American Heart Association Guidelines for CPR 2020

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Adult Basic and Advanced Life Support

Summary of Key Issues and Major Changes

- ✓Outcomes from IHCA are significantly better than outcomes from OHCA, and IHCA outcomes continue to improve
- ✓Recommendations for adult basic life support (BLS) and advanced cardiovascular life support (ACLS) are combined in the 2020 Guidelines
- ✓ Enhanced algorithms and visual aids provide easy-to remember guidance for BLS and ACLS resuscitation scenarios
- ✓The importance of early initiation of CPR by lay rescuers has been re-emphasized

Adult Basic and Advanced Life Support

Summary of Key Issues and Major Changes

- ✓Previous recommendations about epinephrine administration have been reaffirmed, with emphasis on early epinephrine administration
- ✓ Use of real-time audiovisual feedback is suggested as a means to maintain CPR quality
- ✓Continuously measuring arterial blood pressure and end tidal carbon dioxide (ETCO2) during ACLS resuscitation may be useful to improve CPR quality

Adult Basic and Advanced Life Support

Summary of Key Issues and Major Changes

- ✓On the basis of the most recent evidence, routine use of double sequential defibrillation is not recommended
- ✓ Intravenous (IV) access is the preferred route of medication administration during ACLS resuscitation. Intraosseous (IO) access is acceptable if IV access is not available
- ✓Care of the patient after return of spontaneous circulation (ROSC) requires close attention to oxygenation, blood pressure control, evaluation for percutaneous coronary intervention, targeted temperature management, and multimodal neuro prognostication

Adult Basic and Advanced Life Support

Summary of Key Issues and Major Changes

- ✓Because recovery from cardiac arrest continues long after the initial hospitalization, patients should have formal assessment and support for their physical, cognitive, and psychosocial needs
- ✓After a resuscitation, debriefing for lay rescuers, EMS providers, and hospital-based healthcare workers may be beneficial to support their mental health and well-being
- ✓Management of cardiac arrest in pregnancy focuses on maternal resuscitation, with preparation for early perimortem cesarean delivery if necessary to save the infant and improve the chances of successful resuscitation of the mother

Adult Basic and Advanced Life Support

Algorithms and Visual Aids

- ✓A sixth link, Recovery, was added to the IHCA and OHCA Chains of Survival
- ✓The universal Adult Cardiac Arrest Algorithm was modified to emphasize the role of early epinephrine administration for patients with non shockable rhythms
- ✓Two new Opioid-Associated Emergency Algorithms have been added for lay rescuers and trained rescuers

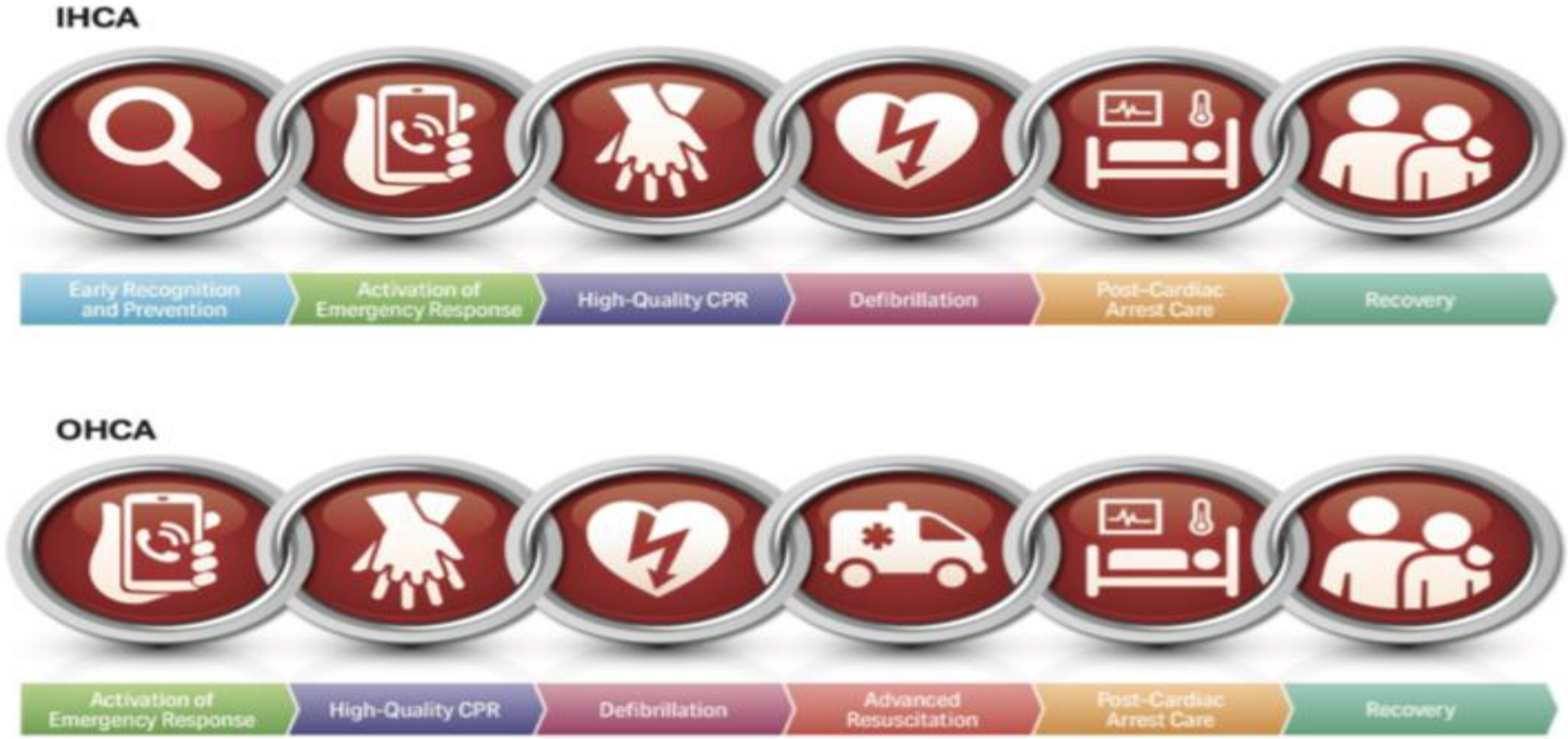
Adult Basic and Advanced Life Support

Algorithms and Visual Aids

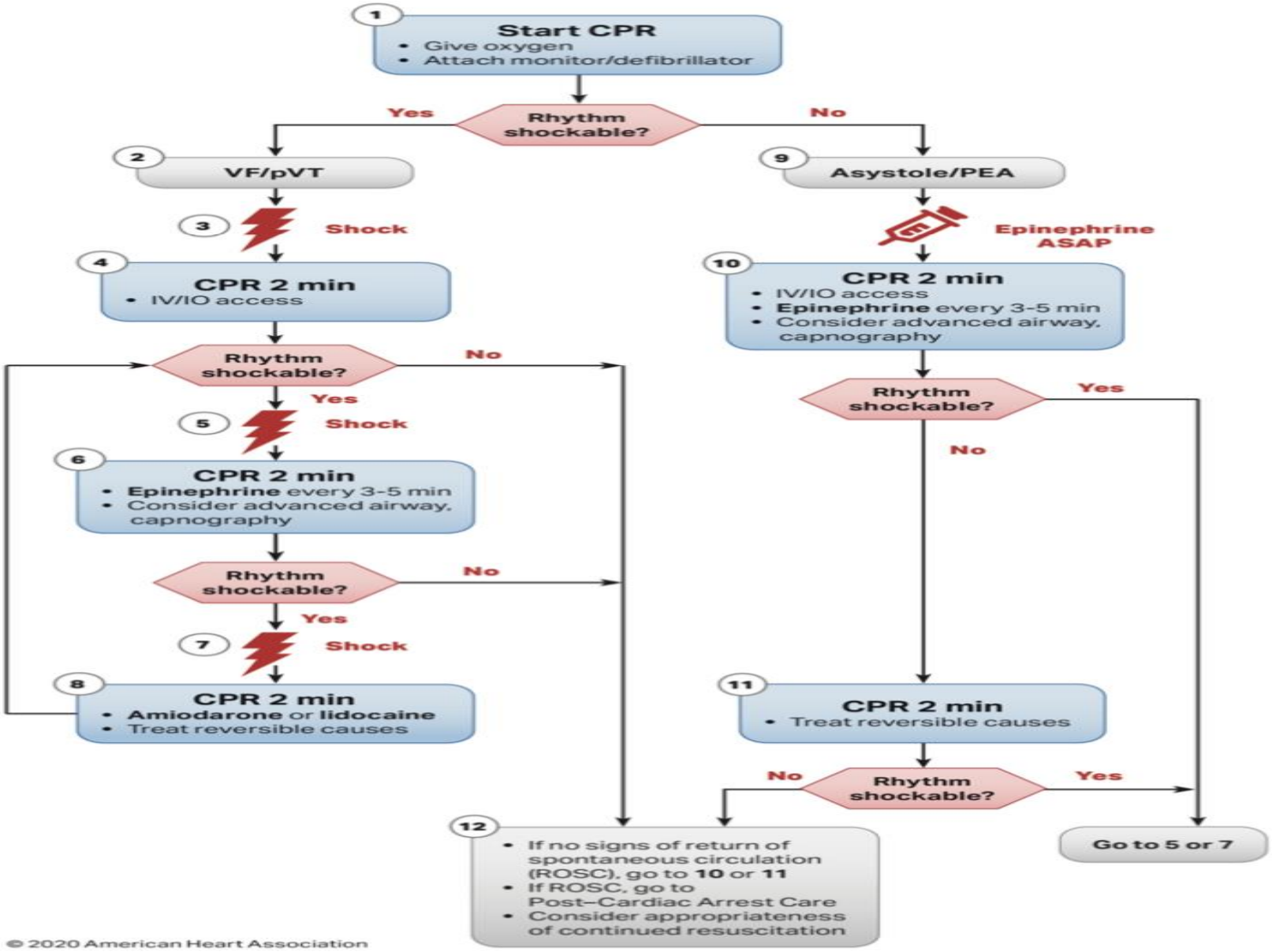
- ✓The Post–Cardiac Arrest Care Algorithm was updated to emphasize the need to prevent hyperoxia, hypoxemia, and hypotension
- ✓ A new diagram has been added to guide and inform neuroprognostication
- ✓ A new Cardiac Arrest in Pregnancy Algorithm has been added to address these special cases

Despite recent gains, less than 40% of adults receive layperson-initiated CPR, and fewer than 12% have an AED applied before EMS arrival.

AHA Chains of Survival for adult IHCA and OHCA



Adult Cardiac Arrest Algorithm



Adult Cardiac Arrest 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 P_{ETCO_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

Adult Cardiac Arrest Algorithm

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

Adult Cardiac Arrest Algorithm

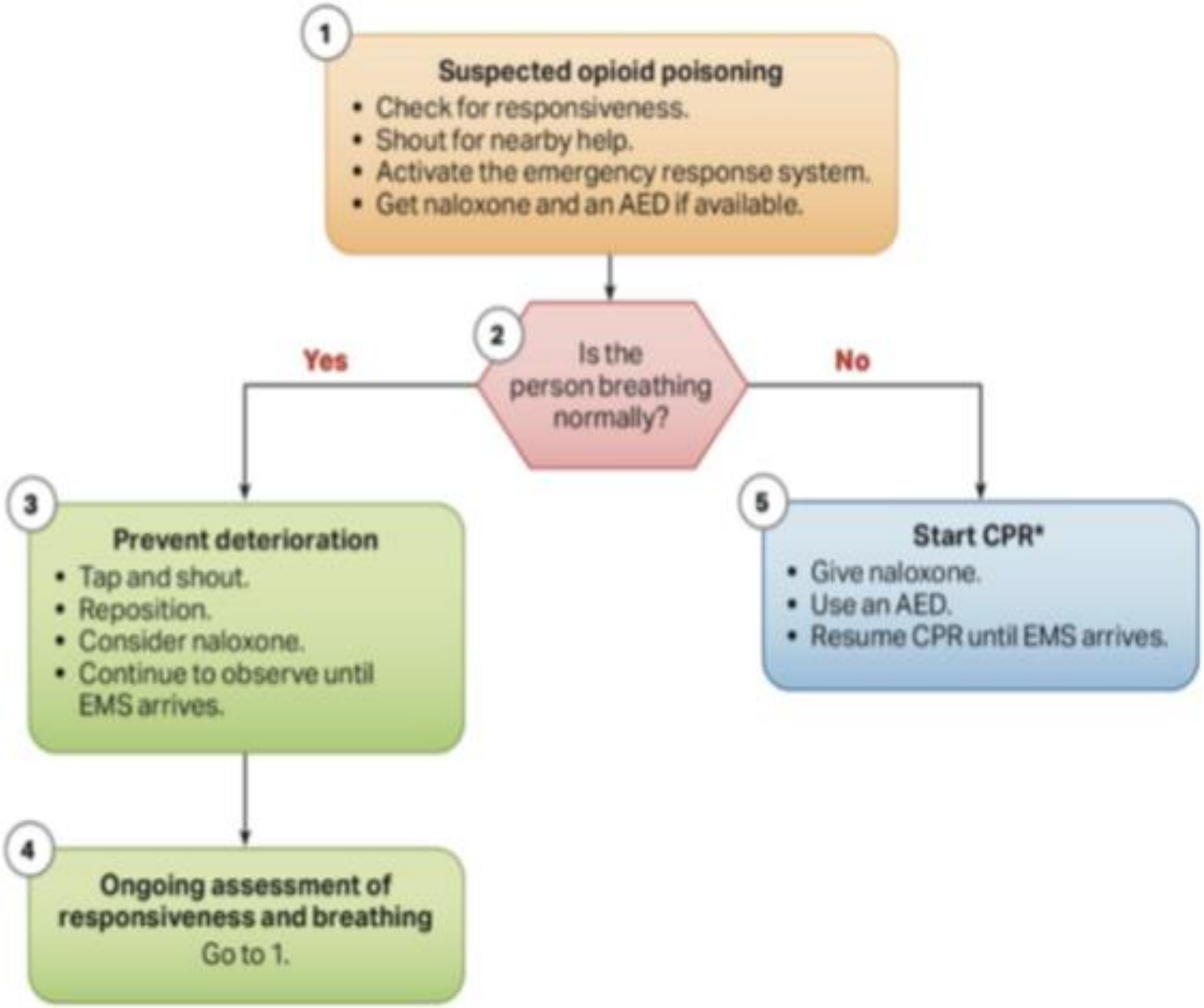
Return of Spontaneous Circulation (ROSC)

- Pulse and blood pressure
- Abrupt sustained increase in $P_{ET}CO_2$ (typically ≥40 mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

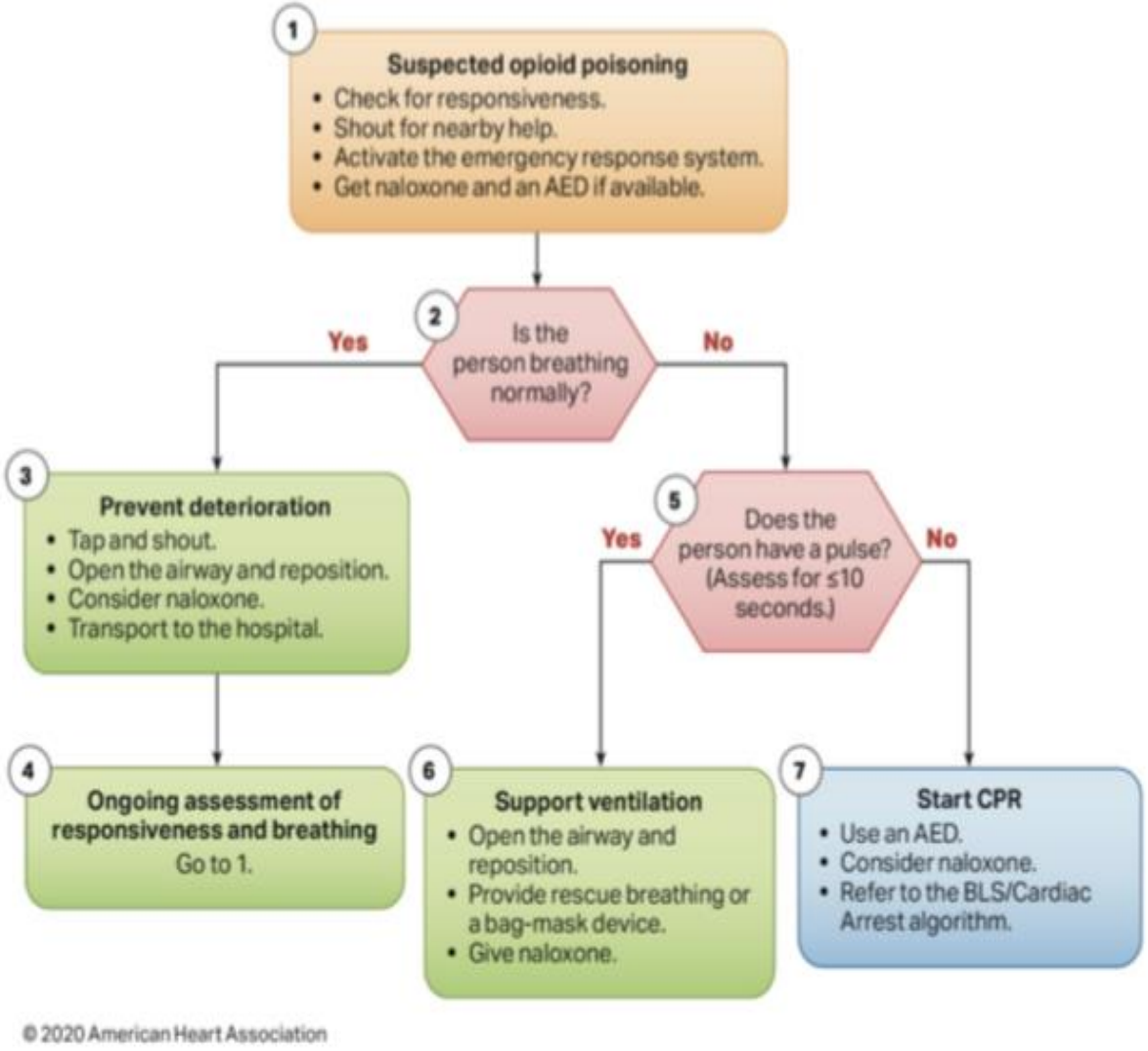
Reversible Causes

- **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

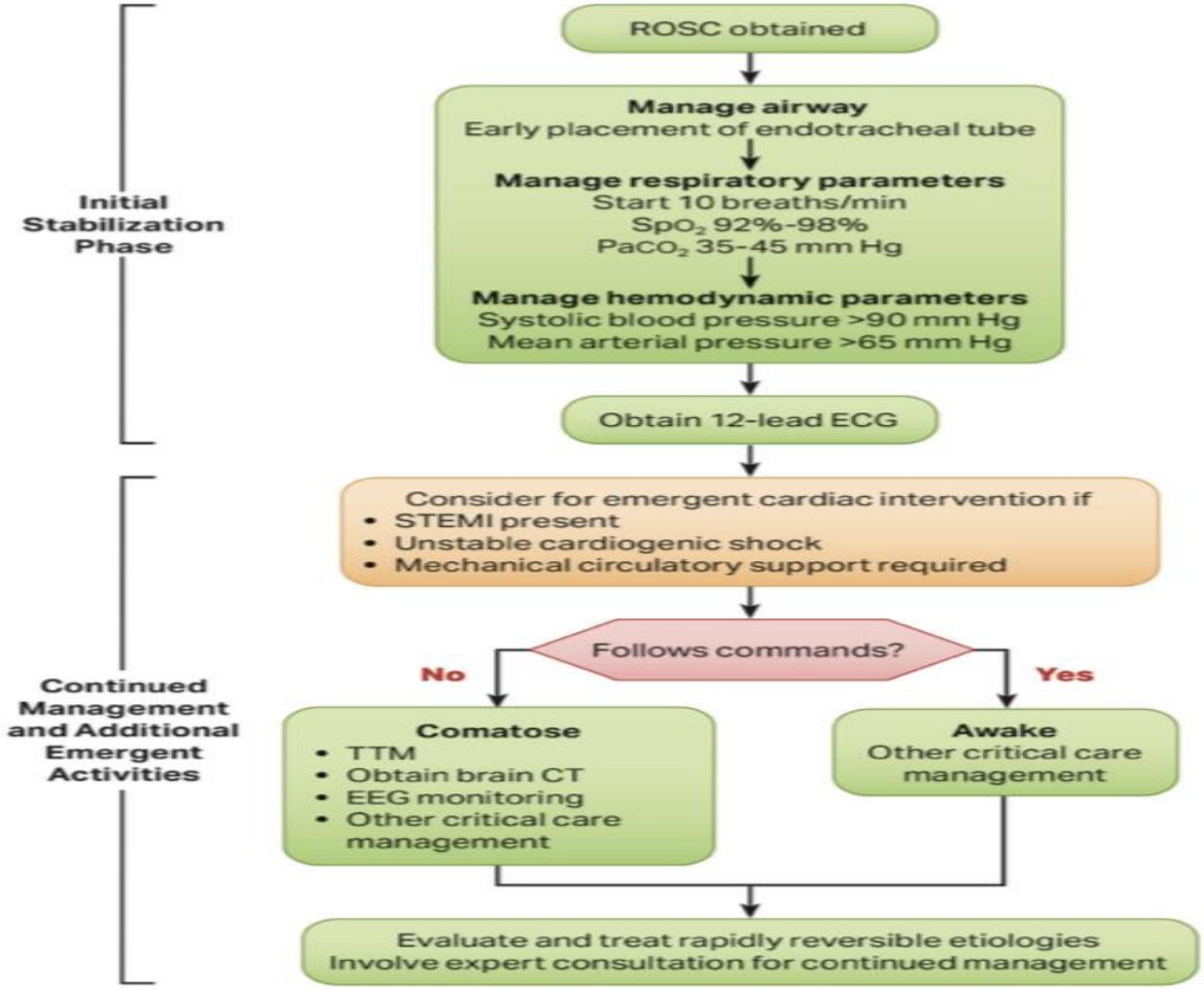
Opioid-Associated Emergency for Lay Responders Algorithm



Opioid-Associated Emergency for Healthcare Providers Algorithm



Adult Post–Cardiac Arrest Care Algorithm



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_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

Adult Post–Cardiac Arrest Care Algorithm

Continued Management and Additional Emergent Activities

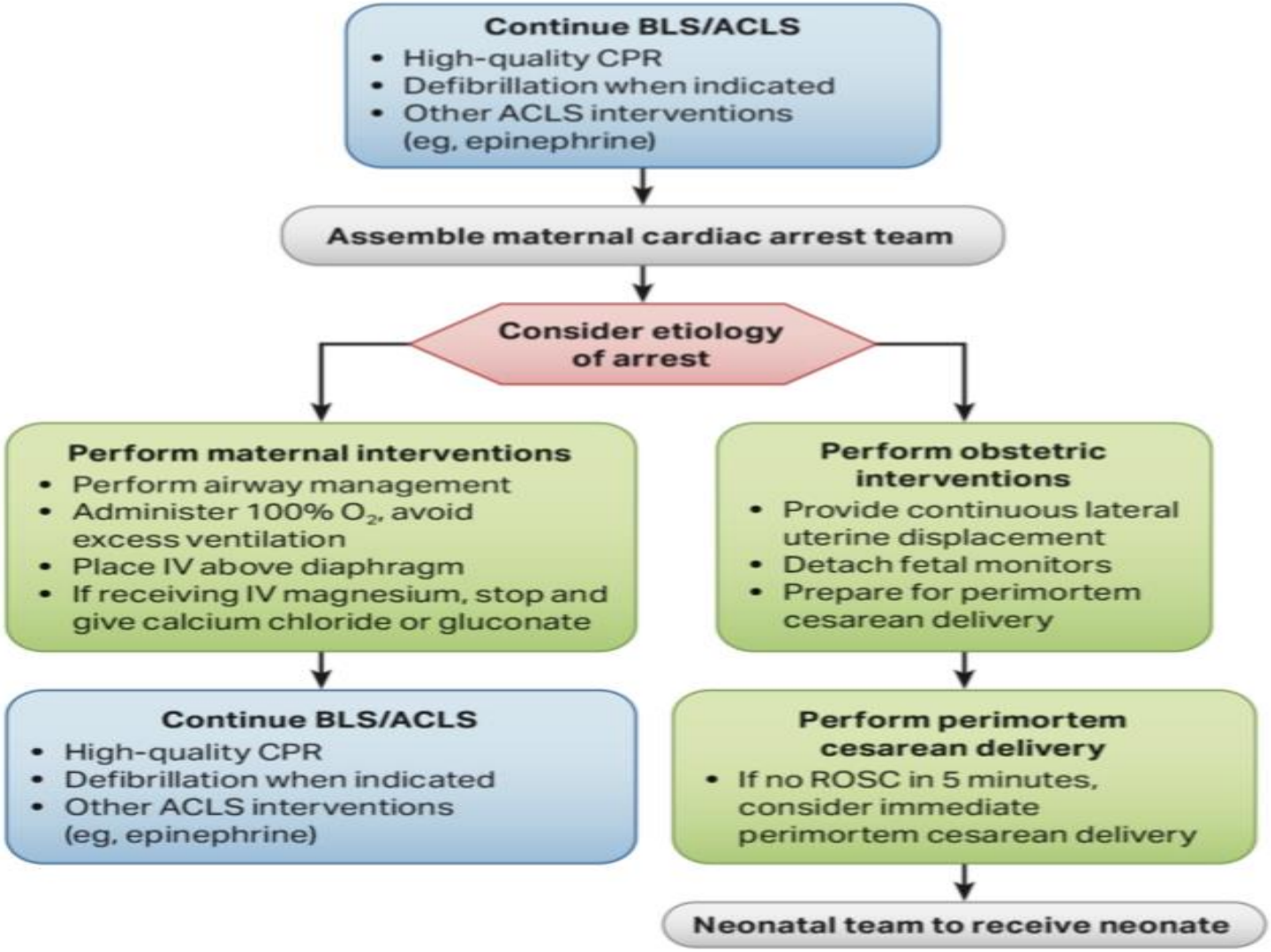
These evaluations should be done concurrently so that decisions on targeted temperature management (TTM) receive high priority as cardiac interventions.

- 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

Adult Post–Cardiac Arrest Care Algorithm

H's and T's
Hypovolemia
Hypoxia
Hydrogen ion (acidosis)
Hypokalemia/**h**yperkalemia
Hypothermia
Tension pneumothorax
Tamponade, cardiac
Toxins
Thrombosis, pulmonary
Thrombosis, coronary

Cardiac Arrest in Pregnancy In-Hospital ACLS Algorithm



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.

Cardiac Arrest in Pregnancy In-Hospital ACLS Algorithm

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.

Cardiac Arrest in Pregnancy In-Hospital ACLS Algorithm

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


ngiyabonga
شكراً جزيلاً
danke
謝謝
teşekkür ederim
спасибо
dank je
gracias
thank you
tapadh leat
mochchakkeram
dziękuję
go raibh maith agat
obrigado
sukriya
kop khun krap
arigato
dakujem
grazie
merci
мерси
감사합니다