

# October 2015 REBELCast Wee Shownotes

## 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation (CPR) and Emergency Cardiovascular Care (ECC)

This is just a list of our top 5 new or updated recommendations, that caught our attention, but certainly there are other recommendations. This is a massive 15 part document, but if you want the cliff notes version of the updates look through part I, titled the executive summary or the Highlights PDF which I will attach on the blog.

1. **Vasopressin is Out (Part 7: Adult Advanced Cardiovascular Life Support, S451):** The AHA has determined that Vasopressin offers no advantage as either a substitute for or in combination with standard-dose epinephrine in cardiac arrest (Class IIb, LOE B-R). The old 2010 recommendation was one dose of vasopressin 40U IV or IO could be used as a replacement either as a first or second dose for epinephrine in the treatment of cardiac arrest. Both Vasopressin and Epinephrine have been shown to increase ROSC in OHCA, and the best available evidence shows that the efficacy of the 2 drugs to achieve this is similar. Therefore for the sake of simplicity the AHA decided to remove Vasopressin from the ACLS algorithm. Some may argue that the Vasopressin, Steroid, Epinephrine Study (Mentzelopoulos SD et al) may argue against this recommendation. First this was a study of IHCA not OHCA. In IHCA the recommendation is the combined use of epinephrine, steroid, and vasopressin MAY BE considered, but further studies are needed before the routine use of this strategy can be recommended (Class IIb, LOE C-LD).
2. **Acute Coronary Syndrome Risk Stratification (Part 9: Acute Coronary Syndrome, S485):** The updated recommendations state that a negative cTnI or cTnT measurement at 0 and between 3 – 6 hours may be used together with very low-risk stratification strategy (i.e. TIMI Score = 0, Low-Risk Score per Vancouver Rule, North American Chest Pain Score = 0 and age <50years, or a low-risk HEART Score = 0 – 3) in order to predict a <1% chance of 30-day MACE (Class IIa, LOE B-NR). The 2010 recommendation was that if biomarkers are initially negative within 6 hours of symptom onset, it was recommended that biomarkers should be remeasured between 6 – 12 hours after symptom onset.
3. **Using Social Media to Summon Rescuers (Part 4: Systems of Cared and Continuous Quality Improvement, S404):** Given the low risk of harm and the potential benefit of such notifications, it may be reasonable for communities to incorporate, where available, social media technologies that summon rescuers who are willing and able to perform CPR and are in close proximity to a suspected victim of OHCA (Class IIb, LOE B-R). This is a new recommendation, but one that I support. There is currently a free app called the goodsamapp. SAM stands for Smartphone Activated Medics. You can read more about it at [goodsamapp.org](http://goodsamapp.org). This free app lets you open the app

and call for help which will call 911 but at the same time will send out alerts to nearby registered users who can open airways perform CPR and use a defibrillator if need be. We all know that early CPR and early defibrillation are keys to survival and good neurologic outcomes in cardiac arrest. Now I should say that there is no study that has shown that activation with social media improves survival from OHCA, but it has been shown to increase the rate of bystander-initiated CPR.

4. **CPR Quality (Part 5: Adult Basic Life support and Cardiopulmonary Resuscitation Quality, S419 – 420):** In 2010 the old adage of ABCs was changed to CABs to focus on circulation early. The key to good neurologic survival is good CPR. There is no surprise that in the 2015 update there is huge emphasis on the quality of CPR. The key amendments made are:
  - a. **Rate:** In adult victims of cardiac arrest, it is reasonable for rescuers to perform chest compressions at a rate of 100/min to 120/min (Class IIa, LOE C-LD). The 2010 recommendation stated it was reasonable for lay rescuers and health care providers to perform chest compressions at a rate of at least 100/min. It turns out the number of chest compressions delivered per minute during CPR is an important determinant of ROSC and survival with good neurologic function. This number is dependent on two factors: rate of compressions and duration of interruptions. Either an inadequate compression rate or frequent interruptions (or both) will reduce the total number of compressions delivered per minute. Another key to remember is that an upper limit to compression rate is recommended in 2015 because excessive compression rate can adversely affect patient outcomes.
  - b. **Depth:** During manual CPR rescuers should perform chest compressions to a depth of at least 2 inches or 5 cm for an average adult, while avoiding excessive chest compression depths (greater than 2.4 inches or 6 cm) (Class I, LOE C-LD). The 2010 recommendation was the adult sternum should be depressed at least 2 inches (5cm). Now my issue with this is, in a code situation when we are asking to push “hard and fast,” how do we judge the depth of compressions without the use of some sort of feedback device?
  - c. **Recoil:** It is reasonable for rescuers to avoid leaning on the chest between compressions to allow full chest wall recoil for adults in cardiac arrest (Class IIa, LOE C-LD). There are no human trial reporting the relationship between chest wall recoil and clinical outcomes. The evidence for this is derived from 2 small animal studies and a pediatric study of patients not in cardiac arrest. In all three of these studies, incomplete recoil was associated with a dose-dependent decrease in coronary perfusion pressure.
  - d. **Minimizing Interruptions:** In adult cardiac arrest, total pre-shock and post-shock pauses in chest compressions should be as short as possible (Class I, LOE C-LD). For adults in cardiac arrest receiving CPR without an advanced airway, it is reasonable to pause compressions for less than 10 seconds to deliver 2 breaths (Class IIa, LOE C-LD). In

adult cardiac arrest with an unprotected airway, it may be reasonable to perform CPR with the goal of a chest compression fraction as high as possible, with a target of at least 60% (Class IIb, LOE C-LD). There are several observational trials that show the duration of compression interruption for the perishock period is directly related to outcomes. The shorter this time is the greater the likelihood of shock success, ROSC, and survival to hospital discharge. So minimize all interruptions in CPR, but really focus on the perishock time period.

5. **Using ETCO<sub>2</sub> to End Resuscitative Efforts (Part 7: Adult Advanced Cardiovascular Life Support, S453):** In intubated patients, failure to achieve an ETCO<sub>2</sub> of greater than 10 mm Hg by waveform capnography after 20 minutes of CPR may be considered as one component of a multimodal approach to decide when to end resuscitative efforts, but it should not be used in isolation (Class IIb, LOE C-LD). The above recommendation is made with respect to ETCO<sub>2</sub> in patients who are intubated, because the studies examined included only those who were intubated. Studies on the predictive capacity of ETCO<sub>2</sub> among intubated patients during cardiac arrest resuscitation are observational, and none have investigated survival with intact neurologic outcome. It is important to remember in observational studies there could be confounding factors not taken into account. Also, the relatively small numbers of patients in these studies suggest that ETCO<sub>2</sub> should not be used alone as an indication to terminate resuscitative efforts, but, the failure to achieve an ETCO<sub>2</sub> greater than 10 mmHg despite optimized resuscitation efforts may be a valuable component of a multimodal approach to deciding when to terminate resuscitation (i.e. point of care ultrasound with no cardiac activity).

#### **References:**

1. Neumar RW et al. Part 1: Executive Summary: 2015 American Heart Association Guideline Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation* 2015; 132(18 Suppl 2): S315 – 67. [epub ahead of print] [PMID: 26472989](#)
2. Highlights of the 2015 American Heart Association Guidelines Update for CPR and ECC. [\[PDF\]](#)
3. Mentzelopoulos SD et al. Vasopressin, Steroids, and Epinephrine and Neurologically Favorable Survival After In-Hospital Cardiac Arrest: A Randomized Clinical Trial. *JAMA* 2013; 310(3): 270 – 9. [PMID: 23860985](#)
4. 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation (CPR) and Emergency Cardiovascular Care (ECC). [Circulation 2015 Table of Contents](#)