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PRESENTATION
Echocardiography should be standard of care in Cardiac Arrest

DESCRIPTION
This presentation will discuss utility of echocardiography to diagnose reversible causes of cardiac arrest.

OBJECTIVES
- Standardized echocardiography minimizes interruptions of chest compressions.
- Echocardiography can diagnose cardiac tamponade.
- Echocardiography can diagnose right heart strain suggestive of massive PE.
- Review fundamental elements of ACLS Adult Cardiac Arrest Algorithm.
- Use primary literature to discuss benefit of CASA protocol.
- Examine how echocardiography can identify reversible causes of cardiac arrest.

DISCLOSURE
No significant financial relationships to disclose.
Echocardiography should be standard of care in cardiac arrest.

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Advanced Cardiovascular Life Support
Adult Cardiac Arrest Algorithm

CPR Technique
- Depth: Hard & fast, 2 in (5cm).
- Rate: 100-120 per minute.
- Ratio: 30:2 compressions to breaths (if no advanced airway).
- Attempt to minimize interruptions.
- Rotate compressions providers every 2 minutes or if fatigued.
- Avoid excessive ventilation.
- Capnography Evaluation:
  - If P/ECO2 is <15mmHg, improve the CPR quality.
- Intra-Arterial Pressure Evaluation:
  - If diastolic pressure is <80mmHg, improve the CPR quality.

Defibrillation
- Monophasic: 360J
- Biphasic: follow manufacturer recommendations
  (eg. first shock 120-200J).
- If recommended joules is unknown, use the maximum available.
- Following shocks give equal joules with higher joules considered.

Medication Therapy
- Epinephrine:
  - 1mg IV/IO every 3-5 minutes.
- Amiodarone:
  - 1st dose 300mg IV/IO bolus.
  - 2nd dose 150mg IV/IO bolus.

Advanced Airway
- Provide ETT or subglottic airway.
- Confirm placement and monitor with capnography or capnometry.
- With an advanced airway, provide 1 breath every 6 seconds without stopping chest compressions.

Return of Spontaneous Circulation
- Palpable pulse and blood pressure.
- Sustained improvement in PETCO2 (generally >40mmHg).
- Intra-arterial monitoring showing spontaneous arterial pressure waves.

Possible Causes
- Acidosis
- Cardiac tamponade
- Coronary thrombosis
- Hypokalemia/Hypokalemia
- Hyperkalemia
- Hypothermia
- Hypovolemia
- Hypoxia
- Pulmonary embolism
- Tension pneumothorax
- Toxins

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Why Echocardiography?
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1. Echocardiography minimizes interruptions of chest compressions.

2. Echocardiography can diagnose cardiac tamponade.

3. Echocardiography can diagnose right heart strain suggestive of massive PE.
FACT: Echocardiography minimizes interruptions of chest compressions.
Chest Compressions During Cardiac Arrest
Magnitude of Perfusion Resulting from Chest Compressions

Continuous Compressions with "Best Possible" Perfusion
Compressions Halt
Inadequate Perfusion
Compressions Resume
No Perfusion

Perfusion Pressure
Time

Figure 3. Proportion of pauses ≤10 seconds, 11-15 seconds, 16-20 seconds, and ≥21 seconds by pre and post CASA intervention time periods.
FACT: Echocardiography can diagnose cardiac tamponade.
FACT: Echocardiography can diagnose right heart strain suggestive of massive pulmonary embolism.
Why Echocardiography?

1. Echocardiography minimizes interruptions in chest compressions.

2. Echocardiography can diagnose cardiac tamponade.

3. Echocardiography can diagnose right heart strain suggestive of massive PE.
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