310-654-8687

ACLS Study Guide

Please STUDY FOR THE CLASS. This guide will assist your preparation for the class. The ACLS Student Manual is by far the best resource and can be accessed in the classroom, online, and from hospitals.
2020 Edition

1) CLASS INTRODUCTION

A) Instructor and student introduction

-be prepared to actively participate

B) Class philosophy

-Don't rush when providing care, but be aggressive (ex: Straight to the point, assertive, loud enough for people to hear, confident, specific)

Note: when you rush you make mistakes and/or create safety issues. When you are not aggressive, communication is poor.

C) Class format

1. Lecture/Videos

2. Practice

3. Test; skills test, 50 question written exam

2) BLS SURVEY

A) C.A.B (Compressions, Airway, Breathing)

B) **Sequence:** 1. Check the scene to make sure it is safe. Don't get hurt trying to help.

2. Check the patient for responsiveness and breathing

3. Activate the Emergency Response System/ Get a Defibrillator

4. Check for a Carotid pulse (no more than 10 secs, no less than 5 secs)

5. Begin CPR, start with Compressions

C) **Compressions:** 1. At a rate between 100-120 per minute and 2 inches deep

2. 30;2 ratio of compressions to breaths

3. Compress the center of the chest (lower half of the sternum)

4. Switch compressors every 2 mins or when HR on monitor drops under 100bpm during compressions

5. Minimize ALL Interruptions to 10 secs or less during CPR

D) **Airway:** 1. Open the airway with the **Head/Tilt Chin Lift** maneuver

2. Use the Jaw Thrust Maneuver for Trauma PT.

Note: do not apply Cricoid pressure any more to all patients.

E) **Breathing:** 1. Give enough air for the chest to rise.

2. Avoid excessive Ventilation to prevent vomiting, too much pressure around the heart, and 0xygen toxicity.

F) **Types of Breathing**: 1. *Normal CPR Breathing* (2 breaths w/ 2 secs. in- between each breath)

2. ***Rescue Breathing*** (1 breath every **6** secs)

3. Breathing w/ an ***Advanced Airway*** (1 breathe every **6** secs)

Cardiac Arrest

It may be reasonable for EMS providers to use a rate of 10 breaths/min (1 breath every 6 seconds) to provide asynchronous ventilation during continuous chest compressions before placement of an advanced airway.

G) **Defibrillation:** 1. Assess and use the Defibrillator immediately after is arrives if necessary.

2. Follow each shock immediately with CPR. Don't reassess immediately.

3. Defibrillation used to shock V-Fib and Pulseless V-Tach only in cardiac arrest

Shock Dosage: 200 J for first shock

300 J for second shock

360 joules for third shock and any shocks after

4. Defibrillator pads can be used universally between defibrillators which results in faster defibrillation. It also all is faster to use than paddles because the pads can be left on the patient's chest.

NOTE: BLS takes priority over ACLS

3) ACLS SURVEY

A) Complete ACLS Survey after BLS Survey

B) Sequence: ABCD; **A**irway, **B**reathing, **Ci**rculation, **D**ifferential Diagnosis

AIRWAY-

1. correct breathing by: Head/Tilt Chin Lift → **NPA** (nasal pharyngeal airway) or **OPA** (oral pharyngeal airway) → Advanced Airway Placement

Question: Is proper Placement of airway confirmed? Is the tube secured?

2. **Types of Advanced Airways**: Laryngeal mask airway, Esophageal-tracheal tube, Endotracheal tube

3. *No more cricoids pressure*. Not beneficial in all cardiac arrest.

4. Measure NPA: From the tip of the PTs ear to the tip of the PTs nose

Measure OPA: From the tip of the PTs ear to the tip of the PTs mouth.

CLASSIFICATION OF THE PATIENT: *STABLE VS UNSTABLE*

A) STABLE--→ TREAT REVERSABLE CAUSES-->MEDICATION THERAPY--→ PACING or S. CARDIOVERSION--→ SPECIALIST

B) UNSTABLE-→ PACING or S. CARDIOVERSION→SPECIALIST

1. Examples of signs and symptoms that can describe a patient that is UNSTABLE:

SHORTNESS OF BREATH (different from respiratory distress)

ALTERED MENTAL STATUS

SBP <90,

02 SATURATION <94 %.

-If the patient has one of these signs or symptoms, they are unstable (in shock) and may deteriorate very quickly.

2. A patient who is unstable can deteriorate within minutes or seconds. They are critical and require EMS or Rapid Response/code Blue.

3. The first question you should ask yourself (knowing the scene is safe) **when you come in contact with the patient is: Are they stable or unstable?**

Note: the patients we are dealing with in this course are patients having cardiac and/or Stroke signs and symptoms. Just because you may be having a cardiac emergency, it does not mean the patient is going to deteriorate quickly. In fact, some patients having heart attacks for example die after 10 hours of onset, where others die in seconds.

BREATHING-

1. For Cardiac Arrest PTs give 100% Oxygen.

2. Monitor ventilations by using **Quantitative Waveform Capnography** &/or Oxygen Saturation.

-O2 Saturation should be: equal to or greater than **90%**

-Capnography: **PETCO** normal range should be **35mm Hg – 40mm Hg** or PACO range of 35-40mm Hg. (Partial End Tidal CO2 measures Exhaled CO2 levels)

CIRCULATION-

1. Monitor CPR quality (If PETCO is **<10mm Hg**, attempt to improve CPR quality)

Questions: 1. What is the Cardiac Rhythm?

2. Has IV/IO access been established?

3. Are medications or fluids needed?

4. Is Defibrillation or Cardioversion needed?

DIFFERENTIAL DIAGNOSIS-

Questions: 1. Why did this PT develop symptoms of arrest?

2. Is there a reversible cause that can be treated?

3) TEAM DYNAMICS

A) Understand your role AND the roles of other Team Members

B) Team Leader's Role: 1. Organizes the group and assigns task

2. Makes sure everything is done at the right time and the right way

3. Trains and Coaches

C) **Closed-Loop Communications:** The team leader gives an order, the team member repeats the order to confirm that they got it. When the task is done, the team member states it verbally.

DO: 1. repeat medication orders

2. Seek advice if necessary

3. Question an order if the slightest doubt exists

4. Talk professionally and avoid raising your voice

DON'T: 1. Forget to notify the team when a drug has been given

2. Take on a task when you haven't completed a task in progress

3. Give unclear messages

4. Take on assignments beyond your scope

D) **Structured Team Debriefing**

1. Corrects Thought Process unlike **Simple Feedback**

2. Summarize, analyze, create records, and set goals

4) POST CARDIAC CARE (pg. 145-151)

A) **Therapeutic Hypothermia**: 1. For PTs who are comatose after ROSC.

2. Cool PT to **32*C to 36*C** for **at least 24hrs.**

3. Use Ice, surface cooling devices, and/or Ice cold isotonic fluids

B) PCI (Cath. Lab) and Hypothermia can be done concurrently.

C) EPI IV infusion for post care: 0.1-0.5mcg/kg per minute to assist in managing hypotension.

D) Avoid O2 toxicity and hypotension. Get the PT to a ICU post-care specialty team.

- E) The main cause for patience to re-arrest relates to not optimizing ventilations/oxygenation and not managing hypotension. The goal for Oxygen saturation is 92% to 98%

5) ACS: Acute Coronary Syndromes (pg. 93 & 94)

A) Signs and symptoms: shortness of breath, chest pain, nausea, dizziness, sweating.

B) **Drugs used:** Oxygen, **aspirin (*160 to 325mg***), **nitro** (none if SBP is <90, right ventricular infarction, hypotension, bradycardia, tachycardia), 2-4mg. slow iv bolus of **morphine** (administer fluids if hypotension occurs. Morphine reduces the amount of oxygen that the heart needs for perfusion), fibrinolytic therapy (**clot busters**. Can reduce mortality by 47% if used in 1st hr), and heparin. A newer drug that is being used: Brilinta 60-90mg.

Don't use morphine, vasodilators, nitro, or volume depleting drugs if inferior wall MI & RV Infarction.

C) Focus for effective treatment: Time management and identification W/ 12 Lead ECG

D) Out-of-Hospital Cardiac Arrest: Half of all patients who die of ACS do so before reaching the hospital. **VF or Pulseless VT** is the precipitating rhythm in most of these deaths. VF is most likely to develop during the first 4 hrs after onset of symptoms.

E) **Reperfusion Therapy:** opens an occluded coronary artery either w/ drugs or mechanical means. (Fibrinolytics or PCI aka CATH LAB)

F) **EMS Treatment**: Assessment, 0xygen, aspirin, nitro, morphine, obtain 12 Lead ECG, complete a Fibrinolytic checklist, Inform receiving facility if ST elevation, Prep for CPR.

G) Emergency Department Arrival: 1. Get 12 lead ECG w/ in 10 mins

2. Use fibrinolytics w/ in 30 mins

3. PCI w/ in 90 mins

NOTE*: HAVE STUDENTS REFER TO ACS ALGORITHM on pg. 77*

6) ACUTE STROKE CARE

A) African American: highest risk, 795,000 strokes occur in US a yr, 1 of leading causes of death,

B) Types: **Ischemic**- (87%) occlusion of artery, **Hemorrhagic**- (13%) vessel in brain ruptures.

C) Rapid identification of Stroke: time of occurrence, assessment (Cinn. Test, glucose, history, 12- lead ECG)

D) Rapid transport to a facility that can provide stroke care

E) Ischemic treatment: IV **Fibrinolytic therapy** (w/in **3-4 ½** hrs of recognition), **Hemorrhage**-Surgery

F) **8 D's** of stroke care: **D**etection, **D**ispatch (EMS), **D**elivery, **D**oor (triage), **D**ata (ED evaluation), **D**ecision (Expertise), **D**rug, and **D**isposition (rapid admission to stroke unit or critical care team).

G) rTPA: can cause brain hemorrhage and other side effects, (contraindications: 80yrs or older, glucose >185, history of both stroke and diabetes, less than 18 yrs old,…)

7) Adult Bradycardia

A) Definition: Heart rate less than 50. (signs: altered mental status, hypotension, signs of shock, chest discomfort, S.O.B.)

B) **Drugs**: **Atropine (0.5 mg every 3-5 mins with a max dose of 3mg)**, Dopamine IV infusion (2-20 mcg/kg per min.) or Epinephrine (2-10 mcg per min). Adjust to PT's response.

C) **Rhythms** for Bradycardia: 1. Sinus Bradycardia

2. First Degree AV Block

3. Second Degree AV Block : TYPE 1 (bad)

TYPE 2 (worse)

4. Third-Degree AV Block (Complete Heart block)

D) **When to look for AV BLOCKS**: 1.Bradycardia

2. “P” waves > QRS

3. “P-R prolonged (0.20 secs)

Question to ask: Is it **regular or irregular?**

REAGULAR: **1ST degree** (PR Interval is consistent and prolonged)

3rd degree (PR Intervals are really inconsistent & “P” waves are always in different positions from QRS)

NOTE: 3RD DEGREE BLOCK: Pace PT immediately or Asystoles will occur quickly)

IRREGULAR: 2ND degree: 1. TYPE 1 (PR inconsistent and missing some QRS)

TYPE 2 (PR waves consistent but missing QRS)

Note that if a patient is unstable, pacing takes priority to medication therapy.

Watch these videos before the class:

https://www.youtube.com/watch?v=U1zq4T7MEWw

QUESTION: Was this code ran well? What was good and bad about the code?

https://www.youtube.com/watch?v=90q19HTvm28

QUESTION: Were good team dynamics present?

https://www.youtube.com/watch?v=AX7wKfTb2Qk

QUESTION: Why is capnography important?

https://www.youtube.com/watch?v=pliSsY23pww

https://www.youtube.com/watch?v=Ts7gND-hyLY

https://www.youtube.com/watch?v=Iy1lV_YzMIk

https://www.youtube.com/watch?v=d7ymmR8WuYE&t=392s

QUESTION: When do you cardiovert? When do you pace?

Optional:

https://www.youtube.com/watch?v=w32PUDL2lb8

https://www.youtube.com/watch?v=JypQxfW94a0

https://www.youtube.com/watch?v=IEIaegVWnmA

Basic MEDICATIONS TO KNOW:

Cardiac Arrest: EPINEPHRINE (used with all cardiac arrest patients)

AMIODARONE/LIDOCAINE (used if a patient does not respond to defibrillation)

Bradycardias: ATROPINE (First drug used to treat bradycardias)

EPINEPHRINE (Used if you can't pace after atropine & also for hypotension post-cardiac arrest)

DOPAMINE (also used to treat hypotension post-cardiac arrest)

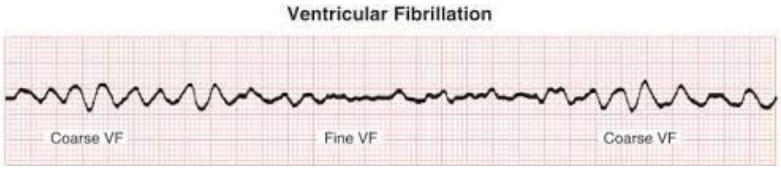
Stroke: TPA (Activase Stroke med used for clots)

A.C.S: HEPARIN, MORPHINE, 02, NITRO, ASPIRIN/BRILINTA (chewable)

Tachycardias: Adenosine (not used for all tachys.)

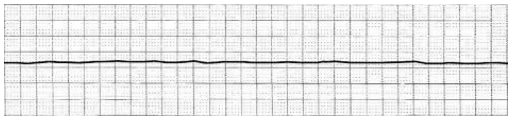
KNOW THE FOLLOWING RHYTHMS:

VENTRICULAR FIBRILLATION (shockable cardiac arrest rhythm)



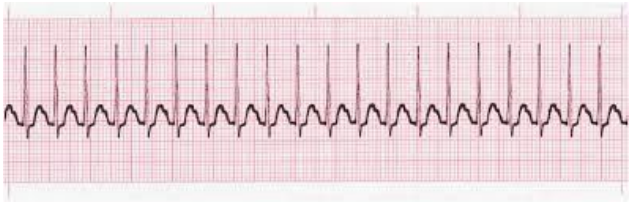
PULSELESS VENTRICULAR TACHYCARDIA (shockable rhythm)

ASYSTOLES (aka flatlined)



NORMAL SINUS RHYTHM (will include normal HR between 60-100 bpm)

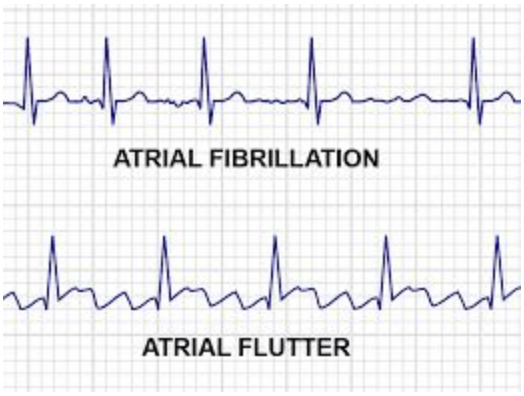
SVT (very fast Tachycardia rhythm with a H.R. above 180)



TACHYCARDIAs (fast rhythm)

BRADYCARDIAs (slow rhythms under 50 B.P.M.) including A.V. blocks

ATRIAL FIBRILLATION



ATRIAL FLUTTER

P.E.A. also known as pulseless electrical activity (normal sinus rhythm with no pulse)

This website will allow easily prep you for rhythm interpretation and practice:

http://www.skillstat.com/tools/ecg-simulator

8) SYMPTOMATIC TACHYCARDIA

A) The HR is greater than 100 and we get real concerned when it goes above **150.**

B) Signs and symptoms: signs of shock, hypotension, chest discomfort, acute heart failure, AMS, SOB

C) Tachycardia rhythms: Atrial Fib, Atrial Flutter, SVT, VT, Uncertain Wide Complex Tachy.

For the Stable Patient, we go with Vagal Maneuvers (works ¼ times) □ to Medications□ to Cardioversion□ specialist.

For Unstable Patients□ Cardioversion□ to Specialist

D) A wide complex tachycardia can be very severe and lead to hypotensive shock and cardiac arrest

9) EMERGENCY TRIAGE- VERBAL ASSESSMENT

What to ask the patient:

S-SIGNS/SYMPTOMS

A- ALLERGIES

M- MEDICATIONS

P- PAST PERTINENT HISTORY

L- LAST ORAL INTAKE

E- EVENTS LEADING UP TO THE EMERGENCY

Example:

1," What's wrong?" or "What brings you to the emergency department?"

2. "Do you have any allergies?"

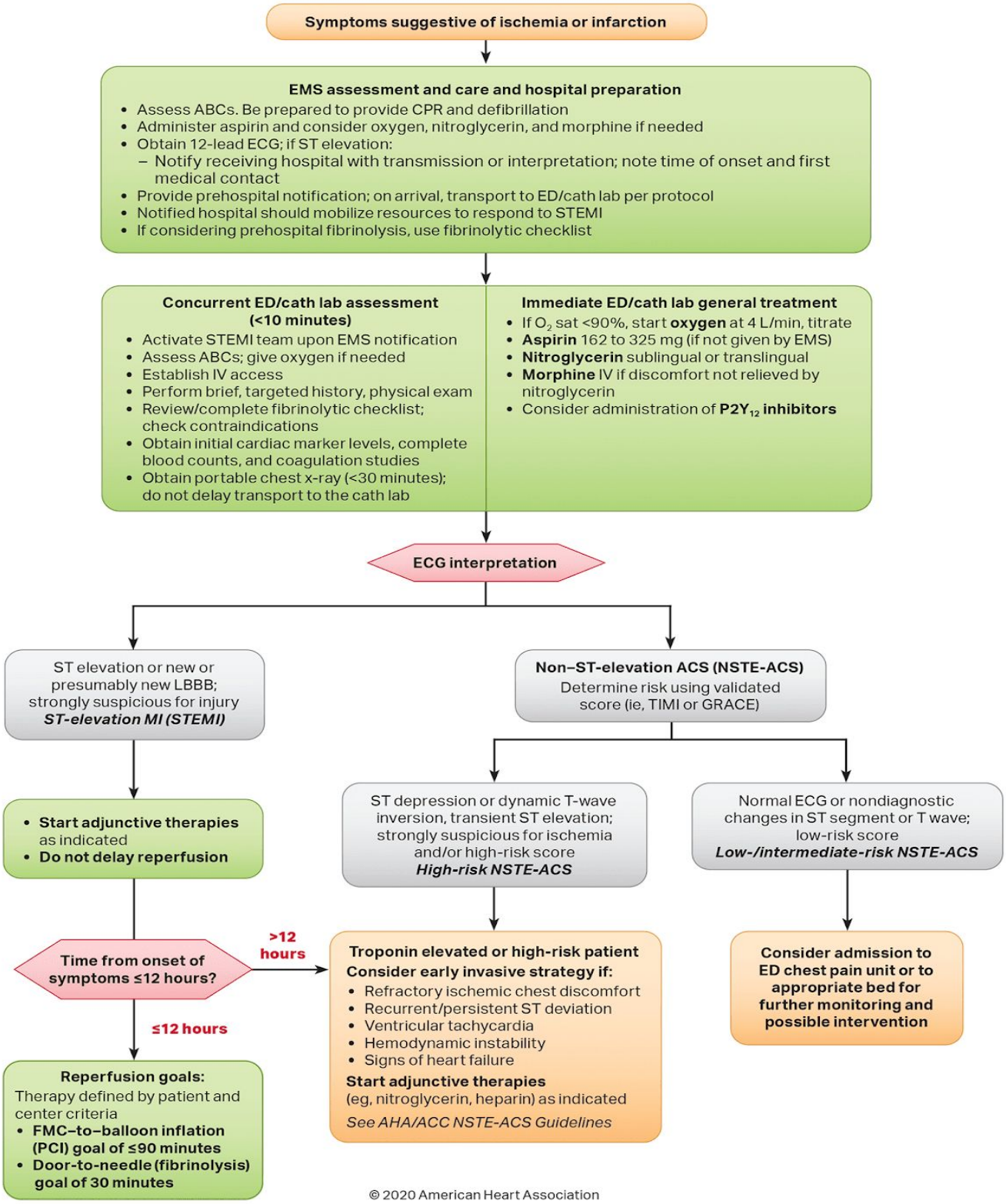
3. "What medications should you be taking?" or "What medications are you on?"

4. "What health issues do you have?"

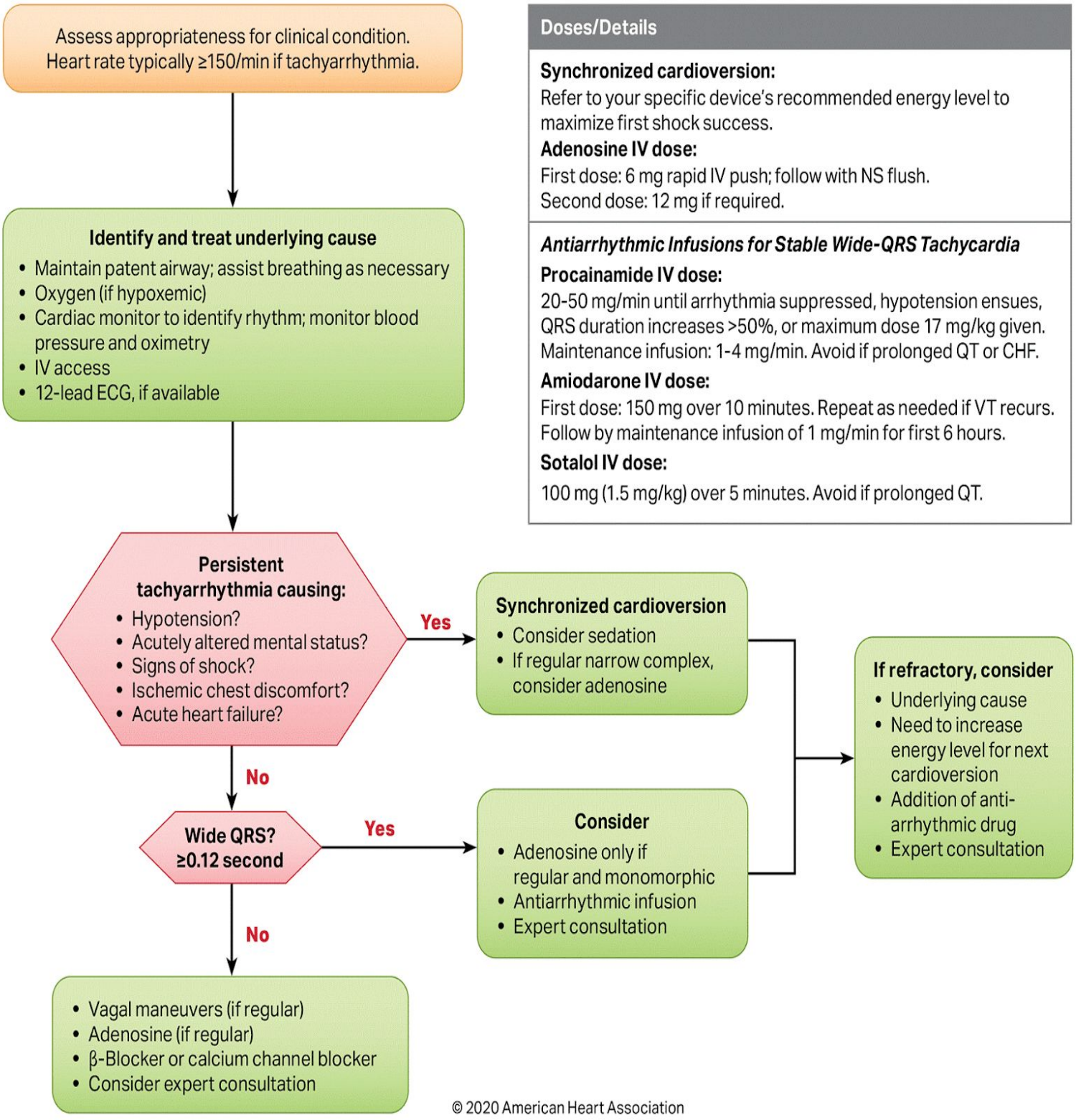
5. "What was the last thing you had to eat or drink?"

6. “What were you doing when you started having chest pain?”

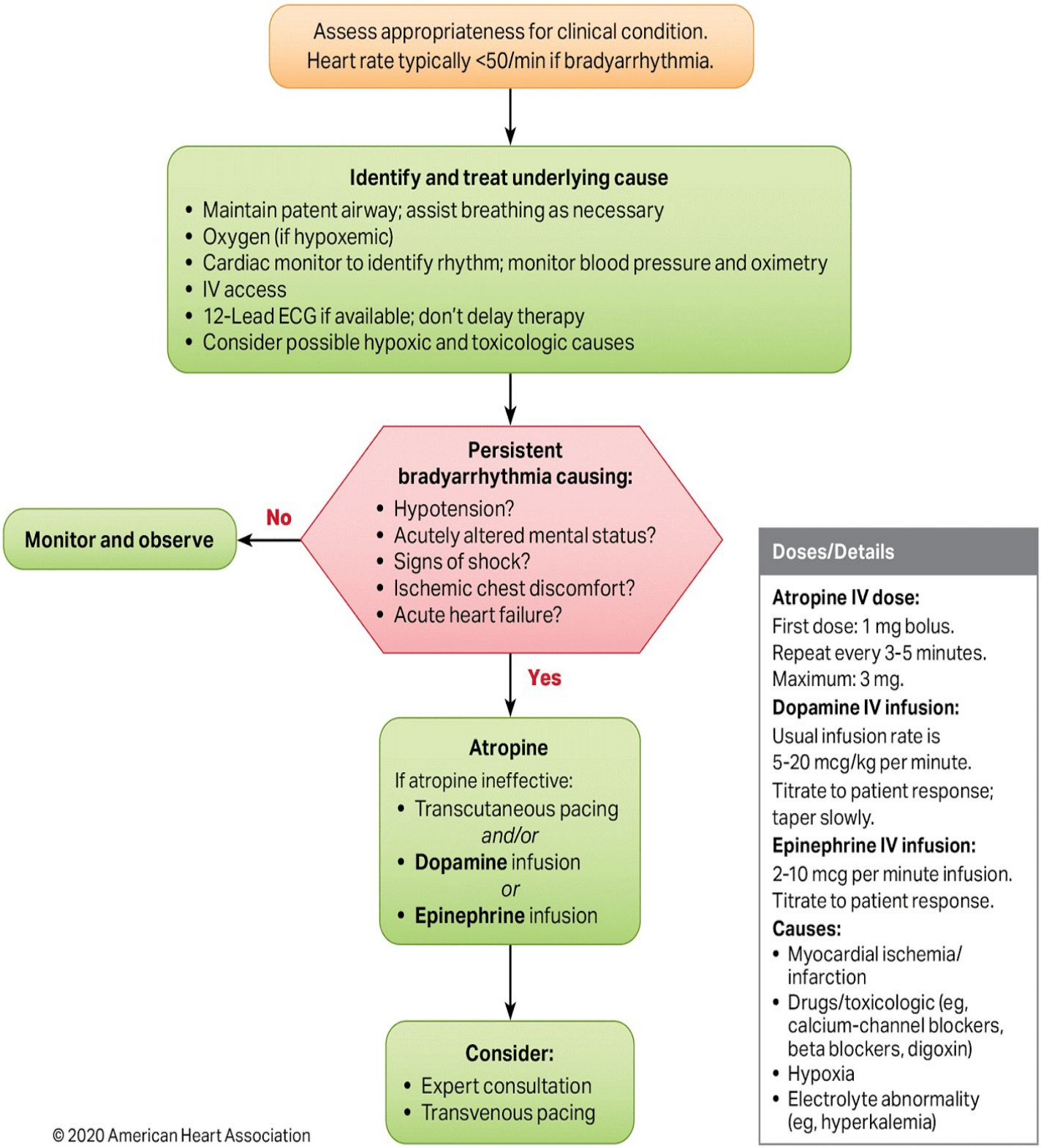
ACS: Acute Coronary Syndromes Algorithm



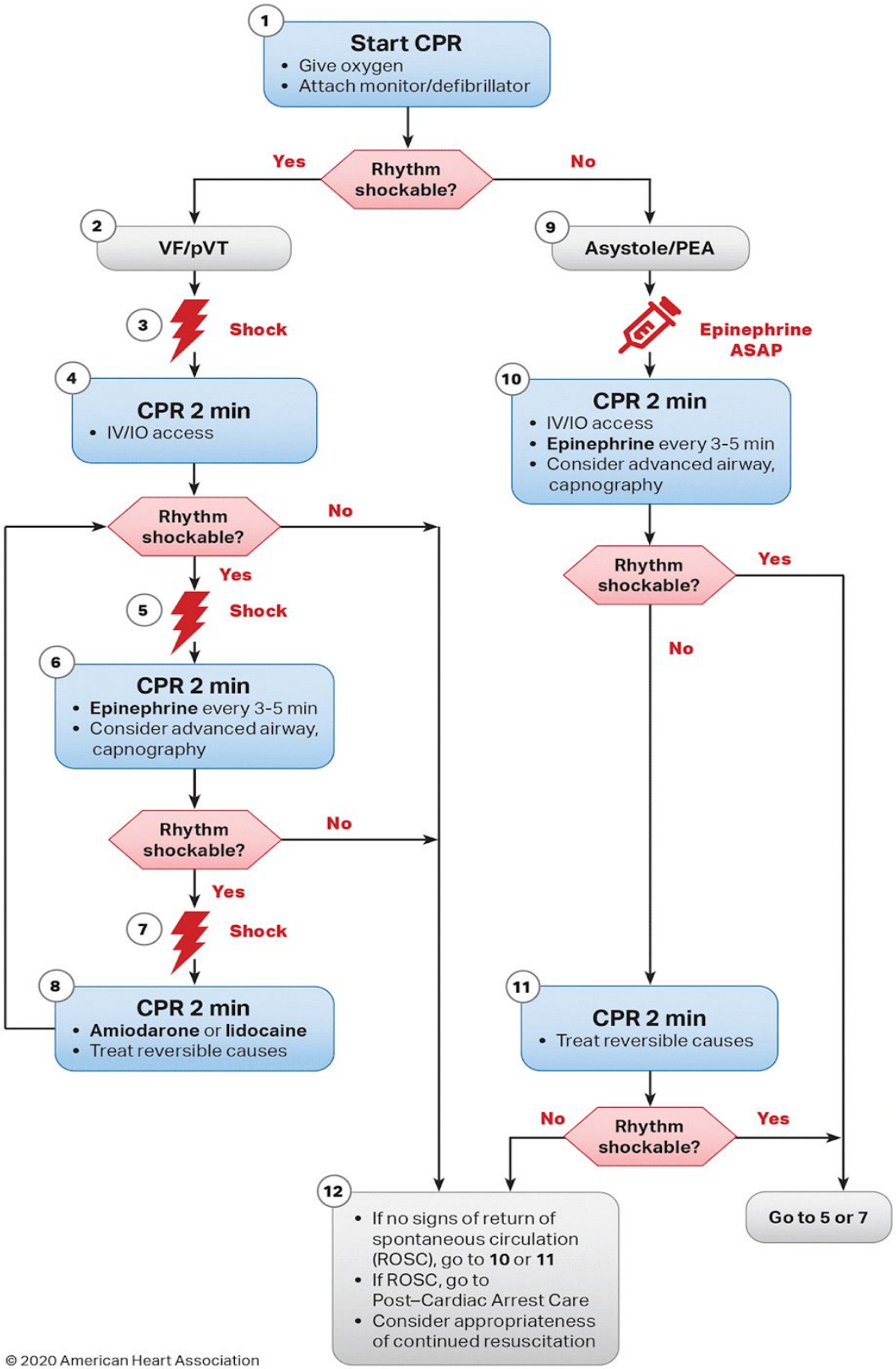
TACHYCARDIA ALGORITHM



BRADYCARDIA ALGORITHM



CARDIAC ARREST: *SHOCKABLE & NON-SHOCKABLE* ALGORITHM



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 $PETCO_2$ 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

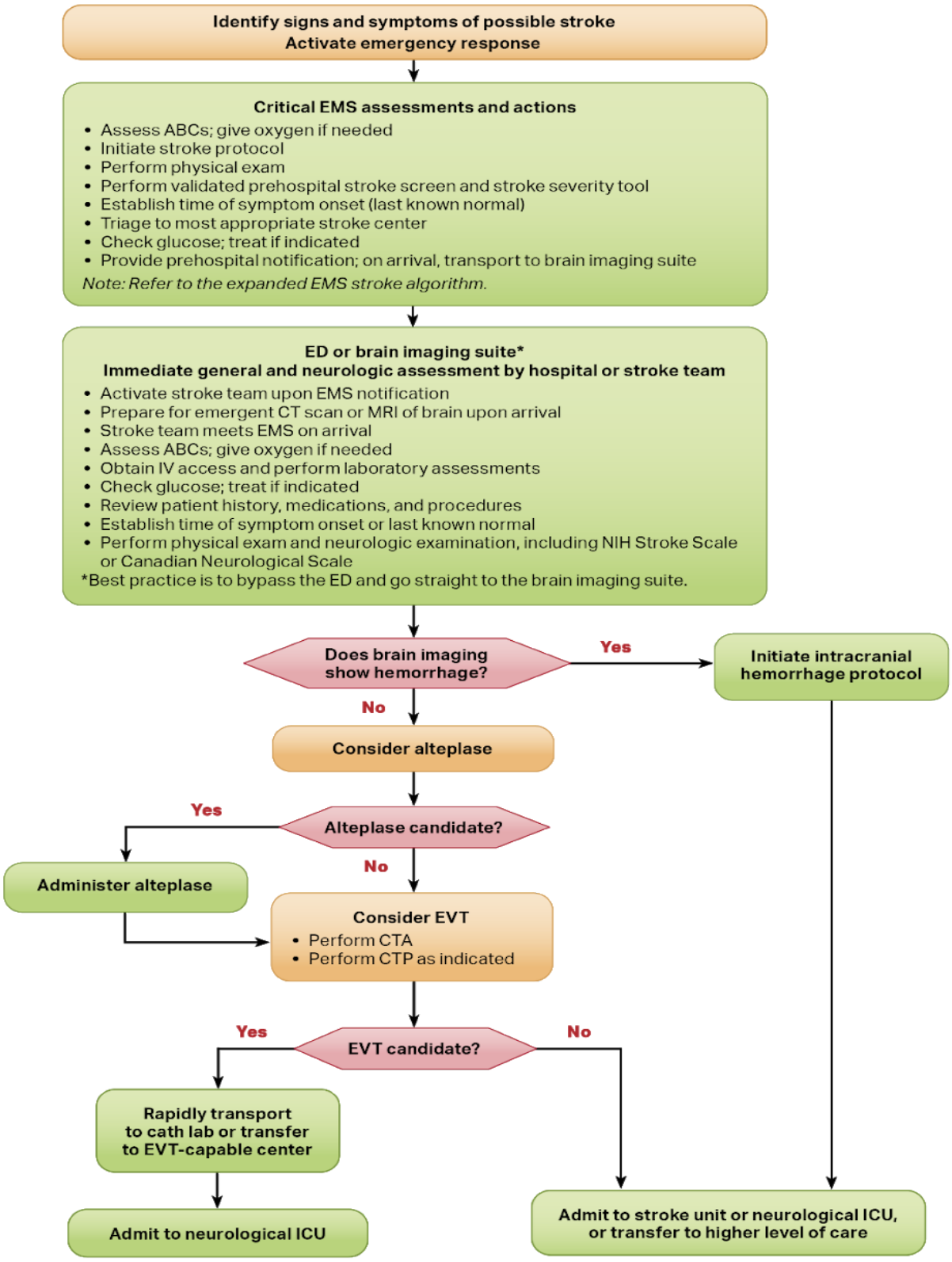
Return of Spontaneous Circulation (ROSC)

- Pulse and blood pressure
- Abrupt sustained increase in $PETCO_2$ (typically ≥40 mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

Reversible Causes

- **H**ypovolemia
- **H**ypoxia
- **H**ydrogen ion (acidosis)
- **H**ypo-/hyperkalemia
- **H**ypothermia
- **T**ension pneumothorax
- **T**amponade, cardiac
- **T**oxins
- **T**hrombosis, pulmonary
- **T**hrombosis, coronary

Adult Suspected Stroke Algorithm



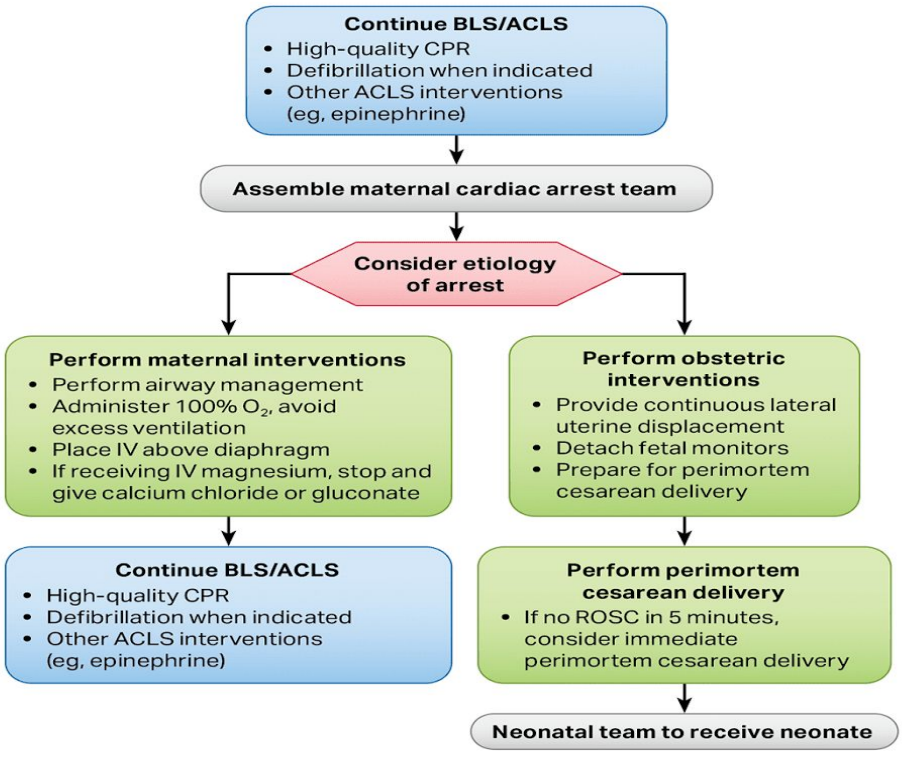
Cardiac Arrest in Pregnancy In-Hospital ACLS Algorithm

A revised algorithm is provided for cardiac arrest in pregnancy.

Changes include:

- Layout is more streamlined
- Added step for administering 100% O_2 and avoiding excessive ventilation
- Removed step to assess for hypovolemia/treatment
- Changed "If no ROSC in 4 minutes" to "5 minutes"
- Maternal Cardiac Arrest box that highlights:
  - Team planning
  - Priorities of high-quality CPR and relief of aortocaval compressions with lateral uterine displacement
  - Goal of perimortem cesarean delivery
  - Deliver in 5 minutes (depending on provider resources and skill sets)

Cardiac Arrest in Pregnancy In-Hospital ACLS Algorithm



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.

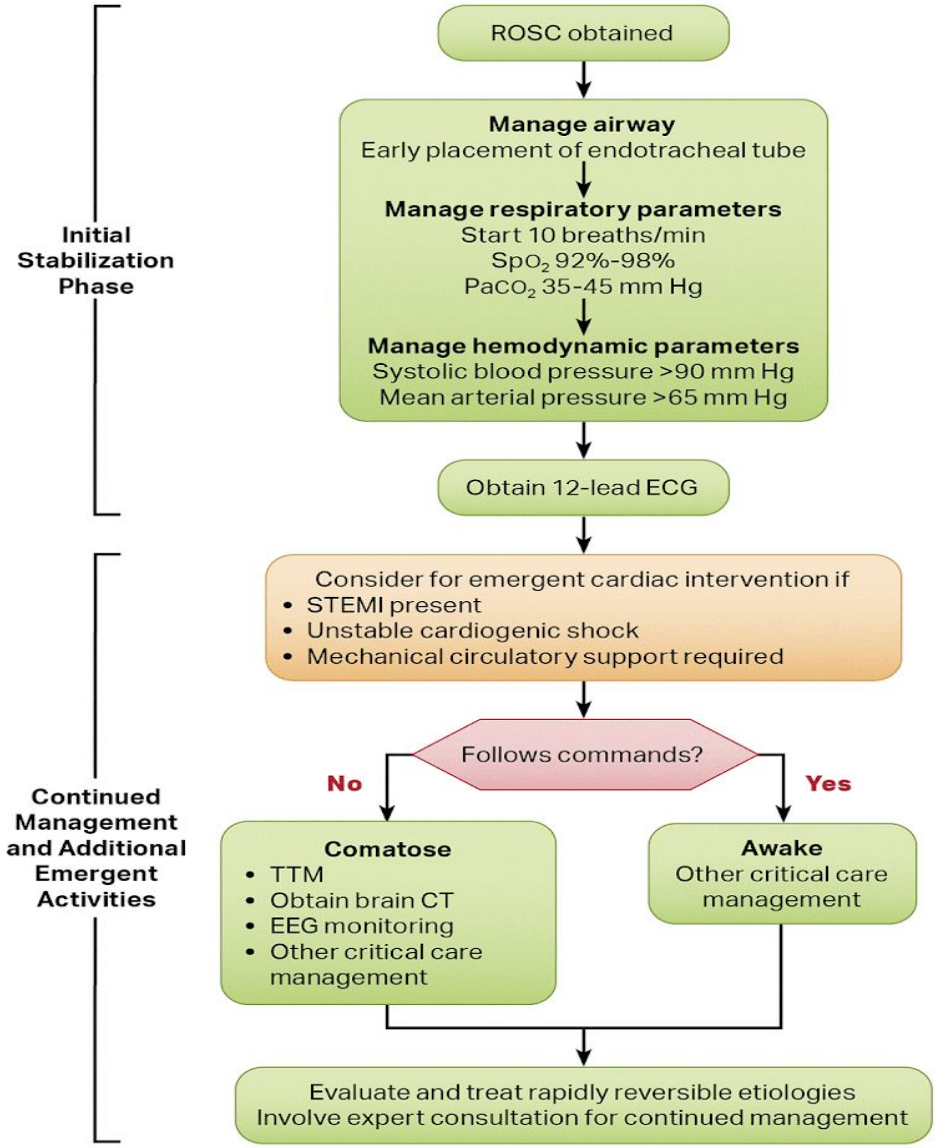
Advanced Airway

- 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

ROSC: Return of Spontaneous Circulation



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_2 for SpO_2 92%-98%; start at 10 breaths/min; titrate to $PaCO_2$ 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

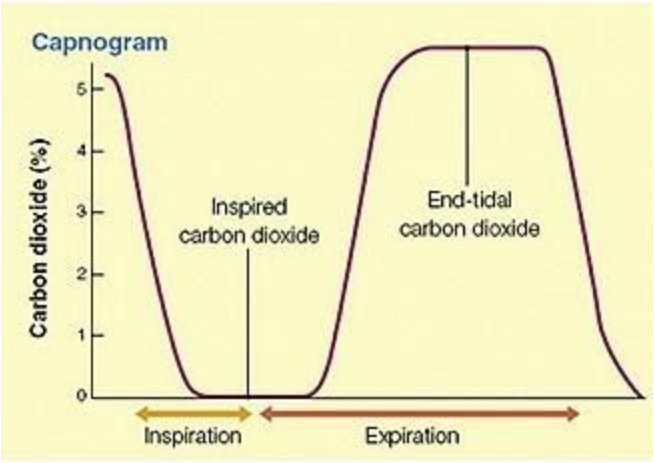
These evaluations should be done concurrently so that decisions on targeted temperature management (TTM) receive high priority as cardiac interventions.

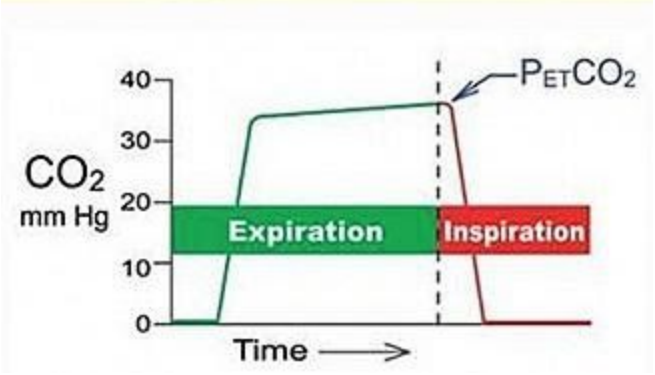
- Emergent cardiac intervention: Early evaluation of 12-lead electrocardiogram (ECG); consider hemodynamics for decision on cardiac intervention
- TTM: If patient is not following commands, start TTM as soon as possible; begin at 32-36°C for 24 hours by using a cooling device with feedback loop
- Other 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/**h**yperkalemia
Hypothermia
Tension pneumothorax
Tamponade, cardiac
Toxins
Thrombosis, pulmonary
Thrombosis, coronary

Waveform Capnography





No Contraindications for Waveform Capnography

Physiologic Monitoring of CPR Quality

2020 (Updated): It may be reasonable to use physiologic parameters such as arterial blood pressure or end-tidal CO_2 when feasible to monitor and optimize CPR quality.

Why: Similar to the above, although the use of physiologic monitoring such as arterial blood pressure and/or end-tidal CO_2 to monitor CPR quality is an established concept, new data support its inclusion in the Guidelines. Data from the AHA Get With the Guidelines-Resuscitation registry show higher likelihood of ROSC when CPR quality is monitored by using either end-tidal CO_2 or diastolic blood pressure. This monitoring depends on the presence of an endotracheal tube or arterial line, respectively***. Targeting compressions to an end-tidal CO_2 value of at least 10 mmHg, and ideally 20 mm Hg or greater, may be useful as a marker of CPR quality. An ideal target has not been identified.***

Fibrinolytic Checklist for STEMI*

Step 1

Has patient experienced chest discomfort for greater than 15 minutes and less than 12 hours?

YES / NO

Does ECG show STEMI or new or presumably new LBBB?

STOP

YES / NO

Step 2

Are there contraindications to fibrinolysis?

If ANY one of the following is checked YES, fibrinolysis MAY be contraindicated.

Systolic BP >180 to 200 mm Hg or diastolic BP >100 to 110 mm Hg	○ YES	○ NO
Right vs left arm systolic BP difference >15 mm Hg	○ YES	○ NO
History of structural central nervous system disease	○ YES	○ NO
Significant closed head/facial trauma within the previous 3 months	○ YES	○ NO
Stroke >3 hours or <3 months	○ YES	○ NO
Recent (within 2-4 weeks) major trauma, surgery (including laser eye surgery), GI/GU bleed	○ YES	○ NO
Any history of intracranial hemorrhage	○ YES	○ NO
Bleeding, clotting problem, or blood thinners	○ YES	○ NO
Pregnant female	○ YES	○ NO
Serious systemic disease (eg, advanced cancer, severe liver or kidney disease)	○ YES	○ NO

Step 3

Is patient at high risk?

If ANY one of the following is checked YES, consider transfer to PCI facility.

Heart rate ≥100/min AND systolic BP <100 mm Hg	○ YES	○ NO
Pulmonary edema (rales)	○ YES	○ NO
Signs of shock (cool, clammy)	○ YES	○ NO
Contraindications to fibrinolytic therapy	○ YES†	○ NO
Required CPR	○ YES	○ NO

*Contraindications for fibrinolytic use in STEMI are viewed as advisory for clinical decision making and may not be all-inclusive or definitive. These contraindications are consistent with the 2004 ACC/AHA Guidelines for the Management of Patients With ST-Elevation Myocardial Infarction.
†Consider transport to primary PCI facility as destination hospital.

Stroke: Treatment of Hypertension

Potential Approaches to Arterial Hypertension in Acute Ischemic Stroke Patients Who Are Potential Candidates for Acute Reperfusion Therapy*

Patient otherwise eligible for acute reperfusion therapy except that blood pressure is >185/110 mm Hg:

- Labetalol 10-20 mg IV over 1-2 minutes, may repeat × 1, or
- Nicardipine IV 5 mg per hour, titrate up by 2.5 mg per hour every 5-15 minutes, maximum 15 mg per hour; when desired blood pressure is reached, lower to 3 mg per hour, or
- Other agents (hydralazine, enalaprilat, etc) may be considered when appropriate

If blood pressure is not maintained at or below 185/110 mm Hg, do not administer rtPA.

Management of blood pressure during and after rtPA or other acute reperfusion therapy:

Monitor blood pressure every 15 minutes for 2 hours from the start of rtPA therapy, then every 30 minutes for 6 hours, and then every hour for 16 hours.

If systolic blood pressure 180-230 mm Hg or diastolic blood pressure 105-120 mm Hg:

- Labetalol 10 mg IV followed by continuous IV infusion 2-8 mg per minute, or
- Nicardipine IV 5 mg per hour, titrate up to desired effect by 2.5 mg per hour every 5-15 minutes, maximum 15 mg per hour

If blood pressure not controlled or diastolic blood pressure >140 mm Hg, consider sodium nitroprusside.

Approach to Arterial Hypertension in Acute Ischemic Stroke Patients Who Are *Not* Potential Candidates for Acute Reperfusion Therapy*

Consider lowering blood pressure in patients with acute ischemic stroke if systolic blood pressure >220 mm Hg or diastolic blood pressure >120 mm Hg.

Consider blood pressure reduction as indicated for other concomitant organ system injury:

- Acute myocardial infarction
- Congestive heart failure
- Acute aortic dissection

A reasonable target is to lower blood pressure by 15% to 25% within the first day.

*Adams HP Jr, del Zoppo G, Alberts MJ, Bhatt DL, Brass L, Furlan A, Grubb RL, Higashida RT, Jauch EC, Kidwell C, Lyden PD, Morgenstern LB, Qureshi AI, Rosenwasser RH, Scott PA, Wijdicks EFM. Guidelines for the early management of adults with ischemic stroke: a guideline from the American Heart Association/American Stroke Association Stroke Council, Clinical Cardiology Council, Cardiovascular Radiology and Intervention Council, and the Atherosclerotic Peripheral Vascular Disease and Quality of Care Outcomes in Research Interdisciplinary Working Groups. *Stroke*. 2007;38:1655-1711.

†del Zoppo GJ, Saver JL, Jauch EC, Adams HP Jr; on behalf of the American Heart Association Stroke Council. Expansion of the time window for treatment of acute ischemic stroke with intravenous tissue plasminogen activator: a science advisory from the American Heart Association/American Stroke Association. *Stroke*. 2009;40:2945-2948.