



General Overview of Protocols Changes & Updates (Nov. 2023)

- **Table of Contents** is expanded to show comprehensive subsections and is hyperlinked to individual protocols/pages (pgs. 2-7)
- **Document Key** added for protocols (pg. 8)
- **Universal Upgrades** (pg. 14) changed trauma upgrade to match new WA State Trauma Triage Tool
- **Assessment & Treatment Section** (pg. 15-61):
 - Updated subjective & objective findings, ALS upgrades & medications in specific protocols (see following pages for specific edits)
 - Added new Sepsis protocol
- **Appendix A** (pg. 62-74):
 - **ACLS & PALS:** Updated ACLS & PALS Algorithms (recreated from the 2020 ACLS Algorithms from the American Heart Association and American Association of Critical-Care Nurses)
 - Revised asystole/PEA algorithm to integrate POCUS Pulse procedures (pg. 65)
 - **Traumatic Cardiac Arrest** algorithm added (pg. 74)
- **Appendix B, C, D & E** (pg. 75-83)
 - External links to RCWs for Death in Field, Infant Transfer, Mandatory Reporting Criteria
- **Appendix F Medical Abbreviations** (pg. 84-89):
 - Reformatted medical abbreviations from table to written alphabetical list
- **Appendix G – Medications** (pg.90-137):
 - Updated medication table with color coding to clearly identify EMT level medications
 - Individual medications are organized in tables & also color coded if EMT level medication
 - **Changes in medications:**
 - Albuterol (pg. 94) – addition of BLS nebulized albuterol
 - Calcium Chloride (pg. 99)– increased “**initial dose from 500 mg to 1 g**”
 - Diltiazem (pg. 103) – added “**slow**” to IVP
 - Dopamine (pg. 105) – increased range to “**2-50 mcg/kg/min**”
 - Epinephrine (pg. 107)– added indication of “**refractory hypotension**” & specified “**3-5mins**”; added “**POCUS Pulse 50 mcg IVP**”; added “**push dose for hypotension/bradycardia of 5-20 mcg IV/IO Q 1-5 minutes**”
 - Glucagon (pg. 113)– added “**IN**”
 - Ondansetron (pg. 128)- Addition of EMT provider level medication – 4 mg sublingual
 - TXA (pg. 137)– added postpartum hemorrhage to indications; increased dosage to “**2 g IVP**”
 - **New medications added:**

▪ Acetaminophen (Tylenol®)	▪ Ketorolac (Toradol®)
▪ Cyanokit/Hydroxocobalamin	▪ Levetiracetam (Keppra®)
▪ Dextrose 10%	▪ Norepinephrine (Levophed®)
▪ Droperidol (Inapsine®) Backup	▪ Oxytocin (Pitocin®)
▪ Haloperidol (Haldol®) 1 st line	
- **Appendix H Tools for EMS Providers** (pg. 135-137):
 - Added Cardiac Arrest Compression Rates



THURSTON COUNTY MEDIC ONE



- **Appendix J Skills (pg. 142-218):**
 - Reordered the Outline of Skills into categories of Emergency Medical Responder Skills, Emergency Technician Skills, and Paramedic Skills
 - Removed Hypothermia (Therapeutic)
 - **Proposed new skills:**
 - Addition of BLS PEEP in Bag Valve Mask Ventilation (pg. 148)
 - Addition of BLS Nebulized Medication Administration (pg. 173-174)
 - Addition of POCUS – Basic Cardiac Exam (pg. 185)
 - Addition of POCUS – Thoracic Exam (pg. 186)
- **Removed Appendix L START Tool**
- **Added Appendix M – LVAD (pg. 222-223)**
- **Appendix N DOH/PSPH Trauma (pg. 224):**
 - Updated to current Washington State DOH Trauma Triage Tool released in Oct. 2023

DRAFT



Changes in General Patient Care Procedures

- **CIRCULATION** (pg. 10):
 - Item 3.D.: Addition of “external jugular, then”. Now reads as ***“If IV access is difficult, consider external jugular, then intraosseous infusion:”***
 - Item 3.E.: Removal of “external jugular IV access”. Now reads as ***“If peripheral IV access and intraosseous access attempts are unsuccessful, consider central IV access in one of the follow sites: right subclavian vein or right or left femoral vein.”***
- **PAIN MANAGEMENT** (pg. 11):
 - Item 5.D.: Removal of “an IV injection for pain relief” and addition of “treatment for pain management”. Now reads as “State they would like treatment for pain management”
 - Item 6: Removal of “an IV opiate injection” and addition of “pharmacological pain management”
Now reads as “Not all patients that receive an ALS evaluation will receive pharmacological pain management”
 - Item 7: Addition of ETCO₂. Now reads as ***“Any patient receiving opiate pain management will be transported by ALS and must: A. have documented continuous oximetry, ETCO₂, and BP measurements every 5 minutes”***
- **COMMUNICATION** (pg. 12):
 - Item 5: Addition of EMTS and Charge RN. Now reads as ***“EMTS and paramedics are required to make contact with a supervising physician/charge RN when:”***
 - Item 6: Changed physician to charge RN. Now reads as ***“Contact base station charge RN as early as possible for critical patients”***
- **TRANSPORT** (pg. 13):
 - Item 1.A.: Removal of “Patients in need of specialty care (e.g., stroke, cardiac, pediatric, trauma) require consult with the base station physician. Now reads as “Ground transport. A. In general, patients should be transported to the hospital of their choice”

Changes in Universal Upgrades

- (pg. 14)
- Replaced “Any blood loss or suspected fluid loss” with “Symptomatic hypotension”
- Changed “Step 1 or 2 trauma” to “Any patient who meets RED criteria in the WA State Trauma Triage Tool
- Changed “Intoxicated Step 3 or 4 trauma patient” to “Intoxicated patient who meets YELLOW criteria in WA State Trauma Triage Tool”
- Changed “SOB” to “Dyspnea”



Changes in Assessments & Treatments

- **ALLERGIC REACTION** (pg. 18-19):
 - Pertinent Objective Findings:
 - Addition of “Hoarseness and stridor”
 - ALS Upgrade Required For:
 - Removal of “within 1 hour of exposure to an allergen AND has a history of anaphylactic reaction to this allergen”
 - Plan/Treatment:
 - Changed “SOB” to “dyspneic”
 - ALS Treatment:
 - Item 1. Epinephrine – changed **“dosing and administration in Appendix G”** to **“0.3 mg IM Q 5 minutes”**
 - Item 6: changed **“mandatory”** to **“recommended”**. Now reads as **“ALS transport recommended for patients who have received glucagon or epinephrine (regardless of who administered)”**
 - Addition of Pediatric Treatment Section:
 1. **“Epinephrine - 0.15 mg IM Q 5 minutes, or 0.01 mg/kg of 1:1,000 IM up to 0.3 mg Q 5 minutes, or 0.01 mg/kg of 1:10,000 IV/IO up to 0.3 mg Q 5 minutes”**
 2. **Control airway prn**
 3. **Albuterol nebulized prn (for bronchospasm)**
 4. **Glucagon - as directed by medical control**
 5. **Diphenhydramine - 1 mg/kg IV/IO/IM to maximum dose of 50 mg**
 6. **ALS transport recommended for patients who have received glucagon or epinephrine (regardless of who administered)”**
- **ANIMAL BITES** (pg. 20):
 - Added “Injuries” to section title. Now reads as “Animal Bites/Injuries”
 - Pertinent Subjective Findings:
 - Addition of “Risk for rabies”
 - Plan/Treatment:
 - Item 3: Addition of “for venomous bites”
- **BLEEDING (NON-TRAUMATIC)** (pg. 21):
 - Pertinent Subjective Findings:
 - Removal of “Trauma”
 - Changed “Coumadin” to “Anticoagulants”
 - Changed “NSAIDS (ibuprofen, ASA)” to “Antiplatelets”
 - Addition of “Coagulation disorders/hematological disorders” to history
 - Assessment/Differential Diagnosis:
 - Removal of “Trauma”
 - ALS Treatment:
 - Addition of Item 4: **“TXA as directed by medical control”**



- **BREATHING DIFFICULTY** (pg. 22):

- Pertinent Objective Findings:
 - Addition of "Grunting (pediatrics)"
- Assessment/Differential Diagnosis:
 - Removal of "Acute" from Pulmonary edema and addition of "CHF" to Pulmonary edema
 - Addition of COPD to Reactive airway disease
 - Addition of ACS
- Plan/Treatment:
 - Item 5. Added "or administer albuterol via nebulizer"
- ALS Treatment:
 - Item 1. For COPD or asthma exacerbation: Addition of "***Solumedrol: 125 mg IV" and "Epinephrine: 0.3 mg IM"***
- Pediatric Treatment:
 - Item 1. Removal of "***If respiratory arrest occurs, attempt one intubation with an ETT 1-2 sizes smaller than usual; if unsuccessful, proceed to a surgical airway"***
 - Item 2. Addition of "***Magnesium as directed by medical control"***

- **CHEST PAIN/DISCOMFORT/HEART PROBLEMS** (p. 24):

- Pertinent Subjective Findings:
 - Changed "shortness of breath" to "dyspnea"
 - Addition of "cardiac, ED, anticoagulants" to medications
 - Addition of "similar to prior cardiac symptoms"
- Pertinent Objective Findings:
 - Changed "Lung sounds: crackles or absent" to "Abnormal lung sounds"
- ALS Treatment:
 - Item 3. Removed "***ACS suspected or confirmed by 12 lead"*** and changed to "***ECG is concerning for AMI"***

- **DIABETIC EMERGENCIES** (pg. 27):

- Pertinent Subjective Findings:
 - Addition of "Short/long acting?" to medications
- Assessment/Differential Diagnosis:
 - Removal of "Oral hypoglycemic agents"
- ALS Upgrade Required For:
 - Addition of "If patient receives caloric supplement and does not meet the following criteria:
 - Blood glucose greater than 80 mg/dl
 - Adequate explanation for hypoglycemic episode
 - Return to baseline mentation
 - Able to eat/check blood glucose on their own
 - Someone is present with patient"
- ALS Treatment:
 - Addition of Dextrose 10%



THURSTON COUNTY MEDIC ONE



- Changed Item 4 from ***“ALS TRANSPORT IS REQUIRED for patients who are taking ultralente, lantus, or oral hypoglycemic medications (except metformin [Glucophage]) after IV glucose resuscitation”*** to ***“Special consideration for long-acting insulin”***
 - Pediatric Treatment:
 - Replaced ***“Dextrose administration guidelines”*** with ***“Dextrose 10%”***
- **ENVIRONMENTAL EMERGENCIES** (pg. 29)
 - ALS Upgrade Required For:
 - Removal of ***“Patient very cold to touch without shivering”***
- **HEADACHE** (pg. 32)
 - Pertinent Subjective Findings:
 - Addition of ***“History of migraines”***
 - Pertinent Objective Findings:
 - Addition of ***“Stroke symptoms”*** (moved from pertinent subjective findings)
 - ALS Upgrade Required For:
 - Addition of ***“New onset of”*** unequal pupils
 - Removal of ***“When asked, “How does this compare to other headaches you’ve had?””***...
 - Addition of ***“stroke signs”*** to ***“lateralizing signs”***
- **MENTAL/EMOTIONAL/PSYCH** (pg. 33)
 - Assessment/Differential Diagnosis:
 - Addition of ***“Dementia,” “Excited/agitated delirium,”*** and ***“Acute psychosis”***
 - ALS Treatment:
 - Addition of ***“Haloperidol 5-10 mg IM”***
 - Addition of ***“Droperidol 5 mg IM”***
- **PREGNANCY/CHILDBIRTH/OB-GYN** (pg. 38)
 - ALS Treatment:
 - Changed Item 4 postpartum hemorrhage. Removed ***“treat for shock”*** and added
 - ***“Uterine massage”***
 - ***10 units in 250 mL NS wide open or 10 unites IM; repeat up to a maximum dose of 50 units***
 - ***Hemorrhagic shock treatment, including TXA”***
- **SEPSIS** (pg. 42) New protocol added (see below)



SEPSIS

Sepsis

PERTINENT SUBJECTIVE FINDINGS

- Dysuria
- Foul smelling urine
- Cough
- Dyspnea
- Fever/Chills
- Abdominal pain
- Vomiting
- Diarrhea
- Dizziness
- Recent hospitalization/surgery

PERTINENT OBJECTIVE FINDINGS

- Cyanosis or pallor
- Weak, rapid pulse
- Tachypnea
- Hypotension
- AMS
- Fever
- Foley catheter
- Wounds

ASSESSMENT/DIFFERENTIAL DIAGNOSIS

- Addisonian crisis
- Pancreatitis
- Pneumonia
- Cardiogenic shock
- Hypovolemic shock
- Anaphylaxis
- Pulmonary embolism



ALS UPGRADE REQUIRED FOR

- See universal ALS upgrades

PLAN/TREATMENT

1. General patient care procedures
2. Check blood glucose level (Appendix J)
3. Obtain oral or rectal temperature
4. Obtain ETCO₂ measurements if equipped and trained to do so
5. Evaluate Sepsis Screen (see following page). If Sepsis Screen positive and you are the transporting unit, notify receiving hospital

ALS TREATMENT

1. Monitor ECG, ETCO₂ (ETCO₂ < 25 mm Hg is concerning for lactic acidosis)
2. IV(s) – fluid resuscitation and vasopressors as necessary
3. Consider crystalloid fluid bolus IV/IO if indicated
 - Adults: reassessment every 500 mL
 - Pediatrics: 20 mL/kg with reassessment every 500 mL
4. If SBP > 90 or MAP < 65 after first fluid bolus initiate vasopressor infusion

continued next page

42

Thurston County Medic One EMS Protocols
Revision: Nov-2023

SEPSIS SCREEN

Must have obvious or suspected source of infection AND any two of these SIRS criteria:

- SBP < 90 mm Hg or MAP < 65
- Heart Rate > 90/min
- Respiratory Rate > 20/min
- GCS < 15
- Temperature > 100.3 F or < 96.0 F (>37.9 C or <35.5 C)
- ETCO₂ < 26 mm Hg on at least 2 consecutive measurements 5 minutes apart



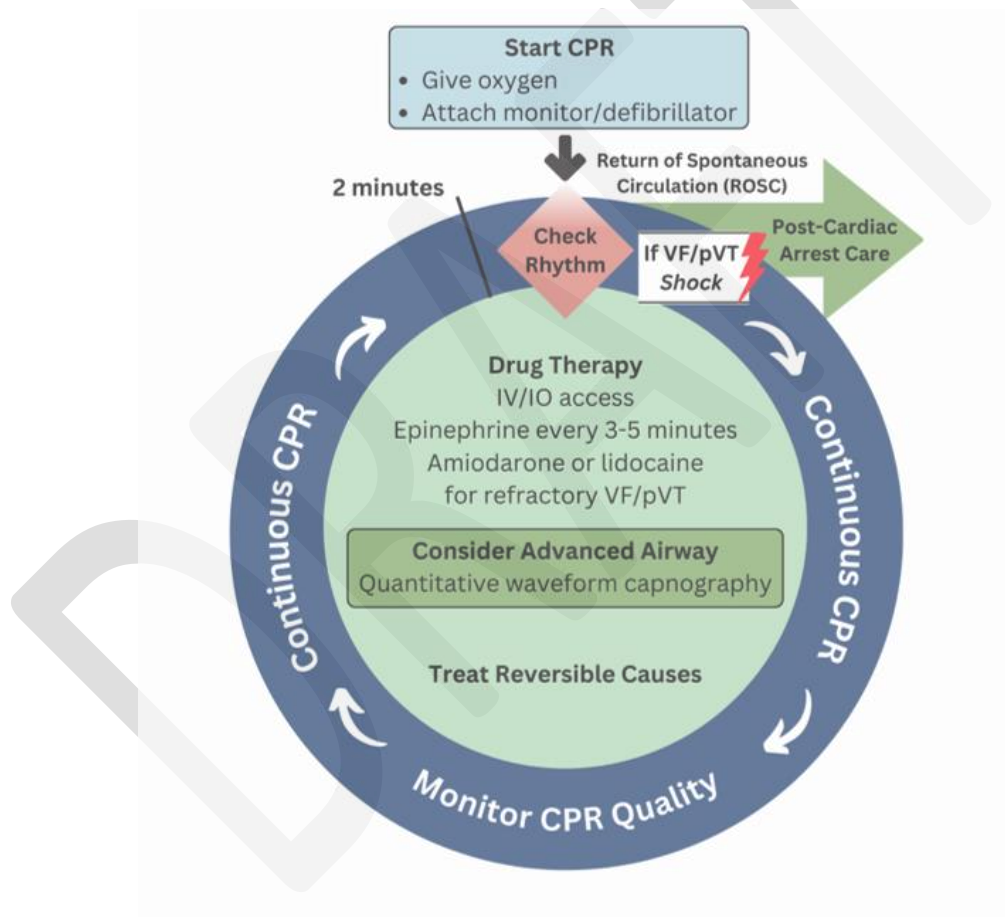
- **HEAD AND NECK TRAUMA** (pg. 56)

- Plan/Treatment:

- Item 2. Head. Changed “If patient displays Cushing’s triad, ventilate with BVM at 24 breaths per minute” to “S/S of herniation are noted then ventilate at 24 bpm, once ETCO₂ is applied frequency adjusted to meet ETCO₂ between 35-40 mm HG”

Changes in Appendix A (ACLS, PALS, TCA)

- **ACLS** new algorithms (pgs. 62-68)





DOSES/DETAILS FOR THE CARDIAC ARREST ALGORITHMS

CPR Quality

- Push hard (at least 2 inches [5 cm]) and fast (100-120/min) and allow complete chest recoil
- Minimize interruptions in compressions.
- Avoid excessive ventilation
- Change compressor Q 2 minutes, or sooner if fatigued
- If no advanced airway, 30:2 compression-ventilation ratio
- Quantitative waveform capnography
 - If PETCO₂ is low or decreasing, reassess CPR Quality

Shock Energy for Defibrillation

- **Biphasic:** Manufacturer recommendation (e.g., initial dose of 12-200 J)
If unknown, use maximum available
Second and subsequent doses should be equivalent, and higher doses may be considered
- **Monophasic:** 360 J

Drug Therapy

- **Epinephrine IV/IO dose:**
1 mg Q 3-5 minutes
50 mcg Q 2 minutes with POCUS pulse
- **Amiodarone IV/IO dose:**
First dose: 300 mg bolus
Second dose: 150 mg
or
- **Lidocaine IV/IO dose:**
First dose: 1-1.5 mg/kg
Second dose: 0.5-0.75 mg/kg

Advanced Airway

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

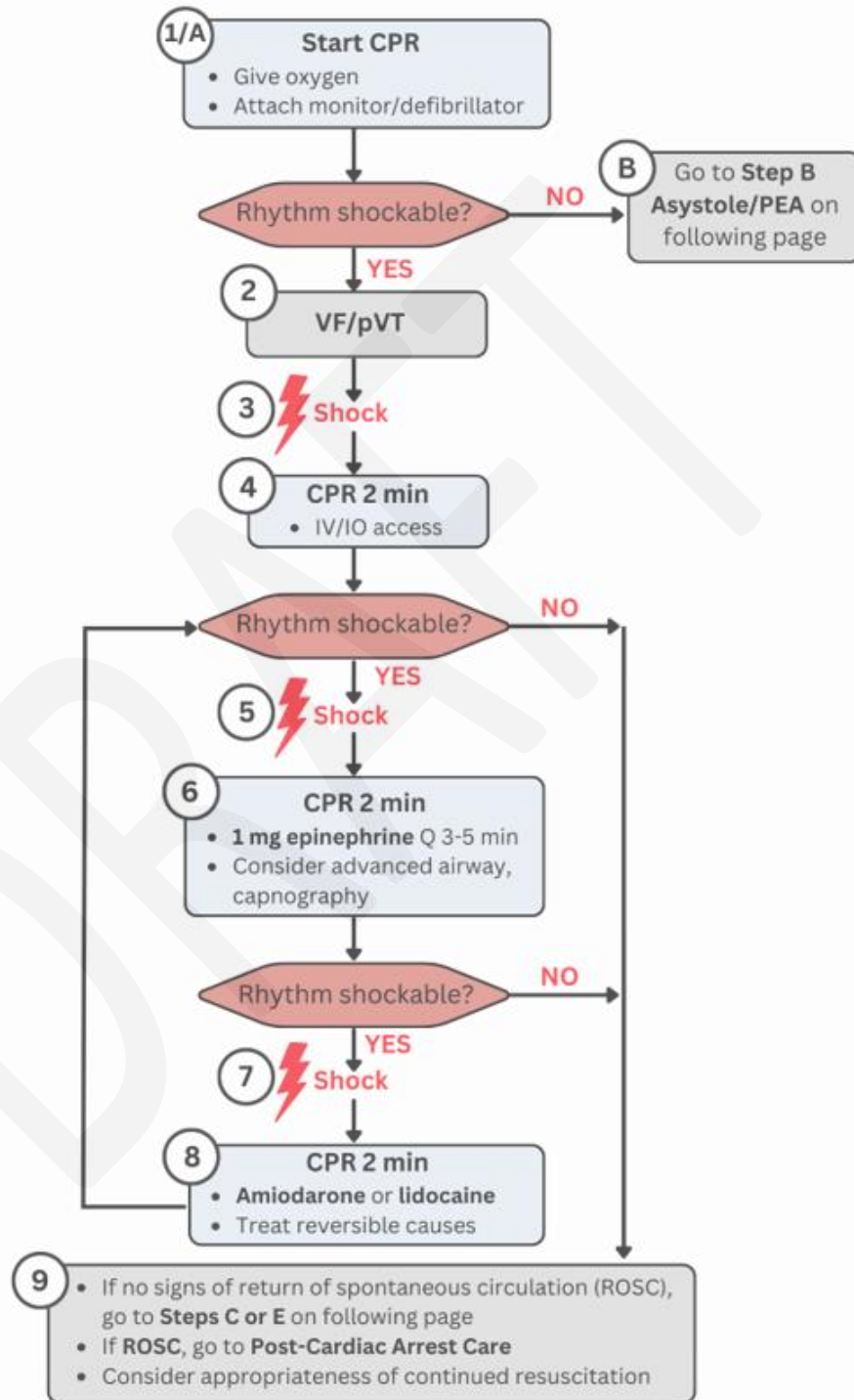
Return of Spontaneous Circulation (ROSC)

- Pulse and blood pressure
- Abrupt sustained increase in PETCO₂ (typically >40 mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

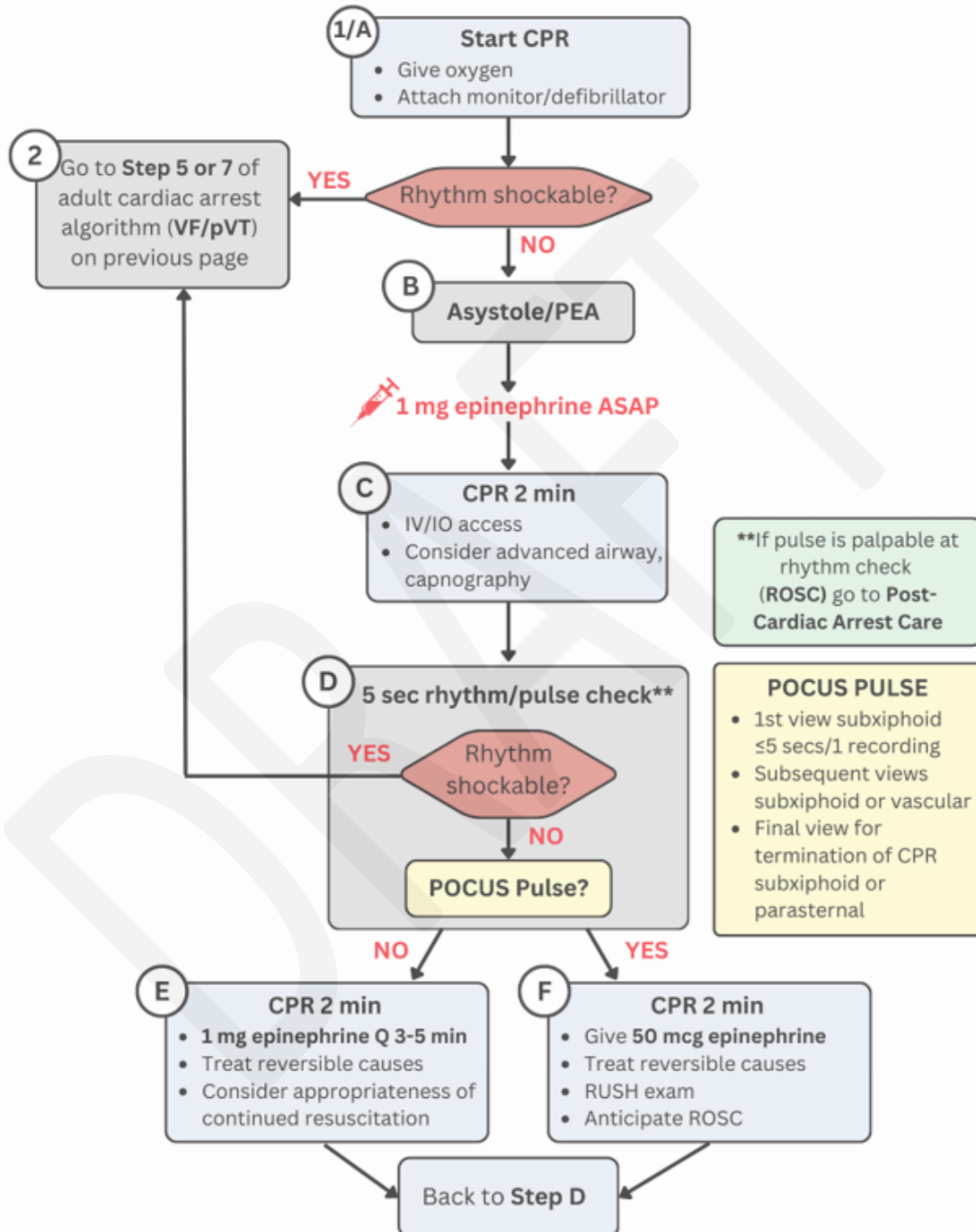
Reversible Causes

- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-hyperkalemia
- Hypothermia
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis, pulmonary
- Thrombosis, coronary

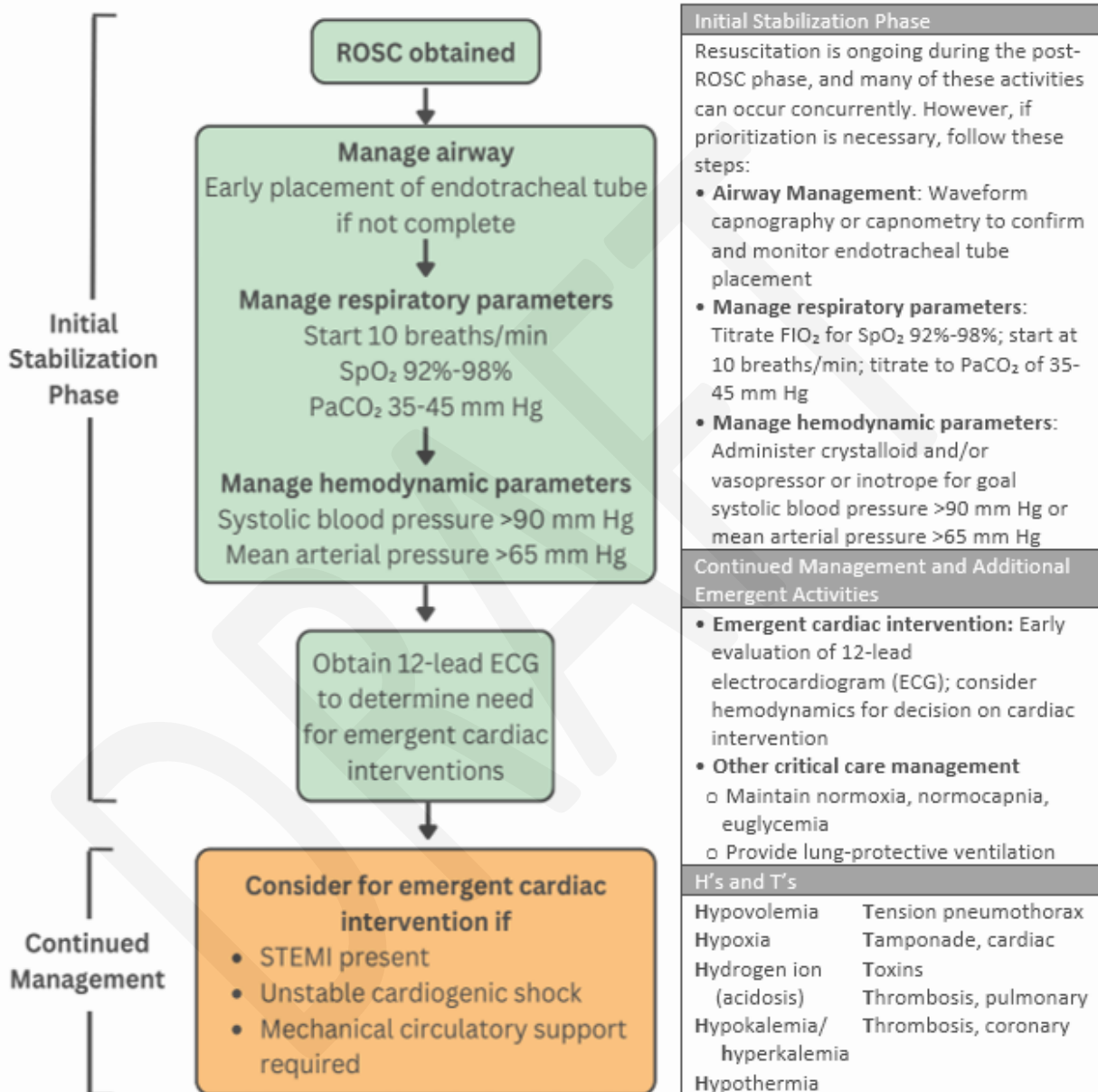
ADULT CARDIAC ARREST ALGORITHM - VF/PVT



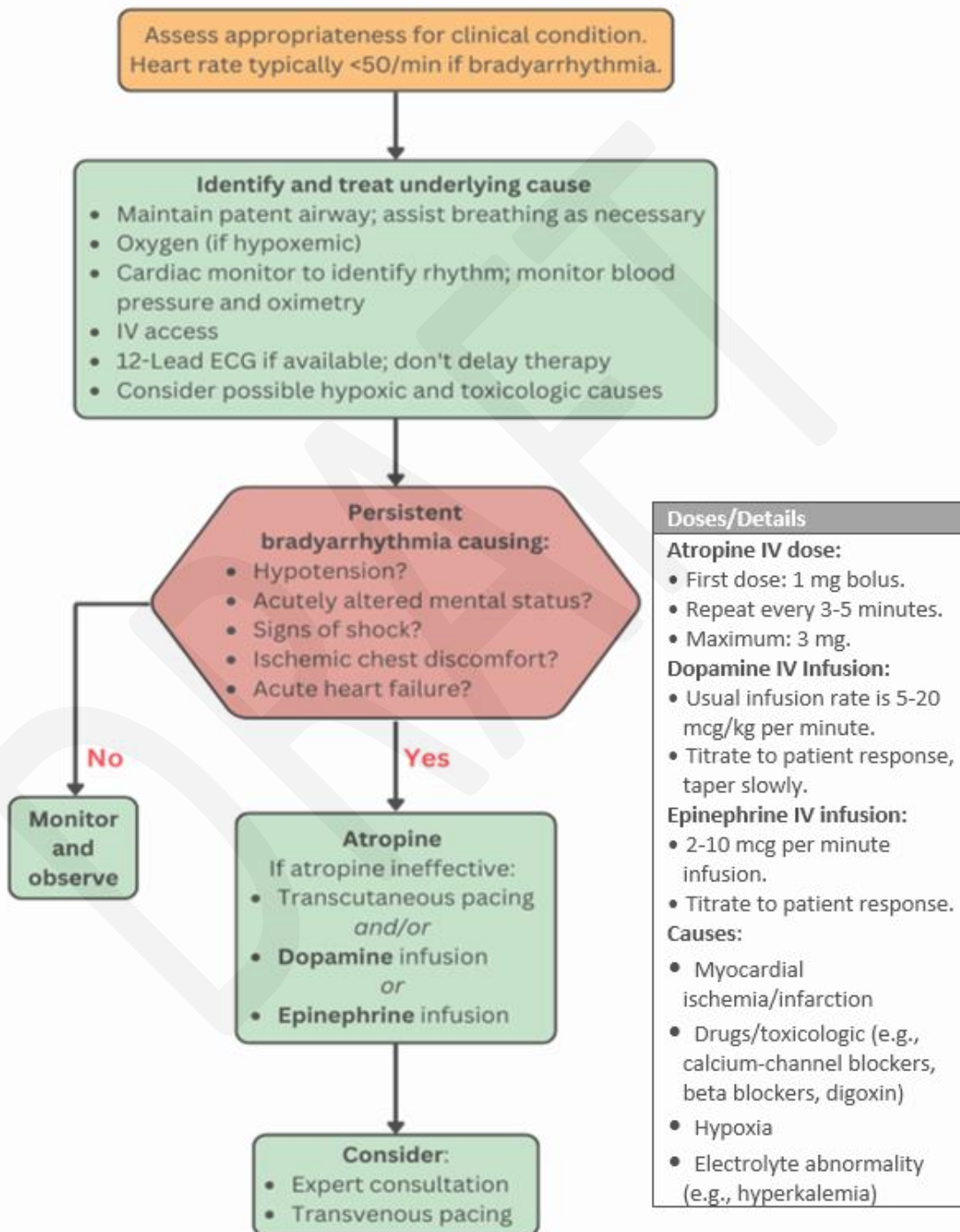
ADULT CARDIAC ARREST ALGORITHM - ASYSTOLE/PEA WITH POCUS



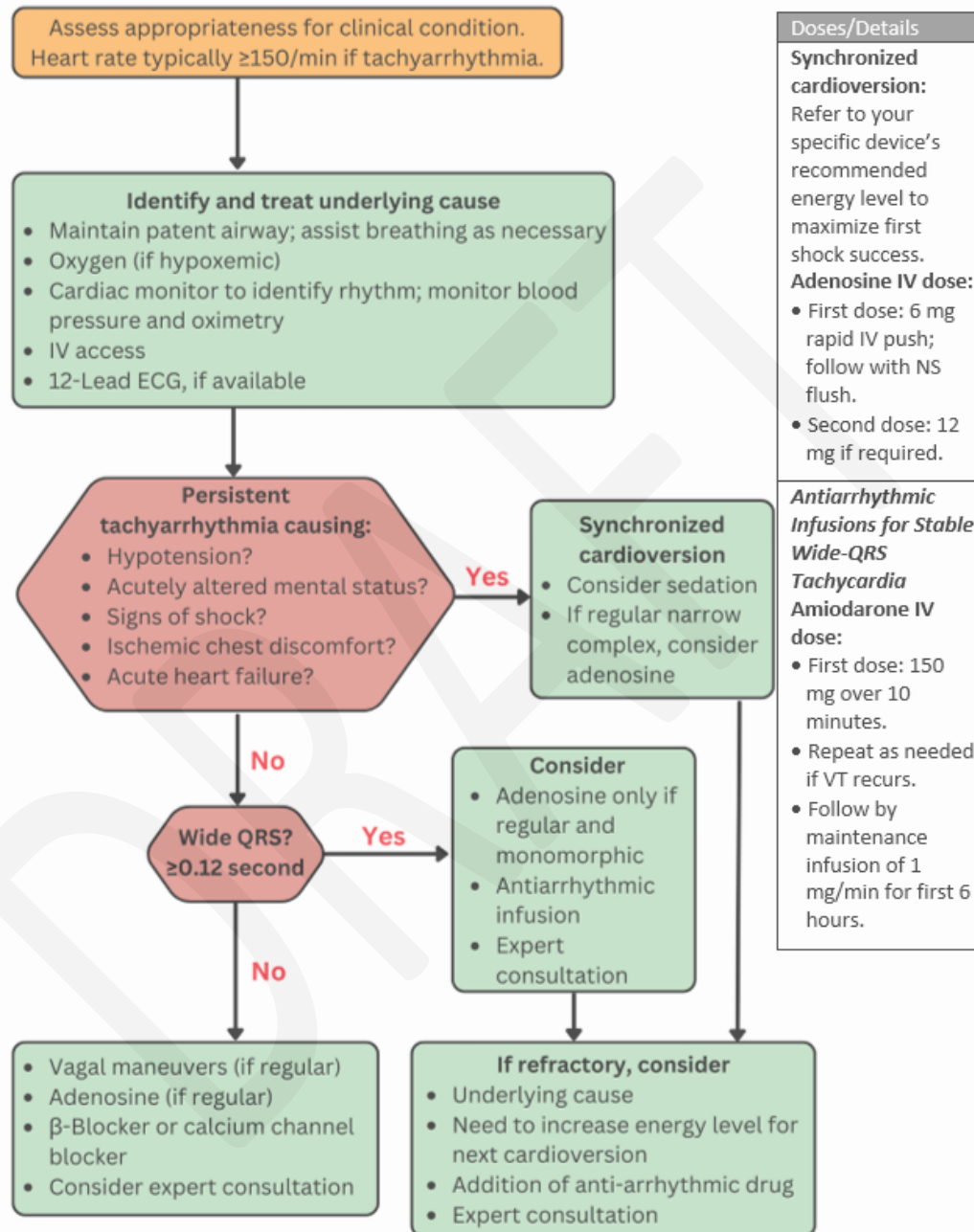
ADULT POST-CARDIAC ARREST CARE ALGORITHM



ADULT BRADYCARDIA ALGORITHM



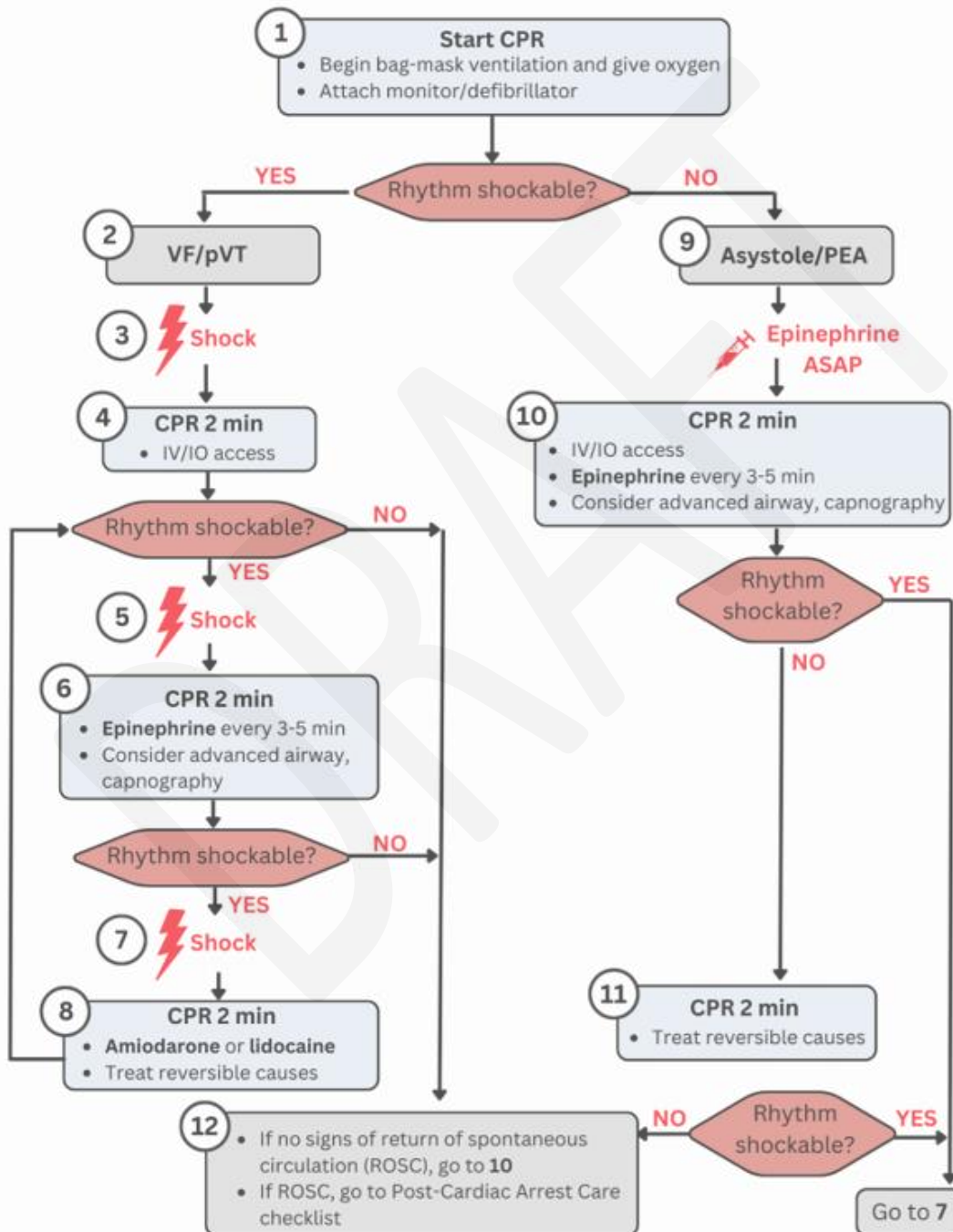
ADULT TACHYCARDIA WITH A PULSE ALGORITHM



- PALS new algorithms (pgs. 69-73)

PALS – APPENDIX A

PEDIATRIC PULSELESS ARREST



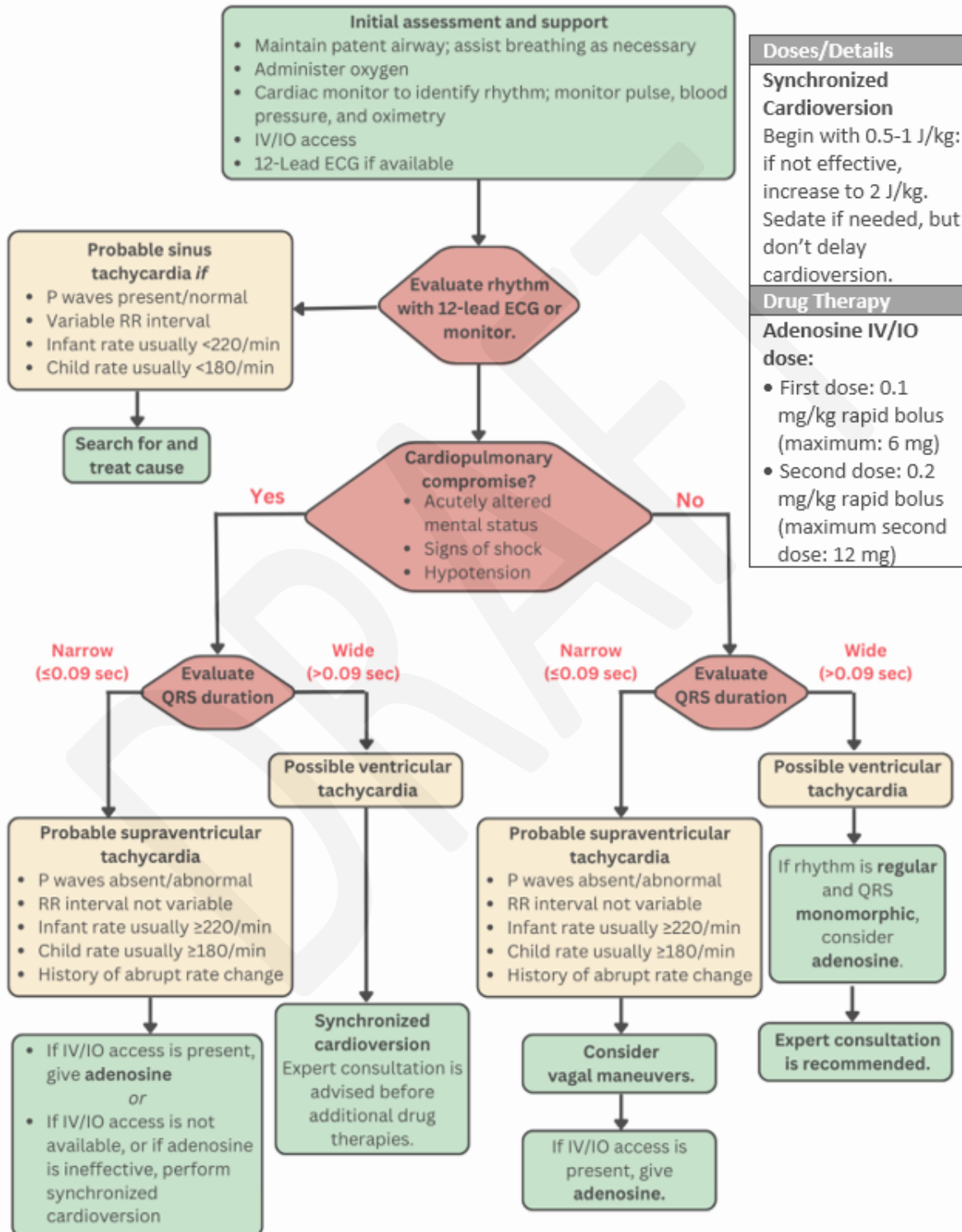
continued next page



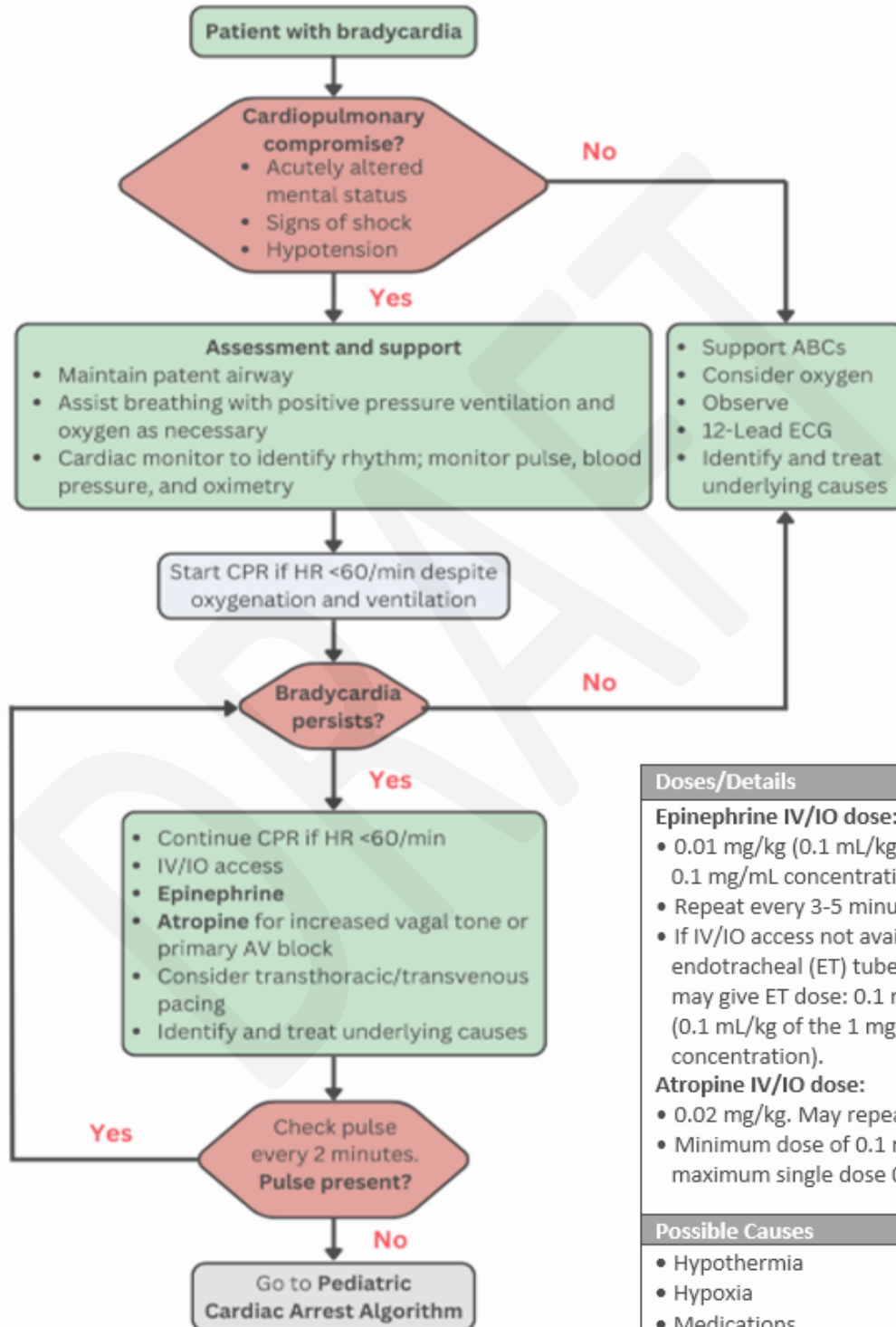
DOSES/DETAILS FOR THE PEDIATRIC CARDIAC ARREST ALGORITHM

CPR Quality <ul style="list-style-type: none">• Push hard (2½ of anteroposterior diameter of chest) and fast (100-120/min) and allow complete chest recoil• Minimize interruptions in compressions• Change compressor every 2 minutes, or sooner if fatigued• If no advanced airway, 15:2 compression-ventilation ratio• If advanced airway, provide continuous compressions and give a breath every 2-3 seconds	Advanced Airway <ul style="list-style-type: none">• Endotracheal intubation or supraglottic advanced airway• Waveform capnography or capnometry to confirm and monitor ET tube placement• Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions
Shock Energy for Defibrillation <ul style="list-style-type: none">• First shock 2 J/kg• Second shock 4 J/kg• Subsequent shocks >4 J/kg maximum 10 J/kg or adult dose	Reversible Causes <ul style="list-style-type: none">• Hypovolemia• Hypoxia• Hydrogen ion (acidosis)• Hypo-hyperkalemia• Hypothermia• Tension pneumothorax• Tamponade, cardiac• Toxins• Thrombosis, pulmonary• Thrombosis, coronary
Drug Therapy <p>Epinephrine IV/IO dose: 0.01 mg/kg (0.1 mL/kg of the 0.1 mg/mL concentration). Max dose 1 mg. Repeat every 3-5 minutes. If no IV/IO access, may give endotracheal dose: 0.1 mg/kg (0.1 mL/kg of the 1 mg/mL concentration).</p> <p>Amiodarone IV/IO dose: 5 mg/kg bolus during cardiac arrest. May repeat up to 3 total doses for refractory VF/pulseless VT or</p> <p>Lidocaine IV/IO dose: Initial: 1 mg/kg loading dose</p>	

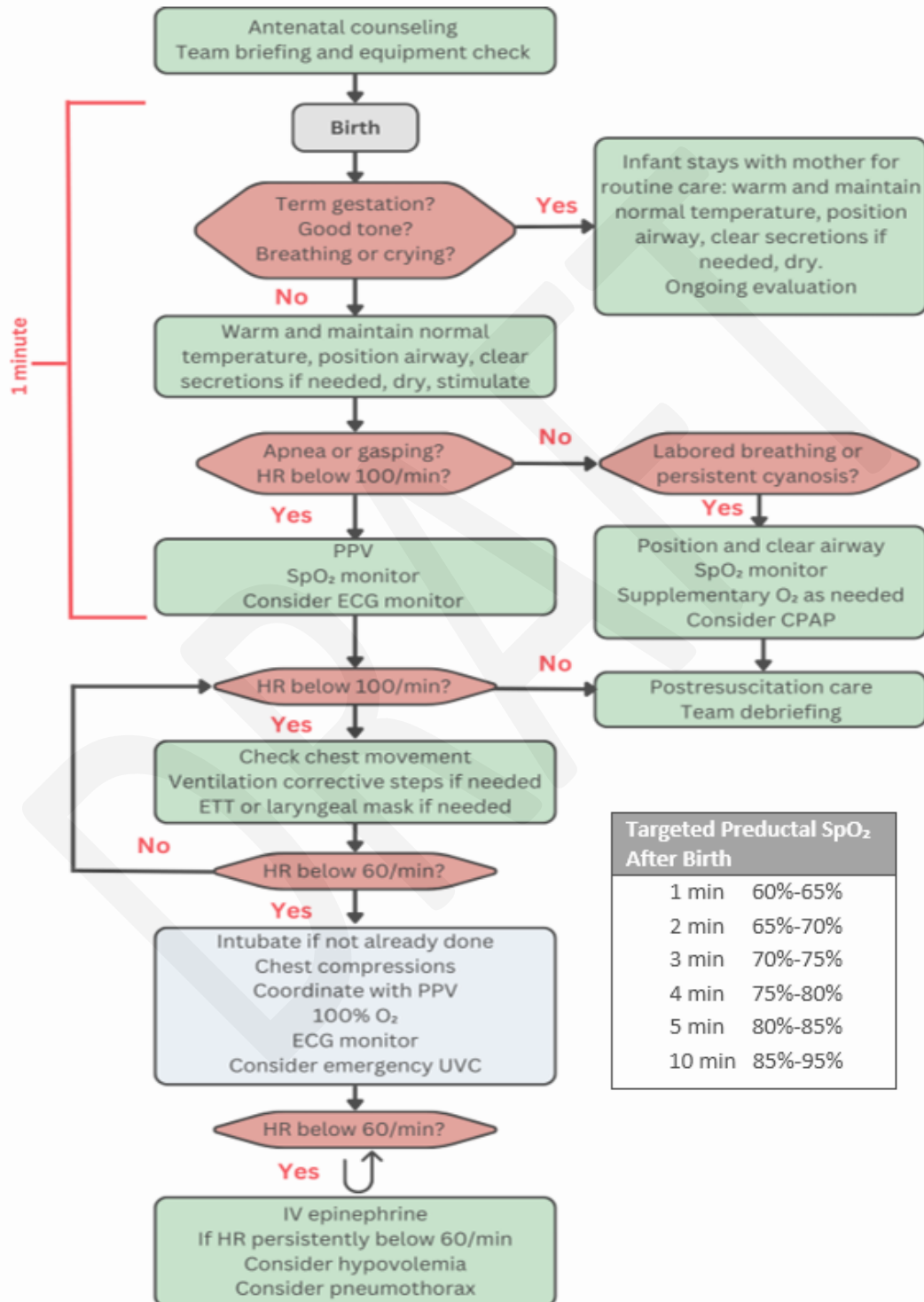
PEDIATRIC TACHYCARDIA



PEDIATRIC BRADYCARDIA



NEONATAL RESUSCITATION

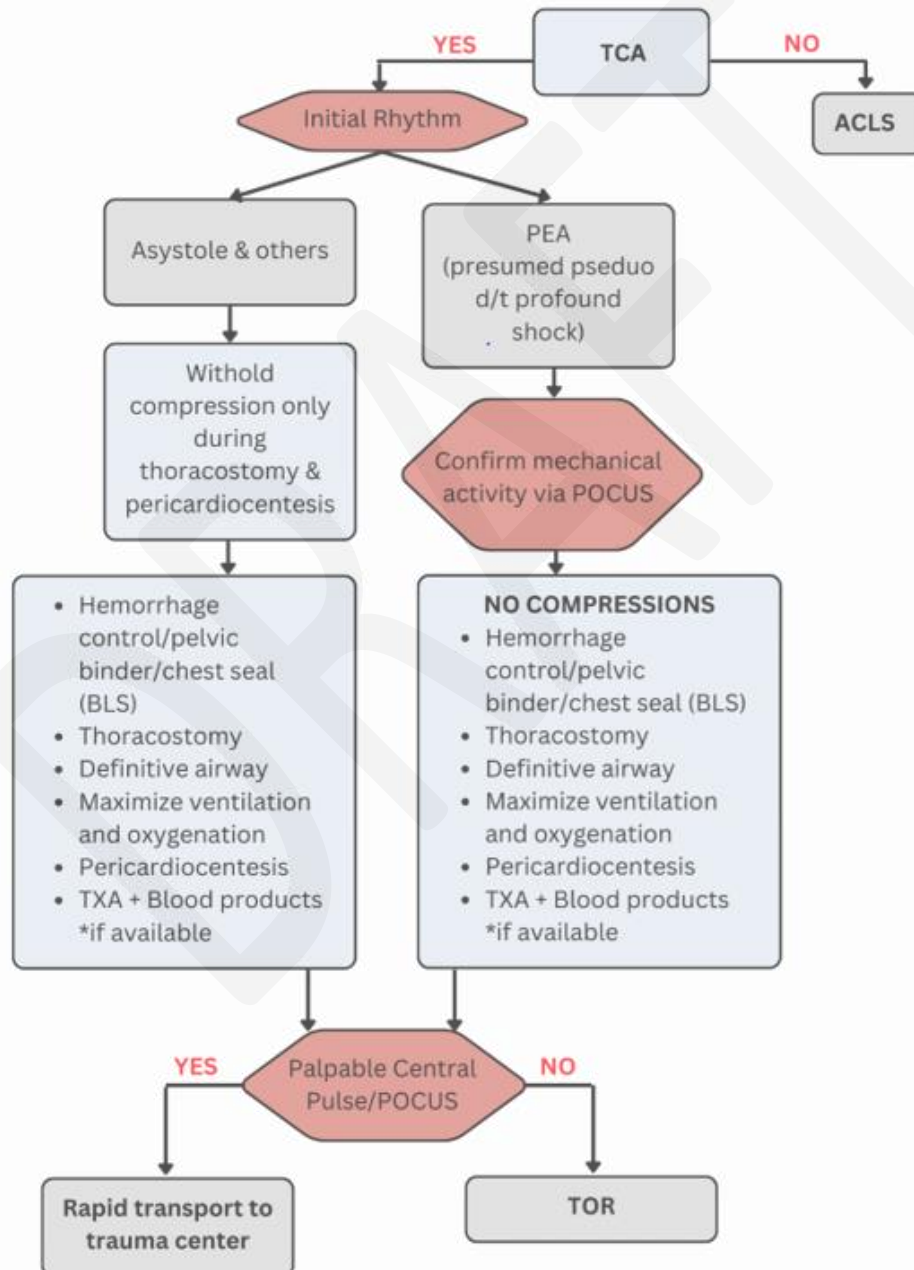


- **Traumatic cardiac arrest algorithm** is a new addition (see pg. 74)

TRAUMATIC CARDIAC ARREST – APPENDIX A

TRAUMATIC CARDIAC ARREST ALGORITHM

Traumatic Cardiac Arrest Algorithm





Changes in Medications

- **ALBUTEROL** (pg. 94):
 - Indications:
 - Added “Wheezing in auscultated lung sounds”
 - Precautions/side effects:
 - Added “Consider withholding for crackles/rales”
 - Adult dosage/route:
 - Changed “Nebulized initial dose 5 mg. Repeat as needed” to BLS level medication
- **CALCIUM CHLORIDE 10%** (pg. 99):
 - Adult dosage/route:
 - Changes initial dosage from **500 mg** to **1 g**
 - Addition of **“Patients in hemorrhagic shock receiving blood products – 1 g IVP”**
- **DILTIAZEM** (pg. 103):
 - Adult dosage/route:
 - Addition of **“slow”** to IVP. Now reads as **“10 mg slow IVP”**
- **DOPAMINE** (pg. 105):
 - Adult dosage/route:
 - Changed range to **“2-50 mcg/kg/min until SBP >90 or MAP >60”**
- **EPINEPHRINE** (pg. 107):
 - Indications:
 - Added **“Refractory hypotension”**
 - Adult dosage/route:
 - Added **“Q 3-5 mins.”** to cardiac arrest dosage/route
 - Replacement of **“Bradycardia IV/IO (1:10,000) 0.5 1 mg: repeat Q3 min”** with **“Push Dose for Hypotension/Bradycardia. 5-20 mcg IV/IO Q1-5 minutes. (Mix 9 ml saline with 1 ml epinephrine 1:10,000 for total of 10 mcg/ml in a 10 cc syringe)”**
 - Pediatric dosage/route:
 - Addition of **“Anaphylaxis. 0.15 mg IM Q 5 minutes or 0.01 mg/kg of 1:1,000 IM up to 0.3 mg Q 5 minutes or 0.01 mg/kg of 1:10,000 IV/IO up to 0.3 mg Q 5 minutes”**
- **GLUCAGON** (pg. 113):
 - Adult dosage/route & Pediatric dosage/route:
 - Addition of **“IN.”**
- **ONDANSETRON** (pg. 128):
 - Adult dosage/route:
 - Addition of **“EMT provider level – 4 mg sublingual”**
 - Addition of **“PO”** Now reads as **“4 mg IV/PO. May repeat x1”**
- **TRANEXAMIC ACID (TXA)** (pg. 137):
 - Indications:
 - Added **“Postpartum hemorrhage”** to indications
 - Adult dosage/route:
 - Changed from **“1 gram IV given over 10 minutes”** to **“2 grams IV push”**



New Medications

(pg. 91)

ACETAMINOPHEN (TYLENOL®)

Acetaminophen

DESCRIPTION	Antipyretic analgesic
INDICATIONS	Pediatric febrile seizure Pediatric fever above 103°F
CONTRAINDICATIONS	Known hypersensitivity Liver failure
PEDIATRIC DOSAGE/ROUTE	<ul style="list-style-type: none">15 mg/kg PO or rectal

(pg. 100)

CYANOKIT/HYDROXOCOBALAMIN

Cyanokit/Hydroxocobalamin

DESCRIPTION	Vitamin B-12
INDICATIONS	Known or suspected cyanide poisoning
CONTRAINDICATIONS	Known anaphylactic reaction to hydroxocobalamin
PRECAUTIONS/SIDE EFFECTS	Use caution in combination with other cyanide poisoning antidotes
ADULT DOSAGE/ROUTE	<ul style="list-style-type: none">5 g slow IV over 15 minutes
PEDIATRIC DOSAGE/ROUTE	<ul style="list-style-type: none">As directed by medical control



THURSTON COUNTY MEDIC ONE



(pg. 101)

DEXTROSE 10% (D₁₀W)

Dextrose 10%

DESCRIPTION	Sugar
INDICATIONS	Symptomatic hypoglycemia
CONTRAINDICATIONS	Hyperglycemia
PRECAUTIONS/SIDE EFFECTS	Pre-treat hypoglycemia alcoholic patients with thiamine
ADULT DOSAGE/ROUTE	<ul style="list-style-type: none">Up to 25 g IV dripRepeat if blood glucose remains less than 60 mg/dL
PEDIATRIC DOSAGE/ROUTE	<ul style="list-style-type: none">5 mL/kg maximum dose of 250 mL (25 g)

(pg. 106)

DROPERIDOL (INAPSINE®)

Droperidol

DESCRIPTION	Antipsychotic/anti-emetic
INDICATIONS	Acute psychosis agitation or delirium
CONTRAINDICATIONS	Hypersensitivity or prolonged QT, hyperthermia
PRECAUTIONS/SIDE EFFECTS	
ADULT DOSAGE/ROUTE	<ul style="list-style-type: none">5 mg intramuscular or 2.5 IVP
PEDIATRIC DOSAGE/ROUTE	<ul style="list-style-type: none">As directed by medical control
NOTE	<ul style="list-style-type: none">QT prolongation12 lead ECG indicated prior and post medicationSynergistic with midazolam and compatible in the same syringe



THURSTON COUNTY MEDIC ONE



(pg. 114)

HALOPERIDOL (HALDOL®)

Haloperidol

DESCRIPTION	Antipsychotic
INDICATIONS	Acute psychosis agitation or delirium
CONTRAINDICATIONS	Hypersensitivity or prolonged QT Hyperthermia
PRECAUTIONS/SIDE EFFECTS	QT prolongation Dosages should be reduced by ½ in the frail elderly patient
ADULT DOSAGE/ROUTE	<ul style="list-style-type: none">• IM 5 to 10 mg IM• IVP 2.5-5 mg IVP Titrated to response up to 10 mg• Can be potentiated with 1-5 mg versed IM/IVP (NOTE: these drugs are same syringe compatible)
PEDIATRIC DOSAGE/ROUTE	<ul style="list-style-type: none">• As directed by medical control
NOTES	<ul style="list-style-type: none">• Synergistic with midazolam and compatible in the same syringe

(pg. 116)

KETOROLAC (TORADOL®)

Ketorolac

DESCRIPTION	Nonsteroidal anti-inflammatory
INDICATIONS	Moderate-acute pain, especially in the circumstance where the patient refuses opioids
CONTRAINDICATIONS	Known hypersensitivity Active peptic ulcers Renal impairment Any suspected bleeding Labor and delivery Those using aspirin or NSAIDs daily
PRECAUTIONS/SIDE EFFECTS	Dosage should be reduced by ½ in elderly patients and those under 50 kgs of body weight
ADULT DOSAGE/ROUTE	<ul style="list-style-type: none">• 15-30 mg IM• 10 mg IVP
PEDIATRIC DOSAGE/ROUTE	<ul style="list-style-type: none">• As directed by medical control



(pg. 117)

LEVETIRACETAM (KEPPRA®)

Levetiracetam

DESCRIPTION	Anticonvulsant
INDICATIONS	Status epilepticus
CONTRAINDICATIONS	Hypersensitivity Reduce dose by 1/2 if on Keppra use
ADULT DOSAGE/ROUTE	<ul style="list-style-type: none">20 mg/kg to a maximum of 4,500 mg given over 15 minutes
PEDIATRIC DOSAGE/ROUTE	<ul style="list-style-type: none">20 mg/kg
NOTE	<ul style="list-style-type: none">It is recommended to still give Keppra if the status seizure is controlled with benzodiazepines to prevent recurrenceDo not delay intubation for anticonvulsant therapy

(pg. 126)

NOREPINEPHRINE (LEVOPHED)

Norepinephrine

DESCRIPTION	Alpha- and beta-adrenergic agonist Vasoconstrictor and inotrope
INDICATIONS	Hypotension with signs of shock
CONTRAINDICATIONS	Ventricular fibrillation Tachydysrhythmias Pheochromocytoma MAOI therapy
PRECAUTIONS/SIDE EFFECTS	Use caution or reduce dose with pre-existing hypertension, preexisting hypothyroidism, peripheral vascular disease, pregnancy Avoid extravasation as this may cause tissue necrosis
ADULT DOSAGE/ROUTE	<ul style="list-style-type: none">2-50 mcg/min until blood pressure is at 90 mm Hg
PEDIATRIC DOSAGE/ROUTE	<ul style="list-style-type: none">0.05-2mcg/kg/min



THURSTON COUNTY MEDIC ONE



(pg. 130)

OXYTOCIN (PITOCIN)

Oxytocin

DESCRIPTION	Hormone
INDICATIONS	Postpartum hemorrhage refractory to fundal massage and skin therapy Hemorrhage Prophylaxis after field delivery
CONTRAINDICATIONS	Hypersensitivity toxemia pregnancy undelivered placenta undelivered baby
PRECAUTIONS/SIDE EFFECTS	Status of post cervical or uterine surgery Sepsis of uterine origin Primipara (first delivery) after age 35
ADULT DOSAGE/ROUTE	<ul style="list-style-type: none">10 units in 250 mL wide open or 10 units IM Repeat up to a maximum dose of 50 units
PEDIATRIC DOSAGE/ROUTE	<ul style="list-style-type: none">As directed by medical control

Changes in Appendix H Tools for EMS Providers

- Addition of Cardiac Arrest Compression Ratios (pg. 140)

CARDIAC ARREST COMPRESSION RATIOS

	Compressions	Ventilation	Rate	Special Considerations
Adult Over 8 years old	Continuous chest compressions More than 2 inches	Interpose 1 breath every 10 th compression Rescue breathing every 5-6 seconds	110-120	Carotid artery pulse check Full chest recoil Switch compressor Q 2 minutes
Child 1 to 8 years old	1 rescuer – 30 compressions 2+ rescuers – 15 compressions 1/3 depth of the chest	2 breaths after 30 compressions 2 breaths after 15 compressions Rescue breathing every 2-3 seconds	110-120	Carotid/femoral artery pulse check If pulse less than 60 with signs of poor perfusion, perform CPR Full chest recoil Switch compressor Q 2 minutes
Infant 30 days to 1 year	1 rescuer – 30 compressions 2+ rescuers – 15 compressions 1/3 depth of the chest Encircling hands technique	2 breaths after 30 compressions 2 breaths after 15 compressions Rescue breathing every 2-3 seconds	110-120	Brachial artery pulse check If pulse less than 60 with signs of poor perfusion, perform CPR Full chest recoil Switch compressor Q 2 minutes
Neonate Birth to 30 days	3 compressions 1/3 depth of the chest Encircling hands technique	1 breath (position airway into sniffing position) If pulse below 100 rescue breathe @ 40-60 times a minute	120+	Brachial artery pulse check If pulse less than 60 with signs of poor perfusion, perform CPR Full chest recoil Switch compressor Q 2 minutes



Changes in Appendix J Skills

- Reorganized skills into sections based on provider skill level and skills are hyperlinked to individual protocols (pg. 139-140)
- **BAG VALVE MASK VENTILATION** (pg. 148)
 - Preparation:
 - Addition of "If equipped with PEEP, set at 5 mmH2O for any patient with SYB>100 mmHg"
- **REMOVED HYPOTHERMIA (THERAPEUTIC) protocol**
- **METERED DOSE INHALER (MDI) ASSIST** (pg. 169) – removed ALS upgrade
- **NEBULIZED MEDICATION ADMINISTRATION** (pg. 173-174) – addition of new EMT provider level skill

NEBULIZED MEDICATION ADMINISTRATION (MASK OR T-TUBE)

Nebulized Medication Administration

PROVIDER LEVEL:

- Emergency Medical Technician
- Paramedic

INDICATIONS:

- Patient condition indicates administration of nebulized medication.

CONTRAINDICATIONS:

- Patient in respiratory arrest

EQUIPMENT:

- Nebulizer
- Oxygen bottle with regulator
- Medication

PREPARATION:

1. Select a nebulizer delivery method based on the patient's ability to hold the device and coordinate inhalation and breathing technique
 - a. If using the hand-held delivery, attach the reservoir hose and mouthpiece to opposite ends of the "T" fitting
 - b. If using a mask delivery, use a nebulizer mask or remove the reservoir bag and the one-way valves (flaps) from a non-rebreather mask
2. Assemble the medication cup by screwing the top and bottom sections together.
 - a. Most nebulizer medication cups must be kept upright to avoid spilling the medication
3. Inspect the medication
4. Place the medication into the medication cup and attach it to the bottom of the "T" fitting or mask
5. Attach the oxygen tubing to the inlet port of the medication cup. Attach the other end to an oxygen source capable for delivering a 6 - lpm flow

PROCEDURE:



1. ALS Upgrade is required
2. Provide supplemental oxygen and/or ventilatory assistance as necessary
3. Allow the patient to achieve a position of comfort
4. Explain procedure to the patient:
 - a. Seal lips around the mouthpiece of the hand-held nebulizer or place mask on patient
 - b. Take slow breaths and inhale as deeply as possible
 - c. Hold breath as long as comfortably able, up to 10 seconds
 - d. Continue until the medication is gone and there is no misting

continued next page



Nebulized Medication Administration Cont.

5. Remove supplemental oxygen from patient
6. Start nebulizer with oxygen at 6 - lpm adjust until it makes a fine mist. The mist should "disappear" with each breath. Much of the mist that can be seen is too large to be absorbed
7. Encourage patient to take slow, deep breaths until the medicine is gone from the medication cup.
 - a. As the medication is administered and the level drops in the medication cup, the cup may need to be tapped to deliver all the medication
8. If medic unit is not on scene 10 minutes after last puff and patient still is in respiratory distress, place another dose of Albuterol into the medication cup and repeat Steps 4-7
9. Replace supplemental oxygen when the treatment is completed
10. Chart the time of administration and number of doses administered
11. Treatment can be discontinued at any time if the patient is no longer in respiratory distress

CRITICAL CRITERIA:

Before administering any medication, always be certain you have the "six rights:" the right patient, the right medication, the right dose, the right time, the right route, and the right documentation

- **NEEDLE THORACENTESIS** (pg. 175)

- Equipment:
 - Added "or another approved device"
 - Added 10-14 g angiocath
- Procedure:
 - Added ***"Select appropriate site for insertion"***
 - Added 1.b. ***"Insert an appropriately sized over-the-needle catheter in the midaxillary line at the 4th or 5th intercostal space at a 90-degree angle by walking the needle over the top of the distal rib"***

- **PULSE CHECKS POCUS** (pg. 184)

- Procedure:
 - Added Step 1. ***"Save image and record incident number in software"***
 - Step 3. Replace ***"Place ultrasound gel to prove footprint (either the carotid or femoral artery)"*** with ***"Record at least one clip of vessel, ideally during pulse check"***
 - Step 5. Change to ***"5 seconds"*** for pulse checks instead of ***"10 seconds"***.
 - Step 6. Removed ***"Resume or terminate chest compressions as indicated"***
 - Step 7. Added ***"Document POCUS use in ePCR per dropdowns or narrative guide"***



- **BASIC CARDIAC EXAM POCUS** (pg. 185)– new protocol added

BASIC CARDIAC EXAM – POCUS

Basic Cardiac Exam POCUS

**ONLY TO BE USED BY PARAMEDICS WHO HAVE GONE THROUGH MPD'S
APPROVED TRAINING PROGRAM**

PROVIDER LEVEL:

- Paramedic

INDICATIONS:

- Shortness of breath
- Chest pain
- Hypotension

CONTRAINDICATIONS:

- Other patient care priorities

EQUIPMENT:

- Ultrasound probe
- Ultrasound gel
- Tablet or screen

PROCEDURE:

1. Save image and record incident number in software
2. Save a minimum of two views & include pathology
 - Parasternal long
 - Parasternal short
 - Subxiphoid
 - Apical
3. Look for fluid around heart
 - If present consider pericardial effusion or hemopericardium; beware fat pad and pleural effusion as mimics
4. Look for adequacy of squeeze (contractility, mitral valve excursion)
 - If decreased, concerning of heart failure
5. Look for signs of RV strain such as D-sign, engorged RV
 - If present, consider large PE
6. Document POCUS use in ePCR per dropdowns or narrative guides

CONSIDERATIONS:

- POCUS Should be used to augment physical exam and should not delay patient care or transport in emergent situations
- Images are considered non-diagnostic and cannot rule out pathology



- **THORACIC EXAM POCUS** (pg. 186) – new protocol added

THORACIC EXAM – POCUS

Thoracic Exam POCUS

**ONLY TO BE USED BY PARAMEDICS WHO HAVE GONE THROUGH MPD'S
APPROVED TRAINING PROGRAM**

PROVIDER LEVEL:

- Paramedic

INDICATIONS:

- Shortness of breath
- Hypoxia
- Hypotension

CONTRAINDICATIONS:

- Other patient care priorities

EQUIPMENT:

- Ultrasound probe
- Ultrasound gel
- Tablet or screen

PROCEDURE:

1. Save image and record incident number in software
2. Save a minimum of one image from each side, include pathology
3. Obtain images from apex, midaxillary and basal lung on each side
4. Look for lung sliding, use M-mode if uncertain
 - If absent or lung point sign, concerning for pneumothorax
5. Look for fluid in the pleural space
 - If present, consider hemothorax or pleural effusion
6. Look for B-lines
 - If focal, consider pneumonia
 - If diffuse, consider congestive heart failure
7. Document findings in ePCR per dropdowns or narrative guides

CONSIDERATIONS:

- POCUS Should be used to augment physical exam and should not delay patient care or transport in emergent situations
- Images are considered non-diagnostic and cannot rule out pathology



- **RUSH EXAM POCUS** (pg. 187-188)
 - Procedure:
 - Changed Step 1 to: ***“Save image and record incident number in software”***
 - Added Step 2. “Save image of:
 - Bilateral lungs
 - One adequate cardiac view
 - RUQ (renal-hepatic interface and liver tip)
 - One view of aorta
 - One view of IVC”
 - Added Step 4: ***“Document POCUS use in ePCR per dropdowns or narrative guide”***
- **E-FAST EXAM POCUS** (pg. 189-190)
 - Indications:
 - Changed IE Patients meeting ***“any criteria”*** in WTTT from ***“meeting steps 1 or 2”***
 - Procedure:
 - Changed Step 1 to: ***“Save image and record incident number in software”***
 - Added Step 2. “Save image of:
 - Bilateral lungs (look at apex and base bilaterally, save one image on each side)
 - Adequate cardiac view
 - RUQ (renal-hepatic interface and liver tip)
 - Pelvic
 - LUQ (Dome of spleen)”
 - Added Step 4: ***“Document POCUS use in ePCR per dropdowns or narrative guide”***
- **POCUS GUIDED CENTRAL VENOUS ACCESS** (pg. 191)
 - Procedure:
 - Replaced ***“Save images, log demographics and incident number in software as a part of documentation”*** with ***“Save image and record incident number in software.”***
 - Femoral Intravenous Cannulation:
 - Added Step 2 ***“Save image of procedure target”***
 - Added Step 8 ***“Document POCUS use in ePCR per dropdowns or narrative guides”***
 - Internal Jugular Venous Cannulation:
 - Added Step 2 ***“Save image of procedure target”***
 - Added Step 7 ***“Document POCUS use in ePCR per dropdowns or narrative guides”***
- **POCUS GUIDED PERIPHERAL VENOUS ACCESS** (pg. 194)
 - Procedure:
 - Added ***“Save image and record incident number in software.”***
 - Short Axis:
 - Added Step 2 ***“Save image of procedure target”***
 - Added Step 8 ***“Document POCUS use in ePCR per dropdowns or narrative guides”***
 - Long Axis:
 - Added Step 2 ***“Save image of procedure target”***



- Added Step 9 ***“Document POCUS use in ePCR per dropdowns or narrative guides”***
- **POCUS GUIDED PERICARDIOCENTESIS** (pg. 196)
 - Procedure:
 - Added ***“Save image and record incident number in software.”***
 - Subxiphoid (SX) Approach:
 - Added Step 8 ***“Document POCUS use in ePCR per dropdowns or narrative guides”***
 - Parasternal Approach:
 - Added Step 6 ***“Document POCUS use in ePCR per dropdowns or narrative guides”***

Changes in Appendix L – START Tool

- Removed START Tool

Changes in Appendix M – LVAD

- Added LVAD protocol (pg. 222)

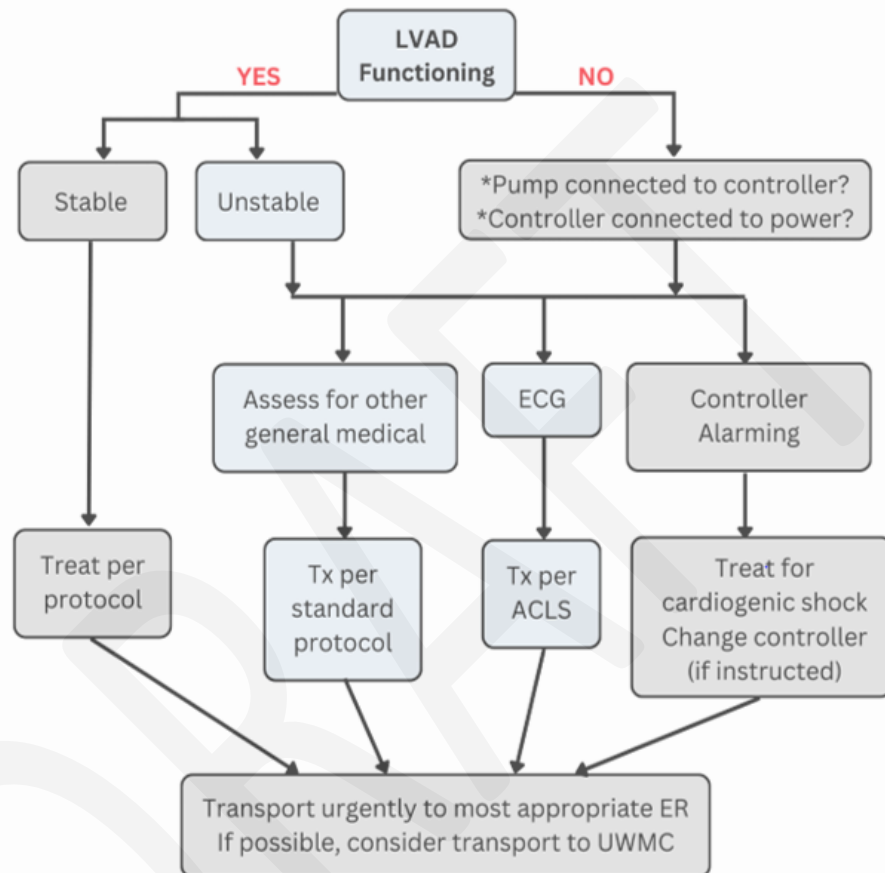
LVAD – APPENDIX M

VENTRICULAR ASSIST DEVICE COMPLICATIONS

1. Contact UWMC @ 206.598.6190. Ask for VAD Coordinator on Call. If no answer, contact medical control at PSPH. [Device-specific EMS field guides can be found at this link.](#)
Keep patient’s companion, if present, with the patient. Bring all the patients’ equipment.
2. Identify emergency
 - a. Treat the patient and follow protocols. Do not focus only on the device. Most patients do not have a primary pump malfunction. Rule out common problems such as stroke, bleeding, arrhythmias, dehydration, and right heart failure.
 - b. Assess the device for information and alarms located on the controller display. The number is also listed on the device and batteries. Intervene appropriately based on the type of alarm. See specific device alarm guides.
 - c. **LVAD failure**
 - i. Auscultate upper abdominal quadrant for continuous humming sound. **If VAD “hum” is not heard, then the device has stopped.**
 - ii. If the LVAD has stopped, the patient’s own heart is intact and may provide minimal cardiac output. Initiate appropriate therapy to stabilize patient. Monitor patient during transport.
 - iii. Identify the alarm on the controller attached to the percutaneous line from the abdomen (the driveline). Ensure driveline and charged batteries are connected to controller. Call specialist for assistance and prepare to change the controller.
 - d. **LVAD working with low flow**
 - i. **ECG abnormal/arrhythmia.** LVAD is dependent on right ventricular function. With arrhythmia, decreased function of right ventricle will affect LVAD flows. The LVAD may be able to maintain flow high enough to keep patient from going into shock. If patient is symptomatic, initiate appropriate therapy to correct the arrhythmia and optimize heart function.
 - ii. **ECG normal with suspected hypovolemia** from either suspected internal bleeding, fluid loss, or low fluid intake. If patient is symptomatic, initiate appropriate therapy to stabilize patient including volume replacement.
 - iii. **High watts.** Can be a sign of thrombus in the pump. Controller fault indicates a Controller malfunction. Electrical fault can be caused by a break in the wiring.
3. Vitals – Patient **may not have a palpable pulse, accurate pulse oximeter readings, or measurable blood pressure** even when the pump is providing adequate circulation. To obtain a blood pressure an automated cuff or doppler method can be used. If unable to obtain with automated cuff use the mean BP with a doppler (first sound you hear – MAP). Rely on other methods to assess perfusion e.g., mental status, skin color, capillary refill. The device flow shown on the controller display reflects the patient’s cardiac output.
4. Large bore peripheral venous access should be established on patient.
5. Perform routine ACLS procedure in cardiac arrest, including cardiac compressions, if indicated.
6. Patient’s Controller (small box attached to percutaneous driveline) will display alarm lights. Patient (or companion) will bring extra batteries before transporting. Do not disconnect controller from patient unless instructed by mechanical heart specialist.
7. Get guidance from the VAD coordinator on acceptable vital signs. Further, consider that you will have different goals (such as starting pressors) than normal ACLS due to patient’s unique physiology.

- Added LVAD algorithm (pg. 223)

LVAD ALGORITHM





Changes in Appendix N – DOH/PSPH Trauma

- Updated WA State Trauma Triage Tool (pg. 224)

DOH/PSPH TRAUMA – APPENDIX N

WASHINGTON STATE TRAUMA TRIAGE TOOL

Figure 1: Trauma Triage Criteria and Categories

Red Criteria: High Risk for Serious Injury

Injury Patterns	Mental Status & Vital Signs
<ul style="list-style-type: none">Penetrating injuries to head, neck, torso, and proximal extremitiesSkull deformity, suspected skull fractureSuspected spinal injury with new motor or sensory lossChest wall instability, deformity, or suspected flail chestSuspected pelvic fractureSuspected fracture of two or more proximal long bonesCrushed, degloved, mangled, or pulseless extremityAmputation proximal to wrist or ankleActive bleeding requiring a tourniquet or wound packing with continuous pressure	<p>All Patients</p> <ul style="list-style-type: none">Unable to follow commands (motor GCS < 6)RR < 10 or > 29 breaths/minRespiratory distress or need for respiratory supportRoom-air pulse oximetry < 90% <p>Age 0–9 years</p> <ul style="list-style-type: none">SBP < 70mm Hg + (2 x age in years) <p>Age 10–64 years</p> <ul style="list-style-type: none">SBP < 90 mmHg orHR > SBP <p>Age ≥ 65 years</p> <ul style="list-style-type: none">SBP < 110 mmHg orHR > SBP

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

Yellow Criteria: Moderate Risk for Serious Injury

Mechanism of Injury	EMS Judgement
<ul style="list-style-type: none">High-risk auto crash<ul style="list-style-type: none">Partial or complete ejectionSignificant intrusion (including roof)<ul style="list-style-type: none">>12 inches occupant site OR>18 inches any site ORNeed for extrication for entrapped patientDeath in passenger compartmentChild (age 0-9 years) unrestrained or in unsecured child safety seatVehicle telemetry data consistent with severe injuryRider separated from transport vehicle with significant impact (e.g., Motorcycle, ATV, horse, etc.)Pedestrian/bicycle rider thrown, run over, or with significant impactFall from height > 10 feet (all ages)	<p>Consider risk factors, including:</p> <ul style="list-style-type: none">Low-level falls in young children (age ≤ 5 years) or older adults (age ≥ 65 years) with significant head impactAnticoagulant useSuspicion of child abuseSpecial, high-resource healthcare needsPregnancy > 20 weeksBurns in conjunction with traumaChildren should be triaged preferentially to pediatric capable centers <p>If concerned, take to a trauma service</p>

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

[Updated WA DOH Version from October 2023](#)