

# AHA 2019 Updates

Those who cannot do, teach.  
Those who cannot teach, supervise  
Murphys Laws for EMTS

# Danine Jasumback BSc, RRT, EMT

Canada to Detroit to Montana via a short stay in CA  
Don't hold that against me

# How are these changes determined?

- What proportion of recommendations in current American College of Cardiology/American Heart Association (ACC/AHA) and European Society of Cardiology (ESC) guidelines are supported by evidence from multiple randomized controlled trials (RCTs), and how has this changed over the past 10 years?
- **Findings** In this systematic review of 51 current guideline documents that included 6329 recommendations, 8.5% of recommendations in ACC/AHA guidelines and 14.3% of recommendations in ESC guidelines were classified as level of evidence A (supported by evidence from multiple RCTs), compared with 11.5% of recommendations in a systematic review of ACC/AHA guidelines conducted in 2009.
- **Meaning** Among recommendations in major cardiovascular society guidelines from 2008 to 2018, the proportion supported by evidence from RCTs remains small.
- ILCOR conducts CEE to shorten interval between evidence and practice

# Updates

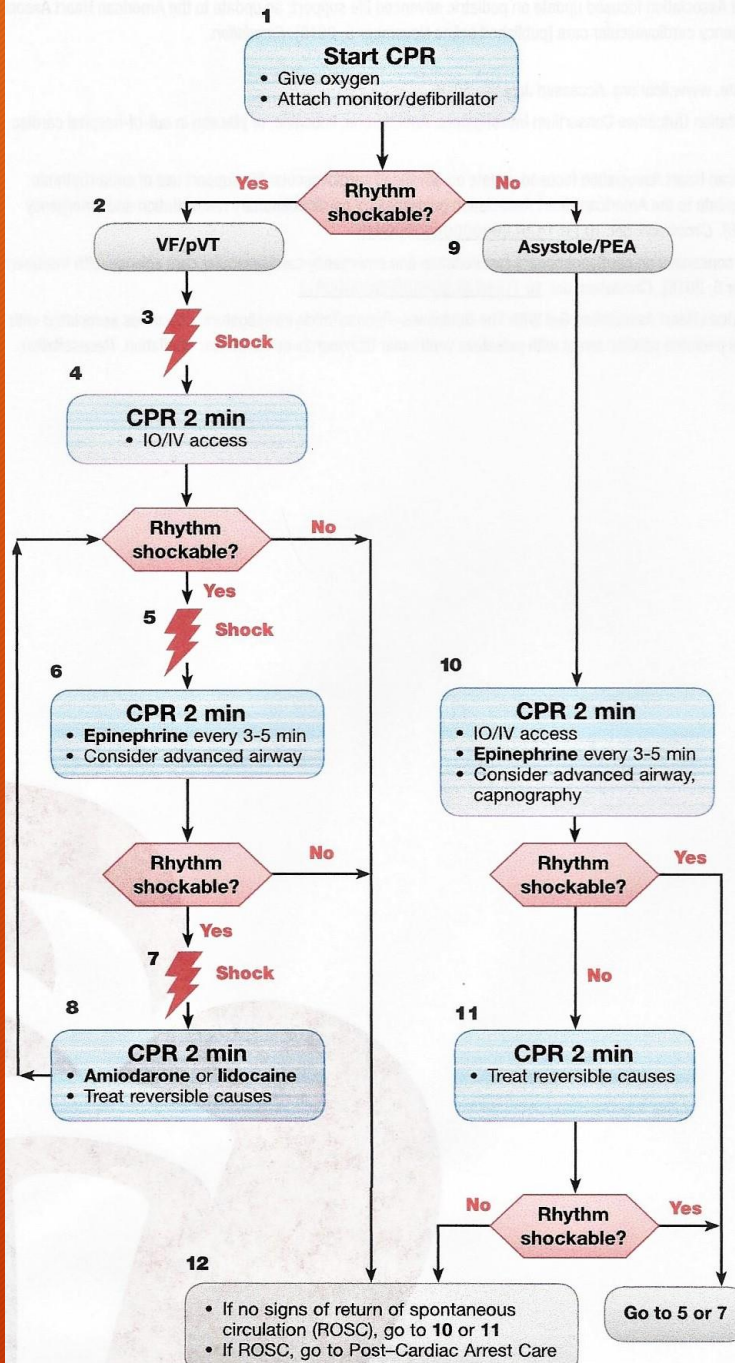
- Pediatric ALS
- Adult ALS
- Bradycardia
- Kids with Congenital Heart Disease
- Guesses for the future

Diagnostic Category	Mortality		Morbidity	
	Early PALS/APLS Received, <i>n/N (%)</i>	Early PALS/APLS not Received, <i>n/N (%)</i>	Early PALS/APLS Received, <i>n/N (%)</i>	Early PALS/APLS not Received, <i>n/N (%)</i>
All patients	49/564 (8.69)	142/946 (15.01)	7/564 (1.24)	40/946 (4.23)
OR (95% CI)	0.54 (0.38–0.76)		0.46 (0.34–0.64)	
Head trauma (isolated)	1/12 (8.3) <sup>a</sup>	9/16 (56.3)	3/12 (25)	0/16 (0.0)
Multiple trauma with head injury	4/11 (36.4)	9/17 (52.9)	1/11 (27.3)	3/17 (17.6)
Multiple trauma without head injury	0/12 (0.0)	3/11 (27.3)	0/12 (0.0)	0/11 (0.0)
All trauma patients	5/35 (14.3) <sup>a</sup>	21/44 (52.9)	4/35 (11.4)	3/44 (6.8)
OR (95% CI)	0.18 (0.06–0.56)			
Respiratory	20/194 (10.3)	47/316 (14.9)	2/194 (1)	14/316 (4.4)
Neurologic	5/82 (6.1)	12/108 (11.1)	0/82 (0.0) <sup>a</sup>	13/108 (12)
Cardiac	12/78 (15.4)	39/173 (22.5)	0/78 (0.0)	5/173 (2.9)
Sepsis	7/59 (11.9)	18/128 (14.1)	0/59 (0.0)	5/128 (3.9)
Others <sup>b</sup>	0/115 (0.0)	3/156 (1.9)	1/115 (1.5)	2/156 (1.3)
All nontrauma patients	44/528 (8.3) <sup>a</sup>	119/881 (13.5)	3/528 (0.6) <sup>a</sup>	29/881 (3.3)
OR (95% CI)	0.58 (0.40–0.84)		0.13 (0.04–0.41)	

<sup>a</sup>  $P < .05$ ,  $\chi^2$  analysis.

<sup>b</sup> Other includes those children from metabolic, gastrointestinal, toxicological, and renal diagnostic categories.

# Pediatric Cardiac Arrest Algorithm—2018 Update



# Pediatric ALS

- Drugs, And More Drugs
- And capnography
- The big review was whether Amiodarone or Lidocaine were preferred in Vt/VF arrest
- The Answer:

**NO!**

- Weak Recommendation, based on Limited Data

# Fluid resuscitation/atropine/TTM

- Care in fluid resuscitation of febrile child (improved survival)
- Atropine no longer indicated for premedication in intubation
- Controversial and no recommended dosages
- Epinephrine recommended vasopressor
- Avoidance of fever rather than hypothermia strict normothermia
- Normal everything except BP fifth percentile for age



# Shock refractory VF/pVT

- Refers to VF or pVT that doesn't respond after more than 1 shock
- Lidocaine or amiodarone
- IV access should not delay quality CPR or defibrillation
- Based on a single study and inferred adult models
- No difference in outcome to discharge (9280 kids)

# And Capnography?

## Use It!

A capnograph measures how much carbon dioxide is present in the patients breath.

They are an essential piece of monitoring and you can find them in areas such as operating rooms, recovery, critical care, wards, and ambulances.

Advantages of capnography:

- Helps assess a variety of problems , from the cell all the way to the breathing equipment
- Non invasive
- Rapid
- Provide continuous measurement

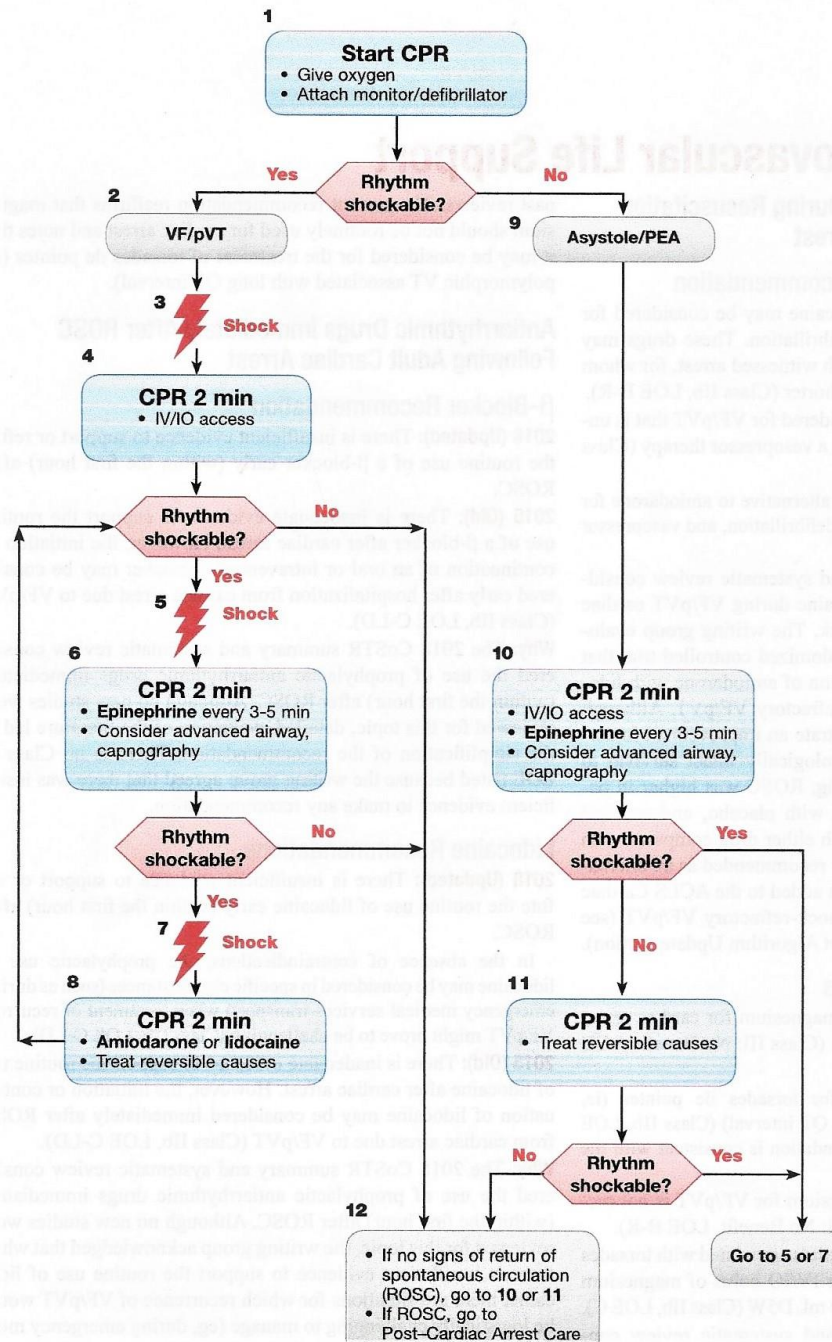
# Kids with Congenital Heart Disease

- This Gem

“Cardiopulmonary Resuscitation in Infants  
and Children With Cardiac Disease  
A Scientific Statement from the AHA”

- Has lots of info for kids with complex heart disease
- Read it if you deal with these kids!

# Adult Cardiac Arrest Algorithm—2018 Update



# Adult ALS Intraarrest-Amiodarone and Lidocaine

- Basically reviewed the ALPS trial (Amio vs Lidocaine)
- Showed No Change in survival to hospital discharge
  - Unless witnessed arrest
- The Change?
  - Amiodarone OR Lidocaine may be considered in shock refractory VF/pVT
  - Weak Recommendation, Moderate Evidence

# Adult ALS Intraarrest- Magnesium

- 4 small RCTs reviewed
- The recommendations:
  - Routine use of Magnesium for cardiac arrest is NOT RECOMMENDED
  - Magnesium May be considered for torsades de pointes
- Routine use statement is based on Limited Data
- May be used in TDP is likewise based on limited data

# Bradycardia

- **THESE ARE NOT ACLS recommendations but..**
- Consider atropine with a few words of caution:
  - Paradoxical bradycardia: You must give at least 0.5mg of atropine. Giving less may cause bradycardia.
  - Avoid in heart transplant patients: Atropine causes heart block or sinus arrest in up to 20% of patients. Bradycardia in heart transplant patients is often defined as < 70-80 bpm.
- Is the QRS narrow or wide?
  - Narrow? Atropine will help.
  - Wide? Atropine does not help and has even been reported to worsen conduction delays
  - Try a catecholamine instead

# Bradycardia

- Based on this 53 page gem:

“2018 ACC/AHA/HRS guideline on the evaluation and management of patients with bradycardia and cardiac conduction delay: Executive summary”

- Mostly directed at cardiologists

But.....



# Adult ALS- Post ROSC

- There have been several studies suggesting beta blockade might help so....
- *B-Blocker Recommendation—Updated*
- 1. There is insufficient evidence to support or refute the routine use of a  $\beta$ -blocker early (within the first hour) after ROSC.

# Adult ALS- Post ROSC

- What about antiarrhythmics POST ROSC?
- *Lidocaine Recommendations—Updated*
- 1. There is insufficient evidence to support or refute the routine use of lidocaine early (within the first hour) after ROSC.
- 2. In the absence of contraindications, the prophylactic use of lidocaine may be considered in specific circumstances (such as during emergency medical services transport) when treatment of recurrent VF/pVT might prove to be challenging

## And my personal favorite statement

“As noted in the ACLS portion of the 2010 guidelines,

### CPR and defibrillation

are the only therapies associated with improved survival in patients with VF/pVT.”

# Intubation during OHCA associated with worse survival and neurological outcomes

- Prioritizing the airway and breathing during CPR is unnecessary
- 16% vs 19% survival if not intubated in a study of 108,000 pts
- AHA stands by 2015 guidelines that BVM is as good or better in OHCA
- No advantage to achieving high O<sub>2</sub> levels after arrest and may be harmful

# What does the future hold?

- Airway
  - Probably irrelevant for the first 10-15 minutes of Cardiac Arrest
- Drugs
  - Don't expect current epinephrine dosing to stick around too long.....

# Future?

- Out-of-hospital cardiac arrest (OHCA) remains a major public health challenge; approximately 356,500 people are treated for OHCA annually in the US.
- Advancements in 9-1-1 telephone CPR instructions, bystander CPR, CPR techniques, public AED availability, and post resuscitation care have been shown to improve outcomes, but implementation varies regionally and there are opportunities for improvement.

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