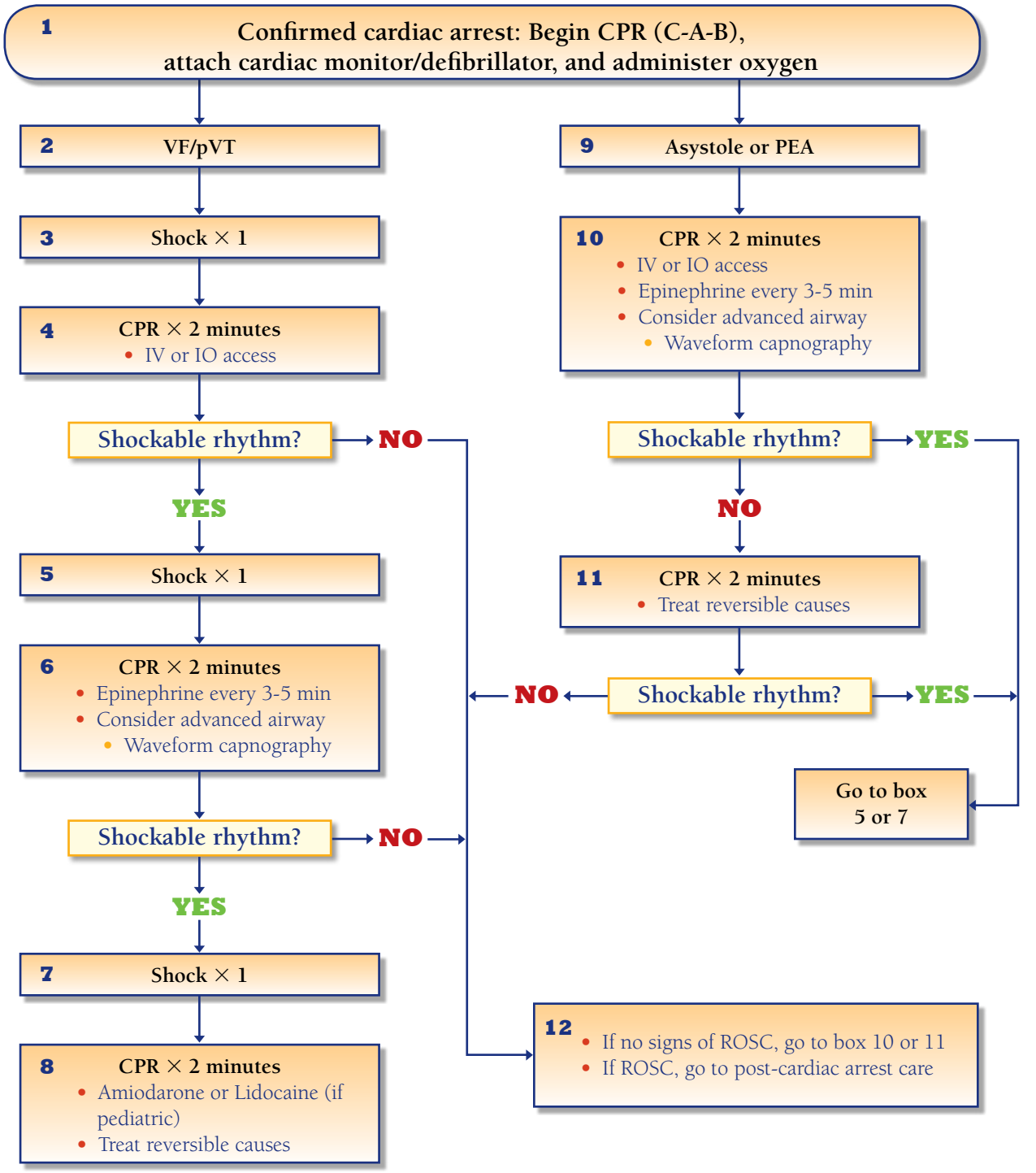
Cardiac Arrest Algorithm

ECSI
EMERGENCY CARE & SAFETY INSTITUTE

Cardiac Arrest Algorithm (Adult or Pediatric)

Assumes the scene is safe, the patient is unresponsive, assistance was called, and you are now arriving



CPR Quality

- Push hard (at least 2 inches in the adult—at least one third of the anterior–posterior diameter of the chest in infants [about 1½ inches] and children [about 2 inches]).
- Push fast at the rate of 100 to 120/min.
- Allow full chest recoil between compressions. No leaning on the chest!
- Switch compressor every 2 minutes. Avoid excessive ventilation. Minimize CPR interruptions to less than 10 seconds.
- Compression-to-ventilation ratio:
  - All adult and single-rescuer CPR: 30:2
  - Two-rescuer infant and child CPR: 15:2
- Begin asynchronous CPR *after* the advanced airway has been inserted. Use a compression rate of 100 to 120/min and ventilations at 10 breaths/min (one breath every 6 seconds).
  - Waveform capnography
  - If $ETCO_2$ < 10 mm Hg, attempt to improve CPR quality

Drug Doses and Intervals

- Epinephrine:
  - Adult: 1 mg IV/IO every 3–5 minutes
  - Pediatric:
    - IV/IO dose: 0.01 mg/kg (0.1 mL/kg of 1:10,000 solution) every 3 to 5 min
- Amiodarone:
  - Adult: 300 mg initial dose; 150 mg second dose
  - Pediatric: 5 mg/kg IV or IO; may repeat twice at same dose; maximum of 15 mg/kg
- Lidocaine (pediatric):
  - 1 mg/kg IV or IO loading dose. Maintenance dose of 20–50 mcg/kg/min infusion. Can repeat bolus if infusion is not given >15 minutes after loading dose.

Advanced Airway

- Insert supraglottic airway device or endotracheal tube.
- Use quantitative waveform capnography to confirm and monitor ET tube placement.
- Begin asynchronous CPR *after* the advanced airway has been inserted. Use a compression rate of at least 100 to 120/min and ventilations at 10 breaths/min (one breath every 6 seconds). Do not hyperventilate!

Defibrillation Energy

Adult:

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

Pediatric:

- First shock at 2 J/kg; second shock at 4 J/kg; subsequent shocks at least 4 J/kg.
- Maximum shock: 10 J/kg or adult energy setting.

Reversible Causes

- **H**ypovolemia
- **H**ypoxia
- **H**ydrogen ion (acidosis)
- **H**ypoglycemia (especially in infants and children)
- **H**ypokalemia/hyperkalemia
- **H**ypothermia
- **T**ension pneumothorax
- **T**amponade, cardiac
- **T**oxins (drug overdose, poisoning)
- **T**hrombosis, pulmonary
- **T**hrombosis, coronary

Return of Spontaneous Circulation (ROSC)

- Abrupt and sustained increase in $ETCO_2$ (typically > 40 mm Hg); palpable pulse.
- Assess BP, obtain 12-lead ECG, and maintain SpO_2 > 94%.
- Treat hypotension (SBP < 90 mm Hg) with IV/IO fluid bolus or vasopressor infusion.
- If STEMI or AMI suspected, transport to PCI center.
- If patient does not follow commands, transport to hospital with TTM and advanced critical care capabilities.