



## Welcome to American Heart Association *Advanced Cardiac Life Support Options*

Remember to be successful in ACLS, it is assumed that you have the ability to interpret cardiac rhythms and determine appropriate treatments. There are now more options than ever before!

### **Recertification \$150**

This class lasts about 3.5 to 4 hours, covers a few videos, completes all the skills, reviews the algorithms and completes mega code and the written exam. ACLS cost is \$150 and to add BLS to this class is an additional \$50. Here is the link for [ACLS Precourse Self-Assessment](#) if you like to study in this way. We also love skill stat to review rhythms.

<http://www.skillstat.com/>

### **Hybrid Class \$150**

Complete the [ACLS Precourse Self-Assessment and Precourse Work](#) which will take around 2-3 hours and print the certificate of completion. You will then be eligible for the rapid recert course, about 1.5 to 2 hours: watch a video, complete skills testing, mega code and written exam.

### **ALCS HeartCode \$100 + AHA online fee \$144**

This gives you the complete ACLS course and exam online, so all you need is a skills check. This takes most people about 4+ hours online and the skills check is about 35-50 minutes.

[Heartcode® ACLS Online](#)

### **Full Provider-First Time \$150-\$220**

Option 1: Complete the precourse self-assessment and precourse work, then we recommend you come to a recert class. This lets you hear a couple videos, review the algorithms together, practice some skills and then you will be prepared to take the mega code skills test and written test. [ACLS Precourse Self-Assessment and Precourse Work](#) With the certification of completion the cost would be \$150.

Option 2: If you want to watch all the videos together or don't complete the precourse work, then we will do that, but the charge will be for the full provider course is \$220.

### **Books**

The test is now open book. You can order or download books directly from the AHA at <https://shopcpr.heart.org/> You can also borrow, check the reference library at your facility, etc. If you chose Heartcode, you have access to the book in the references section online.



## Welcome to American Heart Association Advanced Cardiac Life Support – pg 2

- If you feel like you need a rhythm review, we still like skill stat, but there are tons online and in your app store! <http://www.skillstat.com/> make sure you know the life-threatening ones and the ones that make patients unstable: SVT, Brady rhythms, Heart Blocks, etc.
- Study the H's and T's and ask yourself if you can name one treatment for each. Know your drugs: Epi, Atropine, Amiodarone, Lidocaine, Adenosine, Magnesium, and Norepinephrine.
- Feeling nerdy and love this stuff? <https://cpr.heart.org/en/resuscitation-science/cpr-and-ecc-guidelines> Scroll down and look at the Highlights of 2020 AHA Guidelines Update for CPR and ECC. It was our favorite, but the whole site offers great information.
- Try not to be too nervous, we remember what that is like! Our gift is being able to discuss complex concepts in a simple way and we pride ourselves on having a non-threatening environment where questions are encouraged.
- Have you seen the new AHA app? It's free and full of amazing data. Go to your app store and search AHA Guidelines on the Go.

Next you will find the sample agenda for your course and algorithm copies from the free online resources from the AHA.

**If you have any questions, please let us know-**

**Medical Education Angels**  
**661-205-0927 text/call**  
**Email: [mededangels@gmail.com](mailto:mededangels@gmail.com)**

## Your class will follow 1 of these agendas ☺

### MEA ACLS Hybrid Class Agenda

The student must have certificate of completion from the ACLS precourse self-assessment and precourse work, expect this to take about 2-3 hours online; this is not ACLS Heart Code as there is not an exam. It does offer CE/CME online.

- High Performance Teams
- Skills Testing OPA/NPA/Respiratory Arrest, CPR/AED and Mega Code
- Written Exam 84% or greater to pass, 1 hour allowed for exam

\*Remediation of any kind is not allowed with this option. If a student doesn't pass, they will be required to come to one of the other courses when offered on another date.

### MEA ACLS Recertification Agenda

- Science of Resuscitation
- CPR Coach
- Recognition of deterioration
- IO access
- Algorithms Review
- Skills Testing OPA/NPA/Respiratory Arrest, CPR/AED and Mega Code
- Written Exam 84% or greater to pass, 1 hour allowed for exam

### MEA ACLS Full Provider Agenda

- Systems of Care
- Science of Resuscitation
- Systematic Approach
- CPR Coach
- IO Access
- Airway Management
- Signs of Clinical Deterioration
- High Performance Teams
- ACS
- Stroke
- Coping with Death
- Algorithms Review
- Skills Testing OPA/NPA/Respiratory Arrest, CPR/AED and Mega Code
- Written Exam 84% or greater to pass, 1 hour allowed for exam

\*\*\*On occasion, agendas are altered to include/omit segments that are pertinent to the group.

Breaks are taken as needed, just ask!

Questions encouraged. ☺

Feel free to bring a drink or snack. No one tests well when they are hungry.

Please text or call us if you have any questions. 661-205-0927

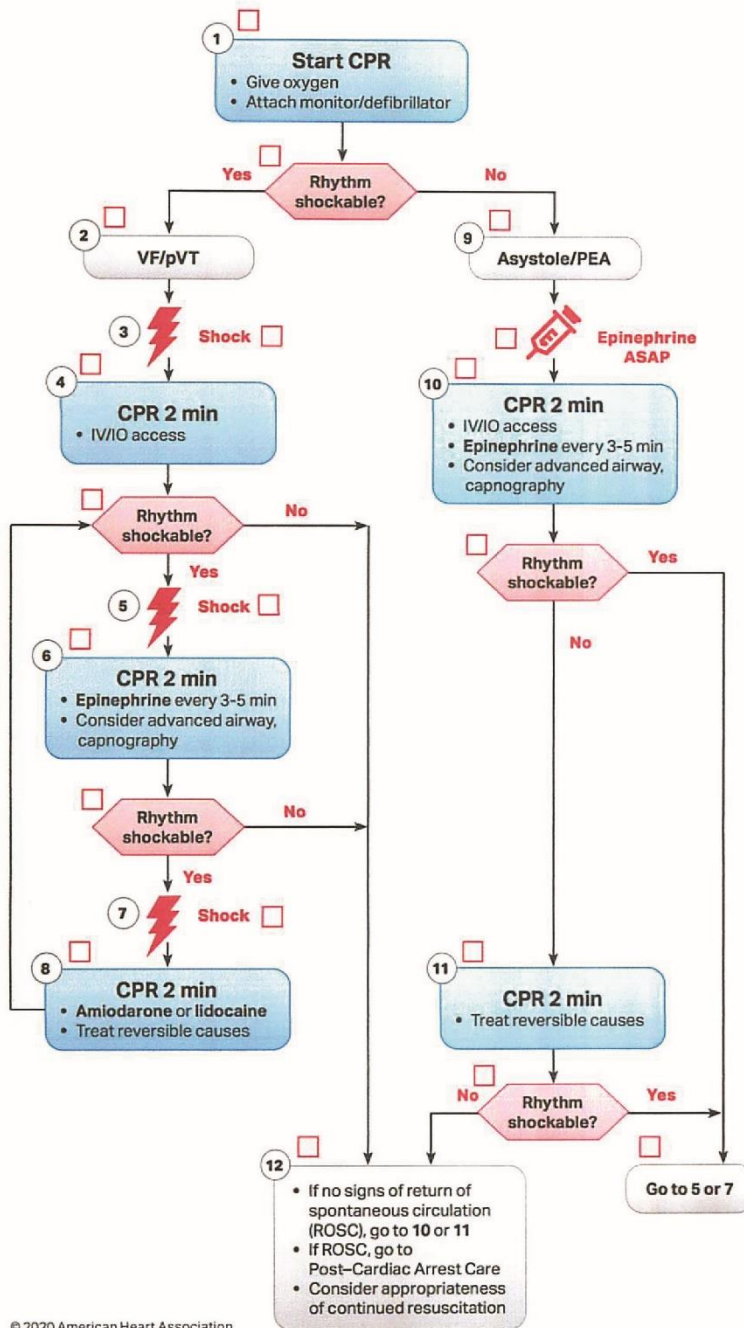
## H's and T's

### The potentially reversible causes of cardiac arrest and near arrest

<b>HYPOVOLEMIA</b> 1. look for obvious signs of fluid/blood loss 2. secure IV/IO access 3. give fluid bolus and reassess	<b>TOXINS</b> (drug OD, accidents) 1. support circulation while you administer reversal. Narcan reverses opiates/narcotics. Romazicon reverses benzodiazepines. Check out pg. 62-64 ECC handbook
<b>HYPOXIA</b> 1. confirm chest rise bilaterally and lung sounds 2. check O2 source 3. SpO2, ABG's, suction Rapid sequence intubation pg. 64-48 ECC handbook	<b>TAMPONADE</b> (causes: chest trauma, CABG, etc.) 1. Look for: JVD, narrow pulse pressure 2. Pericardiocentesis, return to OR
<b>HYDROGEN ION LOSS</b> 1. respiratory – ensure adequate ventilation 2. metabolic – give NaHCO3 (sodium bicarbonate) 3. draw/evaluate CO2 in serum or pH on ABG	<b>TENSION PNEUMOTHORAX</b> (s/s: chest asymmetry, tympani, decreased BS, high peak pressures, JVD, tracheal deviation, severe respiratory distress) 1. vent tension in chest with angio at 2ICS below clavicle 2. CXR 3. support ventilation and oxygenation with BVM, intubate if necessary
<b>HYPOTHERMIA</b> 1. consider warm NS infusion 2. warming measures pg. 71 ECC handbook	<b>THROMBOSIS</b> (coronary or pulmonary) 1. consider fibrinolysis
<b>HYPOGLYCEMIA</b> 1. accu-check and administer reg insulin PRN	<b>TRAUMA</b> 1. inspect body completely; remove clothing 2. secure airway 3. control external bleeding by applying pressure while concurrently giving crystalloids and blood products 4. look for s/s of internal bleeding: send lab work, do diagnostic tests as long as patient stable enough for exam, tap belly if suspicious for internal bleeding, call OR to be on call
<b>HYPOKALEMIA</b> 1. look for flat T waves and U waves 2. administer potassium and consider checking and infusing Magnesium <b>HYPERKALEMIS</b> 1. look for peaked T waves, tall ST or widening QRS 2. To move K intracellular: <ul style="list-style-type: none"> <li>CaCl 10%, 5-10ml/onset 1-3 min</li> <li>Sod. Bicarb give 1 amp up to 1mEq/kg can repeat in 15 min./onset 5-10 min</li> <li>Insulin &amp; Dextrose: 10u regular insulin/1 amp D50 (25gms) /onset 30 min</li> <li>Nebulized Albuterol 10-20mg/15 minutes, may repeat / onset 15 min</li> <li>Lasix 40-80mg IV / onset with diuresis</li> <li>Kayexalate 15-50gm PO or rectal /onset 1-2 hours</li> </ul> Pg. 61, 2020 Handbook of ECC	

## Adult Cardiac Arrest Learning Station Checklist (VF/pVT/Asystole/PEA)

### Adult Cardiac Arrest Algorithm (VF/pVT/Asystole/PEA)



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#### CPR Quality

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

#### Shock Energy for Defibrillation

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

#### Drug Therapy

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

#### Advanced Airway

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

#### Return of Spontaneous Circulation (ROSC)

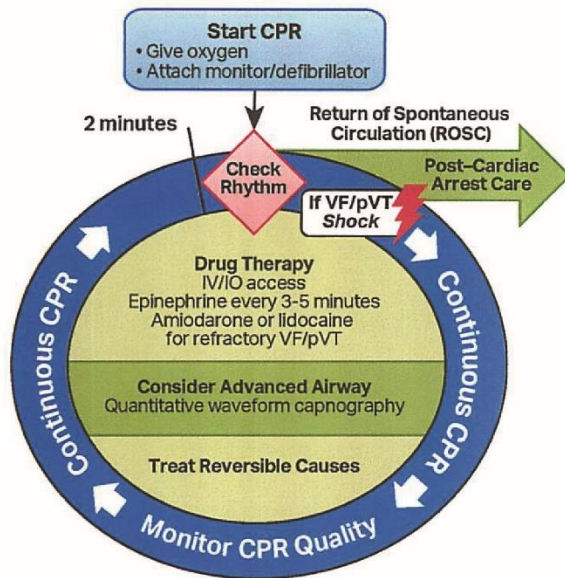
- Pulse and blood pressure
- Abrupt sustained increase in PETCO<sub>2</sub> (typically ≥40 mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

#### Reversible Causes

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



## Adult Cardiac Arrest Circular Algorithm



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### CPR Quality

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

### Shock Energy for Defibrillation

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

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### Return of Spontaneous Circulation (ROSC)

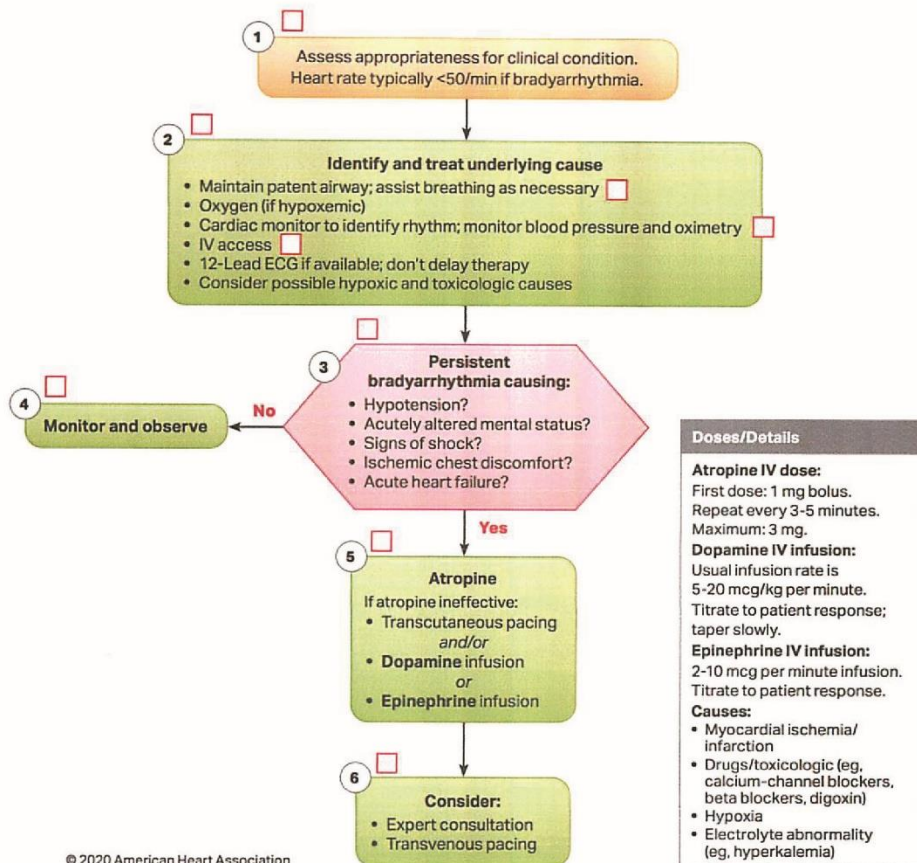
- Pulse and blood pressure
- Abrupt sustained increase in PETCO<sub>2</sub> (typically ≥40 mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

### Reversible Causes

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

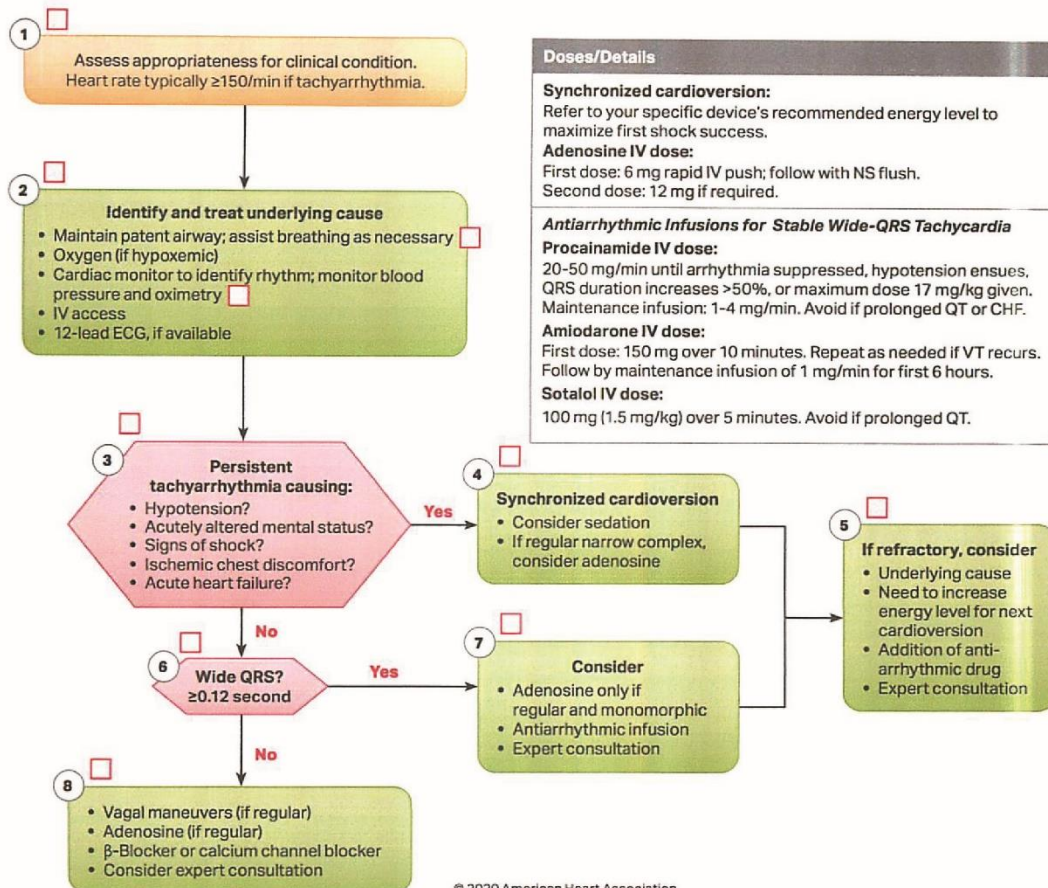
## Adult Bradycardia Learning Station Checklist

### Adult Bradycardia Algorithm



## Adult Tachycardia With a Pulse Learning Station Checklist

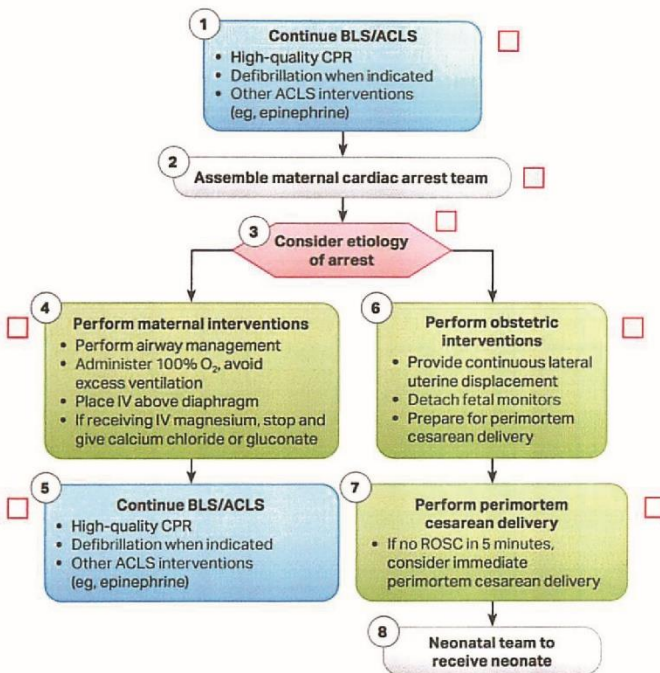
### Adult Tachycardia With a Pulse Algorithm





## Cardiac Arrest in Pregnancy In-Hospital ACLS Learning Station Checklist

### Cardiac Arrest in Pregnancy In-Hospital ACLS Algorithm



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#### Maternal Cardiac Arrest

- Team planning should be done in collaboration with the obstetric, neonatal, emergency, anesthesiology, intensive care, and cardiac arrest services.
- Priorities for pregnant women in cardiac arrest should include provision of high-quality CPR and relief of aortocaval compression with lateral uterine displacement.
- The goal of perimortem cesarean delivery is to improve maternal and fetal outcomes.
- Ideally, perform perimortem cesarean delivery in 5 minutes, depending on provider resources and skill sets.

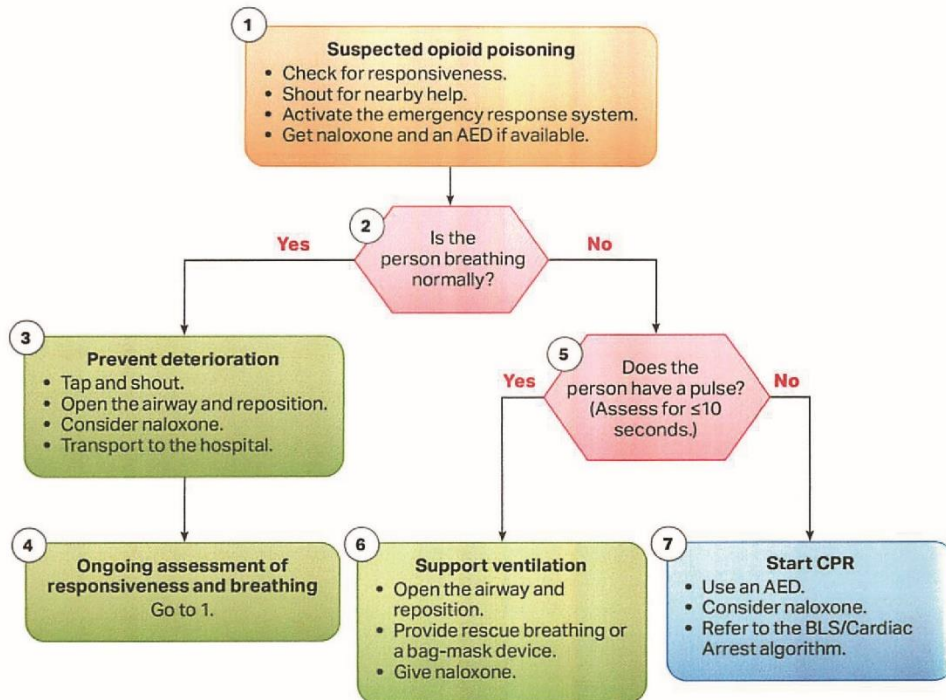
#### Advanced Airway

- In pregnancy, a difficult airway is common. Use the most experienced provider.
- Provide endotracheal intubation or supraglottic advanced airway.
- Perform waveform capnography or capnometry to confirm and monitor ET tube placement.
- Once advanced airway is in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions.

#### Potential Etiology of Maternal Cardiac Arrest

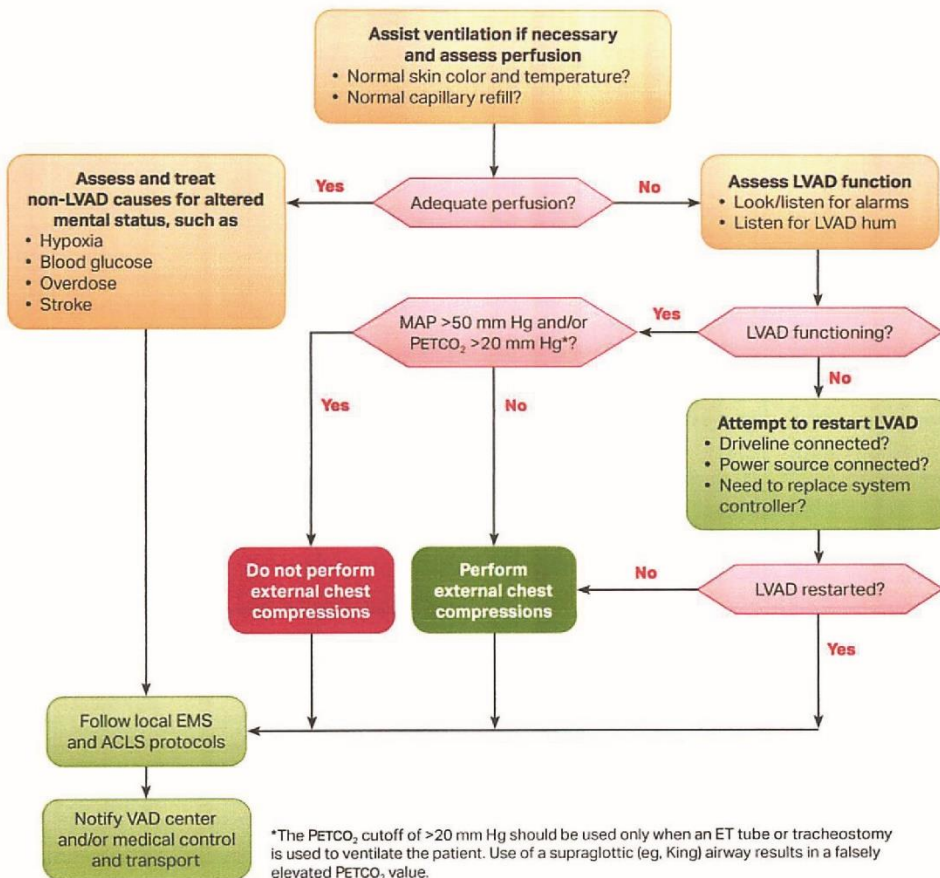
- A Anesthetic complications
- B Bleeding
- C Cardiovascular
- D Drugs
- E Embolic
- F Fever
- G General nonobstetric causes of cardiac arrest (H's and T's)
- H Hypertension

Figure 6. Opioid-Associated Emergency for Healthcare Providers Algorithm.



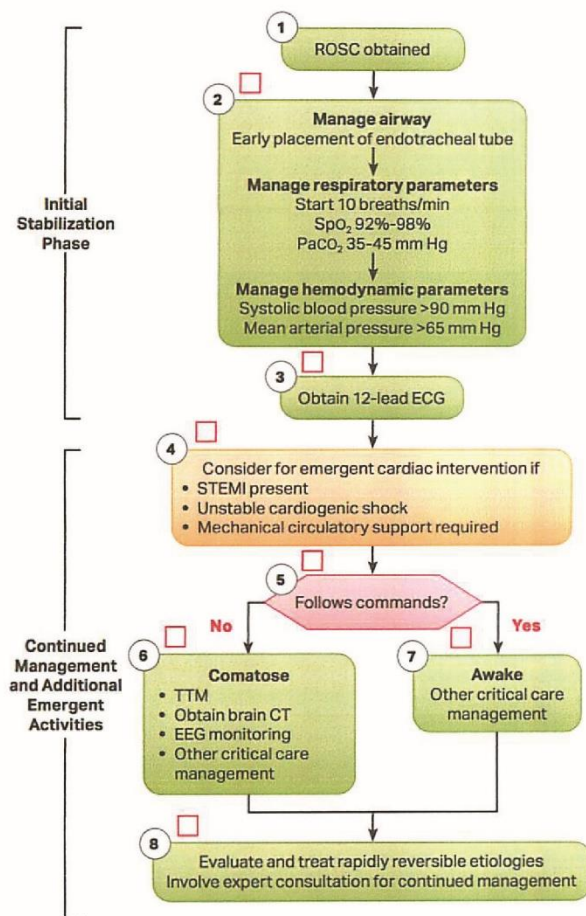
## Adult Ventricular Assist Device Learning Station Checklist

### Adult Ventricular Assist Device Algorithm



# Adult Post-Cardiac Arrest Care Learning Station Checklist

## Adult Post-Cardiac Arrest Care Algorithm



### Initial Stabilization Phase

Resuscitation is ongoing during the post-ROSC phase, and many of these activities can occur concurrently. However, if prioritization is necessary, follow these steps:

- Airway management:  
Waveform capnography or capnometry to confirm and monitor endotracheal tube placement
- Manage respiratory parameters:  
Titrate FiO<sub>2</sub> for SpO<sub>2</sub> 92%-98%; start at 10 breaths/min; titrate to PaCO<sub>2</sub> of 35-45 mm Hg
- Manage hemodynamic parameters:  
Administer crystalloid and/or vasopressor or inotrope for goal systolic blood pressure >90 mm Hg or mean arterial pressure >65 mm Hg

### Continued Management and Additional Emergent Activities

These evaluations should be done concurrently so that decisions on targeted temperature management (TTM) receive high priority as cardiac interventions.

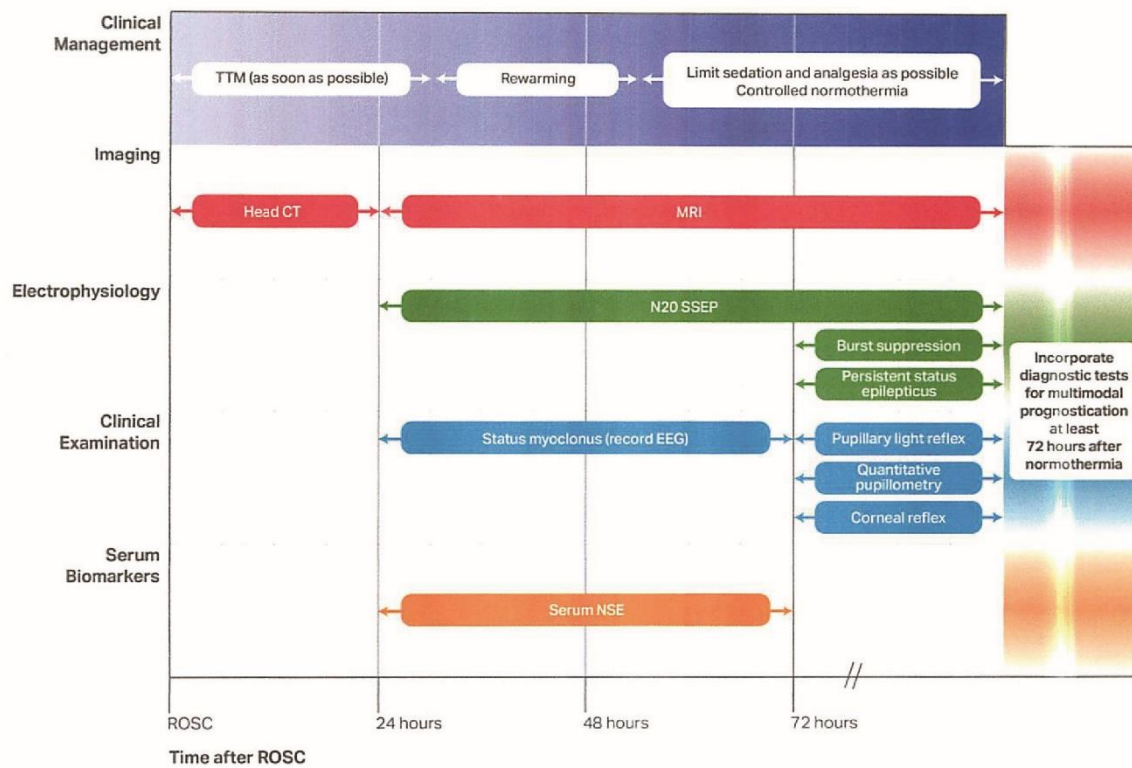
- Emergent cardiac intervention:  
Early evaluation of 12-lead electrocardiogram (ECG); consider hemodynamics for decision on cardiac intervention
- TTM: If patient is not following commands, start TTM as soon as possible; begin at 32-36°C for 24 hours by using a cooling device with feedback loop
- Other critical care management
  - Continuously monitor core temperature (esophageal, rectal, bladder)
  - Maintain normoxia, normocapnia, euglycemia
  - Provide continuous or intermittent electroencephalogram (EEG) monitoring
  - Provide lung-protective ventilation

### H's and T's

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



**Figure 8. Recommended approach to multimodal neuroprognostication in adult patients after cardiac arrest.**



<https://shopcpr.heart.org/>



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\* This book is my favorite. 😊