THE CURRENT RESUSCITATION LANDSCAPE: 2020 GUIDELINES

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DISCLOSURES

CURRENT SUPPORT

- R21NS117973-01 Mast Cell Degranulation following OHCA
- R01NS89372-01 (ICECAP)
- UABHSF-GEF2017–01 ED-ICU Data and support
- UABHSF-GEF2019–01 TEE Resuscitation Program
- 1U01MH110925-01 (AURORA)
- Society for Critical Care Medicine and Emergency Medicine Foundation (CIRCA)
- Zoll Medical Foundation (CAMCA)
- American Heart Association (RQI)

PREVIOUS SUPPORT

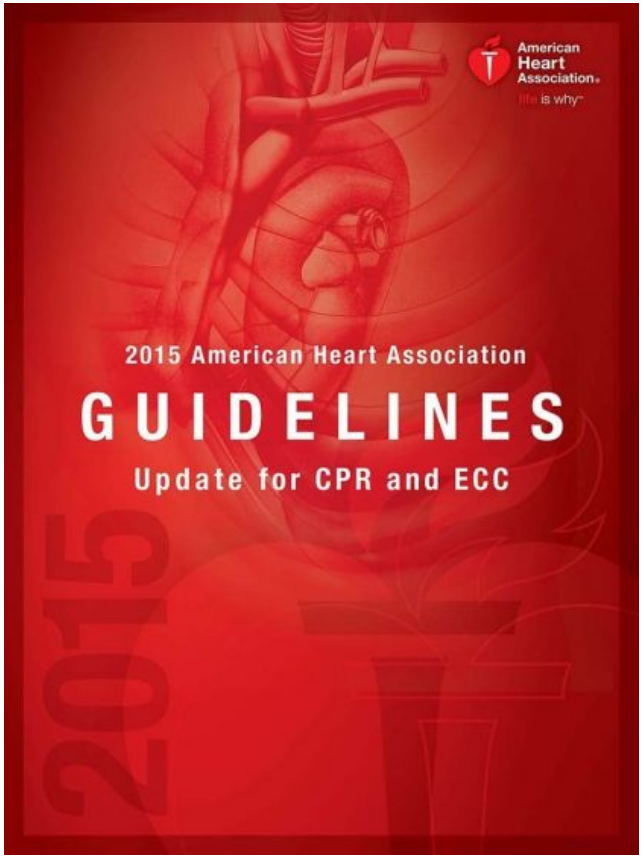
- 2U01HL077881-09 (ROC)
- R01AR056328 (Crash AA)
- 5U01DK096037 (STONE)
- K23AG038548 (Elderly Crash)
- R01GM101197 (PRoACT)
- R01GM103799 (RACE)
- F150929006 (NMB-OHCA)

OTHER RELATIONSHIPS

- American Heart Association, Volunteer TCPR Writing Group Chair and 2020 Guidelines Author

American Heart Association®

GUIDELINES 2015 | CPR & ECC



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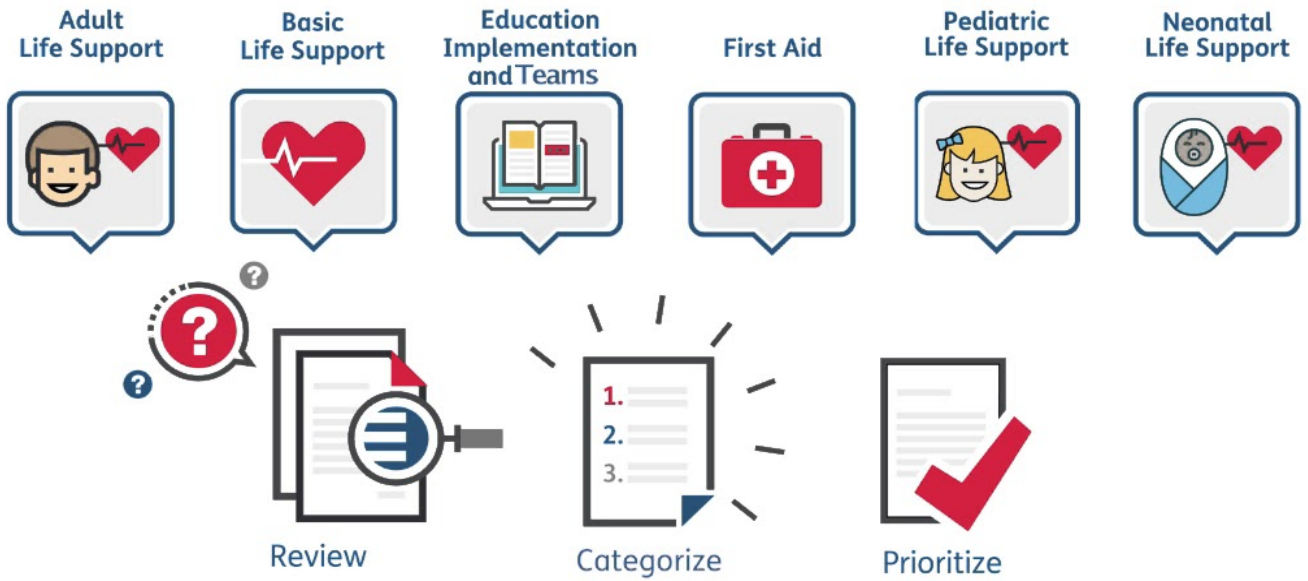
ILCOR *Task Forces*



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Continuous Evidence Evaluation Process

GRADE
Methodology

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Circulation

AHA FOCUSED UPDATE

2019 American Heart Association Focused Update on Advanced Cardiovascular Life Support: Use of Advanced Airways, Vasopressors, and Extracorporeal Cardiopulmonary Resuscitation During Cardiac Arrest

An Update to the American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care

ABSTRACT: The fundamentals of cardiac resuscitation include the immediate provision of high-quality cardiopulmonary resuscitation combined with rapid defibrillation (as appropriate). These mainstays of therapy set the groundwork for other possible interventions such as medications, advanced airways, extracorporeal cardiopulmonary resuscitation, and post–cardiac arrest care, including targeted temperature management, cardiorespiratory support, and percutaneous coronary intervention. Since 2015, an increased number of studies have been published evaluating some of these interventions, requiring a reassessment of their use and impact on survival from cardiac arrest. This 2019 focused update to the American Heart Association advanced cardiovascular life support guidelines summarizes the most recent

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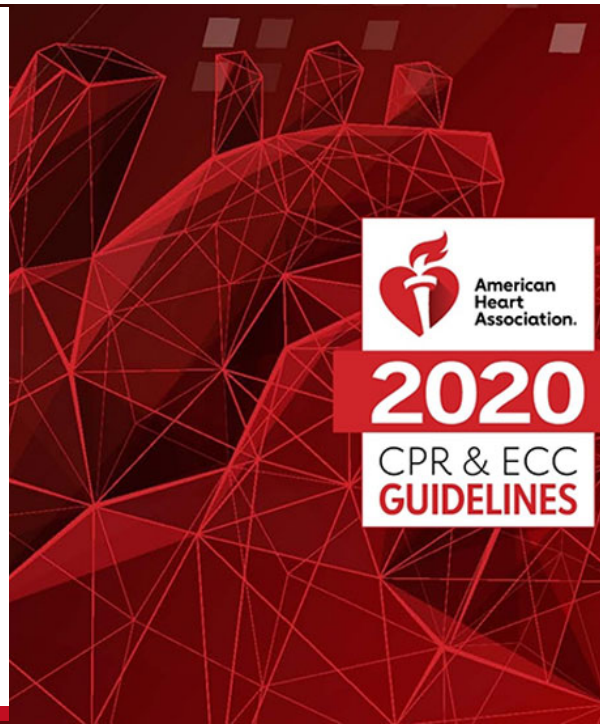
2020 American Heart Association Guidelines for CPR and ECC

These guidelines are based on the most current and comprehensive review of resuscitation science, systems, protocols, and education.



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Circulation

Part 3: Adult Basic and Advanced Life Support

2020 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care

TOP 10 TAKE-HOME MESSAGES FOR ADULT CARDIOVASCULAR LIFE SUPPORT

1. On recognition of a cardiac arrest event, a layperson should simultaneously and promptly activate the emergency response system and initiate cardiopulmonary resuscitation (CPR).
2. Performance of high-quality CPR includes adequate compression depth and rate while minimizing pauses in compressions,
3. Early defibrillation with concurrent high-quality CPR is critical to survival when sudden cardiac arrest is caused by ventricular fibrillation or pulseless ventricular tachycardia.
4. Administration of epinephrine with concurrent high-quality CPR improves survival, particularly in patients with nonshockable rhythms.
5. Recognition that all cardiac arrest events are not identical is critical for optimal patient outcome, and specialized management is necessary for many

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2020 AHA/ECC GUIDELINES

- *"The 2020 AHA guidelines for CPR and Emergency Cardiovascular Care"* provides a comprehensive review of evidence-based recommendations for resuscitation and emergency cardiovascular care.
- In this comprehensive update, we have included 491 new recommendations with 250 new and update recommendations for Adult cardiac arrest resuscitation.

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GENERAL CONCEPTS ADDRESSED

- Reaffirmation of core resuscitation concepts
- Epinephrine is critical in resuscitative care
- Focus on specialized resuscitation situations
- Optimizing post resuscitative care
- Neuroprognostication
- Recovery as a link in the Chain of Survival

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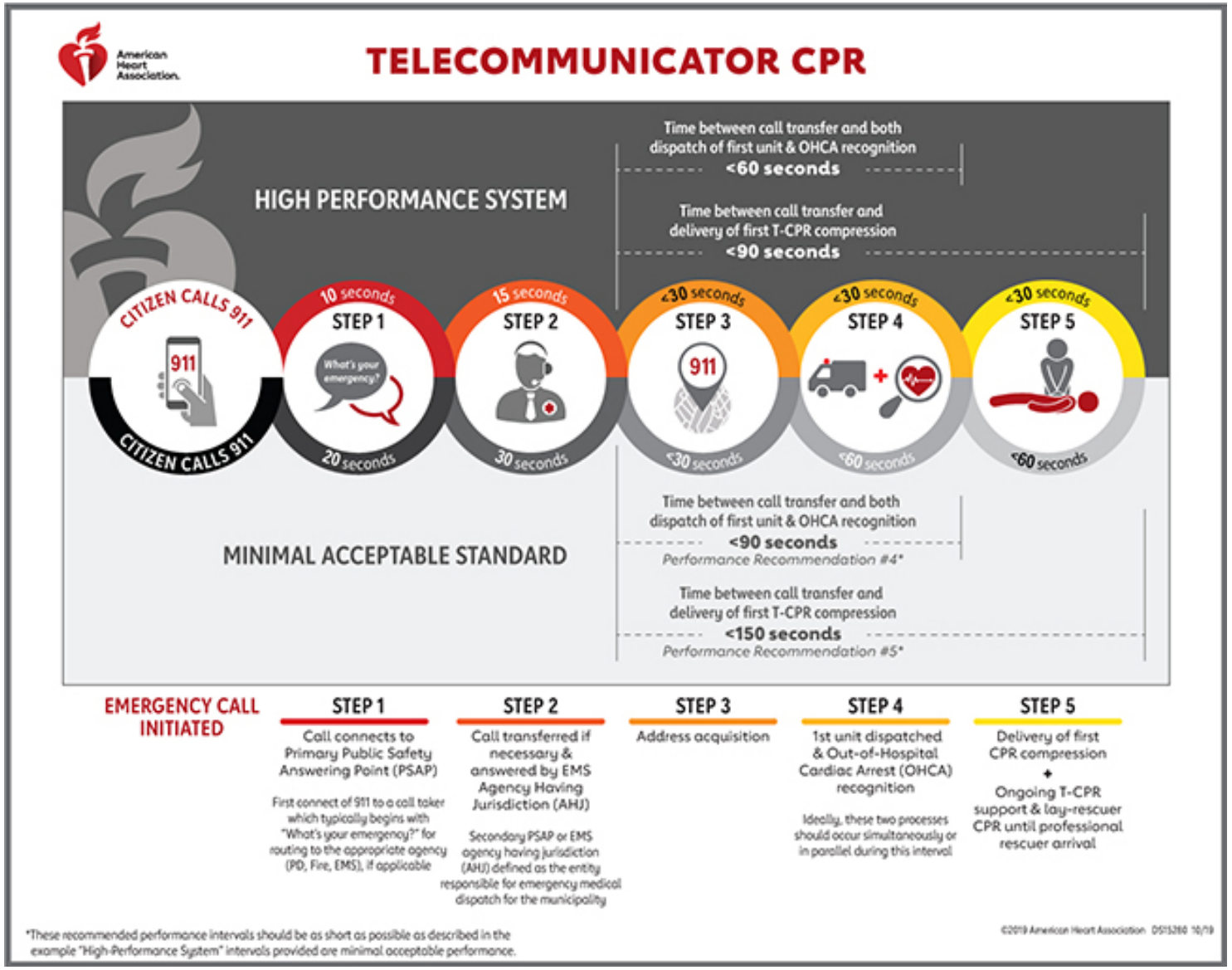
REAFFIRMATION OF CORE CONCEPTS

- One exciting concept, is that the fundamentals of resuscitation have not changed.
- We reaffirmed the importance of:
  - bystander recognition
  - early high-quality CPR
  - defibrillation of shockable rhythms

AHA 2020 Guidelines
reaffirm the need for early initiation of
High-quality CPR

Depth of at least 2 inches for chest compressions

100 to 120/min



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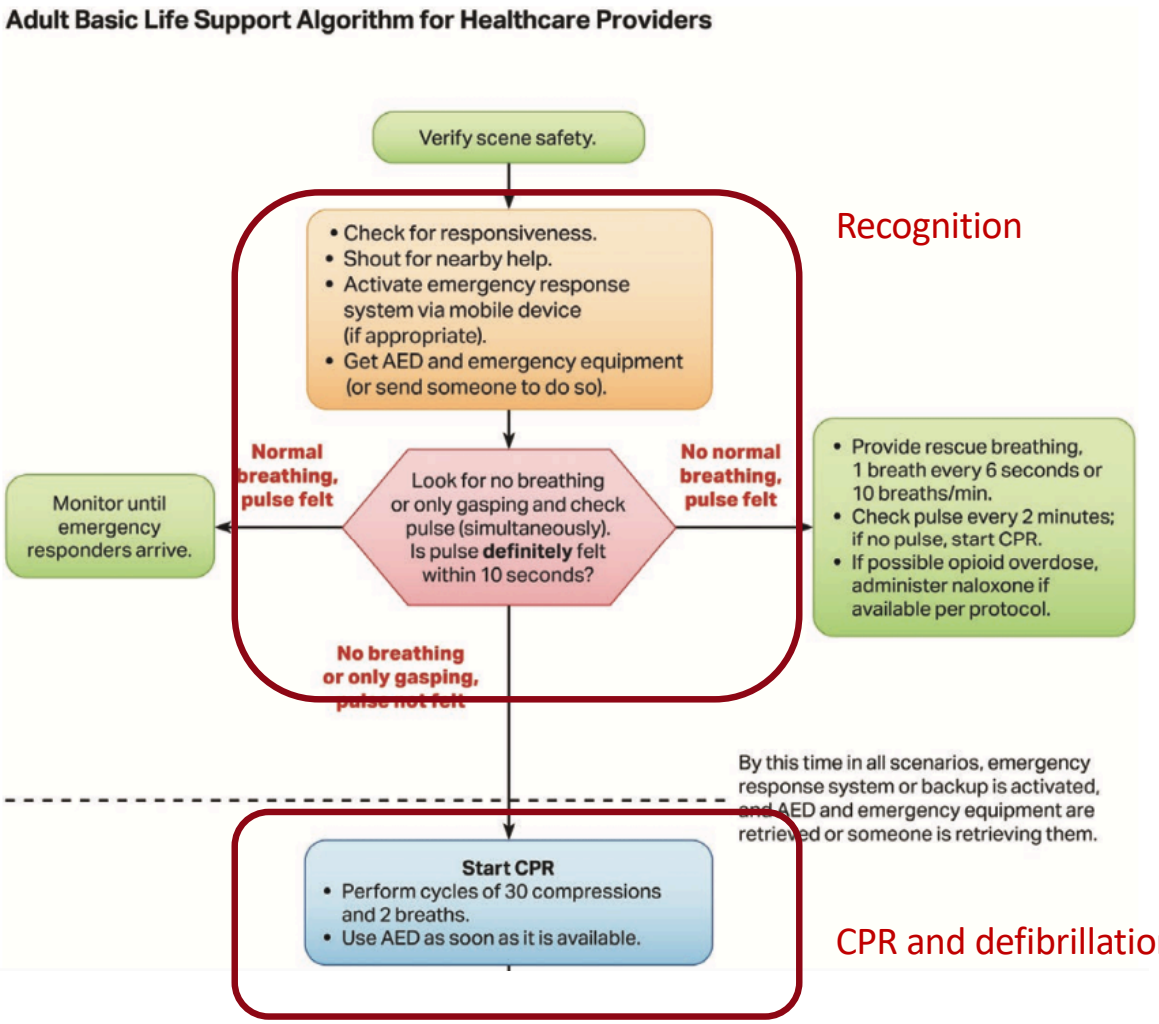

Recognition

CPR and defibrillation

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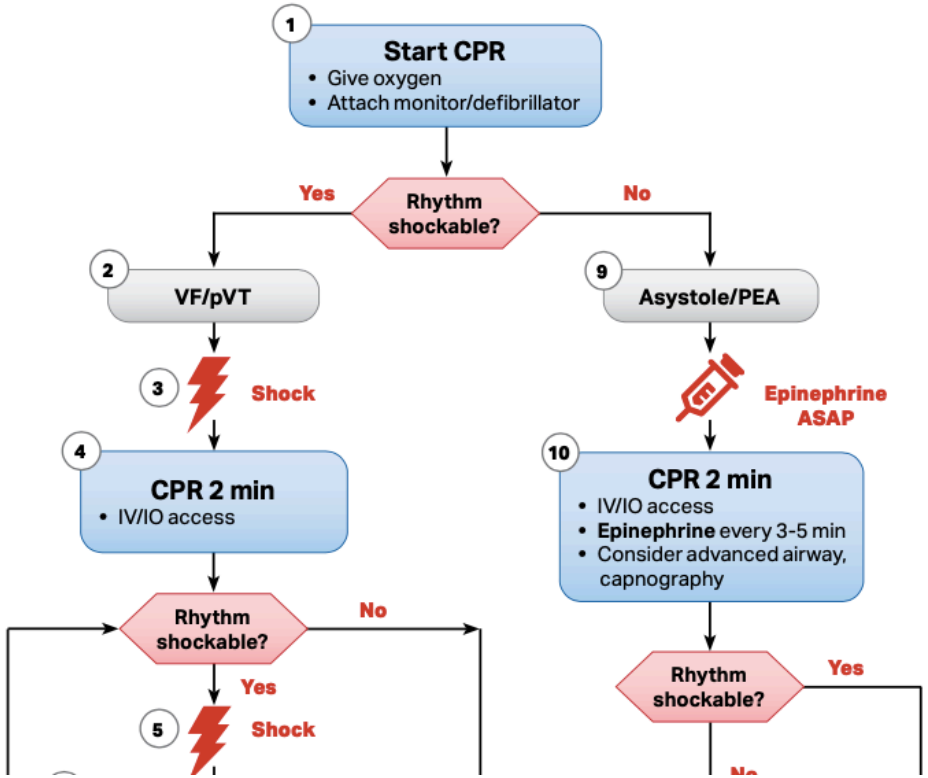
Adult Cardiac Arrest Algorithm



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, or 1 breath every 6 seconds.
- Quantitative waveform capnography
  - If P_{ETCO_2} is low or decreasing, reassess CPR quality.

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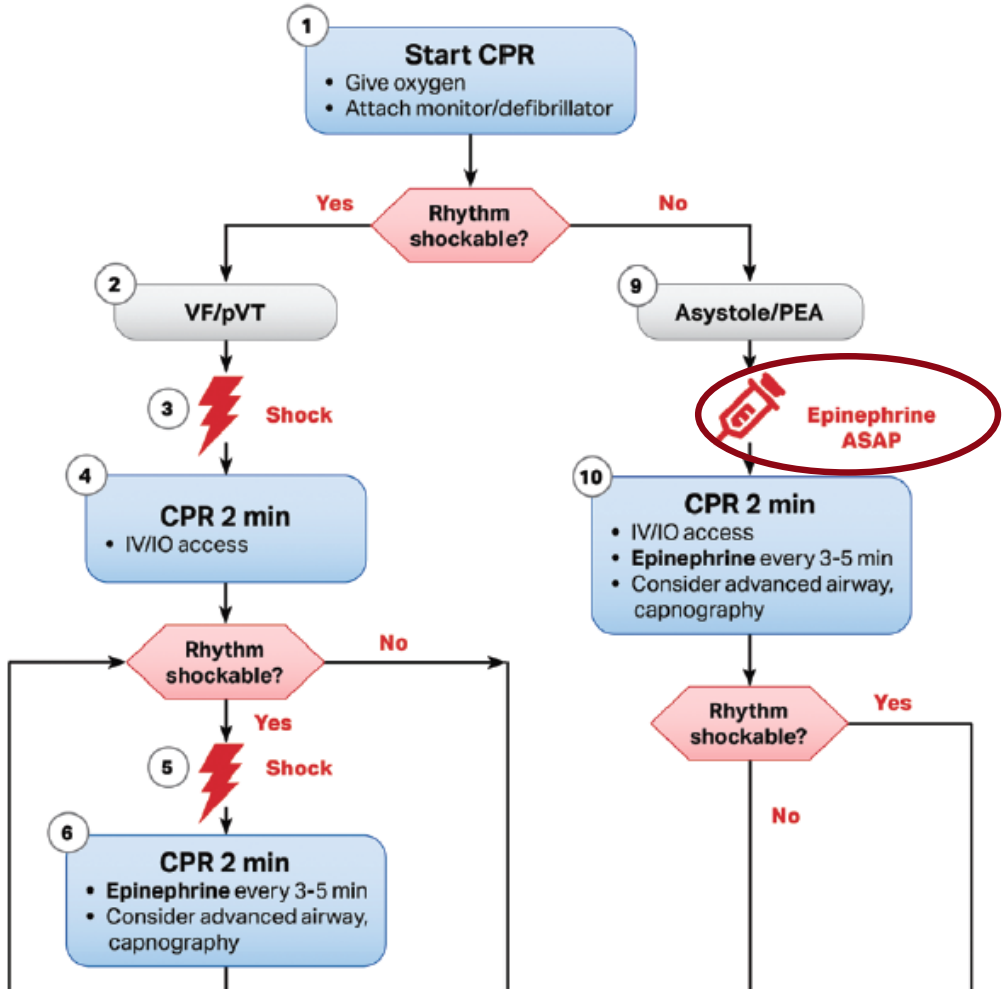
EPINEPHRINE IN RESUSCITATIVE CARE

- Also reaffirmed the use of epinephrine in resuscitation (Class 1 recommendation).
- Recent large RCT have evaluated the use of epinephrine and the key findings are that it increases survival.
- However, overall survival is poor and the impact of epinephrine on neurologic outcome is questionable when time to drug administration is prolonged

Adult Cardiac Arrest Algorithm



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FOCUS ON SPECIALIZED RESUSCITATION

- As we consider resuscitation of patients, we recognize that all events are *not identical* and specialized management may be necessary for optimal patient outcome.
- As an example, in these guidelines, we present new algorithms and guidance for a number of areas including cardiac arrest in pregnancy and opioid associated cardiac arrest.

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SPECIALIZED: CARDIAC ARREST IN PREGNANCY

- New algorithms for the management of cardiac arrest in pregnancy
- Highlights team planning for maternal arrest as well as the use of lateral uterine displacement and perimortem delivery.

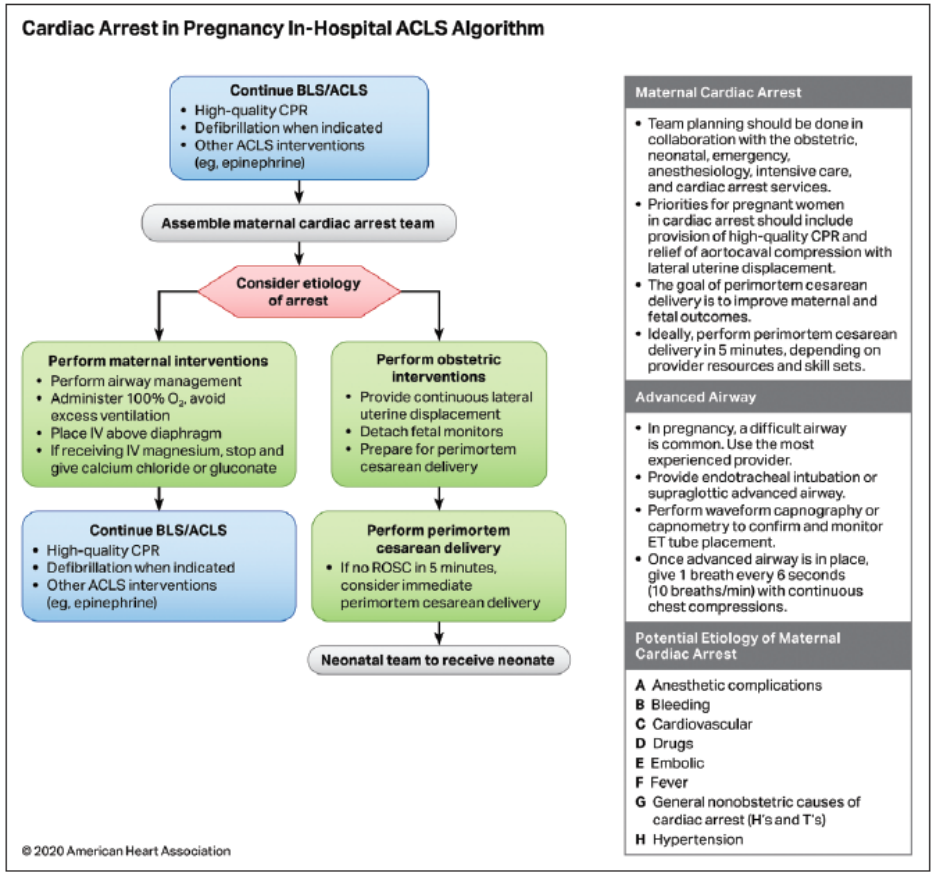

Figure 15. Cardiac Arrest in Pregnancy Algorithm.

SPECIALIZED: OPIOID–ASSOCIATED ARREST

- With the large burden of disease of the opioid epidemic and the increase in opioid associated cardiac arrest, we feature an in-depth evaluation on the literature associated with opioid associated cardiac arrest
- We present two new algorithms which leverage the evidence evaluation from a new scientific statement on opioid associated cardiac arrest

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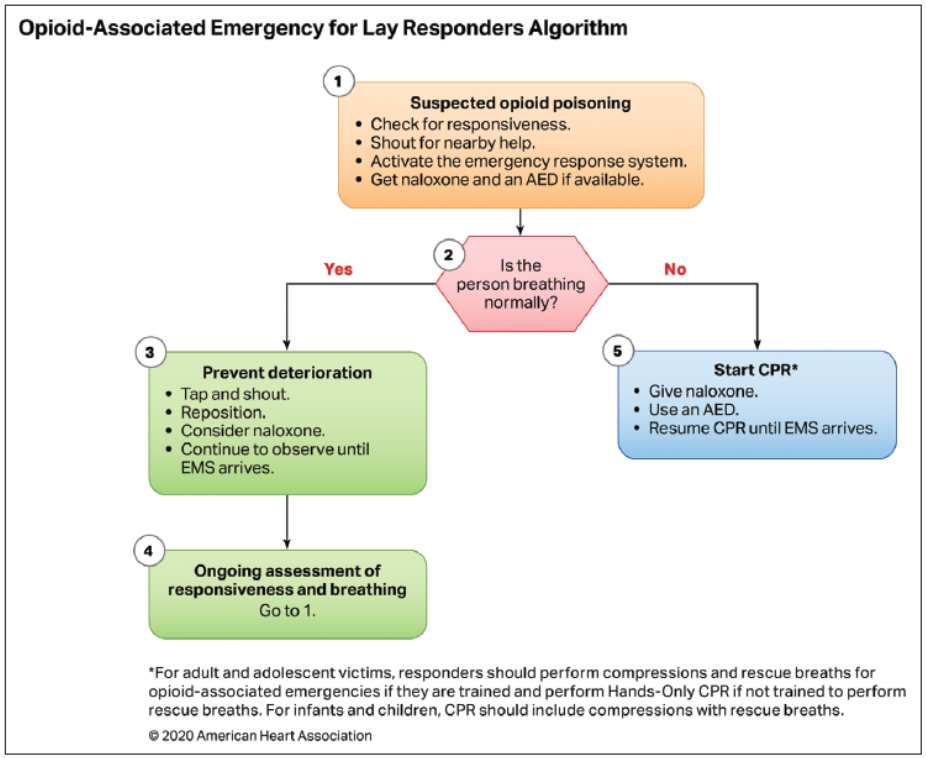

Figure 13. Opioid-Associated Emergency for Lay Responders Algorithm.

- For cardiac arrest,
  - the mainstay of care remains the initiation of the emergency response system and performance of high-quality CPR
- For respiratory distress/failure,
  - Prevent deterioration and provide naloxone

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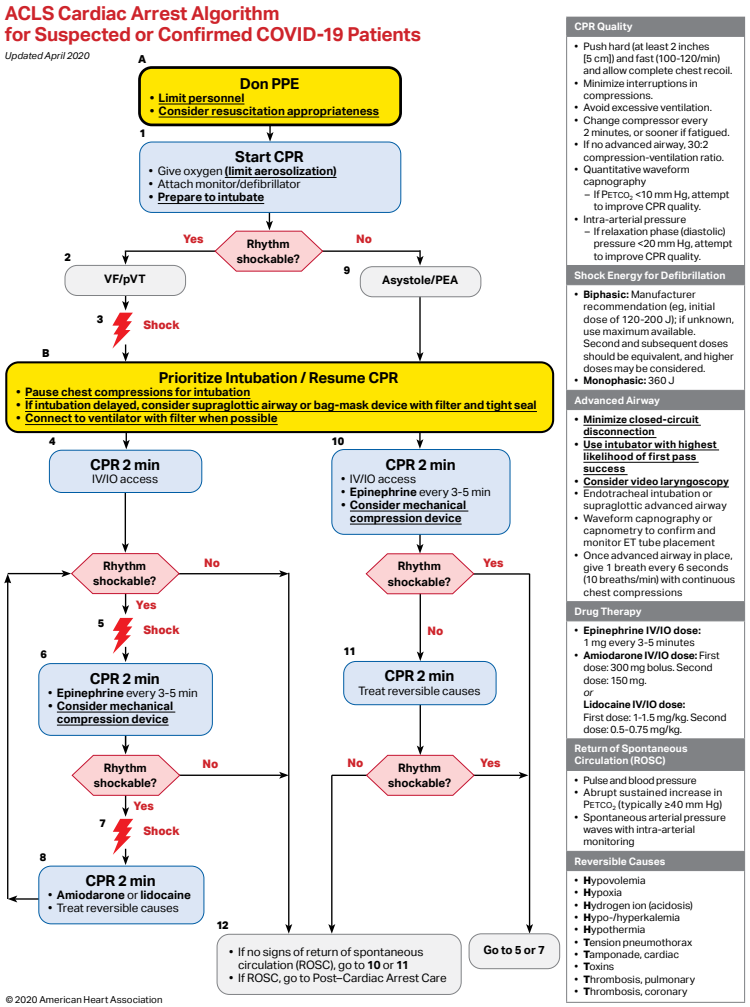
SPECIALIZED: CARDIAC ARREST DURING COVID



- With the large burden of disease of the COVID-19 pandemic, AHA released interim guidance for BLS and ACLS April, 2020.
- These recommendations were thoughtfully balanced to save lives while ensuring provider safety.
- https://cpr.heart.org/en/resources/coronavirus-covid19-resources-for-cpr-training

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DOUBLE SEQUENTIAL DEFIBRILLATION

- A large systematic review recommended against routine use of DSD.
- Recent RCT in being done evaluating DSD and alternative pad placement
- Unanswered questions remain about DSD, including intershock timing, pad positioning, technique, and the possibility of harm with increased energy

Double Sequential Defibrillation		
COR	**LOE**	**Recommendation**
2b	C-LD	1. The usefulness of double sequential defibrillation for refractory shockable rhythm has not been established.

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OPTIMIZING POST RESUSCITATIVE CARE

- For all patients, no matter the cause of arrest, our goal is always to optimize functional survival.
- In these guidelines we feature the critical need to optimize post resuscitative care to ensure functional outcomes.
- In both adult and pediatric sections, we present new guidance for this Chain of Survival.

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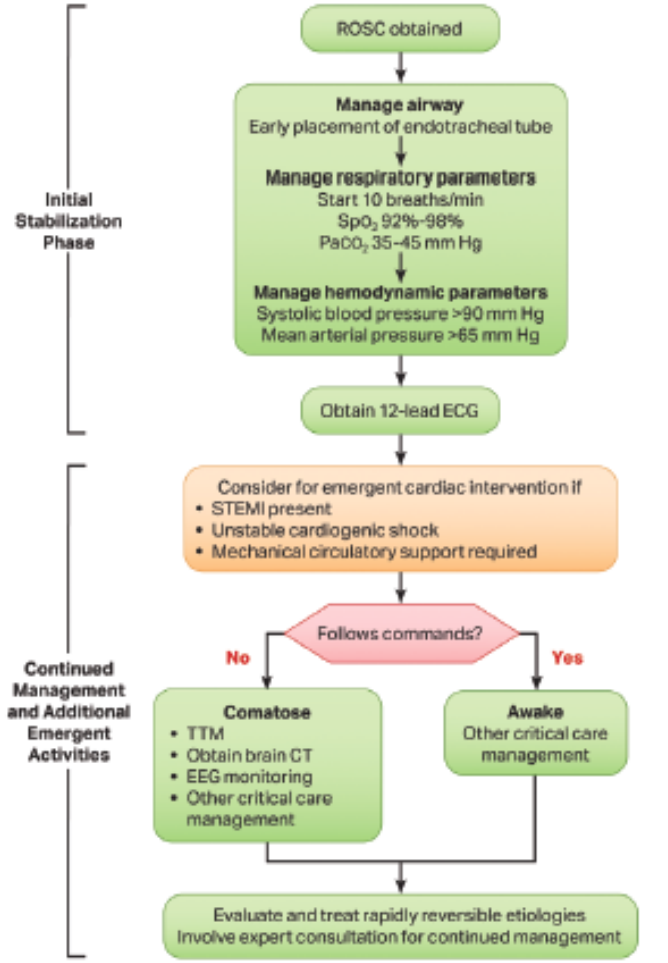
ACLS Healthcare Provider
Post–Cardiac Arrest Care Algorithm



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NEUROPROGNOSTICATION

- Accurate neurological prognostication is important to avoid inappropriate withdrawal of life-sustaining treatment in patients who may otherwise achieve meaningful neurological recovery
- A key aspect to address this challenges is a *multi-modal* approach to neuroprognostication
- In this guideline, we present a new schematic for neuroprognostication that incorporates imaging, electrophysiology, clinical examination and biomarkers

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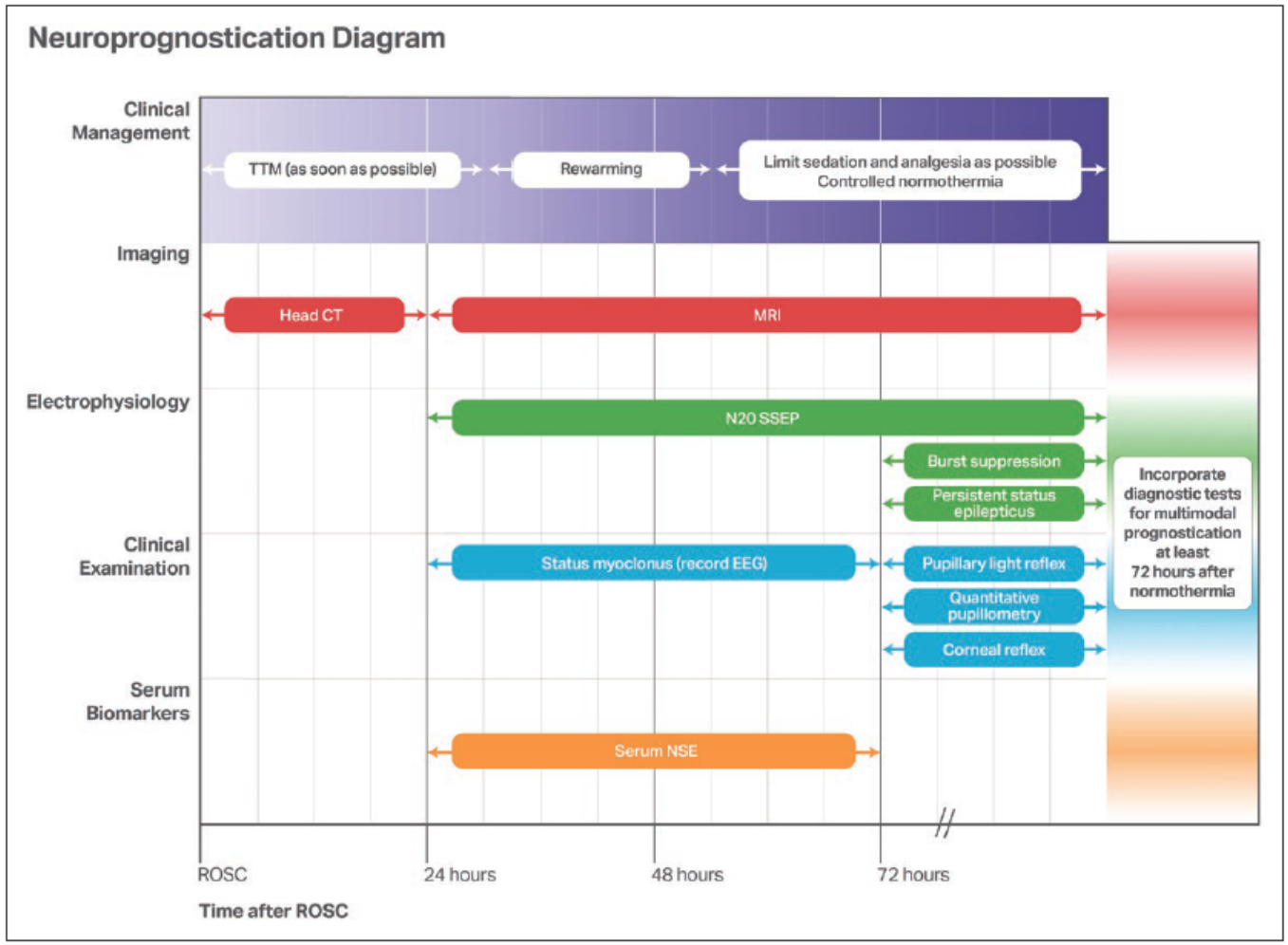

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RECOVERY

- We have all worked diligently to improve outcomes and now we need to focus care for our survivors.
- In this guideline, we leverage a new scientific statement on survivorship and recognize that recovery is real and requires organized planning to optimize a patient's outcome as they transition home.

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RECOVERY

- To highlight this importance of this concept, we recognized RECOVERY, as a critical, new link, in the chain of survival.

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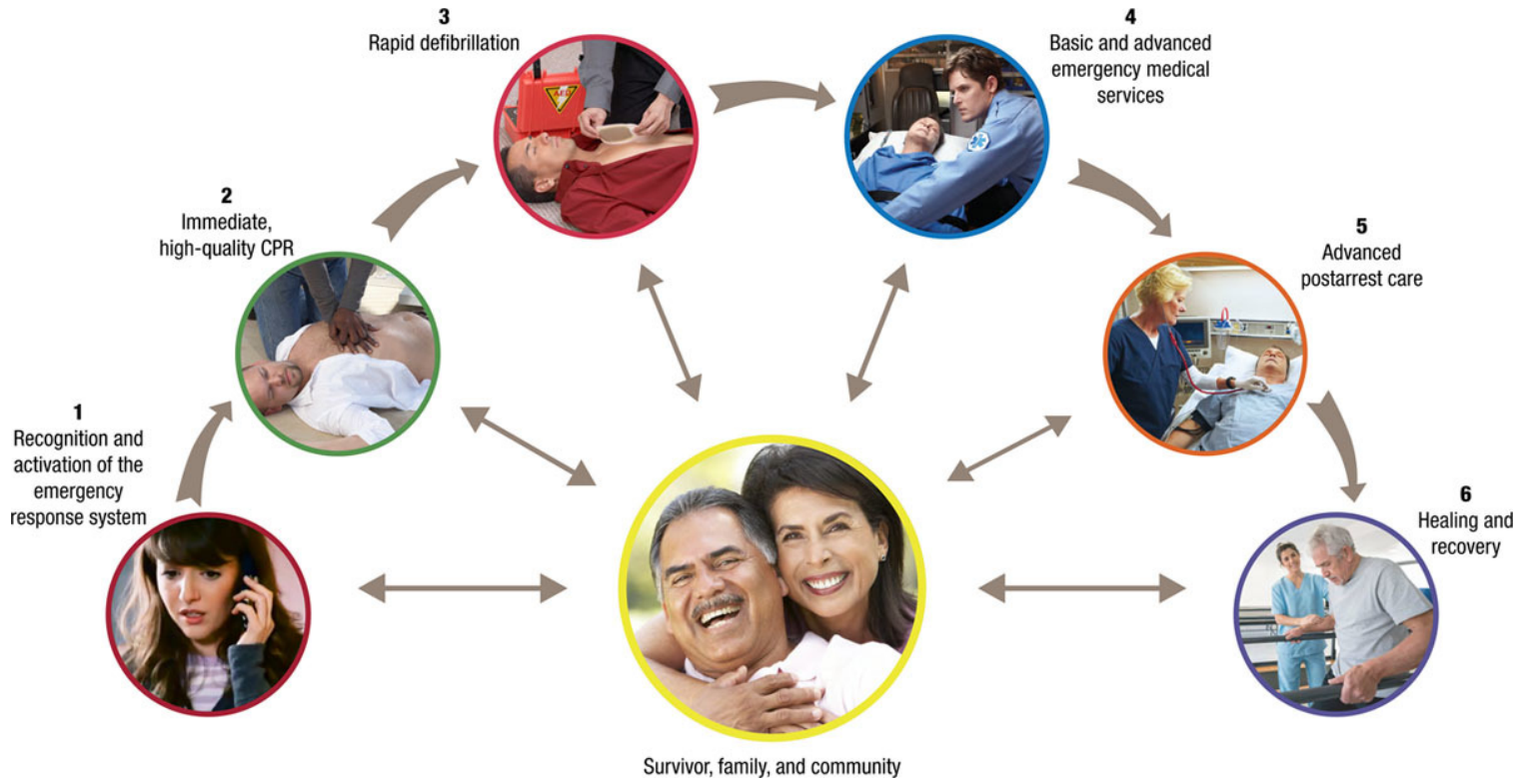

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ROADMAP TO RECOVERY

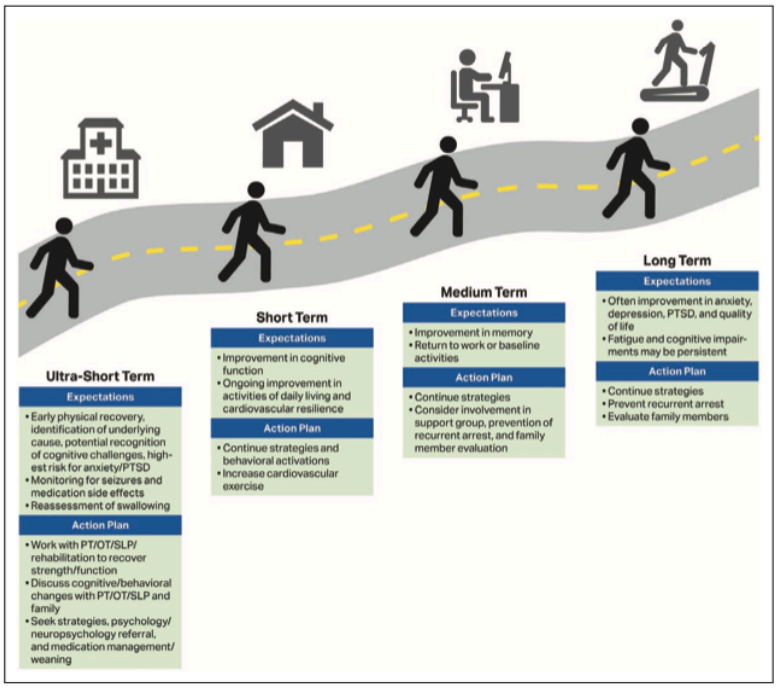

Figure 12. Roadmap to recovery in cardiac arrest survivorship.
OT indicates occupational therapy; PT, physical therapy; PTSD, posttraumatic stress disorder; and SLP, speech-language pathologist.

- Recovery/survivorship plans help guide the patient, caregivers, and primary care providers and include a summary of the inpatient course, recommended follow-up appointments, and post discharge recovery expectations

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Domain	Examples: What to Assess	Examples: How to Measure	Referral/Resource
☐ **Physical/functional**	• Weakness • Ability to sit, rise from chair, stand, or walk • Fatigue, pain • Ability to swallow or speak • Continence	• Speech/swallow evaluation • Get Up and Go Test • Functional Independence Measure	• PT/OT/SLP, PM&R • Inpatient/outpatient rehabilitation
☐ **Cognitive and communication**	• Speaking/writing for communication • Attention and memory • Executive functions • Disinhibition • Compromised insight	• MoCA • Stroop-Effect test • Verbal fluency	• OT/SLP, PM&R • Outpatient rehabilitation
☐ **Neurological**	• Gait, balance • Movement disorders • Myoclonus • Seizures • Vision	• EEG • PT/OT • PM&R	• Neurology • Ophthalmology • PM&R
☐ **Cardiopulmonary**	• Cardiac function • Pulmonary function	• Cycle endurance test • Six-minute walk test	• Cardiology • Pulmonology • Cardiac rehabilitation • Pulmonary rehabilitation
☐ **Affective**	• Somatic symptoms • Tearfulness • Withdrawal or avoidance behavior • PTSD/nightmares/ flashbacks	• HADS • PTSD checklist • SF-36	Psychiatry or psychology
☐ **Social***	• Caregiver/family relationships • Social/religious community relationships	• Caregiver Burden Scale • Caregiver self-assessment	Social work
☐ **Social***	• Transportation • Housing • Benefits • FMLA/short-term disability documentation for patient/ caregivers	• Caregiver Burden Scale • Caregiver self-assessment	Care management
☐ **General medical**	• Medication review/ reconciliation • Device education • CPR training	• Teach-back method • Show-me method	• Multidisciplinary team • Pharmacy • Service representative
☐ **General participation**	• Activities of daily living • Re-engagement with life/ family • Fatigue (physical/cognitive) • Driving, return to work • Return to intimacy • Long-term recovery expectations	• Reintegration to Normal Living Index • Community integration questionnaire	• Multidisciplinary team • Medicine • PT/OT/SLP, PM&R

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CONCLUDING THOUGHTS…

- The “2020 AHA Guidelines for CPR and Emergency Cardiovascular Care” provides a comprehensive review of evidence-based recommendations for resuscitation and emergency cardiovascular care
- In this discussion, we have only touched on a small amount of improvements in resuscitation research, practice and education.
- Through this evidence guided process, we can drive the dissemination and implementation of clinical practices that produce survivors.


THANK YOU!