

OhioHealth Emergency Medical Services Podcast Series
March 2021 Episode: Resuscitation

Objectives:

1. Review categories of shock.
2. Discuss resuscitation methods.
2. Discuss important aspects of cardiac arrest management.

Podcasters

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Session 1

- 72 YF – Altered Mental Status with Evidence of Shock
 - Initial assessment
 - Vital signs are important to review
 - Tachypnea can be an early indicator of shock
 - Determine if the patient is in shock
 - Shock is hypoperfusion to organs
 - Can result in tissue hypoxia and acidosis
 - Categories of shock
 - Hypovolemic and hemorrhagic
 - Decreased blood volume
 - Septic, anaphylactic and neurogenic
 - Decreased vascular resistance
 - Cardiogenic
 - Decreased cardiac output
 - Obstructive
 - Decreased preload and cardiac output
 - Shock index (HR/BP) > 0.7 can be concerning for shock
 - Treatment
 - IVF can be diagnostic and therapeutic
 - Small volume can determine who is fluid-responsive and who is no fluid-responsive
 - Type of fluid
 - LR and Normal Saline are both okay initially
 - LR may be better for more prolonged resuscitations
 - LR is more physiologic than normal saline

- Vasopressors
 - Most agents have varying alpha and beta stimulation
 - Minimal evidence to support one agent over others
 - Dopamine and Norepinephrine Analysis
 - [Norepinephrine favored in septic shock](#)
 - Prehospital environment requires a pragmatic approach
 - Epinephrine is already on most ambulances and may serve as a vasopressor drip
 - The so-called “dirty epi” drip is a quick way to initiate epinephrine (<https://www.aliem.com/dirtyepi/>)
 - Norepinephrine is probably the most preferable
 - Dopamine and dobutamine are less optimal and may be arrhythmogenic
- Airway Management
 - Positive pressure ventilation may adversely affect preload and create per-intubation hypotension and cardiac arrest
 - Induction and paralytic agents may lead to peri-intubation instability as well
 - Consider resuscitation before intubation when feasible
- Treatment for specific types of shock
 - Hypovolemic: IV fluids and supportive care
 - Distributive
 - Anaphylaxis: epinephrine IM and IV fluids
 - Consider epinephrine drip after 2 IM doses
 - Other medications are supportive
 - Septic: IV fluids and vasopressors
 - Cardiogenic
 - Small aliquots of IV fluid
 - Norepinephrine is the vasopressor of choice
 - Transcutaneous pacing
 - Obstructive
 - Increase preload with IV fluid
 - Needle decompression for tension pneumothorax
 - Atraumatic hemorrhagic shock
 - Blood products are likely preferable but limited by availability and scope of practice
 - IV fluids with permissive hypotension if no blood products
 - Vasopressors for support as needed

Session 2

- 47 YM – Unwitnessed out-of-hospital cardiac arrest with bystander CPR with fine ventricular fibrillation
 - The fundamentals matter the most in cardiac arrest care
 - High-quality CPR improves survival
 - Early defibrillation improves survival
 - High-quality CPR initiated as soon as possible
 - Maximize chest compression fraction
 - Assure appropriate depth, rate and recoil
 - For unwitnessed arrests, two minutes of chest compressions are important
 - Witnessed arrest can be immediately defibrillated
 - Prepare for defibrillation and search for other reversible causes
 - Use 200 J for biphasic defibrillators
 - Pre-charge the monitor during chest compressions to limit peri-shock pauses
 - Manage the airway
 - Airway management can be extremely distracting
 - Supraglottic airways are a nice option for effective ventilation and oxygenation
 - Use ETCO₂ to monitor effectiveness of ventilations
 - Be careful with your ventilation rate
 - If not an option, consider bag-valve mask with airway adjuncts and high-flow oxygen
 - BVM requires 30:2 compressions-to-ventilation ratio
 - Supraglottic and endotracheal tube allow for asynchronous ventilations and support a continuous compression approach
 - Do not delay compressions, defibrillation and reversible causes for airway management (unless suspected airway obstruction, respiratory etiology, etc.).
 - Vascular access
 - Okay to attempt IV first but have low threshold for transitioning to IO
 - Medications
 - Minimal, if any, impact on survival from cardiac arrest when given empirically
 - Some medications may help treat reversible causes and should be prioritized in most cases
 - Termination of resuscitation
 - Consider patient features, arrest characteristics, level of EMS provider and scene dynamics
 - There are BLS and ALS guidelines that have been studied
 - ALS Criteria

- Not witnessed by EMS
- No shockable rhythms
- No return of spontaneous circulation
- Consider contraindications to field termination
- Asystole has very poor prognosis
- VF/VT has a much better prognosis
- Some PEA arrests have good prognosis, others have poor prognosis
 - Consider taking an aggressive approach in PEA arrests with favorable characteristics
- Pediatric cardiac arrest requires a slightly different approach, and we will likely cover in a future podcast