Blocker Ingested Identified
- Sotalol → Monitor for Prolonged QT / Torsades de Pointes
  - P — If Yes, Magnesium Sulfate 2g IV/IO over 1-2 minutes
- Propranolol → Monitor for QRS Widening
  - P — If Yes Sodium Bicarbonate, 1mEq/kg IV/IO over 5 minutes As Needed
- No **OR** "Other" →

Blood Sugar
- <70 → A — Dextrose Dosing: D10W 125mL IV/IO **OR** D5W 250mL IV/IO **OR** D50 25mL IV/IO Titrate to Effect
- ≥70 →

Peaked T-waves OR Suspected HyperK
- Yes → P — Sodium Bicarbonate, 1mEq/kg IV/IO over 5 minutes
  - P — Calcium Chloride, 1g IV/IO bolus
- No →

HR <60 AND Symptomatic
- Yes →
  - P — Atropine, 0.5mg IV/IO May repeat x 2
  - P — **No change** Glucagon, 50mcg/kg (max 5mg) IV/IO
  - P — **No change** External Cardiac Pacing Procedure pXx
- No →

Notify Receiving Facility, Contact Medical Control As Necessary

Pearls

REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- **Many beta blocker ingestions do not cause symptoms; exceptions are the elderly, poor cardiac/respiratory reserve, and coingestions with other cardiac medications**
- Patients are unreliable historians in overdose situations, particularly in suicide attempts. Trust what they tell you, but verify (pill bottles, circumstances, etc.)
- Many intentional overdoses involve multiple substances, some of which can have cardiac toxicity; **a 12-Lead should be obtained on all overdose patients**
- Contact Poison Control for all non-opiate overdoses: **1-800-222-1222**

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Calcium Channel Blocker Overdose - Adult

Pertinent Positives/Negatives:

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- History of Ingestion or Suspected Ingestion
- Dysrhythmias
- SLUDGE
- DUMBELLS
- Time of Ingestion
- Type, Number and Dose of Pills Taken (if known)
- Seizures
- Mental Status Change
- Vomiting

Differential

- Status Epilepticus
- Anticholinergic Syndrome
- Meningitis, Tetanus
- Hyperventilation
- Hypocalcemia, hypomagnesemia
- Oropharyngeal Infections
- Serotonin Syndrome
- Sepsis

General Approach, Adult Medical

Clinical Features of Calcium Channel Blocker Overdose

Cardiovasccular – hypotension, bradycardia, shock
Pulmonary – pulmonary edema, rales, crackles
Metabolic – Hyperglycemia (can be a marker of severity)
Neuro – Seizures, myoclonus, dizziness, syncope
GI – Nausea and vomiting

Common Calcium Channel Blockers:

Amlodipine (Norvasc)
Diltiazem (Cardizem, Tiazac)
Nicardipine
Nifedipine (Procardia)
Verapamil (Calan, Verelan)

Airway Evaluation
- Compromised → Go To Airway Management Protocol pXx
- Adequate →

A — IV Access Protocol pXx

A — Normal Saline Bolus 250mL IV/IO

Administer Supplemental O2

12-Lead ECG Procedure (If Not Already Done) pXx

If at any time patient loses pulses

GO IMMEDIATELY to CARDIAC ARREST PROTOCOL pXx

Consider ECPR Protocol pXx

Blood Sugar
- <70 → A — Dextrose Dosing: D10W 125mL IV/IO **OR** D5W 250mL IV/IO **OR** D50 25mL IV/IO
- ≥70 →

HR <60 AND Symptomatic
- Yes → P — Atropine, 0.5mg IV/IO May repeat x 2
  P — Calcium Chloride, 1g IV/IO bolus
- No → P — Calcium Chloride, 1g IV/IO bolus

Notify Receiving Facility, Contact Medical Control As Necessary

Stable **OR** Improving
- Yes → **Notify Receiving Facility, Contact Medical Control As Necessary**
- No →
  P — Glucagon, 50mcg/kg (max 5mg) IV/IO
  P — **No change** Epinephrine, 2-10mcg/min 1:10,000 (max 10mcg/min) IV/IO
- Unstable →
  P — **No change** Consider External Cardiac Pacing Procedure pXx

Pearls

REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- Sustained release preparations may have delayed onset of toxic symptoms (up to 12 hours)
- **Overdoses with Calcium Channel Blockers have a high mortality!! Electrical conduction abnormalities, vasodilation, myocardial depression are severe**
- Patients are unreliable historians in overdose situations, particularly in suicide attempts. Trust what they tell you, but verify (pill bottles, circumstances, etc.)
- Many intentional overdoses involve multiple substances, some of which can have cardiac toxicity; **a 12-Lead should be obtained on all overdose patients**
- Contact Poison Control for all non-opiate overdoses: **1-800-222-1222**

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

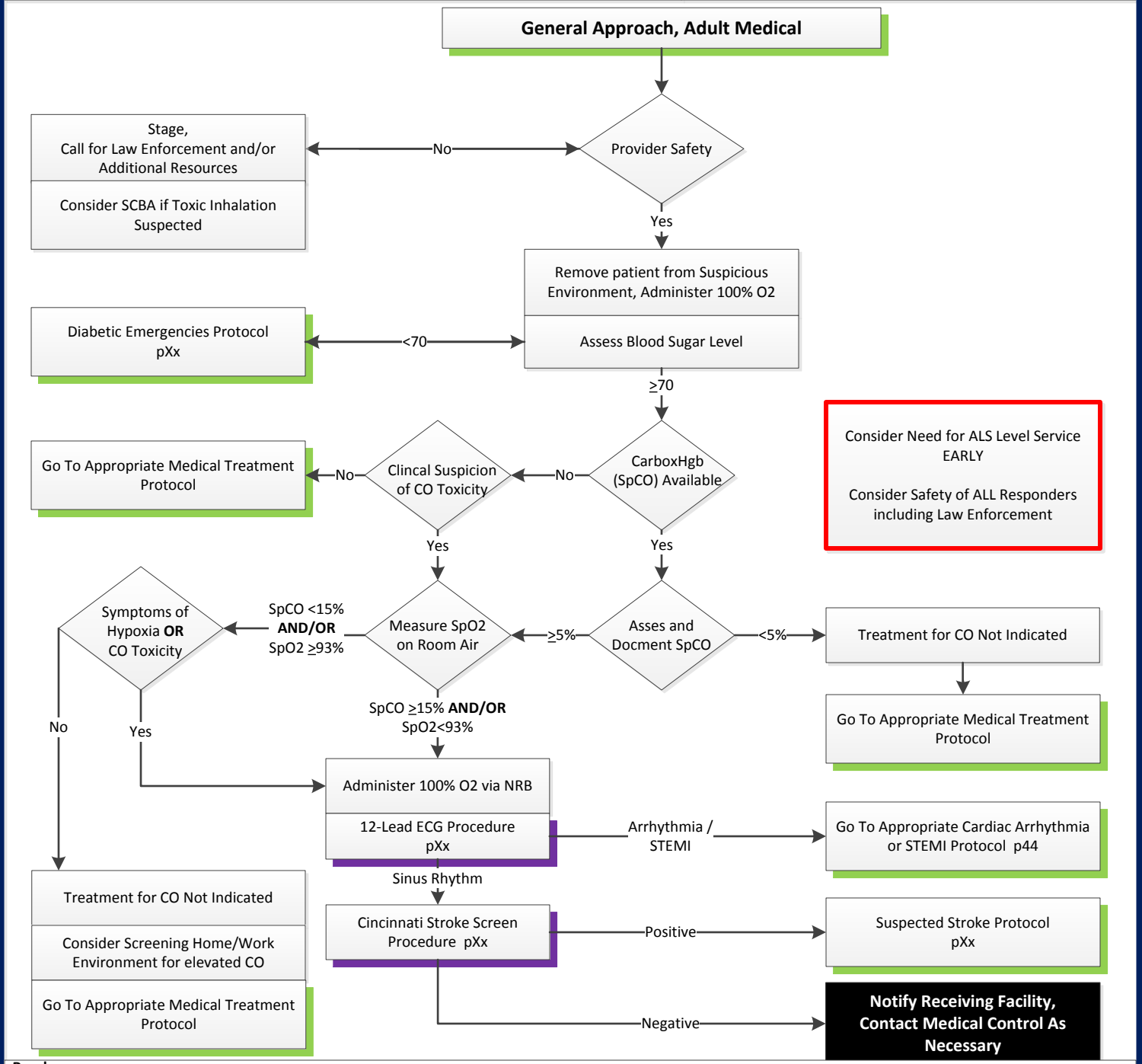
Carbon Monoxide Poisoning - Adult

Pertinent Positives/Negatives:

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- Known or suspected CO Exposure
- Source and Duration of Exposure
- Dysrhythmias
- Headache, Nausea/Vomiting
- Chest Pain, Arrhythmias
- Respiratory Distress
- Seizures
- Mental Status Change
- Vomiting

Differential

- Acute Myocardial Infarction
- Hypoglycemia
- Diabetic Ketoacidosis
- Subarachnoid Hemorrhage
- Acute Stroke
- Influenza
- Other toxic inhalation
- Tension Headache



Pearls

REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- Fetal hemoglobin has a stronger affinity for CO than adult, and will preferentially take the CO from the Mother, giving her a FALSE LOW SpCO level
- Hospital evaluation should be strongly encouraged for any pregnant or suspected to be pregnant females
- The absence or low levels of SpCO is not a reliable predictor of firefighter/victim exposures to other toxic byproducts of combustion. Consider the Cyanide Poisoning Protocol
- Multiple patients presenting with vague, influenza-like symptoms simultaneously should raise your suspicion of CO exposure. Ask about home heating methods, generator use, exposure to combustible fuels

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

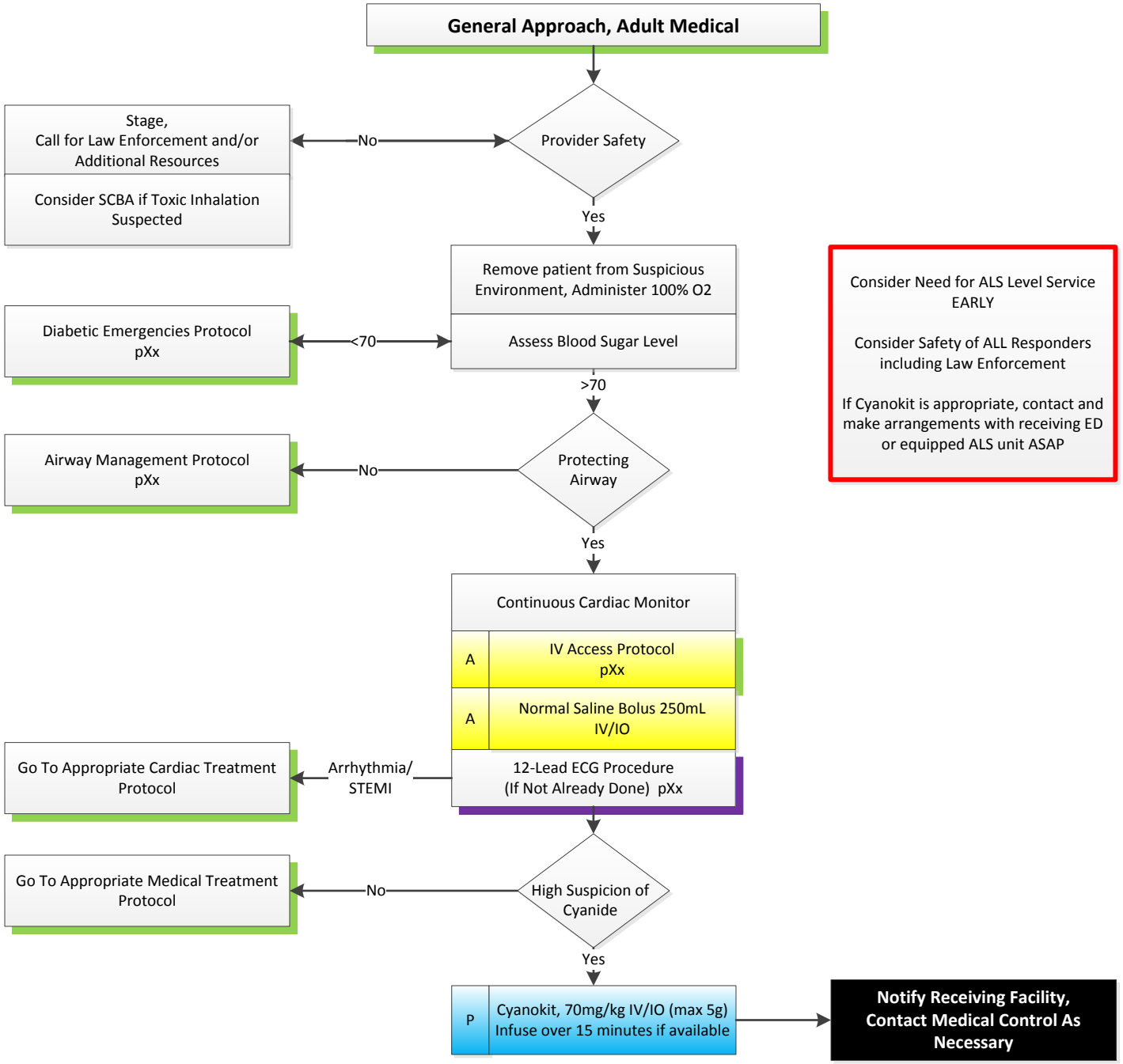
Cyanide Poisoning - Adult

Pertinent Positives/Negatives:

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- Known or suspected CO Exposure
- Source and Duration of Exposure
- Dysrhythmias
- Headache, Nausea/Vomiting
- Chest Pain, Arrhythmias
- Respiratory Distress
- Seizures
- Mental Status Change
- Vomiting

Differential

- Acute Myocardial Infarction
- Hypoglycemia
- Diabetic Ketoacidosis
- Subarachnoid Hemorrhage
- Acute Stroke
- Influenza
- Other toxic inhalation
- Tension Headache



Pearls

REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- Consider Cyanide when exposed to any products of combustion, mining incidents or industrial organic chemistry exposure.
- Fetal hemoglobin has a stronger affinity for CO than adult, and will preferentially take the CO from the Mother, giving her a **FALSE LOW** SpCO level
- Hospital evaluation should be strongly encouraged for any pregnant or suspected to be pregnant females
- The absence or low levels of SpCO is not a reliable predictor of firefighter/victim exposures to other toxic byproducts of combustion
- Multiple patients presenting with vague, influenza-like symptoms simultaneously should raise your suspicion of CO exposure. Ask about home heating methods

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Antipsychotic Overdose / Acute Dystonic Reaction - Adult

Pertinent Positives/Negatives:

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- History of Ingestion or Suspected Ingestion
- Dysrhythmias
- SLUDGEM
- DUMBELLS
- Time of Ingestion
- Type, Number and Dose of Pills Taken (if known)
- Seizures
- Mental Status Change
- Vomiting

Differential

- Status Epilepticus
- Anticholinergic Syndrome
- Meningitis, Tetanus
- Hyperventilation
- Hypocalcemia, hypomagnesemia
- Oropharyngeal Infections
- Serotonin Syndrome
- Sepsis

General Approach, Adult Medical

Common Causes of Dystonic Reactions

Antipsychotics – i.e. Haldol, Prolixin, Thorazine
Antiemetics – i.e. prochlorperazine, metaclopramide
Antidepressants – i.e. buspirone, sumitriptan
Antibiotics – i.e. erythromycin
Anticonvulsants – i.e. carbamazepine, vigabatrin
H2 Receptor Blockers – i.e. ranitadine, cimetidine
Recreational Drugs – i.e. cocaine

Airway Evaluation

Compromised → Airway Management Protocol pXx

Adequate

A — IV Access Protocol pXx

Administer Supplemental O2

12-Lead ECG Procedure (If Not Already Done) pXx

Arrythmia/ STEMI → Go To Appropriate Cardiac Treatment Protocol

P — Diphenhydramine 25mg IV/IO
May repeat x 1 after 10 minutes

Improving

No → P — Lorazepam 1-2mg IV/IO
OR
Midazolam 5mg IV/IO if <60 y/o
Midazolam 2.5mg IV/IO if >60y/o

Yes

Notify Receiving Facility, Contact Medical Control As Necessary

Pearls

REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- Acute dystonic reactions are extrapyramidal side effects of antipsychotic and certain other medications. 90% occur within 5 days of starting a new med
- **Dystonia refers to sustained muscle contractions, frequently causing twisting, repetitive movements or postures, and may affect any part of the body**
- Patients are unreliable historians in overdose situations, particularly in suicide attempts. Trust what they tell you, but verify (pill bottles, circumstances, etc.)
- Many intentional overdoses involve multiple substances, some of which can have cardiac toxicity; **a 12-Lead should be obtained on all overdose patients**
- Contact Poison Control for all non-opiate overdoses: 1-**800-222-1222**

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Opiate Overdose - Adult

Pertinent Positives/Negatives:

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- History of Ingestion or Suspected Ingestion
- Dysrhythmias
- SLUDGE
- DUMBELLS
- Time of Ingestion
- Type, Number and Dose of Pills Taken (if known)
- Seizures
- Mental Status Change
- Vomiting

Differential

- Post-ictal After Seizure
- Hypothyroidism
- EtOH / BZD overdose
- Intracranial Hemorrhage
- Hypoglycemia

General Approach, Adult Medical

In opiate overdoses, poor respiratory effort is what kills patients; emphasis should be on ventilation support first, and Naloxone administration second

Intranasal Naloxone is **ONLY** effective if there is a pulse; circulatory support is key

IN Naloxone has a slower onset, but seems to have a lower incidence of agitation and aggression after administration

While there is no maximum for Naloxone, if the patient does not respond after 2 doses the emphasis should be on airway and ventilation support while looking for other causes of altered mental status

Airway Evaluation

- Compromised → Airway Management Protocol pXx
- Adequate

	Naloxone 0.5-1mg IN each naris may repeat x 1 **OR**
A	IV Access Protocol pXx
A	Naloxone 0.5-2.0mg IV/IO/IM, May repeat x1
	Administer Supplemental O2 to maintain SpO2 ≥93%
	12-Lead ECG Procedure (If Not Already Done) pXx

- Arrhythmia/STEMI → Go To Appropriate Cardiac Care Protocol

Blood Sugar

- <70 → A: Dextrose Dosing: D10W 125mL IV/IO **OR** D5W 250mL IV/IO **OR** D50 25mL IV/IO
- >70

Monitor RR, SpO2 and Mental Status

Improved

- No → Consider Altered Mental Status Protocol pXx → M: Contact Medical Control
- Yes → **Notify Receiving Facility, Contact Medical Control As Necessary**

Single Agent Opiate Medications

Oxycodone
Hydrocodone
Morphine
Heroin
Dilaudid
Fentanyl
Codeine

Combination Opiate Medications

Vicodin – Hydrocodone + Tylenol
Norco – Hydrocodone + Tylenol
Percocet – Oxycodone + Tylenol
Darvocet – Darvon + Tylenol
Vicoprofen – Hydrocodone + Ibuprofen
T3 – Tylenol + Codeine

Long-Acting Opiate Medications

Oxycontin
MS Contin
Methadone

If at any time patient loses pulses
GO IMMEDIATELY to CARDIAC ARREST PROTOCOL p38

In the setting of overdose, these patients need **CPR, not CCR

Pearls

REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- Opiates may be taken orally, intravenously and inhalational (smoked/snorted). All routes are capable of causing respiratory arrest in overdose
- All opiates have effects that last longer than Naloxone. Extended Release and Long-Acting formulations will likely need repeat Naloxone dosing in overdose
- Naloxone has been connected to flash pulmonary edema after administration for opiate overdose; for this reason, all opiate OD patients must be transported
- Intranasal Naloxone should be distributed between both nares to optimize absorption
- Patients are unreliable historians in overdose situations, particularly in suicide attempts. Trust what they tell you, but verify (pill bottles, circumstances, etc.)
- Many intentional overdoses involve multiple substances, some of which can have cardiac toxicity; **a 12-Lead should be obtained on all overdose patients**
- Contact Poison Control for all non-opiate overdoses: **1-800-222-1222**

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Cocaine and Sympathomimetic Overdose - Adult

Pertinent Positives/Negatives:

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- History of Ingestion or Suspected Ingestion
- Dysrhythmias
- SLUDGE
- DUMBELLS
- Time of Ingestion
- Type, Number and Dose of Pills Taken (if known)
- Seizures
- Mental Status Change
- Vomiting

Differential

- Status Epilepticus
- Anticholinergic Syndrome
- Meningitis, Tetanus
- Hyperventilation
- Hypocalcemia, hypomagnesemia
- Oropharyngeal Infections
- Serotonin Syndrome
- Sepsis
- Subarachnoid Hemorrhage
- Pheochromocytoma

General Approach, Adult Medical

Sympathomimetics are drugs that mimic the effects of the sympathetic nervous system

Clinical Features of Cocaine or Sympathomimetic Overdose

Hypertension, Tachycardia, Agitation, Seizure, Dilated Pupils

Common Sympathomimetics:

Ephedrine
Phenylephrine
Pseudophedrine
Methamphetamine
Terbutaline

Airway Evaluation

Compromised → Airway Management Protocol pXx

Adequate

If at any time patient loses pulses

GO IMMEDIATELY to CARDIAC ARREST PROTOCOL pXx

Consider ECPR Protocol pXx

A — IV Access Protocol pXx

A — Normal Saline Bolus 250mL IV/IO

Administer Supplemental O2

12-Lead ECG Procedure (If Not Already Done) pXx

Arrhythmia/ STEMI → Go To Appropriate Cardiac Care Protocol

No **OR** "Other"

Chest Pain in the setting of Cocaine use should be treated with IV Fluids and Benzodiazepines.

Beta Blockers are CONTRAINDICATED in cocaine use, *as it can result in unopposed alpha activity*

Blood Sugar

<70 → A — Dextrose Dosing: D10W 125mL IV/IO **OR** D5W 250mL IV/IO **OR** D50 25mL IV/IO

≥70

Agitation

Yes → Consider Behavioral / Excited Delirium Protocol pXx

P — Lorazepam 1-2mg IV/IO/IM **OR** Midazolam 2-4mg IV/IO/IM/IN (max 4mg)

No

Seizure

Yes → Seizure Protocol pXx

No → **Notify Receiving Facility, Contact Medical Control As Necessary**

Pearls

REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- Patients on MAOIs for depression may have symptoms of a Sympathomimetic Overdose after eating certain foods such as **aged cheese, beer, mushrooms**
- Patients with Cocaine or Sympathomimetic Overdose are at high risk of Arrhythmias, Myocardial Infarction and Stroke
- Patients are unreliable historians in overdose situations, particularly in suicide attempts. Trust what they tell you, but verify (pill bottles, circumstances, etc.)
- Many intentional overdoses involve multiple substances, some of which can have cardiac toxicity; **a 12-Lead should be obtained on all overdose patients**
- Contact Poison Control for all non-opiate overdoses: **1-800-222-1222**

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Tricyclic Overdose - Adult

Pertinent Positives/Negatives:

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- History of Ingestion or Suspected Ingestion
- Dysrhythmias
- SLUDGEM
- DUMBELLS
- Time of Ingestion
- Type, Number and Dose of Pills Taken (if known)
- Seizures
- Mental Status Change
- Vomiting

Differential

- Head Injury
- Hazmat Exposure
- Electrolyte Imbalance
- DM, CVA, Seizure
- Sepsis

General Approach, Adult Medical

Common Tricyclic Antidepressants:

Amitriptyline
Clomipramine
Doxepin
Imipramine
Nortryptyline
Protriptyline

If at any time patient loses pulses

GO IMMEDIATELY to CARDIAC ARREST PROTOCOL pXx

Consider ECPR Protocol pXx

Any Co-ingestants — Yes → Collect Pill Bottles, Pill Fragments and Prescriptions as possible and bring to the ED

12-Lead ECG Procedure (If Not Already Done) pXx

Wide QRS — ≥0.12sec →
- A: IV Access Protocol (If Not Already Done) p54
- P: Sodium Bicarbonate, 1mEq/kg IV/IO over 5 minutes

<0.12sec

Hypotension — SBP <100 →
- A: IV Access Protocol (If Not Already Done) pXx
- A: Normal Saline Bolus 250mL IV/IO

Improved — Yes → SBP ≥100

Improved — No → Shock (Non-Trauma) Protocol pXx

Hypotension — Yes → BP Improved **AND** QRS Narrowing — No →
- P: Sodium Bicarbonate, 1mEq/kg IV/IO over 5 minutes
- If Airway Managed, Hyperventilate to goal EtCO2 30-35mmHg

Improving

SBP ≥100

Seizure — Yes →
- A: IV Access Protocol (If Not Already Done) pXx
- P: Lorazepam 1-2mg IV/IO/IM **OR** Midazolam 2-4mg IV/IO/IM/IN (One Time)

Seizure — No

Arrhythmia — Yes → Go To Appropriate Arrhythmia Protocol

Arrhythmia — No → **Notify Receiving Facility, Contact Medical Control As Necessary**

Pearls

REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- If arrhythmias occur in TCA Overdose, the first step is to give more Sodium Bicarbonate. Then move on to the Appropriate Arrhythmia Protocol
- Administer IV Sodium Bicarbonate 1mEq/kg over 5 minutes, and repeat every 5 minutes until BP improves and QRS complex begins to narrow.
- **Avoid beta-blockers and amiodarone as they may worsen hypotension and conduction abnormalities**
- Patients are unreliable historians in overdose situations, particularly in suicide attempts. Trust what they tell you, but verify (pill bottles, circumstances, etc.)
- Many intentional overdoses involve multiple substances, some of which can have cardiac toxicity; **a 12-Lead should be obtained on all overdose patients**
- Contact Poison Control for all non-opiate overdoses: **1-800-222-1222**

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

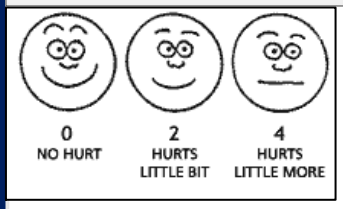
Pain Management - Adult

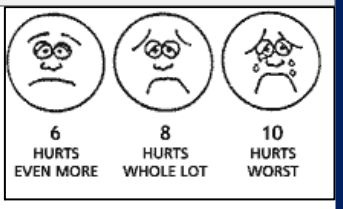
Pertinent Positives and Negatives

- Age, VS, GCS
- SAMPLE History
- OPQRST History
- History of chronic pain

Differential

- Head injury
- Spine Injury
- Compartment Syndrome
- Fracture, Sprain, Strain
- Pneumo/hemo-thorax
- Pericardial effusion
- Aortic Dissection
- Internal organ injury





General Approach – Adult Medical OR Trauma

Assess Pain
0-10 Pain Scale OR FACES Scale

None – Mild Pain (0-4)

- A: Consider Acetaminophen PO* 15mg/kg (max 650mg)
- A: Consider Ibuprofen PO* Max 600mg

Reassess Pain

- Worsening → **Moderate Pain (5-8)**
- Improved → Document response to meds, VS (HR, BP, SpO2, EtCO2)
- Continue with Adult Specific Protocol

Moderate Pain (5-8)

- Place patient on cardiac monitor, continuous SpO2 and EtCO2
- P: Consider IN Fentanyl 1mcg/kg (max 50mcg per naris)
- A: Consider NITROUS Procedure
- A: IV Access Protocol pXx
- A: Consider Ketorolac 15mg IV/IM
- P: Fentanyl 1mcg/kg IV/IO/IM (max 100mcg) May repeat x 1
- P: Consider Ondansetron 4mg IV/IO/ODT/IM

Reassess Pain

- Improved → Document response to meds, VS (HR, BP, SpO2, EtCO2)
- Continue with Adult Specific Protocol
- Worsening → **Severe Pain (9-10)**

Severe Pain (9-10)

- Place patient on cardiac monitor, continuous SpO2 and EtCO2
- P: Consider IN Fentanyl 1mcg/kg (max 50mcg per naris)
- A: Consider NITROUS Procedure
- A: IV Access Protocol pXx
- P: Fentanyl 1mcg/kg IV/IO/IM (max 100mcg) May repeat x 1
- P: Consider Ondansetron 4mg IV/IO/ODT/IM
- P: Consider Ketamine 0.2mg/kg IV/IO (max dose 20mg)
- Document response to meds, VS (HR, BP, SpO2, EtCO2)
- Continue with Adult Specific Protocol

Pearls

REQUIRED EXAM: Vital Signs, GCS, Neuro Exam, Lung Sounds, Abdominal Exam, Musculoskeletal Exam, Area of Pain

- Provider Discretion to be used for patients suffering from chronic pain related issues. However, please note that history of chronic pain does not preclude the patient from treatment of acute pain related etiologies.
- Pain severity (0-10) is a vital sign to be recorded pre- and post-medication delivery and at disposition
- As with all medical interventions, assess and document change in patient condition pre- and post-treatment
- Opiate naive patients and the elderly can have a dramatic response to analgesic medications; start low and titrate up as appropriate
- Allow for position of maximum comfort as situation allows
- Acetaminophen and Ibuprofen are optional for Paramedic level services
- **Ketorolac is contraindicated in: Elderly (>65 y/o), pregnancy/reproductive age, anticoagulation or bleeding diatheses, anticipated surgery, NSAID use (including EMS administered ibuprofen), peptic ulcer or GI bleeding, possible intracranial hemorrhage, renal insufficiency**
- ***Oral medications are contraindicated in anyone who may need an emergent surgery or procedure; "if in doubt, don't give PO"**

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Refusal Protocol - Adult

Pertinent Positives and Negatives

- Age, VS, BP, RR, SpO2
- SAMPLE history
- OPQRST history
- Mental Status
- Pale, Cool Skin
- Delayed Cap Refill

Differential

- Cardiac Dysrhythmia
- Hypoglycemia
- Overdose
- Toxidrome
- Sepsis
- Occult Trauma
- Adrenal Insufficiency

General Approach – Adult, Medical

- ❑ ≥18 Years of Age **OR**
- ❑ Court Emancipated Minor **OR**
- ❑ Legally Married Person of Any Age **OR**
- ❑ Unwed Pregnant Female <18 **IF and ONLY IF** EMS Call Related to Pregnancy

→ No → Parent/Legal Guardian of Patient Can Be Contacted → Yes → Pediatric Refusal Protocol pXx

Yes ↓

No → Transport Required Under Implied Consent **OR** Police Protective Custody

- ❑ Altered Mental Status **OR**
- ❑ Impaired Decision Making Ability **OR**
- ❑ Hallucinations or Thought Disorder **OR**
- ❑ Incapacitated* **OR**
- ❑ Suicidal or Homicidal Ideation

→ Yes → Transport Required Under Implied Consent **OR** Police Protective Custody

No ↓

- ❑ Clinically Intoxicated** **OR**
- ❑ EtOH Use AND *Prudent EMS Provider* Believes Treatment IS Needed

→ Yes →

- ❑ Consult PD To Determine Appropriate Disposition
- ❑ Transport by Ambulance or Alternative (Wisconsin State Statute 51.45)
- ❑ Police Officer Name and Badge Number REQUIRED in Documentation

No ↓

- ❑ Bronchospasm Resolved after ONE Nebulizer Treatment **OR**
- ❑ Insulin *Only* Induced Hypoglycemia Resolved After ONE Treatment

→ Yes → Refusal After EMS Treatment Protocol pXx

No ↓

- ❑ Document assessment including mental status, physical exam, vitals, and SpO2
- ❑ Blood glucose check and documentation **for any patient with history of diabetes, EtOH, seizure OR altered mental status**
- ❑ Assure that the patient/parent/guardian understands the possible consequences of refusal
- ❑ Complete documentation of refusal and obtain signatures
- ❑ Contact On-Line Medical Control for refusals that arise after EMS treatment has been initiated

Pearls

REQUIRED EXAM: VS, GCS, Nature of Complaint

- *Incapacitated definition: A person who, because of alcohol consumption or withdrawal, is unconscious or whose judgment is impaired such that they are incapable of making rational decisions as evidenced by extreme physical debilitation, physical harm or threats of harm to themselves, others or property. Evidence of incapacitation: inability to stand on ones own, staggering, falling, wobbling, vomit/urination/defecation on clothing, inability to understand and respond to questions, DTs, unconsciousness, walking or sleeping where subject to danger, hostile toward others.
- **Intoxicated definition: A person whose mental or physical functioning is substantially impaired as a result of the use of alcohol.
- If there is ANY question, do not hesitate to involve Law Enforcement to ensure the best decisions are being made on behalf of the patient.

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Refusal After EMS Treatment - Adult

Pertinent Positives and Negatives

- Age, VS, BP, RR, SpO2
- SAMPLE history
- OPQRST history
- Mental Status
- Pale, Cool Skin
- Delayed Cap Refill

Differential

- Cardiac Dysrhythmia
- Hypoglycemia
- Overdose
- Toxidrome
- Sepsis
- Occult Trauma
- Adrenal Insufficiency

Refusal Protocol – Adult, Medical

Reason for EMS Activation

Bronchospasm, Resolved after Nebulizer

- ❑ Asymptomatic After One Treatment
- ❑ Presentation is Consistent with Mild Asthma/COPD Exacerbation
- ❑ No pain, no sputum, afebrile, no hemoptysis
- ❑ Not hypoxic after Treatment (SpO2 ≥93%)
- ❑ Complete Resolution of Symptoms
- ❑ Vital Signs WNL after Treatment

ALL 'Yes'

Insulin-only Induced Hypoglycemia

- ❑ Asymptomatic After Treatment
- ❑ Patient is on insulin ONLY (does not take ANY oral diabetes medications)
- ❑ Presentation consistent with simple hypoglycemia
- ❑ Vital Signs WNL after Treatment
- ❑ No indication of intentional overdose

ALL 'Yes'

ANY 'No' / **ANY** 'No'

Transport Required
OR
Police Protective Custody
Contact On-Line Medical Control as necessary

Consider Additional Patient Safety Measures

- ❑ A Family Member or Caregiver is available to stay with the patient to assist/activate EMS if symptoms return
- ❑ Assure that the patient/parent/guardian understands the possible consequences of refusal
- ❑ Request the patient to follow up with their physician as soon as possible and/or to contact 9-1-1 if symptoms return

ALL 'Yes'

- ❑ Document assessment including mental status, physical exam, vitals, and SpO2
- ❑ Blood sugar evaluation and documentation for **any patient with history of diabetes, EtOH OR altered mental status**
- ❑ Assure that the patient/parent/guardian understands the possible consequences of refusal
- ❑ Complete documentation of refusal and obtain signatures

ANY 'No'

Transport Required
OR
Police Protective Custody
Contact On-Line Medical Control as necessary

Pearls

REQUIRED EXAM: VS, GCS, Nature of Complaint

- *Incapacitated definition: A person who, because of alcohol consumption or withdrawal, is unconscious or whose judgment is impaired such that they are incapable of making rational decisions as evidenced by extreme physical debilitation, physical harm or threats of harm to themselves, others or property. Evidence of incapacitation: inability to stand on ones own, staggering, falling, wobbling, vomit/urination/defecation on clothing, inability to understand and respond to questions, DTs, unconsciousness, walking or sleeping where subject to danger, hostile toward others.
- Simple Hypoglycemia for these protocols is defined as: hypoglycemia caused by insulin ONLY and not suspected to be due to occult infection or trauma
- **Intoxicated definition: A person whose mental or physical functioning is substantially impaired as a result of the use of alcohol.
- If there is ANY question, do not hesitate to involve Law Enforcement to ensure the best decisions are being made on behalf of the patient.

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Seizure - Adult

Pertinent Positives and Negatives

- Age, VS, GCS, SpO2, Blood Sugar
- SAMPLE History
- OPQRST History
- Seizure History, Med Compliance
- Bowel or Bladder Incontinence
- Tongue Biting
- Pregnancy History
- Evidence of Trauma
- Number of Seizures and Duration

Differential

- Hypoxia
- Hypoglycemia
- Electrolyte Imbalance
- Eclampsia
- Stroke
- Hyperthermia
- Drugs, EtOH Abuse
- Drugs, EtOH Withdrawal
- Occult Head Injury
- Tumor
- Liver / Kidney Failure
- Infection / Sepsis

General Approach – Adult, Medical

Consider ALS *Early*
Prolonged Seizures Are BAD for Neurologic Outcomes!

Environmental Cause or Toxic Exposure
- Yes → Notify Comm Center and Hazmat Team Ensure Responder and Public Safety → Hazmat, General Protocol pXx
- No

Actively Seizing on EMS Arrival
- No → Blood Glucose
  - ≤70 → Diabetic Emergencies Protocol pXx
  - >70 → Loosen Constrictive Clothing Protect Patient from Injury
    - A: IV Access Protocol pXx
    - Monitor and Reassess
    - Normal Mental Status
      - No → Consider Altered Mental Status Protocol pXx
      - Yes → Seizure Returns
        - Yes
        - No → **Notify Receiving Facility, Contact Medical Control As Necessary**
- Yes → Blood Glucose
  - ≤70 → Diabetic Emergencies Protocol pXx
  - >70 → Consider Airway Management Protocol pXx
    - P: Midazolam 5mg IM/IN if <60 y/o; Midazolam 2.5mg IM/IN if ≥60 y/o
    - Loosen Constrictive Clothing Protect Patient from Injury
    - A: IV Access Protocol pXx
    - Consider Long Board Selective Spinal Immobilization Protocol pXx
    - Still Seizing
      - No → Consider Altered Mental Status Protocol pXx
      - Yes
        - Yes
        - Yes → P: Lorazepam 2mg IV/IO **OR** Midazolam 5mg IV/IO if <60 y/o; Midazolam 2.5mg IV/IO if >60y/o
          - Status Epilepticus
            - No → **Notify Receiving Facility, Contact Medical Control As Necessary**
            - Yes → **Contact Medical Control**

Pearls

REQUIRED EXAM: Blood Sugar, SpO2, GCS, Neuro Exam

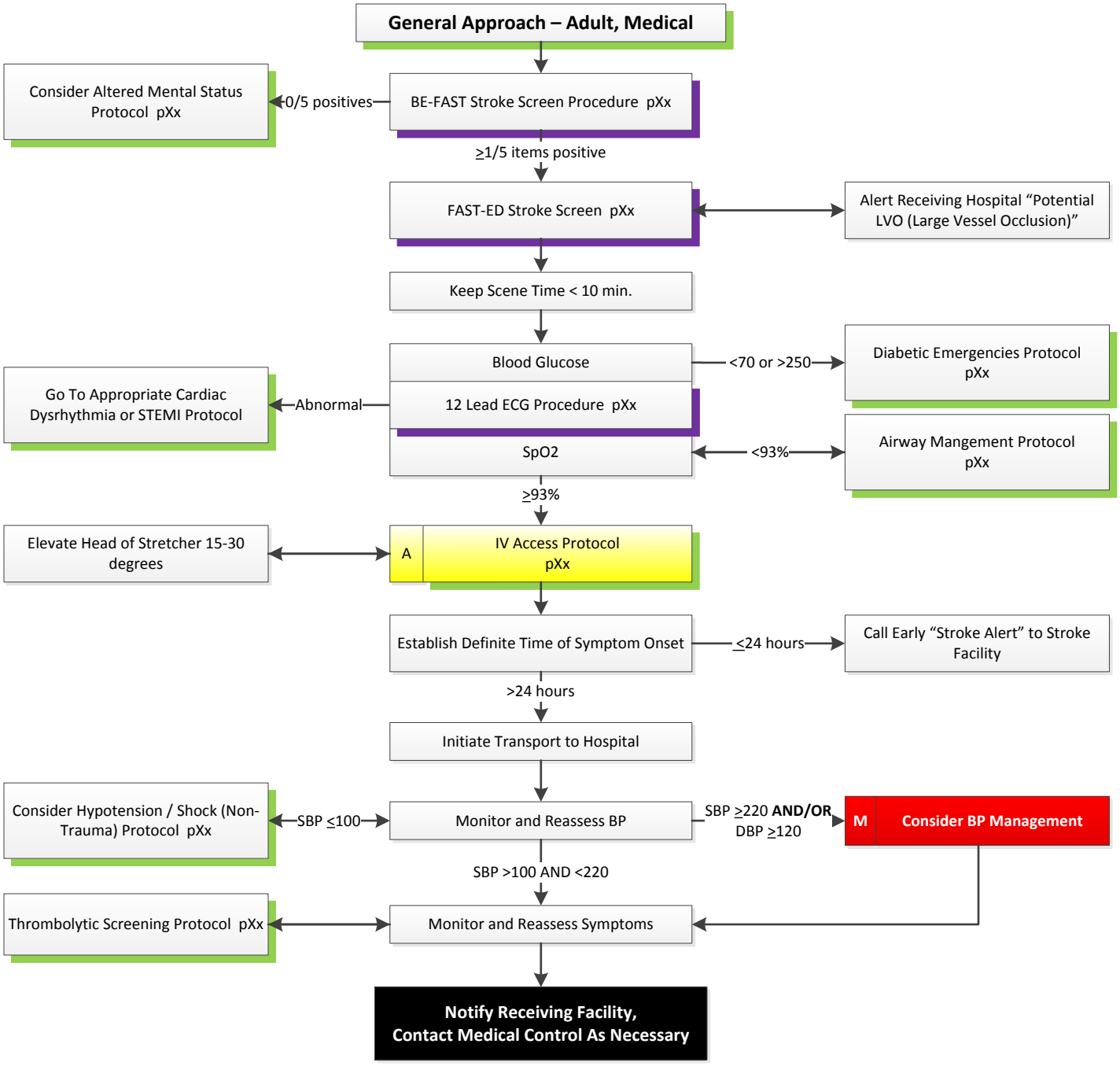
- Midazolam is effective in terminating seizures. Do not delay IM/IN administration to obtain IV access in an actively seizing patient
- Do not hesitate to treat recurrent, prolonged (>1 minute) seizure activity
- Status epilepticus is ≥2 successive seizures without recovery or consciousness in between. This is a TRUE EMERGENCY requiring Airway Management and rapid transport
- Assess for possibility of occult trauma, substance abuse
- Active seizure in known or suspected pregnancy >20 weeks, give Magnesium 4gm IV/IO over 2-3 minutes

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Suspected Stroke - Adult

Pertinent Positive/Negative:
- SAMPLE History
- OPQRST History
- History of CVA, TIA
- Previous Cardiac, Vascular Surgery
- Anticoagulant Use
- Weakness / Paralysis
- Aphasia / Dysarthria
- Headache
- Vertigo
- Seizure

Differential
- TIA
- Seizure
- Hypoglycemia
- Tumor
- Occult Trauma
- Stroke
  - -Thrombolic (~85%)
  - -Hemorrhagic (~15%)



Pearls

REQUIRED EXAM: VS, SpO2, Blood Glucose, Neuro Exam, Cincinnati Stroke Scale

- Thrombolytic Screening Protocol should be completed for any suspected stroke patient
- Think **FAST** – **F**acial Asymmetry, **A**rm Strength, **S**peech and **T**ime since last seen normal
- Be very diligent observing for airway compromise in suspected acute stroke (swallowing, vomiting, aspirating)
- Hypoglycemia, Infection and Hypoxia can present with Neurologic deficit, *especially in the elderly*.
- IV Access is important, but establishment of a line should not significantly delay initiation of transport. Time lost is brain lost!

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Sepsis Screening - Adult

Step One — Systemic Inflammatory Response Syndrome (SIRS) criterial met

- Temperature >38°C (100.4°F)
- Temperature <36°C (96.8°F)
- Chills/Rigors
- Pulse >90
- Respiratory Rate >20
- Acute Mental Status Changes from Baseline
- Glucose >120 without history of Diabetes

<2 Criteria Met →
- Monitor and reassess patient as indicated
- Notify Receiving Hospital for any changes in patient condition

Continue Treatment per Appropriate Medical Protocol

≥2 Criteria Met

Step Two — Is the patient's history / complaint suggestive of an infection?

- Pneumonia
- UTI
- Abdominal Infection
- Blood Stream Catheter Infection
- Bone or Joint Infection
- Skin or Soft Tissue Infection
- Central Nervous System Infection (i.e. Meningitis)
- Endocarditis
- ENT / Maxillofacial Infection
- Foreign Body / Implantable Device Infection

No →
- Monitor and reassess patient as indicated
- Notify Receiving Hospital for any changes in patient condition

Continue Treatment per Appropriate Medical Protocol

Yes

Step Three — **Begin IVF Bolus, 500mL NS** and Consider Shock / Non-Trauma Protocol
Is any of the following organ dysfunction present and **NOT** considered chronic and **NOT** caused by another condition?
Consider ALS intercept - IVF resuscitation and pressors with early antibiotics are key to patient survival
Notify Receiving Hospital of "**Medical Red, SEPSIS ALERT**" as part of radio report

- Systolic BP ≤90mmHg **OR** MAP ≤65mmHg
- SBP down 40mmHG from baseline
- New or increased O_2 requirement to keep SpO_2 ≥90%
- ST segment depression on 12-Lead ECG
- Mental Status Changes

No →
- Monitor and reassess patient as indicated
- Notify Receiving Hospital for any changes in patient condition

Continue Treatment per Appropriate Medical Protocol

Yes

Consider Shock (Non-Trauma) Protocol
pXx

Pearls

REQUIRED EXAM: VS, SpO2, Blood Glucose, Neuro Exam, Cincinnati Stroke Scale

- **SIRS**: The body's inflammatory response to an insult that results in the activation of the immune response
- **Sepsis**: SIRS + documented or highly suspected infection
- **Severe Sepsis**: Sepsis + sepsis induced organ dysfunction
- **Septic Shock**: Sepsis-induced hypotension persisting despite adequate fluid resuscitation resulting in tissue hypoperfusion
- **Surviving Sepsis Campaign (SSC)**: An international initiative to reduce mortality in patients with sepsis. Mortality with severe sepsis is 30-50%, and increases to 60% when shock is present. There are 750,000 new cases and 210,000 US fatalities are attributed to sepsis annually.
- The importance of early identification of sepsis and prompt appropriate treatment cannot be understated; EMS **is** the critical first link!
- Fluid resuscitation, pressors and EARLY antibiotics are the things that save lives in sepsis.

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

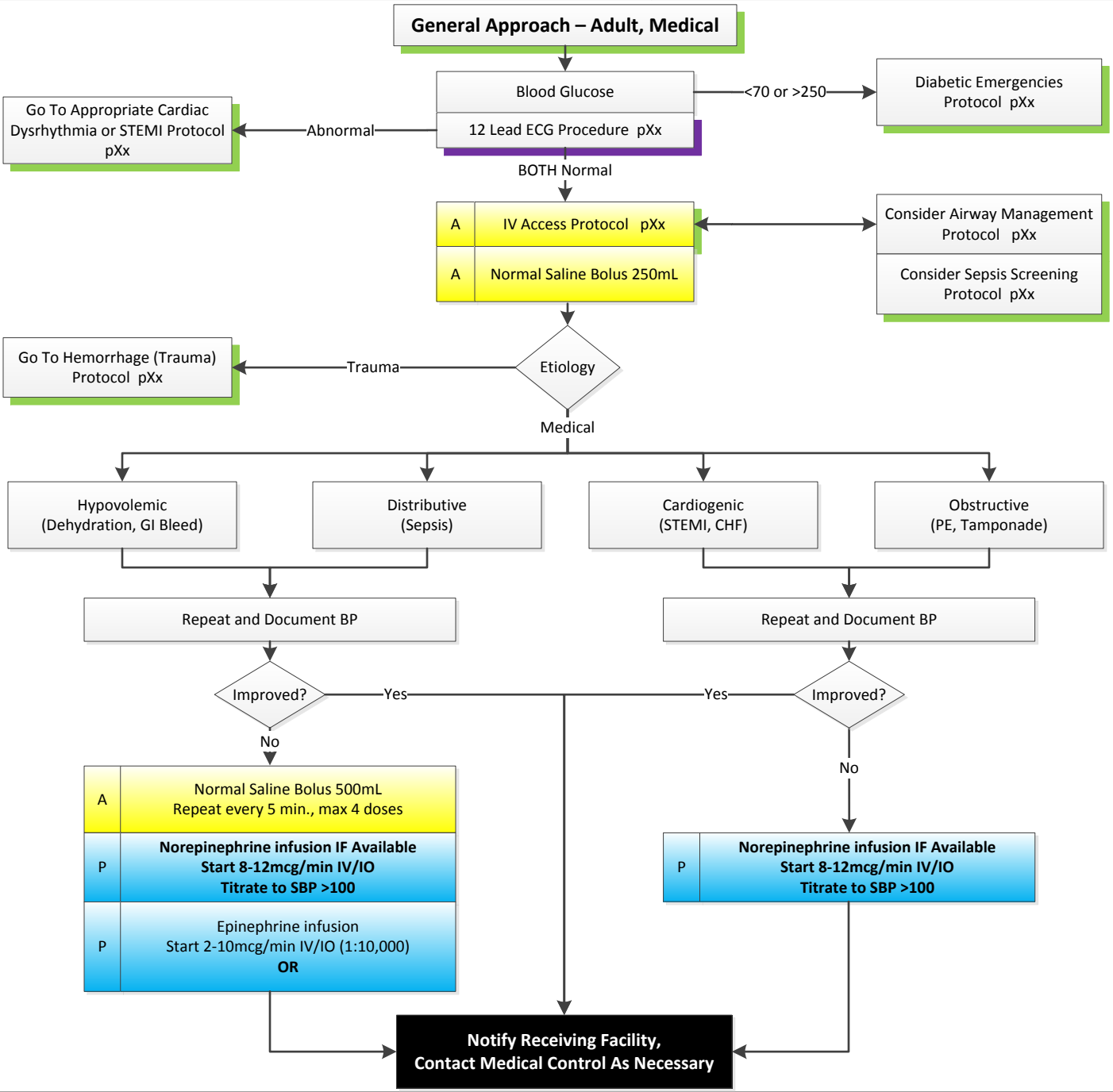
Hypotension / Shock (Non-Trauma) - Adult

Pertinent Positives and Negatives

- Age, VS, BP, RR, SpO2
- SAMPLE history
- OPQRST history
- Source of blood loss, if any (GI, vaginal, AAA, ectopic)
- Source of fluid loss, if any (vomiting, diarrhea, fever)
- Pregnancy history
- Mental Status
- Pale, Cool Skin
- Delayed Cap Refill
- Coffee Ground Emesis
- Tarry Stools
- Allergen Exposure

Differential

- Cardiac Dysrhythmia
- Hypoglycemia
- Ectopic Pregnancy
- AAA
- Sepsis
- Occult Trauma
- Adrenal Insufficiency



Pearls

REQUIRED EXAM: VS, GCS, RR, Lung sounds, JVD

- Shock may present with normal VS and progress insidiously; Tachycardia may be the *first and only* sign of shock.
- If evidence or suspicion of trauma, move to Hemorrhage Protocol early
- Document respiratory rate, SpO2 and breath sounds with IV Fluids, and consider Pulmonary Edema Protocol as appropriate.
- **Acute Adrenal Insufficiency – State where the body cannot produce enough steroids. Primary adrenal disease vs. recent discontinuation of steroids (Prednisone) after long term use. ** IF Adrenal Insufficiency suspected, contact Medical Control and review case. Medical Control may authorize Methylprednisone 2mg/kg IV/IO**

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Thrombolytic Screening - Adult